

# **E - Money and Financial Behaviour of Bank Customers**



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# ***e* – Money and Financial Behavior of Bank Customers**

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### **Authors**

Dr. V. Vimala

Dr. K. S. Sarala

***Dedication***

***To***

***My Beloved Parents***

***and Teachers***

# Preface

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India is embryonic as unique strategic performers in the field of Banking Sector. In view of its enormous expert workforce, developing banking know-how, accessibility of banking services and the occurrence of established innovative banking products especially *e-Money*. India is favorably placed at the national and international banking front. The study of *e-Money* in emergent banking technology and its financial behavior today is incomplete without the learning of bank customer's psychological perspectives, economic aspects and its impact on the standard of living of the select customers in India. There is no doubt that knowledge-based industries such as information technology offer India a smooth route to world Banking Technology based Services and products. Yet far superior aptitudes and prospects exist in the Banking sector also. The learning of *e-Money* and its impact on bank customers financial behavior helps in comprehend the various usages and its effect such as socio-cultural factors, psychological factors, financial factors and economic development on the bankers as well as on bank customers in the contemporary setup. The focus is consequently very important for the students studying Commerce/Business subjects. This book is also useful to others who wish to understand the concept of Banking Technology products such as *e-Money*, virtual banking system, and its various impacts on financial behavior of the bank customers and other banking services to them for their distinct data.

## ***Comprehension of the Book***

This book is deliberate to provide the readers a basic understanding of *e-Money* usages, benefits, satisfaction level, its attitude, preferences, and various impacts on financial aspects with the time duration of possessions with the customers and also assistance in understanding the effect on economic development of the banking sector by using the more and more *e-Money* with the use of innovative banking technology products, critical risks associated with long term usages and its services. Banks have started to rely increasingly on the Cashless transactions in all the routine banking activities with virtual banking system in the modern banking era. *e-Money* is one of the most distinctive products being marketed by banks 21 century. Consequently, it is critical for those involved in the business for their transactions for various buying and selling activities and its very noteworthy to be aware of the nature of the products; the rules governing the same and the issues that a raise in the usage of *e-Money* in the recent days. This book also includes sample illustrations and few statistical data for the reader to understand related topics. This book would be useful for every person as it is inevitable today to use the *e-Money* in various circumstances or in our routine transactions.

The knowledge of *e*-Money makes individual appreciate the legal entanglement pertaining to their various banking technology transactions, avoid legal litigations and obtain timely benefits to the *e*-Money users.

The book emphasizes on the following intentions which remain unchanged in the present book. To study the impact of *e*-Money and its financial behaviours of Bank customers on economic (financial aspects) dimensions with the time duration of holdings; the level of satisfaction attained by the respondents in using their *e*-Money from socio - cultural perspectives, psychological transactions with different influential factors affecting them in up-to-date. To ascertain the critical risks associated with the use of *e*-Money and its implications on the long term usages; and to evaluate the *e*-Money service delivery (in terms of value addition) provided by banking industry to its customers.

With the intension of making the subject of *e*-Money and its impact on Bank customers and financial behaviours towards innovative banking technology products and its services interesting and help the readers easy to understand the topic well. This book is an outcome of the small effort made to understand the *e*-Money and its impact on the financial behaviours of the Bank Customers in the current scenario. As such, this book has important points to the bank customers, bankers, general public, students, and the educational institutions.

### ***Audience of the Book***

The book is designed for the usage of Bankers and Bank Customers and those seek information on advanced banking technology products and its services for their benefit to adopt e-money transactions, students, research scholars and general public who want to update their knowledge of *e*-Money. The subject matter has been discussed in conceptual-cum-analytical manner. The aim of the book is to help the readers to develop necessary skills to understand, analyze and interpret the impact of *e*-Money and its financial behaviour on bank customers to make appropriate decisions in the utilization of *e*-Money transactions in their daily life.

***Dr. V. Vimala***  
***Dr. K. S. Sarala***

## Foreword

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The express headways made in the field of major service sector of banking technology products, services and information communication technology arena have extremely impacted the way banking is made worldwide. Currently, the bank customer's does not have to enter the brick-and-mortar structure of the bank in order to get serviced by the bank. He or she can get all the services right at his or her doorstep on his or her desktop. Such is the quintessential influence of banking products like or *e-Money*, (*e-Banking* and Virtual Banking system) is a new and easier way of paying for goods and services. Electronic Money (Digital Money) is a protected method to store monetarist value on hardware devices, such as computers and smartphones. *e-Money* is used to make and accept payments to and from persons and organizations other than the Digital Money issuers. It presents the evolution of banking, the tremendous influence of information and communication technologies on banking and its products, the quintessential role played by computer science in fulfilling banks' marketing objective of servicing customers better at a less cost and thereby reap more profits. It also highlights the use of advanced statistics and computer science to measure, mitigate and manage various risks associated with banks' business with its customers and other banks. Of particular significance is the set of latest trends this chapter presents in terms of impacts of *e-Money* on financial behavior of the bank customers which this study specifically focused on the psychological impacts, economic and financial impacts and socio-cultural factors both in the long term and short term. The chapter concludes by predicting that the *e-Money* usages, financial behavior and advanced banking technology impacts on various confirmatory factors which is discussed in the study taking into the consideration of all discipline to set for rapid growth in future.

This book will explore issues critical for success in providing usages of *e-Money*. The aim is to assist bank customers in utilizing the opportunities offered by banks which relatively new set of technologies. This book largely restricts itself to the *e-Money* impacts on the customers and their financial behaviour in view of the problem, and is therefore primarily focused on external factors, such as the socio-cultural, financial/ economical and psychological factors. It is not intended that the book should replace texts on existing banking technology products/banking management practices in its focused field, but rather that it be used as a complement to them. The main target audiences include researchers involved in the banking filed, undergraduate as well as postgraduate students of B.Com – Banking Technology, general management and technology management as well as practitioners of Banking technology

products and services of e-banking. This book is of paramount importance can be seen by the fact that the academicians, researchers and professionals from all over the worldwide those interested in the utilization of Banking Technology products and its service.

The readings of this book will indisputably enrich the knowledge on phase of Impact of e-Money on bank customer's financial behaviours in various transactions in their routine business activities. We wish to appreciate the relevance of the topics of this research work and wish this book would surely bring insights in these fields and act as an eye opener to the scholars in this field of inquiry. We are of firm opinion that students, research scholars and academicians will find this book very useful as a source of reference for their research and the decision making in the broad area of Digital Money.

***Dr. V. Vimala***

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## About the Authors

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Dr. K. S. Sarala, at present is serving as Associate Professor and Course Co-ordinator (MBA) in the Department of Commerce and Management, Sahyadri Commerce and Management College, a Constituent College of Kuvempu University, Shivamogga 577 203 Karnataka State, India. She holds Master's Degree in Commerce from Kuvempu University (1994) with Third Rank and Doctoral degree from the same university under FIP Scheme of UGC during 2003. She is specialized in the area of Advanced Cost Accounting and Entrepreneurship Development, Banking, Marketing Management being the other areas of her interest. She joined Sahyadri Arts and Commerce College in 1996 as Lecturer and became Lecturer (Senior Scale) before promoted as Associate Professor in 2010. She as a researcher has completed two Minor Research Projects funded by UGC during 2012 and 2019 and as research supervisor of Kuvempu University has successfully guided six candidates for their Ph. D degree and six more are in progress. She has published more than thirty research articles in journals and edited volumes besides preparing self-study material for BBM and B.Com (Distance Education) of Kuvempu University. Along with this she has also presented more than one hundred papers in seminars and conferences at international, national and state levels. She was the member of NAAC steering Committee Visit to Sahyadri Arts and Commerce College during 2016. She was invited as the resource person for various academic programmes. At present, she is working as the IQAC Co-ordinator, Red Cross Programme Officer and Women Empowerment Cell Co-ordinator in the college.

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*“A Friend is one of the nicest things we can have” So, I take this opportunity to thank and remember my dear friends for being so encouraging, supportive in completing my research work.*

**Place : Coimbatore**

**Date : 30th March, 2020**

**V. Vimala**

## Abstract

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The electronic money (*e-Money*) is the money balance recorded electronically on a stored-value card. Progressively, People are using computer networks and spend for goods and services with electronic money. In 1983, a research paper by David Chaum introduced the idea of digital cash. Every day we face the retail money problem. In an electronic payment system a user can reduce the problem of the retail money. Electronic money is one of the most important breakthroughs of technological progress, which is the last that was invented as an electronic payment method, as a result of the need because of the shortcomings of the means of payment earlier. The electronic cash system is based on the protocol developed by Digi Cash, called E-Cash, which was introduced in the Netherlands in 1994 and by the end of 1995, Mark twain Bank began issuing electronic currency in dollars (Zine El-Din, 2003).The change in demographic features of consumers in terms of their income, marital status, education level etc., and up – gradation of technology and its awareness has brought the relevant changes in consumers' preferences. These changing preferences have also modified their outlook and decision regarding the acceptance and non – acceptance of particular product and services in the market.

Thus, the *e-Money* is gaining popularity among bankers as well as customers and getting accepted in the market place. There has been a drastic change in the banking products and the services by use of new technology. Usage of *e-Money* started increasing in India over a period of time. The present study intends to understand and analyses the current structure of the *e-Money* and financial behavior of bank customers as well as its impact on three important dimensions covering economic (financial aspects), social – cultural and psychological. The scope of the study covers the factors affecting the passion towards the use of *e-Money* among the select customers.

Multi – Stage Sampling was adopted for selection of respondents for the study. This study used suitable statistical tools such as Descriptive statistics, Chi – Square ( $\chi^2$ ), Correlation and Logistic Regression, Confirmative Factor Analysis, Wilcoxon – Mann Walley Test, T – Test and different tools such as tables, diagrams/graphs are also used to analyze the collected data and to make the presentation more effective. The present study has considered a period of twenty years and the relevant data pertaining to the study covers from 2000 to 2020. The research work categorized in seven chapters which are detailed below:

- \* The First Section, *Research Design* deals with introduction followed by statement of problem and need for the study, objectives, scope, sample frame work, period of the

study, hypotheses, statistical tools and techniques and methodology adopted in the study were included in this chapter.

- \* The second section, *Literature Review* provides related studies and researches undertaken in different states and countries across the globe on the *e-Money*. In this section, it helped the researcher to find the research gap, there by identified the research problem of the present study.
- \* The third section, *e-Money in India – A Conceptual Framework* makes an attempt to study and understand the concepts of *e-Money*, its benefits, pros and cons, difference of usages among the customers in the Indian Banking Sector.
- \* The fourth section, present the review of statistical data pertaining to *e-Money*, analyzing the Banking Development trends in India.
- \* The fifth section, *e-Money* examines the best services provided by both public and private sector to the customer and their financial behaviours.
- \* The sixth section *Impact of e-Money and its financial behaviours of Bank Customers*, this part of the study makes an attempt to evaluate the usage, perception, financial behaviour and satisfaction of bank transactions through *e-Money*, socio – cultural impact, psychological factors and other economic factors which influence the use of *e-Money* among the select bank customers.
- \* The seventh section *Summary of Major Findings, Suggestions and Conclusion* presents the major findings of the present study, suggestions offered to Customers and Banks followed by Conclusion.

This study presents valuable empirical evidences of the impact of *e-Money* of the Select Bank Customers of both public and private sector banks in the India. The electronic money (*e-Money*) is innovative method of payment. It is the preceding thing that was designed in automated payment methods. It was considered by a number of features that complete it unique biggest challenges fronting the actions of central banks. This put their impact on the central bank functions in question, especially the impact on monetary policy. This study was designed to investigate these effects and highlight their various aspects through Identification of the monetary policy, Identification of electronic money, to highlight the various effects of the use of electronic money on the role of the bank in the management of monetary policy. It also provides the special attention to the *e-Money* impacts on financial behaviours and perception in Indian banking system, satisfaction level, and impact of *e-Money* from different dimensions

such as socio-cultural, economical, financial and psychological factors. The banks are providing more satisfactory usage of *e*-Money and the virtual banking service their customers and helps us to identify their financial behavior in various business and non-business transaction, in the study area it is mainly focused on the current impact on the financial behaviours of *e*-Money.

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# SECTION I

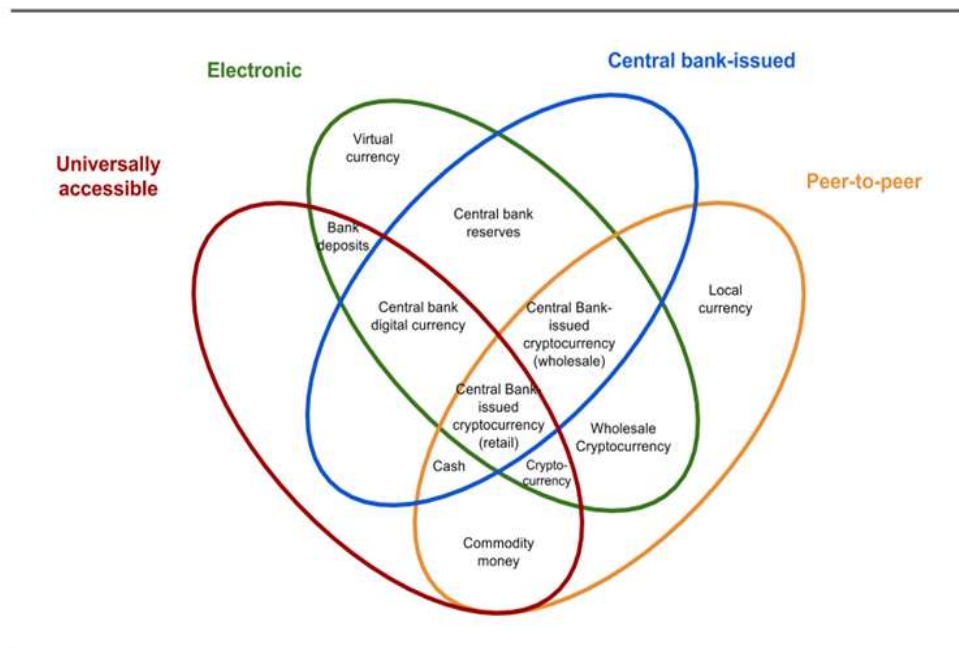
## 1. Research Design

### 1.1. Introduction

Digital currency (Digital Money, Electronic Money or Electronic Currency) is a type of currency available in digital form (in contrast to physical, such as banknotes and coins). It exhibits properties similar to physical currencies, but can allow for instantaneous transactions and borderless transfer-of-ownership. Examples include virtual currencies, crypto-currencies, and central bank digital currency. These currencies may be used to buy physical goods and services, but may also be restricted to certain communities such as for use inside an online game.

Electronic Money (*Electronic Money*) is broadly well-defined as an electronic store of monetary value on a technical device that may be widely used for making payments to entities other than the Digital Money issuer. The device acts as a prepaid bearer instrument which does not necessarily involve bank accounts in transactions. *Digital Money* products can be hardware-based or software-based, depending on the technology used to store the monetary value.

### The money flower: a taxonomy of money



Adaptation from Bank for International Settlements (2017)

Figure 1.1: The Money Flower: A Taxonomy of Money

Digital currency is a money balance recorded electronically on a stored-value card or other devices. Another form of electronic money is network money, allowing the transfer of value on computer networks, particularly the Internet. *e-Money* is also a claim on a private bank or other financial institution such as bank deposits.

## 1.2. *e-Money* in India: An Overview

Electronic Money (*e-Money*) is an electronic store of monetary value on technical device that may be widely used for making payments to understandings other than the issuer without necessarily involving bank account in the transactions, but acting as a prepaid bearer instrument. *e-Money* products are defined as *Stored-value of Pre-paid* products in which a record of the funds or value available to a consumer is stored on an electronic device in the consumer's possession. In contrast to the many existing single-purpose pre-paid card schemes (such as those offered by telephone companies), Electronic *Money* products are intended to be used as a general, multipurpose means of payment. For this reason, using internet to make a credit card payment or to transmit instructions to make funds transfer between bank accounts is regarded as access products or electronic payment systems, rather than electronic money. The Basel Committee (1998) further divides types of electronic money into the categories of electronic purses (hardware or card based) and digital cash (software, network based). Who will issue Electronic *Money*? In theory, Digital Money can be issued by commercial banks or even any institutions, as long as their own *Money* will be widely accepted. *e-Money* can become a medium of exchange when it is widely accepted. When a certain *Digital Money* (issued by Bank X) is widely accepted, it is a private money, which a balance-sheet liability of the issuers (recall our discussion on banknotes issued by commercial banks). Card-based products are being designed to facilitate small-value payments in face-to-face retail transactions and would therefore constitute a close substitute for banknotes and coin. An interesting question is whether there would be a particular incentive to switch to Digital Money products in countries which rely relatively more on cash as a means of payment, as may be the case in a number of emerging market economies. In particular, if the cost of installing transaction devices for *Digital Money*, small vendors may not have incentives to accept Digital Money.

The development of *e-Money* raises a number of interrelated policy issues of potential concern to central banks and other public authorities. Those of particular relevance to central banks relate to their oversight function for payment systems, counterfeiting, seigniorage, (*Seigniorage, also spelled seignorage or seigneur age, is the difference between the value of money and the cost to produce and distribute it.*) and the conduct of monetary policy.

**Payment Systems Virtually:** *e-Money* schemes under development will need inter-institution clearing and settlement arrangements. Many *Digital Money* schemes plan to use existing interbank arrangements. Operators and overseers of interbank clearing and settlement systems need to ensure that such systems are sufficiently robust in terms of institutional and operational arrangements, risk management and settlement procedures.

**Counterfeiting** – Seigniorage and Issuers Since banknotes in circulation represent non-interest-bearing central bank liabilities, a substitution of Electronic Money for cash would lead to a corresponding decline in central bank asset holdings and the interest earned on these assets that constitutes central bank seigniorage revenue. Even a moderate loss of seigniorage could be of concern to some governments, particularly in countries with large budget deficits. Thus, legal issues of particular relevance to central banks include whether *Digital Money* schemes infringe on the monopoly of the central banks in issuing bank notes, which is usually protected by legislation, and whether a central bank could, under existing legislation, *e-Money* itself.

**Monetary Policy** – The impact of *e-Money* on the size of central bank balance sheets depends on the extent those Electronic Money substitutes for cash. Since cash is a large or the largest component of central bank liabilities in many countries, a very extensive spread of *Digital Money* could shrink central bank balance sheets significantly. The issue is at what point this shrinkage might begin to adversely affect monetary policy implementation.

### **1.3. Prerequisite for *e-Money* in Indian Scenario**

There has been a drastic change in the banking products and the services by use of new technology. Usage of *Digital Money/ Electronic Money* such as store of monetary value on technical device started increasing in India over a period of time. Most of the banks now encourage using *e-Money*, where they have already converted all their ATM Cards such as Debit cards or ATM – cum – Debit Cards, Credits cards, Smarts cards etc., to virtual currency and slowly started increase in the use of digital currency system to automated Banking system throughout India. The reason banks are so eager to push *Electronic Money* that it helps them to cut costs significantly. But, this has created lot of confusions among the customers regarding their usage and benefits. Such *Electronic Money* have overcome the delayed payment process of cheques, ATM cards usages due to which sometimes merchants have to suffer in various daily transactions with machine faults and insufficient funds in the ATM machinery, problems in machinery and other security issues in dealing with currency and *Digital Money*.

Still, there are lot of technical problems involved in transactions, PIN and other operational aspects. It is used as a convenient mode of carrying money and also to supplement the Paper Money. Apart from the benefits to individuals, the business as a whole gains advantages from accepting of *Digital Money* as a medium of payment. It has enormous impact on bank customers, changing the buying habits of customers by making it much easier for them to finance purchases of goods and services. Research studies among a broad range of countries show the wide spread adoption of *Electronic Money* and its greater impact on consumer spending, savings habits, psychological aspects, economic changes, socio – cultural changes and financial perspectives.

From psychological standpoint, human need for money is proportional to what each specific person is interested in buying and what they think is within range. Therefore in some people, *e-Money* dependency can breed an overestimation of what they can afford. The result of this state is an increase in the demand for money to either repay the borrowed credit or supplement credit purchases with additional funds. *Digital Money* signals a deep economic trouble that goes far beyond consumer irresponsibility. Increased consumer spending ultimately leads to business growth. It serves as an important driving force and facilitator for economic and business growth through capital accumulation, increased consumer spending, enhanced tax revenues, preventing money laundering and black money. Traditionally, Indian business transactions are mostly carried out by using liquid cash. But, with the emergence of information technology, growth of internet, improved payment structure, *e – Commerce* (Electronic Commerce), Digital Money and *e – Banking* development, entry of foreign banks and new generation banks, high level of competition, easy availability of credit, increase in affluence levels and income of middle group, greater amount of consumerism, fast changes with regard to life style etc., the Indian economy witnessed the growth of *e-Money* –in terms of usage by customers and acceptance by merchant establishments.

In this background, research aims to understand the Impact of *e-Money* and financial behavior of bank customers focusing on different dimensions such as economic dimension (financial aspects), socio – cultural dimension and psychological dimensions. It is observed that very little work is carried out in the area of *e-Money* focusing in India. The current research analysis focuses on to understand how the *e-Money* affect the life style, standard of living, saving habits, spending trends among the selected bank customers, tries to analyses the impact on the socio – cultural changes, passion towards usage of *e-Money*, economic influences such as disposal of income by use of *e-Money*, increase in the purchasing power, use of updated technology by bank customers and their influential factors, such as psychological

factors which is affecting the healthy relationship between the family members and spouses. It also makes an attempt to make a comparative study between the public and private sector banking services specifically towards *e-Money*.

#### **1.4. Objectives of the Exploration on *e-Money***

The principal objective of the research is to comprehend the impact of *e-Money* and its financial behaviors of Bank customers and its effectiveness towards the use and the effective utilization of the services by the selected sample. In this background, objectives of the study are presented as under:

- \* To comprehend the impact of *e-Money* and its financial behaviours of Bank customers and to investigate the level of satisfaction attained by the respondents in using their *e-Money* from socio – cultural perspectives, psychological transactions with different influential factors affecting them in up-to-date.
- \* To ascertain the perilous threats associated with the use of *e-Money* and its implications on the long term usages; and to evaluate the *e-Money* service delivery (in terms of value addition) provided by banking industry to its customers.

#### **1.5. Prospect of the *e-Money***

The research on *e-Money* intends to understand and analyses the current structure of the Digital Money/Digital currency as well as its impact on three important dimensions covering economic (financial aspects), social – cultural and psychological. The scope of the study covers the factors affecting the passion towards the use of *e-Money* among the selected customers using Digital currency through digital banking system across India.

#### **1.6. Propositions of the *e-Money* and its Theories to Prove**

To achieve objectives of the study, the researcher was able to formulate certain hypotheses (H) for the empirical verification of the present study. They are as follows:

- \* **H<sub>1</sub>**: The changes in the duration of holdings of *e-Money* are significantly influenced by economic, socio – cultural and psychological.
- \* **H<sub>2</sub>**: The intensity of *e-Money* holders' satisfaction with their transactions is different in terms of aforesaid three dimensions in the study.
- \* **H<sub>3</sub>**: The use of *e-Money* is not risky with the influential factors of socio-cultural, economic, psychological and financial in the selected sample study.

- \* **H<sub>4</sub>:** The priority and preferences of the *e*-Money strongly influence the bank customers and the value addition – measured in terms of security features provided on digital money differs with type of bank.

The above hypotheses are tested with the help of the data obtained from the primary sources applicable for the analysis of the research study.

## **1.7. Approach and Bases of Data**

The research on *e*-Money is based on systematic investigation and exploration. Accordingly, the use of data has been taken from both primary as well as the secondary data. The relevant reports viz., RBI monthly bulletins, magazines, newspapers, business dailies, books and journals, *e*-media and other literature available in this field constitute secondary sources for the present study. The survey work was carried out with the help of structured, pre – tested questionnaire for select *e*-Money users and collected. Multi – Stage Sampling was adopted for selection of respondents for the study. In the first stage, the Bank Customers of India was divided into two groups Public Sector Banks and Private Sector Banks. In the Second stage area wise division is made, where only the Southern zone of Tamilnadu and Karnataka were considered for the study and of which bank customers who use *e*-Money are selected randomly.

## **1.8. Data Base of the Study**

Data pertaining to the study were collected by using the research instrument (Structured Questionnaire) consisted of questions relating to the socio-economic profile of the *e*-Money users in the selected banks, the factors that motivated the customers to use *e*-Money, the benefits of *e*-Money or digital currency for various transactions, problems faced by using the *e*-Money, level of satisfaction, attitudes, perceptions and misuses attained through operation the banking technology products by taking into consideration three dimensions such as socio – culture, economic (financial aspects) and psychological. The framed research instrument was pre – tested with the help of pilot study and based on their responses the questions were reformulated.

## **1.9. Statistical Tools and Techniques**

To analyze the collected data, various statistical techniques and tools have been used as per the requirement. The information collected was analyzed and presented in a logical way to arrive at meaningful interpretation.

This study used suitable statistical tools such as Descriptive statistics, Chi – Square ( $\chi^2$ ), Correlation and Logistic Regression, Confirmative Factor Analysis, Wilcoxon – Mann Walley Test, T – Test and different tools such as tables, diagrams/graphs are also used to analyze the collected data and to make the presentation more effective.

### **1.10. Limitations of the Study**

This research brings better insight about the impact of *e*–Money on the Customers covering only the Southern Region of India. It also provides indications about service threats which are identified in the survey. However, the research is not free from few limitations. An attempt has been made in the following paragraphs to present the same.

Firstly, the study asked the selected bank customers of *e*–Money users on some personal financial matters. Bank Customers may not have been honest about their digital payment practices and usage of *e*–Money who feels uncomfortable about financial issues may not have participated, or they may have participated less than candidly, thereby distorting the results. Some customers do not understand the basic rules of their digital currency through digital banking system. If a customer’s did not understand the meaning of *e*–Money for the purpose of the study, it might have responded appropriately to the items on the survey.

Secondly, the sampling design may have excluded participation by only with the Bank customers with very good, or very bad *e*–Money user’s histories. Customers who had experienced severe digital currency trouble may have purposely avoided a setting where prizes for participation were offered. The sample consisted entirely of volunteers, always a limitation in a research design.

Thirdly, this is a self – designed instrument. Although the researcher conducted a pilot study using the instrument, and the researcher found at least one item when administering the survey that was clearly misunderstood by respondents. Despite these limitations, the study provided useful information to academic administrators. Little is known about Bank Customers attitudes, satisfaction, usage patter, passion towards handling the digital payment practices. Bankers as an administrators allow digital money solicitors on their Banks without much thought to the implications of such activities for customers. Perhaps by better understanding the card holders’ practices of customers, Bankers can make more informed choices when handling the cards.

One more limitation is with related to the primary sources of data collection on which the present study is based on. It is a known fact that primary data has its own limitations. To have accuracy in the data collected, cross checking was carried out.

In this way, though inaccuracy in the given data was minimized, the data could not be considered as 100 percent correct. The present study relies only on the information gathered through survey, observation and personal interviews, which may subject to bias.

Again, as with the most empirical studies, the sample size and spectrum of respondents is a limitation. Even though a concerted effort was made to include a range of different individual representing different social groups of *e*-Money users, the sample was limited to certain geographical area in the southern region of India. Moreover, the survey is not representative of the whole nation. The sample was collected only from the selected banks and areas in the southern region of India. Therefore, caution need to be taken generalizing these research results to users groups in other geographical areas and environment.

Further, the findings and conclusion could only be applicable to similar set of socio – economic situation. These limitations in no way negate the findings of the study and scope for further research.

### **1.11. Summary**

To sum up, the beginning chapter entitled *Research Design* provides an insight to the reader about the outline of the research work carried out by the researcher on the selected topic in the selected region in India. In this section, it covers an introductory part of the research study covering Indian and Global perspectives. The researcher has identified the research gap after many reviews in the related areas presented the statement of the problem of the study and the need for the study followed by objectives of the study. It also provided the methodology of the study, sample design and the statistical tools and techniques which are applied to prove the formulated hypotheses and data base of the study and tries to identify a few limitations of the study along with chapter scheme of the report at the end of this section.

## SECTION II

### 2. Literatures on *e*-Money

#### 2.1. Introduction

The literature in the area of *e*-Money or digital currency/digital money is enormous and the studies vary from simple case studies to different state studies/cross – country studies to sector – wise comparison studies. Since it is difficult to review all the works carried out in the area of *e*-Money, this review is limited to only those studies which are relevant to the objectives of the present study. With this background, review of a few important works is made in the following paragraphs with an important objective to identify the research gap that exists at present.

The review for the study has been divided into eight categories, and is presented as follows:

#### 2.2. *e*-Money Usages, Attitudes, Financial Behaviours and Perception

Stromback, et,al., (2017), *e*-Money study showed that the efficient Friedman rule policy, of zero nominal interest rates, is only implemented if the government maximizes household's preferences, in which case, *e*-Money competition may either have no role, or weaken the incentive effects of the reputational mechanism.

(Li, 2017), the research work on *e*-Money and its Contribution in various service channels of financial institutions helps people in need and makes great impact on social charity. The impact factors of contribution behavior by customers of financial businesses. Researches were designed, and discussions with customers were conducted first for the purpose of constructing effective research instruments to study the impact of *e*-Money on the select customers. There are many factors that influence consumer intention to use *e*-Money based on the theory of planned behavior. Behavior intention is made by the attitude toward behavior, subjective norms and perceived behavioral control. The research revealed that the attitude toward behavior did not a significantly affect the behavior intention. While the subjective norms and perceived behavioral control have a significant effect on the behavior intention in the usage of *e*-Money.

Salihu et, al., (2019), in the study, it was briefly discussed the use of technology in banking operations has facilitated many daily banking activities. However, the use of technology in electronic banking (*e*-Money) services has its problems/deficiencies as well. It is to examined the impact on electronic banking (*e*-Money) services of security and ease of use.

(Joewono, Effendi, Gultom, & Rajagukguk, 2017), In the research articles, it is identified that the implementation of electronic toll collections brings many benefits for highway by reducing queuing. As a matter of fact, the number of toll road customers in Indonesia who used electronic cards for toll payment is very low. It is argued that behaviours in using electronic card for toll payment have a strong relation with personal behaviours and attitudes of customers of commercial banks.

(Europe Central Bank, 2012), the studies described about the virtual group of people have proliferated in recent years – a phenomenon triggered by technological developments and by the increased use of the internet. In these communities who created and circulated their own currency for exchanging the goods and services they offer, and thereby provide a medium of exchange and a unit of account for that particular virtual community. The research aimed to provide clarity on virtual currencies and tries to address the issue in a structured approach. Virtual currency schemes are relevant in several areas of the financial system and are therefore of interest to central banks. A virtual currency can be defined as a type of unregulated, digital money, which is issued and usually controlled by its developers, and used and accepted among the members of a specific virtual community. Depending on their interaction with traditional, *real* money and the real economy, virtual currency schemes can be classified into three types: Type – 1, which is used to refer to closed virtual currency schemes, basically used in an online game; Type – 2 virtual currency schemes have a unidirectional flow (usually an inflow), i.e. there is a conversion rate for purchasing the virtual currency, which can subsequently be used to buy virtual goods and services, but exceptionally also to buy real goods and services; and Type – 3 virtual currency schemes have bidirectional flows, i.e. the virtual currency in this respect acts like any other convertible currency, with two exchange rates (buy and sell), which can subsequently be used to buy virtual goods and services, but also to purchase real goods and services.

(Van der Crujisen & Horst, 2017), in the study, an effort has taken to know the impact of mobile money on the students group and the people who find the mobile phone technology useful in accessing information (given its internet adaptability features). Students' access to information makes it easier for them to use the technology and its various applications. Resultantly, mobile money technology is largely used among them. To the extent that the mobile money technology facilitates access to funds at any point in time, it has the potency of influencing the spending behaviour of its users.

(Van der Crujisen & Van der Horst, 2017), the research work has made an investigative study to understand the effects of socio-psychological factors on consumers' payment behaviour. Based on insights from the socio-psychological and payment literature it is strongly developed the theoretical model of payment behaviour. The model has been empirically tested by focusing on the choice both between cash and electronic payments, and by using the outcomes of two specially constructed surveys of a representative panel of Dutch consumers.

The report of IFC analysed the Digital finance and financial inclusion has several profits to financial services users, digital finance providers, governments and the economy; notwithstanding, a number of issues still persist which if addressed can make digital finance work better for individuals, businesses and governments. (IFC, 2018)

(Wulandari et al., 2018), in the research work studies the new banking products impact and its benefits to their customers, and details discussion *e*-Money was made. It is an embodiment of a modern banking system that uses a means of payment using cards or applications that are already connected to a bank account. Every year *e*-Money users increase significantly, but the increase is not accompanied by an increase in transactions made using *e*-Money. Last year, it was noted that *e*-Money users were only 35 per cent active. Some clinical studies have established an assessment of service quality. It is important to develop a systems analysis approach that can be used for the development and evaluation of service quality, both at the tactical and strategic level.

(Octabriyantiningtyas, Suryani, & Jatmiko, 2019) The adoption of *e*-Money significantly affected by perceived usefulness, perceived ease to use, and perceived benefit, while about 36 per cent is influenced by other factors. Therefore, in order reach widely used in *e*-Money particularly in Indonesia we should consider several factors that affect consumer preferences. Studies have established an assessment of service quality; there are several dimensions that are assessed according to the *e*-Money study. The dimensions of service quality used in this study are dimensions of ease of use, reliability, responsiveness, privacy, and security. It is important to develop a systems analysis approach that can be used for the development and evaluation of service quality, both at the tactical and strategic level. At present a taxonomic analysis of the dynamic system approach for modeling and simulating customer satisfaction on the quality of *e*-Money services. By using a dynamic system, a model can be drawn that describes the relationship of dimensions on service quality, so that it can be used as a reference to create new policies in order to increase customer satisfaction. It is identified that the modeling are subjective frameworks to assist companies in making policies that are suitable for increasing customer satisfaction and loyalty.

(Soman, 2001), the study has shown the influence of future spending behavior by depleting available budgets. However, a prerequisite for this relationship is the accurate recall of past payments and the experiencing of the full aversive impact associated with them. The use of different payment mechanisms influences both these factors and hence moderates the effects of past payments on future spending. Specifically, historical payments strongly reduce purchase intention when the payment mechanism requires the consumer to write down the amount paid (rehearsal) and when the consumer's wealth is depleted immediately rather than with a delay (immediacy).

(Vlasov, 2017), it is described effectively the evolution of electronic money. It is composed of the evolutionary theory of the origin of money and the theory of money and credit developed by the Austrian School of Economics. The emergence crypto-currency is seen as the next stage in the process of money evolution. It is crypto-currency which can truly be considered electronic money as it exists only in electronic form and is in no way connected to the objects of in material world. As a result, crypto-currency has several advantages when compared to other forms of money.

(ePSO) database. (Baddeley, 2004), the study showed the growth of electronic commerce is dependent upon the emergence of effective electronic payment systems. Whilst payments for large purchases can be made relatively easily using credit/debit cards, small-scale electronic commerce is constrained by the limited nature of existing *e-cash* (or *micropayments*) systems. This paper outlines the evolution of electronic payment systems, leading to an analysis of the essential characteristics of *e-cash*, and microeconomic / macroeconomic implications of the development of *e-cash*. Finally, the key characteristics of successful electronic payment innovations are analyzed using binary dependent variable estimation techniques on data derived from the Electronic Payments Systems Observatory.

### **2.3. e-Money Transactions in India**

(Kamlesh, 2017), the study on e-money transaction explained the importance of the digital cash and its problems. One major advantage of digital cash is its increased efficiency opening new opportunities, especially for small businesses. On the other hand, it will encourage potentially the worsening of problems over taxation and money laundering. In turn, these problems may alter foreign exchange rates, disturb money supplies, and encourage an overall financial crisis. The transnationality of digital cash is the ability of digital cash to flow freely across national borders encourages these benefits and problems, and could have significant repercussions internationally.

From an economic view, this transnationality is the most important characteristic of digital cash. If digital cash behaved like traditional currencies, circulating within a national border and controlled by a central monetary authority, there would be few economic implications that would be worth analyzing.

(Gomez & Budd, 2004), the working papers described the *e*-Money towards free banking and some implications for central banking. It begins by introducing its conceptual framework for modern central banking, in terms of which it then rehearses the free banking argument. It then reviews the development of *e*-Money in terms of both electronic payment methods and electronic issue, with special attention paid to the latter. Study stated, that even in its current stage of development, the emergence of Electronic Money not only reflects and supports key free banking concepts, but may be nudging modern central banking towards free banking practice.

(Wulandari et al., 2018), study helped in the identification and understanding the factors affecting the people in usage of *e*-Money by the application of Technology Acceptance Model (TAM) in the process of analysis perceived by consumers. The factors affecting the adoption of *e*-Money significantly affected by perceived usefulness, perceived ease to use, and perceived benefit, while about 36 per cent is influenced by other factors. Therefore, in order reach widely used in Electronic Money particularly in Indonesia we should consider several factors that affect consumer preferences.

(Morabito & Morabito, 2017), the research showed the significances of digital currencies, and especially those which have an embedded decentralized transfer mechanism based on the use of a distributed ledger, are an innovation that could have a range of impacts on various aspects of financial markets and the wider economy. The potential disruption to business models and systems, are facilitating new economic interactions and linkages. Currently, such schemes are not widely used or accepted, and they face a series of challenges that could limit their future growth. However, some digital currency schemes have demonstrated that their underlying technology could feasibly be used for peer-to-peer transactions in the absence of a trusted third party. Such technology may have potential to improve some aspects of the efficiency of payment services and financial market infrastructures (FMIs) in general. In particular, these improvements might arise in circumstances where intermediation through a central party is not currently cost-effective. This report considers the possible implications of interest to central banks arising from these innovations.

(Durgun & Timur, 2015), research articles investigated the effects of electronic payments are distinct from conventional payment systems with the help of central banks and their policies. Since the existence of civilizations, many different values are used for exchange of commodities, goods and services. By the development of modern economics theory, banknotes which is easier to produce, has been started to use instead of precious metals. The monetary value of the banknotes and mintage responsibility were transferred to the central banks. These central banks are tasked with controlling the monetary policies, generally with the goals of economic growth, price stability and stability of financial systems. Recently, the growing understanding of money has become completely different from traditional money and don't control or produce by central banks.

(Papadopoulos, 2011), the study discussed the falling use of cash and the advent of digital technologies support the possibility of reconfiguration of monetary transactions without any intermediation of physical monetary tokens. The primer of electronic money (*e-Money*), especially in the guise card-based technologies but also as pre-charged software enhanced the optimism for a quick passage to a cashless, even a moneyless society. Nonetheless the prognoses for the elimination of cash have proved wrong so far and it is rather electronic money that struggles for survival.

#### **2.4. *e-Money* Frauds, Cybercrimes and Misuses**

([WGTYP], 2010 ), in the study, the efforts are taken to understand and the present moment hundreds of thousands of people use electronic money (*e-Money*) all over the world. With its help of *e-Money*, the purchase of goods and services with the help of a bank card, starting from bill payments online up to buying computers or cell phones. Today we have many electronic payment systems online that offer the users all those services that we usually receive in banks: savings and money transfers, cash withdrawals, credit loans, etc. the development of systems of combating money laundering or terrorism financing in different states, malefactors look for more difficult ways to legalize their criminal profits, one of which is using electronic money.

(U.S. Department of the Treasury, 1996), the research was made on the today's electronic money (*e-Money*) and electronic payments systems for retail transactions are on the top-ten list of issues for those with significant interests in financial services. Technological breakthroughs promise consumers and retail businesses a wide range of financial services and products in an electronic or digital format. The potential benefits of electronic cash will likely stimulate its wider use.

These benefits include lower costs, reductions in check and credit card fraud, reduced risk of theft and vandalism in retail outlets, and increased convenience for consumers. As old forms of money crimes decline, however, new ones are almost certain to arise. Electronic payments systems offer new opportunities for various violations of law and new challenges to government agencies that combat financial crimes.

(Sukmonkongsamoe, 2017), the working papers made an efforts to provide evidences on the *e*-Money adoptions which has many implications for monetary policy effectiveness. The *e*-Money creation in Euro area is to identify whether *e*-Money creation can counteract monetary policy effectiveness. It also helps to identify the drivers of *e*-Money growth and tested how *e*-Money interacts with other traditional means of payment. An attempt has been made to discern the relationship between electronic money and other traditional means of payment. The result has shown that *e*-Money could not lessen monetary policy effectiveness but has potentials to enhance it; one of the key drivers of *e*-Money growth is comprehensive Electronic Money infrastructure; and lastly evidences suggested that *e*-Money could not significantly disrupt other traditional means of payment.

(Dzomira, 2014), the study explained the forms of electronic fraud which are being perpetrated in the present banking industry challenges being faced in an attempt to combat the risk. The descriptive study which is focused on cyber fraud phenomenon using content analysis found out that most of the cited types of electronic fraud are perpetrated across the banking industry. Challenges like lack of resources (detection tools and technologies), inadequate cyber-crime laws and lack of knowledge through education and awareness were noted. It is recommended that the issue of cyber security should be addressed involving all the stakeholders so that technological systems are safeguarded from cyber-attacks.

## **2.5. *e*-Money in Indian Context**

(Roopadarshini & K, 2018), study on *e*-Money was discussed with limited cash in hand and an indefinite crunch in sight, most people are rushing to cashless transactions. Digital transactions bring in better transparency, scalability and accountability. The world is rapidly moving towards digitalization, and there's no denying its presence in almost all fields of our lives. Whether *e*-Money is used for shopping, education, banking, groceries, bill payments, tax filing or any legal documentation in their routine business activities. Even money has gone digital, with more and more people preferring to use digital cash payment methods rather than carrying hard cash around. Reducing the economy's dependence on the cash and making it more deviated towards these mediums would result into the betterment of the country and the economy. The cashless economy has attacked the parallel economy.

People who hoard money under their bed, people who launder money bypassing banking channels, terrorist who need money to finance their terror will find difficulty in cashless economy. It will help in reducing instances of tax avoidance. Cashless economy will boost consumption as people would not be attracted towards keeping money in banks. More consumption will lead to more production, more employment opportunities & hence, income of people will increase.

(Miliani, 2013), the research on the utilization of Electronic Money as efficient and convenience payment method in Indonesia has been introduced since 2007. The growth of Electronic Money card usage increased up to 53 per cent in 2012, but the individual adoption is still low compared to total population of Indonesia. The objective of this study is to examine factors affecting customer adoption behavior of Electronic Money and to examine the difference in intention to use/reuse Electronic Money between adopter and non-adopter. The in-depth interview showed that risk and security were not the main consideration for using Electronic Money; this result contradicts with the result of similar previous research in e-payment. Meaning, that in Indonesia consumers were not afraid of losing money while using e- money for transaction. The questionnaire based on the modification of Technology Adoption Model and in- depth interview results. Sample of 143 respondents were taken to test the hypotheses, and analyzed using multivariate analysis methods. The results of the study-enhanced understanding of adoption behavior of e- money by describing perceived benefit as factor that influence intention to use/reuse Electronic Money in Indonesia. This study also contributed in managerial practice that there are differences intention to use/reuse *Electronic Money* between adopters and non-adopters due to lack of information of the products.

(Anand, 2015), the study focused on the traditional mode of delivering products and services by banks to the consumers is through a single distribution channel and that is physical bank branches. Financial services industry is developing due to the introduction of internet, rapid technological evolutions, deregulation, globalization as well as the impact of changing competitive and regulatory forces. In order to cope with the quick changes in the business scenario, banks started to rely on distribution channels as an alternative strategy for differentiation and gaining further competitive advantage.

The above mentioned paved way for the development of the e-Banking phenomena. The content provided in this chapter would be useful for existing and potential banks to better understand the Indian e-Banking trends and thus aid in the effective formulation of channel management strategies and reap the benefits out of it.

(Veena, 2018), the studies was carried out on the current *e*-Banking is known as smart banking, touch banking, 360 degree banking, innovative banking, virtual banking and 24X7 banking. Banks are playing an important role in the economic development country. Economic development of a country involves investment in various sectors of the economy. The bank collects small savings from the public for investment in various projects. Present banking scenario has come up with a lot of new initiatives which are oriented to provide a better customer service and facilities with the help of information technology. One of these reasons is the inherent benefit of *e*-Banking to saving time and speed in the transaction of banking activities and consequently enhancing the performance of banks. The study was focused on public, private, nationalized, and foreign *e*-banking services. And the different forms of in Indian scenario. Finally paper concludes technology changes and making trends in *e*-banking which helps for the development.

## **2.6. *e*-Money in Global Level**

(NSO, 2018), research showed the significance of financial services industry is experiencing rapid changes in services delivery and channels usage, and financial companies and users of financial services are looking at new technologies as they emerge and deciding whether or not to embrace them and the new opportunities to save and manage enormous time, cost and stress. There is no doubt about the favourable and manifold impact of technology on *e*-Banking as pictured in this review paper, almost all banks are with the least and most access *e*-Banking Technological equipment's like ATMs and Cards. On the other Hand cheap and readily available technology has opened a favourable competition in *e*-Banking services business with a lot of wide range competitors competing with Commercial Banks in Cameroon in providing digital financial services.

(Lu & Xi, 2011), the research paper using co-integration theory to analyze the monetary multiplier effect of electronic money in China based on the quarterly data of 1994-2010. The results show that there is a stable relationship between the development of electronic money and monetary multiplier in the long term. And *e*-Money has an amplification effect on monetary multiplier. Then we propose several policy recommendations to promote the development of electronic money.

(David & Kaulihowa, 2018), the research examined, the impact of *e*-Banking on commercial banking performance in Namibia using an error correction modeling and granger causality test were applied for the period 2012 to 2015. The advent of the internet has resulted in paradigm shifts in the banking industry towards electronic banking to create a competitive edge over rivals.

Although this rapid development of information technology has made some banking tasks more efficient and cheaper, there are concerns that technological investments are taking a larger share of bank's resources.

(Iwamura & Watanabe, 2006), the research showed that Electronic money (*e-Money*) takes a variety of forms both online and offline, with the possibility of true digital cash looming in the future. Views of the impact of electronic money on monetary policy are as varied. With the amount of electronic money (*e-Money*) still small compared to other forms, the effect on monetary policy is not yet fully determinable. However, central banks and economists must try to anticipate the effects before it becomes more significant. The research on *e-Money* contributes to that effort by summarizing the range of views and the likely effect various forms of electronic money (*e-Money*) will have.

(Görmez & Budd, 2004), the study discussed the uniqueness of the Electronic money and its relation to free banking and some implications for central banking begins by introducing its conceptual framework for modern central banking, in terms of which it then rehearses the free banking argument. It then reviews the development of *e-Money* in terms of both electronic payment methods and electronic issue, with special attention paid to the latter. The discussion includes both mainstream developments, such as Mondex, and '*alternative*' schemes such as LETS. The synergy between the electronic issue of money and free banking perceptions with the consideration of implications for the future of central banking. It offers an '*contestable*' model of central banking, which endeavours to show the effects that *e-Money* may be expected to have (and, indeed, may already be having) as regards monetary policy, financial supervision and seigniorage.

(Stevens, 2002), in the research it is stated the networks of *e-Money* usages especially in the United States, stored-value-card and network money projects have enjoyed only limited success. However, the electronic money (*e-Money*) debate does not hinge on the remote possibility that most monetary instruments might someday be issued by institutions other than depository institutions. Even if money remains the preserve of depository institutions, there is ample evidence of a shrinking demand for deposits at the central bank. In the limit, if demand for central bank money were to continue shrinking, how could a central bank influence interest rates to carry out monetary policy? A central bank that cannot influence interest rates may seem too absurd to contemplate, given our modern proclivity for thinking that government can and should fix anything that seems to be broken. Surely a financial system in which the central bank couldn't implement monetary policy should be reformed.

Or perhaps not, we hear again from one corner of the electronic money (*e*-Money) debate—price stability might be possible without a central bank.

(Iwamura & Watanabe, 2006), an effort made on the *e*-Money variety of forms both online and offline, with the possibility of true digital cash looming in the future. Views of the impact of electronic money (*e*-Money) on monetary policy are as varied. With the amount of electronic money still small compared to other forms, the effect on monetary policy is not yet fully determinable. However, central banks and economists must try to anticipate the effects before it becomes more significant.

(Fung, Molico, & Stuber, 2014), the study investigated the recent developments in retail payments in Canada and elsewhere, with a focus on *e*-Money products, and assess their potential public policy implications. In particular research study how these developments will affect the demand for bank notes, and the central bank's balance sheet and its seigniorage revenue, which as a result might affect the central bank's ability to implement and conduct monetary policy and to promote financial stability. Other public policy issues, such as safety and efficiency, and user protection as well as legal, security and law enforcement, are also considered. While the demise of cash is not imminent, it is important for the central bank to continue to evaluate its potential roles with regard to *e*-Money.

(Jack et al., 2010), it is identified that the Using co-integration theory to analyze the monetary multiplier effect of electronic money in China based on the quarterly data of 1994-2010. The research examined and indicated that there is a stable relationship between the development of electronic money and monetary multiplier in the long term. And *e*-Money has an amplification effect on monetary multiplier. Then we propose several policy recommendations to promote the development of electronic money. (Lu & Xi, 2011) The leading cell phone company in Kenya, Safaricom Ltd., launched M-PESA, a short message service (SMS)-based money transfer system that allows individuals to deposit, send, and withdraw funds from a virtual account on their cell phones and that is separate from the banking system. M-PESA has grown rapidly, currently reaching more than seven million users, approximately 38 percent of Kenya's adult population, and it is widely viewed as a success story to be emulated across the developing world.

(Surtikanti & Mustofa, 2019), the study analyzed the impact of electronic money (*e*-Money) on financial transactions and economic growth among the different community is increased recent days. The research used a descriptive longitudinal method by interviewing several users of *Electronic Money* as the data collection techniques resulted and proved that the

*e*-Money users prefer non-cash transactions, it also got a new fact that the majority of middle-class and upper-class people prefer non-cash transactions because it is more effective and efficient in making transactions. The outcome of the research showed that *e*-Money can be a legitimate payment system that facilitates the upper-middle and lower-middle class. The existence of *e*-Money will help the user, so they do not need to pay directly.

## **2.7. *e*-Money and its Payment System**

(Marimon, Nicolini, & Teles, 1997), the study examined the impact of competition on policy outcomes under different assumption regarding the objectives of central bank, the ability of monetary authorities to commit to future policies and the legal restrictions in the form of reserve requirements on financial intermediaries. Electronic Money (*e*-Money) competition can discipline a revenue maximizing government and resulted in lower equilibrium inflation rates, even when there is imperfect commitment. The efficient Friedman rule policy, of zero nominal interest rates, is only implemented if the government maximizes households preferences, in which case, electronic money competition may either have no role, or weaken the incentive effects of the reputational mechanism.

(Dragusha & Kosumi, 2013), it is identified that the Center for Electronic Payment is predesign to be solution for client attention, where offering different ways of doing trade transactions and trying to avoid using cash in this exchange point. From bank perspective is some structure institution is dealing and offering the service for all banks in market therefore costs less in operation of product, range of products that bank can offered to client in same technology and in same medium, cross sells in this situation is best achievement. Government is always willing to control cash flows and secure reports from private client as well as business clients. If some transactions are done electronically then regarding to taxes is much easier to control businesses as well as money laundering from private clients is more controlled rather in traditional systems. New mediums for these kinds of transactions are suitable to deal with features requested. NFC communication as well as traditional one like SMS is main mediums that are used to finish transactions over financial system in Kosova, as middle institution in hand shaking between client and banks will be Operator of Central for electronic payment.

(Sarokolaei, Rahimipoor, Nadimi, & Taheri, 2012), the study on electronic banking in the present age is rapidly developed with the medium of communication and information technology. One of the most important phenomena of this age is Revolutionizing of traditional banking.

Development of electronic communication and access of large numbers of people to the Internet has provided the conditions for establishing trade and economic exchanges. This subject led to increase of competition in the banking industry and creation of electronic banking services. With increasing demands for such services, something that should be considered is the barriers of electronic banking.

(Otoo & Nemati, 2017), the effect of digi cash was explained in the research and helped to know digital currency role in the routine life. Digital currency has received widespread discussion in practice and academia as a potential alternative to money. Existing research about digital currency largely focuses on building proofs of concept. Research moves beyond the conventional discussion on this emergent technology to explore what people can do and achieve with it. Based on the theoretical framework of Sen's (1992, 1993) capability approach, the research study explores how the adoption of digital currency at the individual level impacts quality of life in a deprived environment, with limited access to banks.

(Durgun & Timur, 2015), research studies depicted the possible effects of electronic payments, which are distinct from conventional payment systems, on central banks and their policies. Since the existence of civilizations, many different values are used for exchange of commodities, goods and services. By the development of modern economics theory, banknotes which is easier to produce, has been started to use instead of precious metals. The monetary value of the banknotes and mintage responsibility were transferred to the central banks. These central banks are tasked with controlling the monetary policies, generally with the goals of economic growth, price stability and stability of financial systems. Recently, the growing understanding of money has become completely different from traditional money and don't control or produce by central banks. However it serves as money and it carries the same specialties. Users are also able to reach and transfer electronic money without intermediaries and central banks. Electronic Money (*e-Money*) is produced and secured by internet codes. Despite the complicated matrix codes, still there are doubts on its security. Some countries prohibited their usage as a policy decision. The most popular electronic money currencies are Bit coin, *e-Cash*, Visa, PayPal and Check- Free all over the world.

(Fung et al., 2014), the study showed the recent developments in retail payments in Canada and elsewhere, with a focus on *e-Money* products, and assess their potential public policy implications. In particular, they study how these developments will affect the demand for bank notes, and the central bank's balance sheet and its seigniorage revenue, which as a result might affect the central bank's ability to implement and conduct monetary policy and to promote financial stability.

(Zandi, Singh, & Irving, 2013), the research explained the policy measures that promote open and market-driven electronic payment solutions for consumers and a level and competitive acceptance and issuance landscape for electronic payment companies, merchants, and the banking sector could improve the economic environment at the market level. A sustainable payments system is not just about technology, but about driving incentives for others to participate in it and derive value from doing so. Encouraging the growth of electronic payments gives consumers and merchants a choice and increases competition. When countries/ regions allow for competition and a level playing field, banks and consumers benefit.

(Kianieff, 2002), the research paper identified the importance of e-Money and the retail payment systems, regardless of whether they utilize debit (access) or smart (SVP) cards, so as to rationalize the application of common legal principles to all such retail payment systems. In fact, the conceptual unity may be broader so as to encompass all closed network systems, connecting participating banks and their customers, so as to facilitate a guaranteed payment. Possibly, the framework may further be expanded to cover guaranteed payments in open systems as well. It is vehemently argued that the development of stored-value products ought not to be arrested by pre-mature over-restrictive regulation.

## **2.8. Theory and Models of e-Money**

(Gunawan, Sinaga, & WP, 2019), the working research paper identified the innovative methods in the Electronic Money (*e-Money*). The development of *e-Money* technology facilitates retail transactions for both consumers and traders. In terms of MSME actors themselves, their readiness to use Electronic Money technology is not yet known. This study aims to determine the level of readiness of MSMEs in using *e-Money*. The model used to analyze the readiness of MSMEs in using *Electronic Money* uses the Unified Theory of Acceptance and Use of Technology (UTAUT) model. Of the five hypotheses proposed, all hypotheses were declared accepted. Based on this research, it can be seen that the concept of *e-Money* can be applied to MSMEs in Yogyakarta. Abstract Micro, Small and Medium Enterprises (MSMEs) are often referred to one of the pillars of the economic strength of a region.

(Dibrova, 2016), the study discussed the virtual currency benefits among the bank customers. Money is perhaps the best recognized and at the same time less understood figure of economy. During the evolution of a monetary science starting from the eighteenth century and fundamental works on such questions as true nature and main functions of money, the

approach and theories about monetary science have changed significantly up to date not reaching the final state. The twenty-first century can be characterized with a vast development of technologies and the increase use of the internet which significantly succeeded the development of monetary system introducing new phenomenon-virtual currencies

(UNODC, 2017), the report provides the inputs of the emergence use of prepaid cards and other magnetic-stripe products to hide illicit proceeds, launder money and to fund acts of terror is a growing threat. This was evident in act of terror in 2016 where perpetrators used prepaid credit cards rather than cash transfers to transfer funds to support the operation. Unfortunately, many of the same features that make prepaid cards a positive payment innovation have also attracted criminals interested in exploiting this electronic money form to facilitate money laundering and other illicit activities.

(Afrian et al., 2017), the research examined the Electronic Money's influences on the money supply of the central bank. The theoretical model of electronic money will explain the impact on money supply. Using data of central bank in China during 1990 to 2010 and applying ordinary least squares (OLS) regression models, the robust evidence that electronic money has a negative impact. In addition, the central bank's abilities to control money supply can be affected by the wide application of electronic money. Further, these results could help central banks and financial institutions predict the economics environment and take necessary actions, eliminate these influences and reinforce the stability of money markets.

(Jack et al., 2010), it is very well discussed the M-PESA is used not only for remittance purposes, but also to save, to purchase pre-paid phone credit and other goods and services, to pay bills, and to execute bank account transactions. However, consumers do not need bank accounts in order to use M-PESA, and Jack and Suri (2009) found it was used by more than half of the unbanked in their sample, just as the central bank may intervene to relax liquidity constraints, it is arguable that Safaricom should actively manage *e-liquidity* by issuing *e-Money* that is at times, in some locations, unbacked by money deposits, assuming that such activism would be costless and allowed by the central bank. M-PESA agents are engaging in such *e-liquidity* management already (for example, when they receive *e-Money* transfers from their head offices without a corresponding transfer back of cash). The implications for the measurement and meaning of monetary and debt aggregates. Improved systems, however, require that the company have better information on net demands for *e-Money* across agents than the agents themselves have, or at least be better able to act on this information without the space/time coordination problems that the models suggest.

(Werner, 2016), the research helped to understand the currently prevalent financial intermediation theory of banking said that banks collect deposits and then lend these out, just like other non-bank financial intermediaries. The older fractional reserve theory of banking says that each individual bank is a financial intermediary without the power to create money, but the banking system collectively is able to create money through the process of *multiple deposit expansion (the money multiplier)*. The credit creation theory of banking, predominant a century ago, does not consider banks as financial intermediaries that gather deposits to lend out, but instead argues that each individual bank creates credit and money newly when granting a bank loan. The theories differ in their accounting treatment of bank lending as well as in their policy implications. Since according to the dominant financial intermediation theory banks are virtually identical with other non-bank financial intermediaries, they are not usually included in the economic models used in economics or by central bankers. Moreover, the theory of banks as intermediaries provides the rationale for capital adequacy-based bank regulation. Should this theory not be correct, currently prevailing economics modeling and policy making would be without empirical foundation.

(Otoo & Nemati, 2017), the study provided the information on how the Digital currency has received widespread discussion in practice and academia as a potential alternative to money. Existing research about digital currency largely focuses on building proofs of concept. The study moves beyond the conventional discussion on this emergent technology to explore what people can do and achieve with it. Based on the theoretical framework of Sen's (1992, 1993) capability approach, the study explores how the adoption of digital currency at the individual level impacts quality of life in a deprived environment, with limited access to banks.

(Al-Laham, Al-Tarawneh, & Abdallat, 2009), the research on e-Money in recent years there has been considerable interest in the development of electronic money schemes. *e-Money* has the potential to take over from cash as the primary means of making small-value payments and could make such transactions easier and cheaper for both consumers and merchants. Electronic Money is a record of the funds or *value* available to a consumer stored on an electronic device in his or her possession, either on a prepaid card or on a personal computer for use over a computer network such as the Internet. The e- money has good network which could become an important form of currency in the future. Such a development would influence the effectiveness and implementation of monetary policy. If an increased use of *e-Money* substantially limits demand for central bank reserves, it would require changes in the operational target of the central bank and a closer coordination of monetary and fiscal policies.

(Model, 2019), it is noted that the *e*-Money Policy Model codifies approaches that have been successfully applied within the AFI network into different categories critical to a well-functioning *e*-Money environment. These include: *e*-Money Policies; *e*-Money Regulatory Considerations; Prudential Regulation and Supervision; Agent Regulation and Supervision; Consumer Protection and Financial Education Measures; Technology and Infrastructure Considerations; Market Development Considerations; and Cross-Cutting Considerations, including a gender component. The intent of the principles codified in this model, drawn from the various approaches across the AFI network, is to provide a compendium of better practices. However, it highlights dynamism and the need for continuous evolution proportionate to emerging trends, technology innovation and business models. The section below elaborates key principles and the rationale for applying such approaches under each category.

(Palley, 2001), the research expressed its view on the development of the financial sector has been a major growth driver in all economies, especially in emerging economies. Part of the financial innovations in the sector in recent times is the electronic payment system. Several studies in developed countries have substantiated the positive transformation of this financial innovation. (Mustapha, 2018) The *e*-revolution promises to introduce new *e*-monies that may ultimately displace existing money. *e*-Money poses a challenge to central banks' ability to control interest rates, and it may also increase endogenous financial instability. The challenge to interest rate control stems from the possibility that *e*-Money may diminish the financial system's demand for central bank liabilities, rendering central banks unable to conduct meaningful open market operations. Increased financial instability could emerge from the increased elasticity of private money production, and from periodic runs out of *e*-Money into central bank money that generate liquidity crises.

## **2.9. *e*-Money Services and its Usages**

(Pelilli, 2008), the study examined the factors influence cashless payment instrument usages (i.e., *e*-Money use), both by considering these instruments' specific attributes and by combining the assumptions of the Theory of Planned Behaviour (TPB) with Technology Acceptance Models (TAM). A survey on undergraduate students has been conducted in order to identify the personal, sociological, and technological variables involved in *e*-Money use. The proposed model has been tested on students' payment habits in using credit, debit, and prepaid cards.

Overall we found that personal and technological attitudes, social and control beliefs, and payment instruments features (in terms of perceived efficacy and efficiency) are linked with electronic money use.

(Mwafise & Stapleton, 2012), the study was able to understand the use of mobile devices for the provision of financial services in developing countries are currently of increased level of importance particularly in communities that lack access to the traditional commercial banking institutions. Many microfinance institutions in developing countries are already introducing mobile applications to their clients to improve and also increase the volume of their operations using this media of information exchange. A key prerequisite which is a necessary ingredient for financial transactions processing to be adopted by this segment of users of mobile networked devices is an effective mobile payment service. Insufficient understanding of the various factors for the proliferation of payment transactions is attributed to the slow in take for its adoption.

(Nugroho, Najib, & Simanjuntak, 2018), the research on the e-Money was very well examined with the many factors that influence consumer intention to use electronic money. Based on the theory of planned behavior, behavior intention is formed by the attitude toward behavior, subjective norms and perceived behavioral control. This research aims to analyze attitude, subjective norms and perceived behavioral control that affect consumer intention in the usage of electronic money. The attitude toward behavior did not a significantly affect the behavior intention. While the subjective norms and perceived behavioral control have a significant effect on the behavior intention in the usage of electronic money.

(Fatmasari, Waridin, Kurnia, & Amin, 2019), it is analysed the utilization of electronic money and debit card facilities in daily activities leads to the problem is use of e-Money. The use of debit cards against student consumption expenses. This system of payment transactions using electronic money and debit cards will affect a person's behavior in spending or consumption behavior. Investigation on the use of e-Money and debit cards in consumption expenditures and how it affects the consumption expenditure. Recently the research applied a quantitative method by using a questionnaire as an instrument to collect the data. Further, the data were then analyzed by applying multiple linear regression models. As result, it was revealed that partially using e-Money in students' consumption behavior had a negative and an insignificant influence, while using debit cards had a positive and significant influence on students' consumption behavior. It is proved that using e-Money and debit cards together have a significant impact on students' consumption behavior.

(Khanboubi, Boulmakoul, & Tabaa, 2019), the research studies made an investigation on the internet of things represents the next phase of the digital revolution that will transform the lives of consumers. While the Internet does not usually extend beyond the electronic world, connected objects represent the extension of the Internet to things and places. The purpose of *e-Money* uses with the help of IoT in finance and to analyzed the impact of digital trends and IoT on the procedural scheme of a traditional bank. It would be interesting to gather the different types of digital trends that similarly impact processes of a bank. These trends carry out the digital transformation of new techniques.

(Dibrova, 2016), the research on the *e-Money* was made in understanding the evolution of a monetary science starting from the eighteenth century and fundamental works on such questions as true nature and main functions of money, the approach and theories about monetary science have changed significantly up to date not reaching the final state. The twenty-first century can be characterized with a vast development of technologies and the increase use of the internet which significantly succeeded the development of monetary system introducing a new phenomenon virtual currency.

(G & A, 2016), the research studies explained the impact electronic banking (*e-Banking*) has on customer satisfaction in comparing with traditional brick and mortar banking service, its relationship with that of age, occupation and education, its impact on branch visits, the level of customer understanding about *e-Banking* and the opportunities and challenges of *e-Banking*. There are large number of studies conducted at the Indian level and very few works are presented in this chapter focusing on the *e-Money*, usage, perceptions, awareness level, satisfactions, attitudes, behavior of the *e-Money*, frauds and crime activities, security issues, impact on the banks, adoption of new technologies involved in the *e-Money*, payment, digital payment systems and other *e-clearance* and settlements through the use of Bank cards. But, studies relating to the Impact of *e-Money* and financial behavior of the Bank customers in Southern Region of India are extremely limited. Keeping this point of view, an attempt has been made to study the Impact of *e-Money* on the Bank Customers and their financial behavior.

## **2.10. Summary**

This chapter deals with the review of the earlier studies which are classified under eight categories focusing on usage patterns of *e-Money*, security aspect of digital payment systems, frauds, cybercrimes and their prevention, economic conditions, usage, attitude towards *e-Money*, comparative studies of old and modern instruments, customer acceptance and usage patterns, general view of Digital Money etc. At the end of the chapter as attempt has been made to identify the research gap in the area.

## SECTION III

### 3. Conceptual Structure of e-Money in India

#### 3.1. Introduction

The use of electronic money has become commonplace, with digital payments increasingly taking the place of transactions carried out with physical cash or cheques. And with the range of contactless payment options expanding all the time, the use of cash is declining rapidly. Electronic Money (*e-Money*) is defined as money that exists on banking computer systems and used to facilitate cashless payments, either stored on a card or phone, or over the internet. Although its value is backed by fiat currency and may, therefore, be exchanged into a physical form, electronic money is mainly used for electronic transactions. *e-Money* is most commonly used through electronic banking systems and monitored through electronic processing. Most electronic money isn't used in physical form, most of it in bank vaults managed by central banks alone.

#### 3.2. e-Money – A Global Perspective

Technology is transforming the world of payments and has opened up opportunities for transactions to be more convenient, faster and cheaper. At the same time, new payment methods give rise to new risks. Monetary Authority of Singapore (MAS) developed the Payment Services Act 2019 (PS Act) to provide a forward monitors the payments landscape in Singapore and internationally to ensure that our regulations continue to meet our objectives of providing regulatory certainty and consumer safeguards, while encouraging innovation and growth of payment services and FinTech. MAS has reviewed its current payments legislation<sup>4</sup> and developed the PS Act to regulate traditional and new forms of payment services in a single activity-based framework. The Monetary Authority of Singapore (MAS) developed the Payment Services Act 2019 (PS Ac) to provide a forward looking and flexible framework for the regulation of payment systems and payment service providers in Singapore. It provides regulatory certainty and consumer safeguards, while encouraging innovation and growth of payment services and financial technology (FinTech). Payment services such as the issuance of *e-Money* and Digital Payment Token (DPT) services will be regulated under the PS Act.

The Scope of *Digital Money* and Digital Payment Tokens: *e-Money* is well-defined in the PS Act as any electronically stored monetary value that,

- (a) Is denominated in any currency or pegged by its issuer to any currency.

- (b) Has been paid in advance to enable the making of payment transactions through the use of a payment account.
- (c) Is accepted by a person other than its issuer.
- (d) Represents a claim on its issuer, but does not include any deposit accepted in Singapore, from any person in Singapore.

*e*-Money, as a digital representation of fiat currency, encompasses the monetary value of that fiat currency that it is denominated in. It similarly also takes on the monetary value of the fiat currency that it is pegged to by its issuer. This is to address the risk that issuers may circumvent Electronic Money related regulations under the PS Act through relabeling in its current definition; *e*-Money can only be pegged to a single currency, but not multiple currencies.

When MAS first drafted the PS Act, there existed first generation digital tokens like Bitcoin and Ether that were used for payments – these were commonly known as *Virtual Currencies or Crypto-currencies*. The crypto-currencies scope of the PS Act by defining a DPT to be any digital representation of value (other than any excluded digital representation of value) that,

- (a) Is expressed as a unit;
- (b) Is not denominated in any currency, and is not pegged by its issuer to any currency; 10  
For example, with the original definition of *Digital Money*, an *e*-Money issuer may have circumvented *e*-Money regulations by naming the *e*-Money as X-dollars and pegging it to a currency instead of denominating it in a currency. Consultation on the payment services act 2019: scope of *e*-Money and digital payment tokens 23, December 2019 Monetary Authority of Singapore.
- (c) is, or is intended to be, a medium of exchange accepted by the public, or a section of the public, as a payment for goods or services or for the discharge of a debt;
- (d) Can be transferred, stored or traded electronically; and
- (e) Satisfies such other characteristics as the authority may prescribe.

There are therefore two defining characteristics that differentiate *Electronic Money* and DPT:

- \* *e*-Money is a digital representation of a single fiat currency, whereas DPT is simply a representation of value, without necessarily any reference to fiat currency; and
- \* *e*-Money must represent a claim on the issuer, whereas DPTs need not (and in several instances a DPT may not be issued by an issuer, e.g. bitcoin)

The European Commission Office of Internal Markets defines *e*-Money as the digital equivalent of cash, stored on an electronic device or remotely at a server.

Data is from the Bank for International Settlements' Statistics on payment, clearing and settlement systems in the CPSS countries. Report published in January 2013 with figures on 2011.

Table 3.1: Use of Electronic Money by Non-Banks (Total Number of Transactions in Millions, 2011)

Sl. No.	Country	2007	2008	2009	2010	2011
01.	Belgium,	89.9	81.2	70.5	60.6	50.5
02.	Brail	19.8	18.4	23.7	35.4	37.4
03.	France	26.4	32.2	36	41.1	46.5
04.	Germany*	51.8	47.4	43.1	38.9	36
05.	India	-	-	-	12.1	32.8
06.	Italy	49.6	72.6	89.7	118.3	151.9
07.	Japan	809.6	1,116.1	1,509.6	2,000.4	2,342
08.	Korea	147.7	132.7	135.4	159.1	113.1
09.	Netherlands	174.8	176.1	177.1	178.3	176.9
10.	Russia	1.9	7.4	47.7	79.1	106.2
11.	Singapore	1,662.6	1,869.5	2,047.8	2,195.4	2,888.2
12.	Switzerland	17.7	17.3	15.8	15.3	10.6
13.	CPSS***	3,051.8	3,570.8	4,196.3	4,934	5,992.1

Note - \* Sum or average excluding those countries for which data are not available. For credit transfer, data for France (Prior to 2005) and the United Kingdom include interbank transactions; however, the total number is relatively small.

Electronic payment can refer just to e-Commerce or payments for buying and selling goods or services offered online or to any type of electronic funds transfer. Use of e-Money is still in its infancy in comparison with more mature payments channels, such as checks and direct debits. In fact, according to data from the BIS Committee on Payment and Settlement Systems (CPSS), Digital Money accounted, in 2011, for much less than 1 per cent of transaction value in all reporting countries with highs of 0.22 per cent of total volume of payments in Singapore (the equivalent of \$1.7 billion) and 0.1 per cent in Italy (or \$13.5 billion.)

Table 3.2: Use of Electronic Money by Non-Banks (Total Value of Transactions in Billions, 2011)\*

Sl. No.	Country	2007	2008	2009	2010	2011
01.	Belgium,	0.541	0.517	0.437	0.349	0.322
02.	Brail	0.374	0.495	0.558	0.963	1.255
03.	France	0.073	0.099	0.112	0.121	0.141
04.	Germany*	0.216	0.222*	0.202	0.185	0.174
05.	India	-	-	-	0.386	1.334
06.	Italy	4.624	6.702	7.233	9.82	13.507
07.	Japan	4.935	8.135	13.514	20.227	26.052
08.	Korea	1.106	1.012	1.082	2.116	1.866
09.	Netherlands	0.651	0.704	0.663	0.624	0.629
10.	Russia	0.063	0.396	1.076	2.396	6.757
11.	Singapore	1.143	1.349	1.325	1.445	1.747
12.	Switzerland	0.067	0.065	0.064	0.067	0.056
13.	CPSS***	13.791	19.697	26.268	38.705	53.841

Note - \* Converted at yearly average exchange rates, except as noted.

\*\* Sum or average excluding those countries for which data are not available. For credit transfer, data for France (Prior to 2005) and the United Kingdom include interbank transactions

The same is true in terms of number of transactions. Singapore, with 2.8 billion of them, has, by far, the most active *e*-Money market, with 88 per cent of payments happening via this method. Italy is a distant second, with approximately 152 million *e*-Money transactions accounting for approximately 4 per cent of total number of payments. However new technology developments and regulatory initiatives around electronic payments hold the promise of vastly increasing payments traffic through this channel, particularly in the consumer space. With mobile payments technology such as Near Field Communications (NFC) advancing rapidly and those in the payments and mobile space from system providers to banks to mobile service providers pouring resources into its development, this will further push development of the *e*-Money usage. In addition, modern payments infrastructure and the rapid increase in mobile penetration in emerging markets especially within Asia may drive *Electronic Money* growth in developing countries faster than many developed markets.

*e*-Money also uses a well-established regulatory framework in Europe, EU rules on *Digital Money* aimed at facilitating the emergence of new, innovative and secure Electronic Money services, providing new companies with access to the *Digital Money* market and encouraging effective competition. The EU *e*-Money directive (EMD) sets out the rules for the business practices and supervision of digital money institutions and also lays the foundations for a single market for services in the EU. Provisions include aligning EU requirements for digital cash services and putting in place a coherent set of requirements for obtaining a license as an Digital Money institution.

The fact electronic currency can be exchanged for fiat currency distinguishes it from crypto-currencies, but the boundaries are beginning to blur as Digital Money evolves. Crypto-currencies use a decentralized system based on blockchain technology, which secures information in separate blocks linked by cryptography, which is resistant to modification of the data. Sweden, which is one of the leading countries in terms of becoming a cashless economy, is taking steps to develop its own national crypto-currency, the *e*-krona. Russia and Venezuela are also planning their own national crypto-currencies. In Sweden, the vast majority of everyday payments are electronic, with people rarely using cash or ATMs. In fact, notes and coins represent just one per cent of the Swedish economy, compared to 10 per cent in Europe as a whole, according to Capgemini and ABN Amro's annual World Payments Report.

The Financial Supervisory Authority of Iceland (FME) approved Reykjavik-based Monerium as its first electronic money institution in June. This means Monerium has regulatory approval to provide fiat payment services for the Icelandic krona on a blockchain and use it throughout the European Economic Area.

The benefit of putting *e*-Money on the block chain is that it enables cross-border payments without a financial intermediary. Monerium has suggested that working under the established EU framework for *Digital Money* is competitive advantage, with Monerium CEO and co-founder Sveinn Valfell telling Coin Desk: *For practical purposes, fiat will be the currency most people and institutions will want to use in the near- and medium-term. And if you are touching fiat in any way, you just have to comply with the relevant regulations*” Monerium will initially operate using the ethereum block chain, backed by block chain software provider ConsenSys. However, it could operate across public and private distributed ledgers in the future, allowing expenditures and transfers to be made without an intermediary.

The developments in Iceland and Sweden show there is plenty of scope for Electronic Money to evolve beyond its initial use. The use of blockchain will boost security, while also making *e*-Money more flexible than today. And, as more countries explore the potential of *e*-Money the evolution of Electronic Money will shape the future direction of digital payments more widely.

### **3.3. Growth of *e*-Money in India**

Growth of *e*-Money from the demonetisation of Rs. 500 and Rs. 1,000 currency notes in November 2016, the share of *e*-Money in India’s payment systems grew to 21.5 per cent in 2017 from 0.8 per cent in 2012, according to a new report prepared by the Reserve Bank of India (RBI). With Rs. 3,459 million *Digital Money* transactions, India was only behind Japan and the US in 2017 with respect to the volume of *Electronic Money* transactions, said the report titled *Benchmarking India’s Payment Systems*. The report, which termed demonetization *a game-changer for e*-Money, provides a comparative position of the payment system ecosystem in India relative to comparable payment systems and usage trends in other major countries. While demonetisation gave the necessary fillip, the availability of mobile infrastructure and alternate payment systems ensured that payment systems were not affected when cash was in short supply.

While medium to large-value transactions continue to be made through digital banking channels and cheques, the low-value day-to-day transactions shifted to *Electronic Money*, it noted. The study found that when it comes to using *e*-Money for online transactions, India is far ahead of other developed countries. Although behind China, India has a decent 26 per cent of online transactions using *Electronic Money*. In terms of the number of ATMs deployed, India is next only to China. During 2012 – 2017, ATM deployment grew at a compound annual growth rate of 14 per cent.

While this is good from the customer service perspective, it depicts high demand for cash. At the end of 2017, India had 2,22,300 ATMs which, however, dropped to 2,21,703 as on March 31, 2019. Digital payments in India are witnessing thriving growth with a compound annual growth rate (CAGR) of 12.7 per cent in the number of non-cash transactions, global. The country has led to a boom in the number of merchants adopting digital payments with close to 1.5 million digital payment acceptance locations in 2016-17. The Reserve Bank of India has forecast an outcome of 50 per cent increase in mobile-based payment transactions as per its '*2021 vision Document*'. This shift can be attributed to driving factors such as robust payment infrastructure, evolution of form factors, availability of structured data, shift in consumer behaviour and the government's vision of transforming India into a cashless economy.

### **3.4. e-Money in Various Business Applications and Transactions**

The electronic cash-system is deliberate to contribute to the consecutive replacement of money in the retail sector. One among its attractive assets from the merchant's perspective is the payment guarantee given by the issuing bank after the effectual authorization. Due to its efficiency, electronic cash is ready to grow even in competition with different POS-systems. For cardholders, electronic cash transactions are free of charge *e-cash* actually globalizes the economy, since the user will transfer cash into his cyber-wallet in any currency desired.

A merchant will accept any currency and convert it to local currency once the cyber cash is uploaded to the bank account. To the extent a user needs *e-cash* off-line; all that's necessary is smart card technology. The cash is loaded onto the smartcard, and the special electronic wallets are used to offload the cash onto different smartcards or directly to an on-line system. Smartcards are used successful in different countries for such transactions as phone calls for a number of years.

Four major elements in an electronic cash system are

- \* Issuers
- \* Merchants
- \* Regulators
- \* Customers

For e-Cash dealing, we want to go through a minimum of three stages

- \* Account setup
- \* Purchase
- \* Authentication

We can classify e-Cash payment systems:

- \* Account-Based Systems
- \* Token-Based Systems
- \* Notational Systems
- \* Smart Card-Based Notational Systems

### ***Properties of Electronic Cash***

Digital cash must have a monetary value; it must be backed by cash, bank-authorized credit, or a bank-certified cashier's check. When digital cash created by one bank is accepted by others, reconciliation must occur without any problems. Digital cash must be interoperable or exchangeable as payment for other digital cash, paper cash, goods or services, lines of credit, deposits in banking accounts, bank notes or obligations, electronic benefits transfers, and the like. Digital cash must be storable and retrievable. Digital cash should not be easy to copy with while it is being exchanged. It should be possible to prevent or detect duplication and double-spending of digital cash.

### **3.5. e-Money v/s e-Banking**

Electronic banking has many names like e banking, virtual banking, online banking, or internet banking. It is simply the use of electronic and telecommunications network for delivering various banking products and services. Through e-Banking, a customer can access his account and conduct many transactions using his computer or mobile phone. In this article, we will look at the importance and types of e-Banking services.

#### ***Types of e-Banking***

Banks offer various types of services through electronic banking platforms. These are of three types:

- \* **Level 1** – This is the basic level of service that banks offer through their websites. Through this service, the bank offers information about its products and services to customers. Further, some banks may receive and reply to queries through e-mail too.
- \* **Level 2** – In this level, banks allow their customers to submit instructions or applications for different services check their account balance, etc. However, banks do not permit their customers to do any fund-based transactions on their accounts.
- \* **Level 3** – In the third level, banks allow their customers to operate their accounts for funds transfer, bill payments, and purchase and redeem securities, etc.

Most traditional banks offer e-Banking services as an additional method of providing service. Further, many new banks deliver banking services primarily through the internet or other electronic delivery channels. Also, some banks are ‘internet only’ banks without any physical branch anywhere in the country.

### ***Browse more Topics under Money and Banking***

- Functions of Money and its Demand
- Supply of Money
- Instruments of Monetary Policy and the Reserve Bank of India (RBI)

Therefore, banking websites are of two types:

1. **Informational Websites** – These websites offer general information about the bank and its products and services to customers.
2. **Transactional Websites** – These websites allow customers to conduct transactions on the bank’s website. Further, these transactions can range from a simple retail account balance inquiry to a large business-to-business funds transfer. The following table lists some common retail and wholesale e-banking services offered by banks and financial institutions:

**Common e-Banking Services**

<b>Retail Services</b>	<b>Wholesale Services</b>
Account Management	Account Management
Bill Payment	Cash Management
New Account Opening	Small Business loan applications, approvals or advances
Consumer wire transfer	Commercial wire transfer
Investment/Brokerage Services	Business – to – Business payment
Loan application and approval	Employee Benefits /Pension administration
Account aggregation	

### ***Importance of e-banking***

The importance of electronic banking for banks, individual customers, and businesses are mentioned separately.

### ***Banks***

01. Lesser transaction costs – electronic transactions are the cheapest modes of transaction.
02. A reduced margin for human error – since the information is relayed electronically, there is no room for human error.
03. Lesser paperwork – digital records reduce paperwork and make the process easier to handle. Also, it is environment-friendly.
04. Reduced fixed costs – A lesser need for branches which translates into a lower fixed cost.

05. More loyal customers – since *e*-banking services are customer-friendly, banks experience higher loyalty from its customers.

### ***Customers***

01. Convenience – a customer can access his account and transact from anywhere 24X7X365.
02. Lower cost per transaction – since the customer does not have to visit the branch for every transaction, it saves him both time and money.
03. No geographical barriers – In traditional banking systems, geographical distances could hamper certain banking transactions. However, with *e*-banking, geographical barriers are reduced.

### ***Businesses***

01. Account reviews – Business owners and designated staff members can access the accounts quickly using an online banking interface. This allows them to review the account activity and also ensure the smooth functioning of the account.
02. Better productivity – Electronic Banking improves productivity. It allows the automation of regular monthly payments and a host of other features to enhance the productivity of the business.
03. Lower costs – Usually, costs in banking relationships are based on the resources utilized. If a certain business requires more assistance with wire transfers, deposits, etc., then the bank charges it higher fees. With online banking, these expenses are minimized.
04. Lesser errors – Electronic Banking helps reduce errors in regular banking transactions. Bad handwriting, mistaken information, etc. can cause errors which can prove costly. Also, easy review of the account activity enhances the accuracy of financial transactions.
05. Reduced fraud – Electronic Banking provides a digital footprint for all employees who have the right to modify banking activities. Therefore, the business has better visibility into its transactions making it difficult for any fraudsters to play mischief.

### ***e-banking in India***

In India, since 1997, when the ICICI Bank first offered internet banking services, today, most new-generation banks offer the same to their customers. In fact, all major banks provide *e*-Banking services to their customers.

### ***Popular Services Under e-banking in India***

- ATMs (*Automated Teller Machines*)

- Telephone Banking
- Electronic Clearing Cards
- Smart Cards
- EFT (*Electronic Funds Transfer*) System
- ECS (*Electronic Clearing Services*)
- Mobile Banking
- Internet Banking
- Telebanking
- Door-step Banking

***Further, under Internet Banking, the Following Services are Available in India***

- 01. Bill payment** – Every bank has a tie-up with different utility companies, service providers, insurance companies, etc. across the country. The banks use these tie-ups to offer online payment of bills (electricity, telephone, mobile phone, etc.). Also, most banks charge a nominal one-time registration fee for this service. Further, the customer can create a standing instruction to pay recurring bills automatically every month.
- 02. Funds transfer** – A customer can transfer funds from his account to another with the same bank or even a different bank, anywhere in India. He needs to log in to his account, specify the payee’s name, account number, his bank, and branch along with the transfer amount. The transfer is affected within a day or so.
- 03. Investing** – Through electronic banking, a customer can open a fixed deposit with the bank online through funds transfer. Further, if a customer has a DEMAT account and a linked bank account and trading account, he can buy or sell shares online too. Additionally, some banks allow customers to purchase and redeem mutual fund units from their online platforms as well.
- 04. Shopping** – With an e-banking service, a customer can purchase goods or services online and also pay for them using his account. Shopping at his fingertips.

### **3.6. e-Money Frauds and Cyber Crimes**

Electronic Money (*Electronic Money*) is the digital equivalent of cash that is stored on an electronic device or remotely at a server. It is a relatively new payment instrument that has been developed to provide a more secure form of transaction and to facilitate Electronic Commerce. A typical example of Digital Money / *Electronic Money* is Proton. It is an electronic purse application for debit cards in Belgium. The goal of Proton is to replace cash —primarily for small transactions around the 15 EUR.

For security reasons, the card is limited to storing 125 EUR of available electronic cash. The main advantage of Proton is that merchants can accept payments without the need for using a bank terminal. Below, in order to provide a better understanding of *e-Money*, I use two criteria to differentiate four categories of Electronic Money schemes. These criteria are the means used for storing *e-Money* and the identification of the user of Electronic Money.

Based on the means used for storing the *e-Money*, *e-Money* schemes can be divided into (1) card-based *e-Money* schemes and (2) network-based *e-Money* schemes. Card based *e-Money* is stored on cards that can be used for making payments so that the user of the card does not need to use cash. The *e-Money* cards contain a portable magnetic tape that carries the information required for making payments. Network-based *Electronic Money* refers to *e-Money* transactions conducted via telecommunication networks, such as the Internet. Network-based *Electronic Money* is well suited for e-commerce payments. Based on the identification of the user of *Electronic Money*, *Digital Money* schemes can be divided into (3) anonymous *Electronic Money* schemes, and (4) identified *e-Money* schemes. While anonymous *Electronic Money* schemes do not reveal the identity of the user, identified *Electronic Money* schemes always reveal the identity of the user. Anonymous *e-Money* schemes are regarded as a digital analog of cash.

### ***Duplication of Digital Money/ e-Money Cards***

When *e-Money* is stored on a card, the criminals may create a duplicate of that card that function as a genuine, but contains fake balances. In order to duplicate a card used for *e-Money* transactions, the criminal would need to have a high level of expertise and resources. The reason is that the duplication of such cards requires obtaining the same type of chip card and software. It should be noted that *Electronic Money* cards include prepaid and gift cards. Both types of cards can be unlawfully duplicated.

A gift card can be defined as a preloaded debit card allowing the cardholder to use it for the purchase of goods or services. In 2010, the Federal Reserve estimated that 17 per cent of Americans are using gift cards. A prepaid card contains a preloaded amount of funds. It is issued by a financial institution, and is used like a normal credit card. An important difference between gift cards and prepaid cards is that while gift cards are anonymous, prepaid cards are normally issued in the name of individual account holders.

The 2008 *RBS World Pay incident* is a good example of an incident involving the use of cloned prepaid cards. By cloning thousands of prepaid cards, the criminals stole 9,000,000 USD from 2,100 cash machines in 280 cities.

In order to obtain the data required for creating forged cards, the criminals broke into RBS World Pay systems. The incident was one of the first globally coordinated attacks affecting the payments industry. In 2012, a federal judge in Atlanta delivered the first verdict related to the RBS WorldPay incident. S.M., a 45-year-old Chicago resident, who was one of the leaders of the attack was sentenced to 30 months imprisonment and ordered to pay 89 000 USD in restitution. In relation to the case, Sally Quillian Yates, the U.S. Attorney for Northern Georgia, said that: *This case demonstrates the growing expertise and reach of law enforcement in combating international cyber criminals. We will continue to work with our law enforcement partners throughout the world to investigate and prosecute those who defraud victims in the United States, wherever the perpetrators may be.*

### ***Alteration or Duplication of Data or Software***

Another crime concerning *Electronic Money* is the unauthorized modification of data stored on a genuine electronic money device. For instance, the criminals may fraudulently increase the balance recorded on an *Electronic Money* card. A modification of data on an *Electronic Money* card could be performed either by exploiting security weaknesses in the software or by physical attacks on the chip itself. The FIS incident is illustration of an attack exploiting security weaknesses in software. In 2011, criminals changed the withdrawal limits of prepaid cards issued by the **Fidelity National Information Services Inc. (FIS)**, a Florida-based financial institution. The balances on these prepaid cards were stored in a central database, and not on the cards themselves. After increasing or eliminating the withdrawal limits for 22 prepaid cards that they had obtained, the criminals cloned the prepaid cards and withdrew 13,000,000 USD.

The Edmonton incident is an example of an incident involving a physical attack on the chip of *Electronic Money* cards. In 2007, the Police in Edmonton, USA, arrested a 26-year-old man that used a fake reader to modify the cards. By modifying the magnetic stripes of genuine bank gift cards, the criminal was able to use the gift cards like cash. It is worth mentioning that, in order to modify the magnetic stripes, the criminal compromised not only the security code on the magnetic stripe but also automated systems that warn the bank issuing the gift cards for suspicious transactions.

### ***Theft of Electronic Money Cards***

Another type of *Electronic Money* fraud is the theft of gift and prepaid cards. A case illustrating a theft of gift cards has recently happened in the United States. In the beginning of 2013, a former postal worker in the USA was accused of stealing and using gift cards from

customers while delivering post. After several customers complained of missing gift cards, the United States Postal Service Office started investigating one of its employees. It is interesting to note that the investigators used a test letter marked *U.S. Currency*. The letter contained 40 USD and a device informing the investigators when someone opens the letter. Shortly after leaving the post office, the device indicated that the letter was opened. Agents went to employee's postal vehicle and took her into custody. In the vehicle, they found a Visa gift card addressed to a customer of the United States Postal Service Office.

### ***Repudiation of Transactions***

A user of *Electronic Money* card may fraudulently claim that he/she did not authorize a transaction made with his *Electronic Money* card. This kind of fraud usually takes one of the following three forms: (a) the user claims that he never received an item ordered online; (b) the user claims that he received the wrong item ordered online; (c) the user claims that he had his credit card stolen and was charged for items he did not order. Through such a fraud scheme, cardholders may receive goods and services without paying for them.

According to Robert W. Botelle, the chief customer officer at the US-based payments intelligence and processing platform (*Little & Co.*) such a claim is called *friendly fraud*. Robert W. Botelle stated that more consumers have resorted to it because of the pressures of the recession. A study published in 2011 by Javelin Strategy & Research and Lexis Nexis reveals that losses caused by *friendly fraud* amount to 20 per cent of all losses suffered by merchants in the United States. Friendly fraud has a significant impact on the digital products market because, due to the non-face-to-face nature of the transactions, it is difficult for merchants to prove that their clients received the purchased goods or services.

### ***Money Laundering***

In most jurisdictions, money laundering is a criminal offence. It is defined by Interpol as "any act or attempted act to conceal or disguise the identity of illegally obtained proceeds so that they appear to have originated from legitimate sources". *Electronic Money* systems can be attractive to money launderers because of two reasons: ability and mobility of *Electronic Money*. The *Electronic Money* systems are untraceable because the parties to the transaction can deal with each other directly without the need of identification and the intervention of a financial institution. In relation to the mobility of *e-Money*, it should be noted that *e-Money* systems may be used for making international transfers of funds to a country that does not have legal protection against money laundering.

### 3.7. Summary

Since its creation, the form of money has been subject to a perpetual change. In the past, societies used shell money, pieces of metals, gold and silver coins, and other forms of money. Today, we face the next change in the form of money and, in particular, the shift from paper money to electronic money. If implemented with due regard to information security, Electronic Money has the potential to *become* an important form of currency in the digital world. The prevention measures against these types of fraud should include the adoption of strategies in which close cooperation will exist between all actors involved in providing and using *Digital Money* systems. These actors include individual users, retail merchants, services providers, telecommunications carriers and financial institutions. It should be noted that the adopted strategies should allow a quick identification of the weakness in *Digital Money* systems. Because of the technical complexity of *e-Money* cards and applications, a single organization may not be able to assess the security risks related to an *e-Money* product. That is why it is preferable if the organizations use an integrated approach to security, including independent security assessments, to assess the security risks.

## SECTION IV

### 4. e-Money and Banking Development Trends in India

#### 4.1. Introduction

The trend has been the creation of service delivery channels through which consumers can interact with the banks. Therefore modern banks provide their consumers with increased channel choice, reach out consumers through many routes. As such, ATMs, telephone, internet and wireless channels are now available to the consumers to perform their banking transactions in addition to the traditional branch banking. Banks cannot go back in the future by reducing the number of channels as consumers have become somewhat adapted to and indeed are utilizing a broad range of options (Durkin, 2004).

In recent years, the Indian economic environment has seen a lot of changes because of reforms and measures taken by the banks. The largest change is seen in the financial sector where the banking sector is the largest player to notice this change. So, the banking sector is strong enough to withstand any sort of pressure and competition. Thus, these trends in banking have been very visible in the last few years. India, now, has a fairly stable banking sector with different classes of banks contributing to it. Thus, these include foreign banks, public banks, private sector banks, and others. Reserve Bank of India is head of all these banks.

*Indian banking sector can be majorly divided into three sections.*

- \* Phase I – This is from 1786 to 1969 and it was the initial phase of the banking. So, in this phase, many small banks were set up.
- \* Phase II – This phase can be considered from 1969 to 1991 where regularization, nationalization, and growth of banks come into the picture.
- \* Phase III – This phase is from 1991 onwards and it consists of liberalization and its after effects.

#### ***Trends in Banking***

In recent years, there have been many changes in the banking industry. These trends in banking have made the whole process of banking very easy. These trends include the following:

##### \* **RTGS – Real Time Gross Settlement**

RTGS was introduced in India in March 2004. It is a system through which a bank receives instruction in the form of electronic for transferring the funds from one bank account to the other bank accounts.

As the name suggests, the transfer of funds between the accounts takes place in 'real time'. The RTGS system is kept running and maintained by the RBI. So, it is operated by the RBI who provides it the faster and efficient way to transfer the funds while facilitating the various financial operations. Thus, the money sent under this system is instantaneous and the beneficiary gets the money within two hours.

\* **e-cheques**

This technology has been developed in the US which will replace the conventional paper cheques in India. Thus, to include this method of e-cheque and make it mandatory, a negotiable instruments act has been included in the amendment.

\* **Electronic Clearing Service**

ECS is an electronic system that is used to make the payments and receipts that are in bulk. The payments need to be similar in nature which can be smaller in amount and repetitive in nature. Thus, this facility is specifically beneficial to government agencies and companies that make or receive large bulk payments.

\* **EFT – Electoral Funds Transfer**

This is a system to transfer the money from one's bank account to other accounts. So, in this system, the concerning party that wants to make the payment instructs the bank and make cash payment or authorizes the bank to transfer the funds directly. So, the sender should provide the bank with the complete details like the name of the receiver, account type, and account number of the respective bank, city name, branch name, and other details to the bank. Thus it will ensure that the amount reaches the beneficiaries account quickly and correctly.

\* **ATM – Automatic Teller Machine**

This is the most popular method in India to withdraw the money. The customers can enable this service to withdraw the money 24 by 7. It allows the customers to perform all day to day bank activities without interacting with any humans. Furthermore, these facilities are also used for the payment of funds, utility bills, etc. The other trends in the banking sector include a point of sale terminal, telebanking, and electronic data interchange. Electronic Money based on cards in which a built-in chip containing cash equivalent as a result of prepayment can be used not only as a carrier of electronic money but also as traditional payment cards for access to the holder's bank account. Introducing a system of payment for goods using electronic money, goods purchased in this way can be cheaper by the same 2.5 – 5 per cent, which will stimulate sales and will be beneficial for buyers, sellers and the electronic payment system as a whole (Hilorme et al., 2019).

Considering that electronic money also claims to be a part of the money transfer market, it becomes quite obvious interest in this segment, when the exchange agent can deliver the addressee free for him and for the sender of funds.

Consequently, the acquisition of electronic money by users can be carried out as follows: through the cash desk of the bank the issuer of electronic money; by transferring non-cash funds in favor of the bank the issuer of electronic money; with the help of self-service machine to deposit the *e-wallet*; through agents for distributing electronic money; through agents for replenishing electronic devices; through agents for exchange transactions; through settlement agents who accept electronic money in exchange for cash or non-cash funds; through other banks that are members of the electronic money system and, accordingly, members of the payment system within which the bank operates issuer of electronic money. In this case, the agents of deposit are business entities that provide users of means of electronic money deposit of *e-wallet* (electronic vouchers), and distribution agents are legal entities that distribute electronic money among users in exchange for cash or non-cash funds. In order to consolidate the data by public authorities or the company's headquarters from geographically distributed subdivisions or other stakeholders using specialized software, which allows to faster process the necessary data and to present it to the desired user, the receiving information system should have data in the form in which it will be able to process them and give out the result.

Therefore the present section attempts to address the objectives such as:

01. To understand the *e-banking*
02. To look at the evolution of *e-banking* as a phenomena.
03. To analyze the existing *e-banking* trends in India.
04. To identify the opportunities and challenges associated with *e-banking*.
05. To suggest future research directions and recommendations.

Electronic Money or *Electronic Money* is the electronic alternative to cash. It is monetary value that is stored electronically on receipt of funds, and which is used for making payment transactions. *Electronic Money* can be held on cards, devices, or on a server. Examples include pre-paid cards, electronic purses, such as M-PESA in Kenya, or web-based services, such as PayPal. As such, *Electronic Money* can serve an umbrella term for a number of more specific electronic value products and services.

## **e-Banking Evolution**

Modern scenario projects that *e-Banking* is shaping the financial services industry. Hence forth, it is imperative to understand comprehensively the evolution of *e-banking*.

A brief history and trend analysis of the evolution of *e*-Banking industry globally using document analysis reveals the major barriers, impediments and boosters for the rapid transition of the banking sector and uptake of *e*-Banking. Document analysis is the systematic analysis of a particular topic, using documents such as newspapers, annual reports, employment records, published and unpublished articles, industry and consultancy reports, ongoing academic working papers, government white paper reports and whitepapers (Neuman, 1997). In a broader perspective, electronic banking is defined as the provision of banking services via means other than traditional physical branches (Liao et al., 1999). Electronic Banking offers its financial services to its prospective customers through various forms such as:

- Automated Teller Machines (ATM)
- Telephone Banking
- Home Banking
- Internet Banking
- Mobile Banking

*e*-banking in India: The Reserve Bank of India (RBI) constituted a working group on Electronic Banking. The group divided the Electronic Banking products in India into three types based on the levels of access granted. They are:

Information Only System: General purpose information like interest rates, branch location, bank products and their features, loan and deposit calculations are provided in the banks website. Electronic Information Transfer System: The system provides customer specific information in the form of account balances, transaction details, and statement of accounts. Fully Electronic Transactional System: This system allows bi-directional capabilities. Transactions can be submitted by the customer for online update. This system requires high degree of security and control.

## **4.2. *e*-Money Trends in Indian Banking Sector**

In contrast, Indian banks have an insignificant Internet banking record. ICICI Bank kicked off online banking way back in 1996 and a host of other banks soon followed suit. But even for the Internet as a whole, 1996 to 1998 marked the adoption phase, while usage increased only in 1999 due to lower ISP online charges, increased PC penetration and a tech-friendly atmosphere. Reveals Anup Bagchi, head, Internet Banking, ICICI Bank, *We had launched the Internet banking service even before the RBI had formulated its guidelines. Fortunately, as it was a comparatively new concept, the regulating authorities were extremely co-operative with us.*

After ICICI, Citibank, IndusInd Bank and HDFC Bank and Times Bank (now part of HDFC Bank), were the early ones to bite the technology bullet in 1999. Says C N Ram, head, information technology, HDFC Bank, *Our vision was very clear, we were not enamored by the concept of Internet banking but looked at it more as an add-on service which our customers should gradually adopt.* In line with this strategy, initially the Net banking facility was provided in order to meet the information requirements of the customers and gradually it ventured into fund transfers and third party transfers.

Government intervention is essential and appropriate particularly in India. Government should work in conjunction with the banks to improve the infrastructure facilities as well as regulate and supervise the economic policies periodically. Often intervention of the government would create positive attitudes among the consumers' who might be motivated to use e-Banking. Aggressive marketing programs play a critical role in making the e-Banking to large number of consumers. Marketing communications is an effective tool and banks should properly utilize the appropriate marketing techniques to reach the large mass of consumers. Marketing communications should also devise a specific plan that strategically incorporates e-Banking service delivery channel promotion. Personal online help should be provided continuously which would substantially eliminate the consumers' fear associated with the e-Banking and often encourages them to use complex products and services provided by the banks.

Looking at recent developments in money, questions often arise about the difference between electronic money (*Electronic Money*), mobile money, and a number of other terms used freely in this evolving space. While there may not be a universally agreed terminology, there has been general alignment among international organizations including the World Bank, GSMA and European Union, allowing us to start defining the terminology around digital money in a broadly accepted manner. For the purposes of this paper we will use the below definitions. *Electronic Money* Short for electronic money, the EU defines *Electronic Money* as a monetary value represented by a claim on the issuer which is stored electronically and issued on receipt of funds, for the purpose of making payment transactions, and is accepted by natural or legal persons other than the issuer.<sup>4</sup> Under this definition Electronic Money refers to any type of electronic stored value that serves as an alternative to cash. This could cover anything from gift cards to Bitcoin to values stored through Venmo. Traditionally Electronic Money differs from money in a bank account in two significant ways. First, it is often not covered under financial protections such as the USA's FDIC insurance. Second it often does not earn interest.

### **4.3. Summary**

*e*-Banking success depends on the rate of internet penetration in a country. Since the developed nations have good infrastructure and more per capita income, possession of a computer as well as internet is not a problem for many consumers. However, with regard to the developing nations like India poor infrastructure in conjunction with low levels of internet penetration is a serious problem. Internet service providers and banks should provide certain incentives and subsidize the surfing cost. It would be beneficial for the consumers' if free training sessions and mock demonstrations about the use of internet and *e*-banking are provided by the banks and service providers. Multiple access facilities combining telephone, internet, mobile and ATM would likely motivate more number of consumers' to adopt and use *e*-Banking. Provision of proper authentication facilities and assurance by the banks to maintain consumers' identity and confidentiality would essentially initiate the uptake of *e*-banking by many.

## SECTION V

### 5. e-Money: Best Services and its Highlights

#### 5.1. Introduction

Electronic money or *Electronic Money* is a payment system which now is getting popular. *Electronic Money* is a cashless payment system which now is many used in several big cities in Indonesia, including Jakarta. The existence of electronic money has been replacing the function of cash. You don't have to pull out your money from your wallet to paying anything, you only have to use one card and all is done. Although behind its advantages, don't mean there is no disadvantage. Below are advantages and disadvantages of electronic money.

#### 5.2. e-Money Benefits

The benefits of digital money or electronic money, people can send mass payments to freelancers, remote workers, and others. It can also be used to pay for utilities, cell phone services, and internet access, transfer money to others, pay for goods and services online and offline, trade and much more. The mean of payment that exists in purely electronic form is called Digital Money. Electronic Money or Digital Money is not tangible and is accounted for and the transactions are performed online using computers. Digital Money can be exchanged using credit cards, the internet, and smartphones. It can also be turned into physical money like in the case of an ATM. Digital Money is one innovative technology that moves the transactions from the physical to the digital world. Like any other technology, digital money too comes with its own pros and cons. While it can open up new opportunities for small businesses, the government also has to take necessary care to keep the problems of taxation and money laundering at bay.

The advantages of digital cash are not limited to an individual. This has a major impact on the economy of the country as the reduction in the use of cash will help reduce the grey economy and also prevents money laundering. This also increases the tax compliance which will at the end benefits the customers in the long run. The use of digital cash will also make sure that any loopholes in the country's public systems are plugged and the beneficiaries would be able to avail those benefits that are long due to them. While an individual gets to witness the direct benefits of cashless transactions, there are a lot of indirect benefits that have a greater significance. One of the benefits of using electronic cash is the fast pace with which the money gets circulated. As cash is a material, it can be prevented from circulation.

For example, a tourist can bring back the cash that was unused from a visit and that would lie idle till the next trip. Cards and other electronic channels alleviate this and they help increase the circulation. In more economic terms, it helps to increase the velocity of money.

Our country India is still driven by cash and only 5 per cent of the payments take place electronically. The major reason for this is the lack of access to online banking for the majority of the population. Another major reason is that both small and large transactions still continue to take place in the form of cash in India. When a survey was conducted by A. T. Kearny at the malls in India, it was observed that more than 90 per cent of the transactions took place through cash. Even the e-retailers provided the option of cash on delivery to increase their sales. Though many purchase happen electronically, COD is used for more than 60 per cent of the transaction. After the move of demonetization, it is witnessing the mix of cash and digital transactions. The technic shift has indeed come from the increased use of smartphones, the cashless economy is not yet her in India, however, the move towards it has certainly begun.

The benefits of *e*-Money are:

***(a) Cannot Cheat***

Digital money is money that users cannot tamper with or arbitrarily adjust to a traditional currency.

***(b) Lowers Transaction Fees***

Digital money transactions usually do not cost too much for intermediaries as traditional transactions. Moreover, digital money transactions are processed quickly on the system.

***(c) High Security***

Crypto-currency is the most unique and powerful encryption, only the owner with the private key has access to. Therefore, the government cannot arbitrarily freeze your account.

***(d) Transactions Everywhere, Everywhere, Everything Around the Globe***

With the rapid development of the electronics market over the past 10 years, you can easily conduct Crypto-currency transactions in many countries around the world. For example, you can use the Crypto-currency to buy a luxury Lamborghini car, book a space flight tour of Richard Branson, Virgin Galactic, or own a real estate company.

***(e) Environment Protection***

Typically, paper money consumes a lot of production materials and thus more or less affects the environment and ecosystem.

### 5.3. Pros and Cons of e-Money

e-Money helps people to do any transactions easier. With e-Money, the amount of cash to make transactions helps smooth business dealings. Also, it makes the worries about the change money necessary. It gives an advantage for both seller and buyer. Furthermore, the process of *Electronic Money* payment is faster than cash payment. We don't have to count money manually, but it can be counted by the computer system. It will make the transaction more accurate and help to avoid human errors. Second, the massive utilization of e-Money in society will create new employments. It happens because many new e-Money companies emerge in the country. Even the old companies that have been established launch their *Electronic Money* product. The emergence of the companies gives the society a new employment. The quantity of the people who have jobs in the nation will increase the economic growth as well as the prosperity of people. So, the advantages of e-Money are beneficial for the nation and the society.

Besides the advantages, e-Money also has several disadvantages. One of them is the security system. We need account and password to use e-Money. It is also crucial to maintain the security of our Electronic Money. Nevertheless, the security system is not enough to keep it safe. In some cases, the password of e-Money can get leaked and our account can be duplicated. Another disadvantage of Digital Money is we need to bring the device everywhere. So, if we don't bring the device with us then we can't make any transaction. Other disadvantage of e-Money is it can't be used in every transaction. Not every place has the device to support the e-Money payment. It causes consumers still use cash in some transaction. Therefore, the disadvantages of e-Money will give several bad impacts on us. e-Money is a non cash payment method that has several advantages to help us in our economic activities. But the disadvantages of e-Money can't be ignored. The disadvantages will hold our economic or social activities. The advantages and the disadvantages of e-Money certainly influence the use of it. Nevertheless, the disadvantages of e-Money can be overcome. For example, to avoid our e-Money account to get hacked, we can make new complicated combination of our e-Money password. So, we can conclude that the advantages of e-Money are more beneficial and dominant than the disadvantages.

Table 5.1: Pros and Cons of e-Money

Sl. No.	Pros	Cons
01.	<p><b>More Practical</b> To use electronic money, you have to charge the balance. You can top up at the merchants and now is easier to find the merchant. The balance in your <i>Electronic Money</i> can be used for any transactions, wherever and whenever. You only have to use one card and you can pay anything you want as long as you never run out of your balance</p>	<p><b>Consumptive</b> Aware or not, Electronic Money who gives us a lot of convenience has made us into a consumptive person. Why? Because the convenience makes us want to buy things a lot, until we don't realize that the balance almost runs out.</p>
02.	<p><b>Faster Transaction</b> Payments using electronic money are indeed faster than using cash. As an example when you want to pay for a train ticket. You can directly tap in on an available machine, then go to the platform, and wait for your train to come. No need to long queue at the counter, pull out money, or waiting for the change.</p>	<p><b>Low Security</b> <i>Electronic Money</i> can change hands easily. No need to enter a password or something, everyone can use it without any permission. When your card is lost, the people who find your card can directly use it. That is the consequence behind its convenience which is incriminating. All you have to do as the owner is keep it very well.</p>
03.	<p><b>Global Transaction</b> For those who love online shopping, Electronic Money also can be useful. Because, it can be used as a payment on any e-commerce sites, including overseas. It is because e-Money applies globally. In an online transaction, Electronic Money has the same function with a credit card. You only have to enter your card number, and the payment is done.</p>	<p><b>The Left Balance Can't be Cashed</b> Although transaction using Electronic Money is very easy, but not all payments can be done by using electronic money, or if you already top up the balance so many. Then, the balance can't be cashed back.</p>
04.	<p><b>Lower Cost</b> The cost of using digital cash is extremely low. Normal bank transactions require huge amounts of infrastructure. There are bank branches, tellers, clerks, electronic systems, all of which combine to make transactions possible. This infrastructure can only be used for banking transactions. On the other hand, digital cash does not warrant any special infrastructure. It can use basic services such as the internet to make the same transactions possible. Hence, the need for dedicated infrastructure is removed. This brings down the cost of transactions.</p>	<p><b>Not Traceable</b> The digital cash uses the internet, which makes traceability difficult. Hence, the system provides anonymity. This can be a good thing but also a bad thing. For instance, criminals could use the digital cash system to launder their money to different countries. The lack of traceability is a major problem for governments and legal authorities. It does not have any significant impact on the user community.</p>
05.	<p><b>Long Distance Transactions</b> With physical cash, sending money to the other side of the world can be very expensive. This is also the case with electronic cash since intermediaries like SWIFT get involved and hence have to be paid a fee. However, digital cash can be sent around the world without too much of a hassle. The cost to send money to the next door neighbour and to a person on the other side of the world is the same in a digital cash system.</p>	<p><b>Forgery</b> Digital cash systems pose some unique risks. Since cash is digital, it is likely that hackers might break into the system. They may generate more coins even though they have not paid anything to earn that cash. When excessive coins are generated, the value of the other coins in the system is reduced. Hence, this risk affects both the users as well as the banks equally.</p>

Sources:

- \* [https://www.kompasiana.com/aprediakanina/5ae01002cf01b448de4de512/advantages-and-disadvantages-of-Plastic-Money? page=all](https://www.kompasiana.com/aprediakanina/5ae01002cf01b448de4de512/advantages-and-disadvantages-of-Plastic-Money?%20page=all)
- \* <https://www.managementstudyguide.com/digital-cash-advantages-and-disadvantages.htm>

## 5.4. Clearing/Settling of e-Money

The central bank of any country is usually the driving force in the development of national payment systems. The Reserve Bank of India as the central bank of India has been playing this developmental role and has taken several initiatives for Safe, Secure, Sound, Efficient, Accessible and authorised payment systems in the country. The Board for Regulation and Supervision of Payment and Settlement Systems (BPSS), a sub-committee of the Central Board of the Reserve Bank of India is the highest policy making body on payment systems in the country. The BPSS is empowered for authorizing, prescribing policies and setting standards for regulating and supervising all the payment and settlement systems in the country. The Department of Payment and Settlement Systems of the Reserve Bank of India serves as the Secretariat to the Board and executes its directions.

In India, the payment and settlement systems are regulated by the Payment and Settlement Systems Act, 2007 (PSS Act) which was legislated in December 2007. The PSS Act as well as the Payment and Settlement System Regulations, 2008 framed thereunder came into effect from August 12, 2008. In terms of Section 4 of the PSS Act, no person other than the Reserve Bank of India (RBI) can commence or operate a payment system in India unless authorized by RBI. Reserve Bank has since authorized payment system operators of pre-paid payment instruments, card schemes, cross-border in-bound money transfers, Automated Teller Machine (ATM) networks and centralized clearing arrangements.

### \* *Payment Systems*

The Reserve Bank has taken many initiatives towards introducing and upgrading safe and efficient modes of payment systems in the country to meet the requirements of the public at large. The dominant features of large geographic spread of the country and the vast network of branches of the Indian banking system require the logistics of collection and delivery of paper instruments. These aspects of the banking structure in the country have always been kept in mind while developing the payment systems.

### \* *Paper-based Payments*

Use of paper-based instruments (like cheques, drafts, and the like) accounts for nearly 60 per cent of the volume of total non-cash transactions in the country. In value terms, the share is presently around 11 per cent. This share has been steadily decreasing over a period of time and electronic mode gained popularity due to the concerted efforts of Reserve Bank of India (RBI) to popularize the electronic payment products in preference to cash and cheques. Since paper based payments occupy an important place in the country, Reserve Bank had introduced

Magnetic Ink Character Recognition (MICR) technology for speeding up and bringing in efficiency in processing of cheques. Later, a separate High Value Clearing was introduced for clearing cheques of value Rupees one lakh and above. This clearing was available at select large centres in the country (since discontinued). Recent developments in paper-based instruments include launch of Speed Clearing (for local clearance of outstation cheques drawn on core-banking enabled branches of banks), introduction of cheque truncation system (to restrict physical movement of cheques and enable use of images for payment processing), framing CTS-2010 Standards (for enhancing the security features on cheque forms) and the like. While the overall thrust is to reduce the use of paper for transactions, given the fact that it would take some time to completely move to the electronic mode, the intention is to reduce the movement of paper – both for local and outstation clearance of cheques.

\* ***Electronic Payments***

The initiatives taken by RBI in the mid-eighties and early-nineties focused on technology-based solutions for the improvement of the payment and settlement system infrastructure, coupled with the introduction of new payment products by taking advantage of the technological advancements in banks. The continued increase in the volume of cheques added pressure on the existing set-up, thus necessitating a cost-effective alternative system.

\* ***Electronic Clearing Service (ECS) Credit***

The Bank introduced the ECS (Credit) scheme during the 1990s to handle bulk and repetitive payment requirements (like salary, interest, dividend payments) of corporates and other institutions. ECS (Credit) facilitates customer accounts to be credited on the specified value date and is presently available at all major cities in the country. During September 2008, the Bank launched a new service known as National Electronic Clearing Service (NECS), at National Clearing Cell (NCC), Mumbai. NECS (Credit) facilitates multiple credits to beneficiary accounts with destination branches across the country against a single debit of the account of the sponsor bank. The system has a pan-India characteristic and leverages on Core Banking Solutions (CBS) of member banks, facilitating all CBS bank branches to participate in the system, irrespective of their location across the country.

\* ***Regional ECS (RECS)***

Next to NECS, RECS has been launched during the year 2009. RECS, a miniature of the NECS is confined to the bank branches within the jurisdiction of a Regional office of RBI. Under the system, the sponsor bank will upload the validated data through the Secured Web Server of RBI containing credit/debit instructions to the customers of CBS enabled bank branches

spread across the Jurisdiction of the Regional office of RBI. The RECS center will process the data, arrive at the settlement, generate destination bank wise data/reports and make available the data/reports through secured web-server to facilitate the destination bank branches to afford credit/debit to the accounts of beneficiaries by leveraging the CBS technology put in place by the bank. Presently RECS is available in Ahmedabad, Bengaluru, Chennai and Kolkata.

\* ***Electronic Clearing Service (ECS) Debit***

The ECS (Debit) Scheme was introduced by RBI to provide a faster method of effecting periodic and repetitive collections of utility companies. ECS (Debit) facilitates consumers / subscribers of utility companies to make routine and repetitive payments by 'mandating' bank branches to debit their accounts and pass on the money to the companies. This tremendously minimizes use of paper instruments apart from improving process efficiency and customer satisfaction. There is no limit as to the minimum or maximum amount of payment. This is also available across major cities in the country.

\* ***Electronic Funds Transfer (EFT)***

This retail funds transfer system introduced in the late 1990s enabled an account holder of a bank to electronically transfer funds to another account holder with any other participating bank. Available across 15 major centers in the country, this system is no longer available for use by the general public, for whose benefit a feature-rich and more efficient system is now in place, which is the National Electronic Funds Transfer (NEFT) system.

\* ***National Electronic Funds Transfer (NEFT) System***

In November 2005, a more secure system was introduced for facilitating one-to-one funds transfer requirements of individuals / corporates. Available across a longer time window, the NEFT system provides for batch settlements at hourly intervals, thus enabling near real-time transfer of funds. Certain other unique features viz. accepting cash for originating transactions, initiating transfer requests without any minimum or maximum amount limitations, facilitating one-way transfers to Nepal, receiving confirmation of the date / time of credit to the account of the beneficiaries, etc., are available in the system.

\* ***Real Time Gross Settlement (RTGS) System***

RTGS is a funds transfer systems where transfer of money takes place from one bank to another on a *Real Time* and on *Gross* basis. Settlement in *Real Time* means payment transaction is not subjected to any waiting period. *Gross settlement* means the transaction is settled on one to one basis without bunching or netting with any other transaction. Once processed,

payments are final and irrevocable. This was introduced in in 2004 and settles all inter-bank payments and customer transactions above Rs. 2 lakh.

\* ***Clearing Corporation of India Limited (CCIL)***

CCIL was set up in April 2001 by banks, financial institutions and primary dealers, to function as an industry service organisation for clearing and settlement of trades in money market, government securities and foreign exchange markets. The Clearing Corporation plays the crucial role of a Central Counter Party (CCP) in the government securities, USD –INR Forex Exchange (both spot and forward segments) and Collateralised Borrowing and Lending Obligation (CBLO) markets. CCIL plays the role of a central counterparty whereby, the contract between buyer and seller gets replaced by two new contracts - between CCIL and each of the two parties. This process is known as 'Novation'. Through novation, the counterparty credit risk between the buyer and seller is eliminated with CCIL subsuming all counterparty and credit risks. In order to minimize these risks, that it exposes itself to, CCIL follows specific risk management practices which are as per international best practices. In addition to the guaranteed settlement, CCIL also provides non-guaranteed settlement services for National Financial Switch (Inter bank ATM transactions) and for rupee derivatives such as Interest Rate Swaps. CCIL is also providing a reporting platform and acts as a repository for Over the Counter (OTC) products.

\* ***Other Payment Systems***

Pre-paid Payment Systems - Pre-paid instruments are payment instruments that facilitate purchase of goods and services against the value stored on these instruments. The value stored on such instruments represents the value paid for by the holders by cash, by debit to a bank account, or by credit card. The pre-paid payment instruments can be issued in the form of smart cards, magnetic stripe cards, internet accounts, internet wallets, mobile accounts, mobile wallets, paper vouchers, etc. Subsequent to the notification of the PSS Act, policy guidelines for issuance and operation of prepaid instruments in India were issued in the public interest to regulate the issue of prepaid payment instruments in the country. The use of pre-paid payment instruments for cross border transactions has not been permitted, except for the payment instruments approved under Foreign Exchange Management Act,1999 (FEMA).

\* ***Mobile Banking System***

Mobile phones as a medium for providing banking services have been attaining increased importance. Reserve Bank brought out a set of operating guidelines on mobile banking for banks in October 2008, according to which only banks which are licensed and supervised in

India and have a physical presence in India are permitted to offer mobile banking after obtaining necessary permission from Reserve Bank. The guidelines focus on systems for security and inter-bank transfer arrangements through Reserve Bank's authorized systems. On the technology front the objective is to enable the development of inter-operable standards so as to facilitate funds transfer from one account to any other account in the same or any other bank on a real time basis irrespective of the mobile network a customer has subscribed to.

\* ***ATMs / Point of Sale (POS) Terminals / Online Transactions***

Presently, there are over 61,000 ATMs in India. Savings Bank customers can withdraw cash from any bank terminal up to 5 times in a month without being charged for the same. To address the customer service issues arising out of failed ATM transactions where the customer's account gets debited without actual disbursement of cash, the Reserve Bank has mandated re-crediting of such failed transactions within 12 working day and mandated compensation for delays beyond the stipulated period. Furthermore, a standardised template has been prescribed for displaying at all ATM locations to facilitate lodging of complaints by customers. There are over five lakh POS terminals in the country, which enable customers to make payments for purchases of goods and services by means of credit/debit cards. To facilitate customer convenience the Bank has also permitted cash withdrawal using debit cards issued by the banks at PoS terminals.

The PoS for accepting card payments also include online payment gateways. This facility is used for enabling online payments for goods and services. The online payment are enabled through own payment gateways or third party service providers called intermediaries. In payment transactions involving intermediaries, these intermediaries act as the initial recipient of payments and distribute the payment to merchants. In such transactions, the customers are exposed to the uncertainty of payment as most merchants treat the payments as final on receipt from the intermediaries. In this regard safeguard the interests of customers and to ensure that the payments made by them using Electronic/Online Payment modes are duly accounted for by intermediaries receiving such payments, directions were issued in November 2009. Directions require that the funds received from customers for such transactions need to be maintained in an internal account of a bank and the intermediary should not have access to the same. Further, to reduce the risks arising out of the use of credit/debit cards over Internet/IVR (technically referred to as card not present (CNP) transactions), Reserve Bank mandated that all CNP transactions should be additionally authenticated based on information not available on the card and an online alert should be sent to the cardholders for such transactions.

\* ***National Payments Corporation of India***

The Reserve Bank encouraged the setting up of National Payments Corporation of India (NPCI) to act as an umbrella organisation for operating various Retail Payment Systems (RPS) in India. NPCI became functional in early 2009. NPCI has taken over National Financial Switch (NFS) from Institute for Development and Research in Banking Technology (IDRBT). NPCI is expected to bring greater efficiency by way of uniformity and standardization in retail payments and expanding and extending the reach of both existing and innovative payment products for greater customer convenience.

\* ***Oversight of Payment and Settlement Systems***

Oversight of the payment and settlement systems is a central bank function whereby the objectives of safety and efficiency are promoted by monitoring existing and planned systems, assessing them against these objectives and, where necessary, inducing change. By overseeing payment and settlement systems, central banks help to maintain systemic stability and reduce systemic risk, and to maintain public confidence in payment and settlement systems. The Payment and Settlement Systems Act, 2007 and the Payment and Settlement Systems Regulations, 2008 framed thereunder, provide the necessary statutory backing to the Reserve Bank of India for undertaking the Oversight function over the payment and settlement systems in the country

Process Daily mark to market settlement. The daily mark-to-market is settled in cash on T+1. Settlement mechanism Cash-settled in Indian rupees. Settlement price The settlement price is the RBI reference rate on the date of expiry. Last trading day The near-month contract is discontinued for trading two days prior to the expiry day (assuming both the days are trading days). The final settlement day is the contract expiry date which is generally T+2 from the last trading day of the contract. To settle transactions submitted to the RTGS system, members must maintain an RTGS settlement account with the RBI in Mumbai. This account has to be funded at the beginning of each RTGS processing day from the member's current account with the RBI, and at the end of the day the balance in the settlement account is transferred back to that current account. Since banks maintain current accounts with different offices of the RBI, they are allowed to transfer funds during the RTGS day between these current accounts and the RTGS settlement account. For this purpose, there is an interface between the RTGS system and the Integrated Accounting System (IAS) of the RBI. The IAS is the accounting system of the RBI (members' current accounts are in IAS).

The banks use the option available in their Participant Interface (PI) (to transfer funds from one account to another in Mumbai) or use the centralised funds management system (CFMS) if

the transfer is between accounts from one office of the RBI to another. Transactions which have passed all validity checks are taken up for settlement on a FIFO with priority basis. All such transactions based on available balances in the settlement account are duly settled by debiting the account of the sending bank and crediting the account of the receiving bank. Settlement finality on a gross basis in real time is achieved when this process is complete. Members can obtain intraday liquidity (IDL) from the RBI (fully collateralised by Indian government securities held by the members in their IDL-SGL account) free of interest to augment their available liquidity in the RTGS system. IDL must be returned by the end of the RTGS day. Failure to do so is subject to a penalty interest charge on outstanding balances.

## **5.5. Guidelines for Usages of e-Money**

*Digital Money* may be broadly defined as "an electronic store of monetary value on a technical device used for making payments to undertakings other than the issuer without necessarily involving bank accounts in the transaction, but acting as a prepaid bearer instrument" (European Central Bank, 1998). These products could be classified into two broad categories viz., (a) pre-paid stored value card (sometimes called "electronic purse") and (b) pre-paid software based product that uses computer networks such as internet sometimes referred to as *Digital Cash* or *Network Money*. The stored value card scheme typically uses a microprocessor chip embedded in an electronic card while software based scheme typically uses specialised software installed in a personal computer.

The stored value card could be of three types - single-purpose card, closed-system or limited-purpose card and general-purpose or multi-purpose card. The single-purpose card generally with a magnetic chip recording the amount of fund therein is designed to facilitate only one type of transaction e.g., telephone calls, public transportation, laundry, parking facilities etc. Here, the distinguishing point is that the issuer and the service provider (acceptor) are identical for the cards. These cards are expected to substitute coins and currency notes. It is important to note here that the European Central Bank (ECB) has exempted these single-purpose pre-paid cards from the purview of their policy initiatives on Digital Money because of their smaller denominations as well as limited risk exposure for customers and the financial system as a whole.

The closed-system or the limited-purpose cards are generally used in a small number of well-identified points of sale within a well-identified location such as corporate/university campus. ECB has recommended that these cards be subject to lighter regulations and be issued by credit institutions.

The multi-purpose card on the other can perform variety of functions with several vendors viz., credit card, debit card, stored value card, identification card, repository of personal medical information etc. ECB has underscored especially the importance of these cards with respect to regulatory oversight, restrictions on issuers and their implications for monetary policy. These cards may reduce demand for current accounts in the bank for likely reduction in transaction costs, and prudent portfolio management. It is important to distinguish here the so-called *access* products e.g., credit card and debit card from *Electronic Money*. The former typically require a telephone or a personal computer with appropriate software to access the customer account before transferring the value while under *Electronic Money*, the amount of value is already embedded and it may be increased or reduced without necessarily involving a personal bank account. In a sense, *Electronic Money* can be construed as an electronic form of traveler's cheques (TCs). In both cases, the user pays for the instrument upfront.

\* ***Relative Status of Various Retail Payments Media***

From payer's perspective, different payment instruments can be distinguished depending upon when funds are actually parted with. This can be shown as below. Given this scenario, it is expected that *Electronic Money* may not displace other payment instruments. However, eventually a payment instrument is used considering its opportunity cost and the transaction value of the item to be purchased as indicated below.

In a scale of low value to high value, it is felt that while it may not be desirable to place any limit on storing monetary value in *Electronic Money*, based on current experience, it is expected that *Electronic Money* might be used mainly for small value transactions and thus, could be used to substitute central bank notes and coins at least partially.

\* ***Incentives for Using Electronic Money***

Spread of *Electronic Money* would depend upon the incentives of issuers, merchants and consumers of using *Electronic Money*. For issuers, the principal motivation arises from revenues to be earned from investment of outstanding balances (i.e., float income), savings of costs from reduced handling of cash and incentive of offering fee-based service to consumers and merchants besides the larger security emanating from audit trail of transactions and improved management information system. For merchants, the trade-off would be between reductions in cost of handling physical cash vis-a-vis cost of putting in place necessary infrastructure. For consumers, the use of *Electronic Money* would depend upon the perceived security and privacy of *Electronic Money* and ease with which *Electronic Money* could be used which would again depend upon willingness of merchants to accept *Electronic Money*. In other words, apart from security, privacy and ease, network effects are also important for wider use

of *Electronic Money*. An economy like India where cash transactions are very high, could benefit from using Electronic Money through cost savings from printing and minting of smaller denomination notes and coins and eliminating the cost of handling, storing, transporting and insuring currency. These should also improve operational efficiency of the financial sector as also extension of banking to the urban poor and rural communities besides facilitating e-governance initiatives of governments. However, such benefits should be weighed against the need to build up the costly infrastructure to operate nationwide cashless retail payment system.

\* ***Implications for Balance Sheet of the Central Bank and Conduct of Monetary Policy***

Before analysing the likely implications, it is instructive to note that Digital Money can be issued in three alternate ways. Each of these three ways may have different implications for conduct of monetary policy. First, *e*-Money can be issued in exchange of cash (i.e., 100 per cent backing of central bank money). Under that circumstance, there may be only marginal change in total money supply in the economy provided there is no significant change in velocity of circulation of money. Second, *e*-Money can also be issued on credit against interest payment. Third, it is argued that *e*-Money could also be issued as a separate form of currency independent of central bank money by entities other than the central bank. In that case, *e*-Money would compete against the central bank money as a medium of exchange. Such a scenario, however, in which public gets *Electronic Money* from an entity in exchange for something other than the central bank money seems remote now. It may be worth appreciating here that one of the strongest proponents advocating abolition of central bank's monopoly in the creation of money was Von Hayek (1976). He proposed that banks should also issue their own currency. The resultant competition would ensure only well managed currencies to survive, help appropriate price discovery process and achieve price stability.

***(i) Balance Sheet of the Central Bank***

Currency notes and coins generally form an overwhelming part of any central bank's balance sheet. If *e*-Money is extensively used and in the process, replaces substantially central bank's money, central bank's balance sheet would *shrink* while that of the issuing authority of *Digital Money* would *expand* in relative terms. To elaborate, if an individual pays, say, Rs.100 to an issuing authority, say, a bank, to obtain a pre-paid card (i.e., *Electronic Money*), while the central bank's currency liability remains unchanged (because its liability to public gets reduced while its liability to banks gets increased correspondingly), the balance sheet of the bank in question as the issuer of *e*-Money would in contrast enlarge with the arrival of a new deposit. This together with deposit multiplier, the banking sector as a whole would have larger

deposit. Technically, with zero reserve requirement and complete substitution of central bank currency, the central bank's balance sheet would shrink significantly in relation to that of the banking sector. This coupled with very high money multiplier would result in substantial enlargement of balance sheets of banks, and hence, would have the potential of inconceivably increasing money supply for a given increase in base money. In other words, if a consumer prefers to use *Digital Money* vis-a-vis currency, then for a given stock of currency, the money multiplier would go up which would in turn increase the aggregate money supply in the economy more than what would have been the case without *e-Money*.

With large scale use of *Digital Money*, it has been apprehended that central bank's balance sheet may shrink to such an extent relative to that of the banking sector that it may be unable to perform its liquidity absorption function [in effect, open market operations (OMO)] on account of non-availability of adequate volume of assets. Under that circumstance, extensive *e-Monetisation* in the economy could jeopardise the conduct of monetary policy of the central bank. It may, however, be noted that the central bank would not have any problem in liquidity injection because central bank money is still the only legal tender in the economy.

Apart from constraining its liquidity management function, relative shrinkage in balance sheet may also have implications regarding loss of *seigniorage* revenue for the central bank (BIS, 1996). This is because currency notes and coins are the interest-free liability of the central bank towards public (i.e., public have in effect lent to the central bank such amount free of interest) which are then used by the central bank to purchase interest bearing assets. Thus, interest earned on these assets constitutes its seigniorage revenue. Therefore, if the central bank's operating costs are high which are more likely in an environment where central bank is required to intervene more, it may even incur losses on account of seigniorage revenue foregone. This may also have adverse implications for governments with chronic budget deficits as it would be deprived of the transfer of surplus to its treasury from the profitable central bank.

As a counter argument, it is maintained that there should always be a lower bound below which the use of currency notes and coins should not go down [akin to Baumol (1952) - Tobin (1956) inventory model] so that there should also be a limit below which reserve money should not shrink relative to broad money stock. Moreover, so long as *Electronic Money* is expected to be used for small value transactions and the underlying asset of *Electronic Money* is the central bank money and the central bank has the monopoly in its issuance, its balance sheet is not expected to contract sufficiently. Again, since *Electronic Money* developments are expected to be gradual in nature rather than an one-off event, many of the apprehensions

expressed above may not materialise as the central bank should have adequate time to respond accordingly.

## ***(ii) Conduct of Monetary Policy***

### ***a. Case when Digital Money is Issued against Central Bank Money***

*Electronic Money* could have profound impact on compilation of monetary statistics and money supply unless regulated prudently. As indicated above, *e-Money* could be issued against cash (i.e., 100 per cent backed by central bank money paid upfront). Since *e-Money* is close substitutes of central bank money, these should be explicitly accounted for in monetary statistics. If *e-Money* is allowed to be issued only by banks, then currency would be substituted with demand/time liabilities through *e-Money*. In that eventually, issuance of *Electronic Money* would be money stock neutral and no change would be required in the definition of money stock. However, if *e-Money* is issued by entities other than depository institutions (i.e., banks), the money creating sector as embedded in compilation of monetary statistics would need to be broadened. Otherwise, it would reduce information content of monetary aggregates as monetary statistics without coverage of *e-Money* may not fully represent the transaction balances in economy. It may need to be appreciated here that in recent period, countries generally follow eclectic approach with accent on interest rate/inflation targeting rather than monetary targeting. Even then, assessment of liquidity could pose problem on account of higher velocity of money and interest elasticity of money demand.

There could also be a situation where residents could use digital cash or network money supplied by entities outside the country for domestic transactions. If such transactions rise significantly, a large part of domestic money would be held abroad and there would be weaker link between domestic transactions and monetary aggregates. In that case also, monetary aggregates would lose its predictive power. In a sense, even without *e-Money*, some countries have already experienced such phenomenon through spread of dollarisation or co-circulation of currency.

With regard to its behaviour on money supply, since this is only substitution of currency and coins with *e-Money*, it may witness only a small change despite enlargement of commercial banks' (the issuers) balance sheets vis-a-vis that of the central bank because velocity resulting from increase in such demand liability may not increase much. If, on the other hand, the velocity increases, this would certainly increase money supply more for a given increase in base money. However, if *e-Money* performs only small value transactions, such velocity effect on overall money supply could be small and there may not be any perceptible

change in money supply. These apart, interest elasticity of *e*-Money could be higher on account of the fact that it would generate float to the issuers of *e*-Money which are generally likely to be invested in interest bearing highly liquid securities (to meet redemption liability). On the contrary, mere currency holding does not involve such process. In view of this, it is expected that competition may force interest rate to be paid in due course on *e*-Money balances despite these being in the nature of demand liabilities. Under this circumstance, the proportion of interest bearing liabilities in monetary aggregates would grow which would render them more unstable and information content of monetary aggregates would also change

***b. Case when Electronic Money or Digital Cash is Issued on Credit***

*e*-Money can also be issued on credit (i.e., no central bank money is paid upfront by the customer who is now a *borrower*) against payment of interest rate whereby it is the issuer who is supposed to comply with all the requirements of the regulator in respect of the issuance of *e*-Money. Under this case, there is a possibility that the issuers may assume a leveraged position. There is, therefore, a need for continuous monitoring of the behaviour of issuing authorities for balanced growth of their assets and liabilities, particularly liabilities arising out of issuance of *e*-Money. For these reasons, the Group recommends that the central bank should regulate and closely monitor the practice of issuing *e*-Money on credit.

***c. Case when Electronic Money is Issued as an Independent form of Currency***

In this context, one of the principal concerns over the emergence of Electronic Money is whether the central bank would be in a position to conduct monetary policy when *Electronic Money* would be issued as an independent form of currency. Here two opposite views are being offered. Friedman (1999) has argued that notwithstanding the monopoly power of the central bank to create reserves, in future the central bank may not be in a position to influence vast amount of financial transactions by controlling a small volume of its reserves in an environment of new payment and banking technologies. The study emphasised that different forms of *Electronic Money* in that scenario may advance to the point that these would not only provide payment services but also settlement services in an economy thereby obviating the need for central bank money for settlement. King (1999) has gone even further and argued that in a future world, all settlements could be done on a real-time basis through transfers of appropriate value of private wealth from one electronic account to another in an electronic barter environment thus obviating the need for central bank money in the economy. In that case, there would be no role for the central bank as it would not be in a position to influence short-term rate of interest.

Goodhart (2000) on the other hand maintains that the central bank's ability to influence nominal rate of interest is eventually an issue of political economy because if it is so required, the government can always place a set of legal restrictions on financial market so that they would be forced to settle only in central bank money. He has also argued that a central bank with the support of the government has the ability to incur largest losses than any other entity in the economy and accordingly, would be in a position to influence nominal interest rate even in the absence of demand for central bank money. Freedman (2000) holds that incentives facing banks to force them to settle on the books of the central bank is key for the latter to influence nominal interest rate. Such incentives can be built into the terms and conditions of unlimited standby facilities whereby central bank would be prepared to accept overnight deposits as well as extend overnight loans at certain interest rates which would in turn establish a corridor for overnight market interest rates.

Woodford (2000 and 2001) shares the same views of Freedman (2000). He mentioned that even in the presence of multiple currency, market participants may like to settle at least some of their payment obligations on the books of the central bank in central bank money on account of its unparalleled creditworthiness. Central bank can influence overnight interest rates if it is ready to accept overnight deposits and lend overnight at specified rates in the form of standing facilities, disregarding the quantity as is being practised in Australia, Canada and New Zealand. In other words, a central bank can determine both the quantity of settlement balances and interest rate thereon unlike private financial institutions issuing their own currencies who can determine only either of them.

In a multi-currency regime, whether monetary policy does matter is eventually a question of how many private entities contract with one another in course of their transactions in a stable currency. Since currency uses are characterized by network externalities in that larger the number of users, larger is the settlement value of the currency concerned, it is implied that currency could at best be supplied oligopolistically. In fact, it could be a case of natural monopoly also. Such notion, however, goes against the hypothesis put forward by Hayek (1976) and obliquely by Friedman (1999) and King (1999). Apart from the issue relating to network externalities, there are other several reasons why, in a multi-currency regime, competition among several currencies and the corresponding process of price discovery may not be beneficial for economies.

First, during the competitive phase when bad currencies would be driven out on account of their not maintaining corresponding liquid assets to meet the liability, the economy could experience high inflation and volatility in its output. Second, there is no guarantee that once

the discovery process of searching the stable currency is over, the new monopolist / oligopolists thereafter would not resort to inflationary finance to maximize its seignorage revenue. Third, in the event when there are multiple currencies, there would be number of prices for n number of currencies. This would severely erode the unit of account function of money as it would no longer act as numeraire. A unique numeraire is the most efficient solution to this co-ordination problem.

Given these considerations, it appears that there is a trade-off between micro-economic efficiency and macro-economic stabilisation. This is because with the advancement of technology and the consequent innovations in both wholesale and retail payments media including Electronic Money, the economy stands to gain efficiency in terms more prudent risk management practices, faster settlement of funds and better disclosure of information. Simultaneously, the economy is also confronted with destabilising forces like lesser information content of key variables e.g., monetary aggregates, multiple currency regime, lesser private sector demand for central bank money and the consequent threat to the existence of the central bank etc. Therefore, while micro-economic efficiency considerations demand that there should be increasingly private provision of payment and settlement services in the economy in future, macro-economic stabilization policy warrants that there should be a case for public regulation over such provision. In fact, this is the fundamental reason for which the "monopoly right" in the issuance of currency, as indicated above, should be in the hands of some public authority, preferably the central bank. Even then, there cannot be any final judgment on this issue at this point of time. In view of all these considerations, the Group, therefore, recommends that the RBI should regularly monitor closely all these developments so that integrity of the financial system is preserved.

\* ***Policy Issues for the RBI***

Based on the above analysis, there could be three areas of immediate concern to RBI - (i) what could be the mode through which *Electronic Money* could be permitted to be issued, (ii) of the financial market participants, who could be allowed to issue *Electronic Money* and (iii) what should be the prudential norm to be followed for preserving effectiveness of monetary policy and integrity of the *Electronic Money*. These apart, there are three other areas where the Group feels that there is a need for ongoing work viz., (a) legal framework involving the rights and obligations of issuers, merchants, consumers and the regulator (i.e., the RBI), (b) technological security and (c) the clearing and settlement arrangements of different *Electronic Money* schemes.

### ***(i) Issuance of Digital Money***

The Group recommends that multi-purpose *Electronic Money* may be permitted to be issued only against payment of full value of central bank money or against credit only by the banks. The issuance of *e-Money* on credit basis should, however, be strictly regulated and closely monitored. On the issue whether entities other than the central bank could issue independent media of exchanges, the Group feels that such a possibility is apparently remote in India at this point of time. However, RBI may continually keep track of these developments for preserving integrity of the financial market.

In this regard, it needs to be appreciated that issuers must be under obligation to offer redemption of their Electronic Money liabilities net of service charges, if so required. From monetary policy point of view, such redemption requirement is essential in order to preserve unit of account function of money as also to control money supply in the economy.

### ***(ii) Status of Issuers of e-Money***

Keeping the above discussions in perspective, one can conceptualize arguments for preference of a particular class of institution as issuers of *e-Money*. First, liabilities accepted under multi-purpose pre-paid cards are in the nature of *demand liabilities* and hence, banks may be preferred as issuers of *e-Money*. Second, since *e-Monetisation* involves generation of fresh liabilities by the issuing authority, compilation of monetary statistics would warrant regular reporting of such liabilities to the central bank. This could be easier done for banks rather than for non-banks. Third, if *e-Money* is subjected to reserve requirement, then pricing of *e-Money* between institutions with reserve requirement and those without them would be different. Ensuring level playing field demands that issuing authority should be uniform. Fourth, issuing authority would have strong incentive to leverage and oversupply *Electronic Money* if it is issued as credit against interest. The resultant implications for money supply, interest rate and inflation on the one hand and probability of default and likely impact on systemic crises and eventually on deposit insurance of the central bank on the other may necessitate that issuing authority be restricted to banks only. Fifth, security issue of *e-Money* may also prompt the central bank to prefer banks as the only issuer of *e-Money*.

In this context, it may be indicated that the ECB has recommended only credit institutions should be allowed to issue multi-purpose pre-paid cards. In many of the European Union (EU) countries, this recommendation has been implemented. However, the ECB has also permitted non-credit institutions to issue Electronic Money provided they would conform to seven minimum prudential requirements as laid down by it in 1998 as has been adopted in Denmark.

In USA, on the other hand, both depository and non-depository institutions may issue *e-Money*. However, developments in Electronic Money are rather quite moderate in USA relative to those in Europe.

Based on these considerations and the credibility of non-banking financial institutions in India now, the Group proposes that at this stage, RBI should not permit them to issue multi-purpose *Electronic Money*. However, if it permits them to do so, it should require them as also banks to conform to seven minimum prudential requirements laid down by ECB in 1998 as indicated below. In this regard, it should be noted that the single purpose and limited purpose *e-Money* should be allowed to be issued by any entity including banks.

### ***(iii) Minimum Prudential Requirements for Operations of Electronic Money Scheme***

In order to preserve effectiveness of monetary policy and integrity of *Electronic Money* schemes, the Group suggests that we should adapt the following seven minimum prudential requirements, as mandated by ECB, with regard to issue of Electronic Money:

- a. Prudential supervision: Issuers of electronic money must be subject to prudential supervision.
- b. Solid and transparent legal arrangements: The rights and obligations on the part of the respective participants (customers, merchants, issuers and operators) in an electronic money scheme must be clearly defined and disclosed. Such rights and obligations must be enforceable under all relevant jurisdictions.
- c. Technical security: Electronic Money schemes must maintain adequate technical, organisational and procedural safeguards to prevent contain and detect threats to the security of the scheme, particularly the threat of counterfeits.
- d. Protection against criminal abuse: Protection against criminal abuse, such as money laundering, must be taken into account when designing and implementing electronic money schemes.
- e. Monetary statistics reporting: Electronic Money schemes must supply the central bank with whatever information that may be required for the purposes of monetary policy.
- f. Redeemability: Issuers of Electronic Money must be legally obliged to redeem electronic money against central bank money at par at the request of the holder of electronic money.
- g. Reserve requirements: The possibility must exist for central banks to impose reserve requirements on all issuers of electronic money.

Broadly, *Electronic Money* is an electronic store of monetary value on a technical device. *Digital Money* could be classified as (a) pre-paid stored value card (sometimes called *electronic purse*) and (b) pre-paid software based product that uses computer networks such as internet sometimes referred to as *Digital Cash* or *Network Money*. The stored value card could be of three types - single-purpose card, closed-system or limited-purpose card and general-purpose or multi-purpose card. The single-purpose card generally with a magnetic chip recording the amount of fund therein is designed to facilitate only one type of transaction e.g., telephone calls, public transportation, laundry, parking facilities etc. Here, the distinguishing point is that the issuer and the service provider (acceptor) are identical for such cards.

The closed-system or the limited-purpose cards are generally used in a small number of well-identified points of sale within a well-identified location such as corporate/university campus. The multi-purpose card on the other can perform variety of functions with several vendors viz., credit card, debit card, stored value card, identification card, repository of personal medical information etc. While it may not be desirable place any limit on storing monetary value in *Electronic Money*, it is expected that Digital Money could be used to substitute central bank notes and coins at least partially. However, the importance of *Electroni Money* with respect to regulatory oversight, restrictions on issuers and their implications for monetary policy is extremely critical from the point of view of the central bank.

After considering various issues, the Group recommends that multi-purpose *Digital Money* may be permitted to be issued only against payment of full value of central bank money or against credit only by the banks. The issuance of Electronic Money on credit basis should, however, be strictly regulated and closely monitored. It needs to be appreciated that issuers must be under obligation to offer redemption of their *Digital Money* liabilities net of service charges, if so required. From monetary policy point of view, such redemption requirement is essential in order to preserve unit of account function of money as also to control money supply in the economy. With regard to status of issuers of Electronic Money, it may be indicated that there are five reasons which may warrant banks as the issuers of multi-purpose *Electronic Money*. These include attributes of *Digital Money* being closure to demand liabilities of the bank, implications of *e-Money* on velocity of circulation of money and its corresponding impact on monetary statistics, the option to impose reserve requirement on *e-Money*, the need for closure monitoring of *Electronic Money* when these would be issued as credit and the technical security of *Electronic Money*. For all these reasons, the Group recommends that only banks should be allowed to issue multi-purpose *e-Money*. However, single-purpose and limited-purpose *Electronic Money* should be allowed to be issued by any entity including banks.

Non-banks should not be permitted to issue multi-purpose *Electronic Money*. If they are permitted, they along with banks must conform to seven minimum prudential requirements as laid down by European Central Bank (ECB) in 1998. These are (i) prudential supervision of issuers of *Electronic Money* by the central bank, (ii) solid and transparent legal arrangements codifying the rights and obligations of issuers, merchants, consumers and the regulators, (iii) adequate technical, organisational and procedural safeguards to prevent and detect threats to the security of Electronic Money, (iv) protection against criminal abuse, (v) supplying of all relevant information to the central bank for the purpose of monetary policy, (vi) legal obligations to redeem Electronic Money against central bank money at par at the request of the holder and (vii) the right of the central bank to impose reserve requirement on issuers of *Electronic Money*.

*Electronic Money* could have profound impact on compilation of monetary statistics and money supply unless regulated prudently. *Electronic Money* could be issued against cash (i.e., 100 per cent backed by central bank money paid upfront). Since *Electronic Money* are close substitutes of central bank money, these should be explicitly accounted for in monetary statistics. If *Electronic Money* is allowed to be issued only by banks, then currency would be substituted with demand/time liabilities through *Electronic Money*. In that eventually, issuance of *Electronic Money* would be money stock neutral and no change would be required in the definition of money stock. However, if *Electronic Money* is issued by entities other than depository institutions (i.e., banks), the money creating sector as embedded in compilation of monetary statistics would need to be broadened.

There could be a situation where residents could use *Electronic Money* supplied by entities outside the country for domestic transactions. In that case, monetary aggregates would lose its predictive power. It is expected that the proportion of interest bearing liabilities in monetary aggregates would grow in the event of growing use of Electronic Money which would render them more unstable, and information content of monetary aggregates would also change. If *Electronic Money* is issued on credit, there is a possibility that the issuers may assume a leveraged position. There is, therefore, a need for continuous monitoring of the behaviour of issuing authorities for balanced growth of their assets and liabilities, particularly liabilities arising out of issuance of *Electronic Money*. For these reasons, the Group recommends that the central bank should regulate and closely monitor the practice of issuing *Electronic Money* on credit.

If consumers prefer to use *Electronic Money* vis-a-vis currency, then for a given stock of currency, the money multiplier would go up which would in turn increase the aggregate money supply in the economy more than what would have been the case without Electronic Money. Also, with large scale use of *Electronic Money*, it has been apprehended that central bank's balance sheet may shrink to such an extent relative to that of the banking sector that it may be unable to perform its liquidity absorption function on account of non-availability of adequate volume of assets. Apart from constraining its liquidity management function, relative shrinkage in balance sheet may also have serious implications regarding loss of *seigniorage* revenue for the central bank. As a counter argument, it is maintained that there should always be a lower bound below which the use of currency notes and coins should not go down so that there should also be a limit below which reserve money should not shrink relative to broad money stock. A review of developments indicate that while considerations of potential benefits of micro-economic efficiency, extension of banking to urban poor and rural communities and facilitation of *e-governance* demand that there should be increasingly private provision of payment and settlement services in the economy in future, macro-economic stabilisation policy warrants that there should be a case for public regulation over such provision. Also, currency uses are characterised by network externalities in that larger the number of users, larger is the settlement value of the currency concerned implying that currency could at best be supplied oligopolistically. There are, in fact, the fundamental reasons for which the *Monopoly Right* in the issuance of currency should be in the hands of some public authority, preferably the central bank. Even then, there cannot be any final judgement on this issue at this point of time. In view of all these considerations, the Group, therefore, recommends that the RBI should regularly monitor closely all these developments so that integrity of the financial system is preserved. The RBI should also periodically review issues relating to legal framework, if any, technical security and the clearing and settlement arrangements of different *Electronic Money* schemes and the practices of various Electronic Money schemes, both in India and abroad, for preserving integrity of the financial market. On the issue whether entities other than the central bank could issue independent media of exchanges, the Group feels that such a possibility is apparently remote in India at this point of time. However, RBI may continually keep track of these developments for smooth functioning of the financial market.

## **5.6. Summary**

To sum up, this section discussed the key factors of digital cash/money and its benefits in various business transactions. Digital Money or *Electronic Money* benefits, pros and cons of

Electronic Money, clearing and settlement of Electronic Money, guidelines with respect of usages of digital money were detailed this section. The key benefit of digital or mobile payments is the ease and the speed of completing the transactions. The users of digital payments enjoy more flexibility in making payments. As all the payments are processed through secured servers, users need not worry about any risk involved. People who do not have credit or debit cards can also use mobile wallets where they can get their wallets loaded with cash from the nearest kiosk. The benefits individuals enjoy by going cashless are many. No need to stand in those long queues outside the ATMs, no worry about the cashouts during holidays no, more waiting for the cheque to get credited and no risk of carrying currency in the wallets. The cashless transactions come with enhanced security procedures.

## SECTION VI

### 6. e-Money and Financial Behaviors of Bank Customers

#### 6.1. Introduction

The *Digital Money* users or Bank cardholders and the factors that motivated the bank customers to choose *e-Money* are presented in this section. In this connection, the core research study is presented focusing mainly on the impact of the *e-Money* users in the southern region of Tamilnadu and Karnataka state in three important dimensions such as socio – cultural, economic (financial aspects) and psychological.

#### 6.2. Socio – Economic Profile

*e-Money* users about 58.37 percent of males and fall in the group of 40 to 49 age group. 36.67 per cent among the select respondents are just graduate alone with the highest income level Rs. 20,000 to Rs. 30,000 range for their *e-Money* transactions in their routine life. 27.49 percent of select sample are fall under the category of professionals which results about 24.36 per cent. All the select banks customers use saving account for their *Digital Money* transactions.

Table 6.1: e- Money Usages in Various Banking Transactions

Banking Transactions	Grand Total	
	N	%
<i>Real Time Gross Settlement (RTGS) and / National Electronic Fund Transfer (NEFT) transactions</i>	172	28.67
<i>Immediate Payment service (IMPS) and Unified Payment Interface (UPI)</i>	131	21.83
Educational fee payments	93	15.50
Electricity and Telephone Bill payment	75	12.50
LIC and Postage services	37	06.17
Lending and Borrowing in NBFCs	36	06.00
Online deposits (Fixed or Recurring)	00	00.00

Source: Field Survey Result, 2018 – 2020, (Note: N = Total respondents (600))

The highest bank customer of select area uses the *e-Money* account to 28.67 per cent which includes the Real Time Gross Settlement (RTGS) and National Electronic Fund Transfer (NEFT) and 21.83 per cent uses *Digital Money* through the mode of Immediate Payment service (IMPS).

Table 6.2: e – Money Usages for Various Payments and Settlements

Payments for various business activities	Very Frequently (Almost Daily)	Frequently (Fortnightly)	Occasionally (Once in a Month)	Rarely (Few Times a year)	Can't Say
Agricultural business	108 (18.0%)	108 (18.0%)	134 (22.3%)	200 (33.3%)	50 (8.3%)
Lending and Borrowings activities in banks and non-banking organizations	78 (13.0%)	82 (13.7%)	162 (27.0%)	214 (35.7%)	64 (10.7%)
Hospital Management	74 (12.3%)	90 (15.0%)	128 (21.3%)	218 (36.3%)	90 (15.0%)
Educational Institutions	222 (37.0%)	110 (18.3%)	144 (24.0%)	64 (10.7%)	60 (10.0%)
Services Sectors (Banking, Insurance, Hotels etc.)	60 (10.0%)	106 (17.7%)	152 (25.3%)	186 (31.0%)	96 (16.0%)
Military and Defenses	74 (12.3%)	90 (15.0%)	128 (21.3%)	218 (36.3%)	90 (15.0%)
Corporate and Industrial sectors	64 (10.7%)	110 (18.3%)	144 (24.0%)	222 (37.0%)	60 (10.0%)
Own Business	108 (18.0%)	108 (18.0%)	134 (22.3%)	200 (33.3%)	50 (8.3%)
Entrepreneurial Business	82 (13.7%)	76 (13.7%)	82 (13.7%)	248 (41.3%)	112 (13.7%)
Science and Technology activities	78 (13.0%)	82 (13.7%)	162 (27.0%)	214 (35.7%)	64 (10.7%)
Professional Business	136 (23.0%)	116 (19.3%)	110 (18.3%)	188 (31.3%)	48 (8.0%)

Source: Field Survey Result, 2018 – 2020, Note: N = Number of Respondents (600) and % = Percentages

The majority of corporate and industrialist uses about 36.3 per cent and professional users of e-Money are 31.3 per cent. Agricultural business rarely uses which shows 33.30 per cent, Lending and Borrowings activities in banks and non-banking organizations 35.70 percent respectively. 37 per cent are highest e-Money users from the research study. Services Sectors (Banking, Insurance, Hotels etc.) Military and Defenses, Corporate and Industrial sectors, Own Business, Entrepreneurial Business and Science and Technology activities are rarely use the *Digital Money* in their business and routine transactions.

Table 6.3: Gender – Wise e – Money Usages Statistics

Gender	e – Money usages				Grand Total	
	Yes	%	No	%	N	%
Male	216	36.00	101	16.83	317	52.83
Female	184	30.67	99	16.50	283	47.17

Source: Filed Survey Result, 2018 - 2020, N – Number of respondents (600).

The highest credit card holders are males. e-Money users which accounts to 317 (52.83 per cent) and 283 (47.17 per cent) are female respondents.

Table 6.4: e-Money Convenience and Services

Factor	Grand Total	
	N	%
Convenience	111	18.50
Easy and Fast Service	61	10.17
Helps family members	60	10.00
Reliability	101	16.83
Shopping Convenience	123	20.50
Withdrawal purposes	144	24.00

Sources: Field Survey Result, 2018 – 2020, N – Number of respondents (600).

The highest *Digital Money* users opined that they use for withdrawal purposes which is clearly showed in the above table and about 144 (24.00 per cent) out of 600 respondents, 123 (20.50 per cent) use for shopping purposes, 111 (18.50 per cent) opined that it is very convenient, 101 (16.83 per cent) expressed that it is very reliable, 61 (10.17 per cent) felt holding and using is very easy and fast and finally 60 (10.00 per cent) felt that it helps the family members a lot.

Table 6.5: Use of e-Money for Purchase

Factors	Grand Total	
	N	%
Rarely (Few Times a year)	38	6.33
Occasionally (Once in a Month)	132	22.00
Frequently (Fortnightly)	183	30.50
Very Frequently (Almost Daily)	183	30.50
Can't Say	64	10.67

Sources: Field Survey Result, 2018 – 2020, N – Number of respondents (600).

Bank customers 183 (30.50 per cent) expressed that they use the *Digital Money* very frequently (almost daily) or fortnightly. 132 (22.00 per cent) said that they use occasionally or once in a month, 64 (10.67 per cent) respondents doesn't express their opinion and 38 (6.33 per cent) said that they use cards very rarely.

Table 6.6: Opinion towards the e-Money

e-Money	Description	Grand Total	
		N	%
	Economical	352	58.67
	Expensive	248	41.33

Source: Field Survey Result, 2018 – 2020, N – Number of respondents (600).

The different opinion towards the *Digital Money* by the selected bank customers in the sample, clearly shows that the 352 (58.67 per cent) respondents felt that holding the *Digital Money* is economically good, whereas 248 (41.33 per cent) donot have any economic advantages. 379 (63.17 per cent) respondents said that electronic money are very expensive (in terms of service charges and taxes) and on the other side 221 (36.83 per cent) expressed that it is not so expensive in using or transacting with the *e-Money*.

Table 6.7: Precautionary Measures While Using the *e-Money* Security

Precautionary Measures while using the D Money Security	Responses	Total	
		Total	Percent (%)
Knowledge about online threats	Yes	407	67.8
	No	193	32.2
Use of unsecured websites	Yes	390	65.0
	No	210	35.0
Usage of one-time password (OTP)	Yes	373	62.2
	No	227	37.8
Change online PIN once in two months	Yes	439	73.2
	No	161	26.8
Use birth date, Phone No., House No. as online PIN, default PIN setting in apps	Yes	398	66.3
	No	202	33.7
Customer asked to update the information in mobile applications and computer systems	Yes	386	64.3
	No	214	35.7
Avoiding carrying the <i>e-Money</i> daily or regularly	Yes	417	69.5
	No	183	30.5
Limited use of <i>e-Money</i>	Yes	351	58.5
	No	249	41.5
Avoiding to carry or use on special occasions, crowds functions and festivals	Yes	360	60.0
	No	240	40.0
High secrecy in holding PIN or not disclosing the PIN	Yes	398	66.3
	No	202	33.7
Enabling the high security through the account	Yes	326	54.3
	No	274	45.7

Source: Field Survey Result, 2018 – 2020, N – Number of respondents (600).

The precautionary measures taken by the customers while using the *Digital Money* is very high at 67.8 per cent are having thorough knowledge about the online threat and internet hacking while using their cards for various purposes in their daily life styles, 65.0 per cent agreed that they are not using the secured web portals for their online transactions when they use their electronic money for their transactions and payments, 62.20 per cent write their PIN back of their cards which is insecure many a times, 73.20 per cent of the customers frequently change their PIN say two or three months once for their safety transactions and protect them from frauds and mishandling of the *Electronic Money*, 66.3 per cent of the respondents in the study use their birth date, Phone Number and House Number which indicates that it is insecure. 64.3 per cent of customers have agreed that they update the information, 69.5 per cent said that they avoid carrying the *Electronic Money* daily or regularly, 58.5 per cent agreed that they use very limited *Electronic Money* for their routine activities, 60 per cent opined that they avoid carrying or using their bank cards on special occasions, crowd, functions and festivals, 66.3 per cent felt that the high secrecy in holding PIN or not disclosing the PIN to anyone and 54.30 per cent are enabling the high security through the account by the banks for their transactions.

The above figures help us to assess the customers to what an extent the customers are in trouble financially when they use *Electronic Money* for their payments, transactions, shopping, and travel and dinner purposes. This in turn puts some of the customers into trouble psychologically and financially when they lose their *Electronic Money* in their payment systems while making payments through National Electronic Fund Transfer (NEFT) / Real Time Gross Settlements (RTGS), internet banking, mobile banking activities etc.,

Table 6.8: Perception towards the *e-Money*

Area	Perceptions	HS	S	NSND	D	HD	Total
<b>e-Money</b>	Easy and Convenient	59	10	39	39	17	164
	Quick/Speedy transactions	58	5	23	27	9	122
	Less Cyber crimes	55	15	43	32	23	168
	Accessible anywhere, anytime	63	6	30	36	11	146

Source: Field Survey Result, 2018 – 2020, N – Number of respondents (600).

Note: HS – Highly Satisfied, S – Satisfied, NSND – Neither Satisfied nor Dissatisfied, D – Dissatisfied and HD – Highly dissatisfied

The perception towards the *Electronic Money* in selected public and private sector Banks indicate that 164 respondents are strongly satisfied with the use of *e-Money*, and it indicates that their perception is positive. Further 59 respondents stated that it is very easy and convenient and 63 opined that it is accessible anywhere and anytime.

Table 6.9: Inconvenience and Problems encounter With Use of e-Money by the Customers

Description	Almost Never	Rarely	Some Times	Often	Almost Always
Technology setback	82 (13.7%)	76 (13.7%)	82 (13.7%)	248 (41.3%)	112 (13.7%)
Technical issues and cyber security	108 (18.0%)	108 (18.0%)	134 (22.3%)	200 (33.3%)	50 (8.3%)
Privacy of personal information will also be an	64 (10.7%)	110 (18.3%)	144 (24.0%)	222 (37.0%)	60 (10.0%)
Negative Interest Rates	78 (13.0%)	82 (13.7%)	162 (27.0%)	214 (35.7%)	64 (10.7%)
Knowledge and awareness factor	78 (13.0%)	82 (13.7%)	162 (27.0%)	214 (35.7%)	64 (10.7%)
Issue of unifying the mode of transaction as incompatible	60 (10.0%)	106 (17.7%)	152 (25.3%)	186 (31.0%)	96 (16.0%)
Issue of cheap e-banking service	74 (12.3%)	90 (15.0%)	128 (21.3%)	218 (36.3%)	90 (15.0%)
Internet Connectivity	108 (18.0%)	108 (18.0%)	134 (22.3%)	200 (33.3%)	50 (8.3%)
Forgery: Digital cash systems	108 (18.0%)	114 (19.0%)	96 (16.0%)	226 (38.0%)	54 (9.0%)
Digital Cash - Not Traceable	136 (23.0%)	116 (19.3%)	110 (18.3%)	188 (31.3%)	48 (8.0%)
Cyber crimes	60 (10.0%)	106 (17.7%)	152 (25.3%)	186 (31.0%)	96 (16.0%)
Confidential data management	82 (13.7%)	76 (13.7%)	82 (13.7%)	248 (41.3%)	112 (13.7%)
Barriers of cashless economy	64 (10.7%)	110 (18.3%)	144 (24.0%)	222 (37.0%)	60 (10.0%)
Absolute Personal Choice Factor	74 (12.3%)	90 (15.0%)	128 (21.3%)	218 (36.3%)	90 (15.0%)

Source: Field Survey Result, 2018 – 2020, N – Number of respondents (600).

The customers finding difficulties in handling the *Electronic Money* majority of them fallen under the category of very often they find difficulty such as in Absolute Personal Choice Factor is 218 (36.3 per cent), Barriers of cashless economy is 248 (41.3 per cent), Confidential data management is 248 (41.3 per cent), Cybercrimes accounts to 186 (31.0 per cent), Digital Cash - Not Traceable indicates 188 (31.3 per cent), Digital cash systems accounts to 226 (38.0 per cent ), Internet Connectivity is 200 (33.3 per cent), Issue of cheap e-banking service resulted 186 (31.0 per cent), Issue of unifying the mode of transaction as incompatible mode of money transfer may cause problems shows 186 (31.0 per cent) Knowledge and awareness factor is about 214 (35.7 per cent), Negative Interest Rates indicates 214 (35.7 per cent), Privacy of personal information will also be an important issue showed to 222 (37.0 per cent) often, Technical issues and cyber security 200 is (33.3 per cent) almost always, Technology setback also resulted to 248 (41.3 per cent).

Table 6.10: Purpose of *e*-Money

<b>Payment of <i>e</i>-Money : Most Preferred</b>	<b>Total</b>
Shopping	208 (34.67 %)
Dinner	137 (22.83 %)
Travelling	171 (28.50 %)
Others if any specify	084 (14.00 %)

Source: Field Survey Result, 2018 – 2020, N – Number of respondents (600).

Note: Numbers mentioned in the parenthesis represents the percentages and the % - Percentage to total of respective columns.

The purposes of *e*-Money are mainly classified into three major categories viz shopping, dinner and travelling, of which the use their electronic money for shopping which accounts to 208 (34.67 per cent), 137 (22.83 per cent) use for the purposes of dinner, 171 (28.50 per cent) use for the purposes of travelling and rest of the cardholders for other purposes which accounts to 84 (14.00 per cent).

Table 6.11: Opinion about the *e*-Money

<b>Description</b>	<b>Strongly Disagree</b>	<b>Disagree</b>	<b>Neither Agree Nor Disagree</b>	<b>Agree</b>	<b>Strongly Agree</b>
Easy Handling of <i>e</i> -Money	214 (35.7%)	78 (13.0%)	82 (13.7%)	162 (27.0%)	64 (10.7%)
<i>e</i> -Money Skills/Positive approach	218 (36.3%)	74 (12.3%)	90 (15.0%)	128 (21.3%)	90 (15.0%)
Flawless/Correct Operations	248 (41.3%)	82 (13.7%)	76 (13.7%)	82 (13.7%)	112 (13.7%)
General Assessment about the Service	188 (31.3%)	136 (23.0%)	116 (19.3%)	110 (18.3%)	48 (8.0%)
Knowledge about the products and Services	186 (31.0%)	60 (10.0%)	106 (17.7%)	152 (25.3%)	96 (16.0%)
Speed of Conducting operations	200 (33.3%)	108 (18.0%)	108 (18.0%)	134 (22.3%)	50 (8.3%)
Understanding the benefits involved in operating with any <i>e</i> -Money	222 (37.0%)	64 (10.7%)	110 (18.3%)	144 (24.0%)	60 (10.0%)

Source: Field Survey Result, 2018 – 2020, N – Number of respondents (600).

Note: Numbers mentioned in the parenthesis represents the percentages and the % - Percentage to total of respective columns/rows.

The opinions about the *e*-Money are rated in the five likert scale method. It is clearly indicated from the above statistics that 41.3 per cent respondents strongly disagreed that use of *e*-Money is flawless/correct operations which is the opinioned high from the above data, followed by 37 per cent respondent opined that understanding the benefits involving in operation with any *e*-Money are not agreed. From the above table, it is notice that all the

respondents strongly disagree with the *e*-money's uses and benefits in different ways like speed of conducting operations, easy handling, knowledge about the products and services, *e*-Money skills/Positive approach towards *Digital Money* and other general assessment about the services.

Table 6.12: ANOVA – Opinion about the Digital Money

ANOVA						
Opinion about the Electronic Money	Groups	Sum of Squares	df	Mean Square	F	Sig.
Perfect Operations	Between Groups	2.436	2	2.111	1.324	(D).289
	Within Groups	1480.693	598	2.476		
	Total	1480.693	599			
Promptness of Conducting tasks at banking operations	Between Groups	15.821	2	15.821	8.592	.004
	Within Groups	1101.053	598	1.841		
	Total	1116.873	599			
Management of <i>e</i> -Money	Between Groups	4.503	2	4.503	2.121	.146
	Within Groups	1269.737	598	2.123		
	Total	1274.240	599			
Acquaintance about the products and Services	Between Groups	2.886	2	2.182	.888	(C).342
	Within Groups	1324.767	598	2.215		
	Total	1327.093	599			
<i>e</i> -Money Skills/Positive approach towards <i>e</i> -Money	Between Groups	.029	2	.019	.002	(B).981
	Within Groups	1236.770	598	2.068		
	Total	1236.773	599			
General Assessment about the Service	Between Groups	.089	2	.004	.000	(A).999
	Within Groups	1363.903	598	2.281		
	Total	1365.993	599			
General Assessment about the Service	Between Groups	9.285	2	9.285	5.419	.020
	Within Groups	1024.608	598	1.713		
	Total	1033.893	599			

Source: Field Survey Result, 2018 – 2020, N – Number of respondents (600).

In this case, F statistic calculated from the data would arrive by chance if the null hypothesis was true with a probability of 0.008, will reject the null hypothesis and conclude that there are differences of some sort in opinion from the respondents towards the *Electronic Money* based on the degree of usage in the selected sample area. By simply inspecting the means in the descriptive table, got with the ANOVA output, and should suspect that the difference between the low and high difference of opinions groups might be significant, since that is the biggest difference, but how about the difference between the low and the medium groups. This is the information that can be got from our multiple comparison tests.

From (A) in the table – 6.12, the p-value for the main effect of field of study is 0.999 and therefore the effect of field of study towards the Flawless/Correct Operations is not significant. It is concluded that on an average, the opinions of the respondents towards the electronic money both including debit and credit cards are the same. From (B), the p-value for proximity is 0.981, can be therefore concluded that the main effect of understanding the benefits involved in operating with any *Electronic Money* is significant. From (C), the p-value for the interaction is 0.342; the *Electronic Money Skills/Positive* approach towards *Electronic Money* is significant and it can be concluded that the effect of understanding the benefits involved in operating with any *Electronic Money* s are not the same and from (D) the p-value for the interaction is 0.289; Knowledge about the products and services is significant.

Table 6.13: e-Money Security

<b>e-Money Security</b>	<b>Grand Total</b>	
	<b>N</b>	<b>%</b>
Not at all Secured	97	16.17
less Secured	127	21.17
Secured	94	15.66
Moderately Secured	150	25.00
Highly Secured	132	22.00

Source: Field Survey Result, 2018 – 2020, N – Number of respondents (600).

Note: Numbers mentioned in the parenthesis represents the percentages and the % - Percentage to total of respective columns/rows.

97 (16.17 per cent) of respondents opined that e-Money is not at all secured, 127 (21.17 per cent) expressed that less secured, 94 (15.66 per cent) felt that secured, 150 (25.00 per cent) said that moderately secured and 132 (22.00 per cent) e-Money users felt highly secured.

Table 6.14: ANOVA – e–Money Security

ANOVA						
Reasons for preferring the Bank Cards	Groups	Sum of Squares	df	Mean Square	F	Sig.
Good Branch Network	Between Groups	22.513	6	4.503	2.412	.035
	Within Groups	1109.027	594	1.867		
	Total	1131.540	600			
High speed of Transaction	Between Groups	37.334	6	7.467	4.513	.000
	Within Groups	982.864	594	1.655		
	Total	1020.198	600			
High Security	Between Groups	13.562	6	2.291	1.621	(B).188
	Within Groups	868.952	594	1.463		
	Total	880.373	600			
International Presence	Between Groups	21.160	6	4.232	2.349	.040
	Within Groups	1070.173	594	1.802		
	Total	1091.333	600			
Private Banking	Between Groups	24.012	6	4.802	1.954	.084
	Within Groups	1459.828	594	2.458		
	Total	1483.840	600			
Better Pension Scheme	Between Groups	16.453	6	3.344	1.863	(C).142
	Within Groups	1215.128	594	2.046		
	Total	1232.998	600			
Insurance Services	Between Groups	6.500	6	.896	.453	(A).831
	Within Groups	1041.107	594	1.753		
	Total	1045.673	600			
Many cash – Machines (ATMs)	Between Groups	22.798	6	4.560	2.268	.046
	Within Groups	1194.067	594	2.010		
	Total	1216.865	600			
Less Processing Time	Between Groups	35.528	6	7.106	3.131	.008
	Within Groups	1348.065	594	2.269		
	Total	1383.593	600			
Convenient Branch Location	Between Groups	74.849	6	14.970	8.362	.000
	Within Groups	1063.445	594	1.790		
	Total	1138.293	600			
Security of Documents	Between Groups	58.749	6	11.750	5.684	.000
	Within Groups	1227.891	594	2.067		
	Total	1286.640	600			
Loyalty Rewards	Between Groups	63.136	6	12.627	6.192	.000
	Within Groups	1211.338	594	2.039		
	Total	1274.473	600			
Advisory Services	Between Groups	68.132	6	13.626	6.675	.000
	Within Groups	1212.528	594	2.041		
	Total	1280.660	600			
Brand Image	Between Groups	114.642	6	22.928	11.021	.000
	Within Groups	1235.831	594	2.081		
	Total	1350.473	600			
Quick Response	Between Groups	53.813	6	10.763	5.707	.000
	Within Groups	1120.181	594	1.886		
	Total	1173.993	600			
Friendly Staff	Between Groups	68.266	6	13.653	6.476	.000
	Within Groups	1252.394	594	2.108		
	Total	1320.660	600			
Wide Range of Services offered	Between Groups	98.519	6	19.704	10.804	.000
	Within Groups	1083.314	594	1.824		
	Total	1181.833	600			

From (A) in the table – 6.14, the p – value for the main effect of field of study is 0.831 and therefore the effect of field of study towards the Insurance Services is not significant. It can conclude that on average, the opinions of the respondents towards the reasons for preferring the Bank Cards are the same. From (B), the p – value for High Security is 0.188; and from (C), the p – value for the interaction is 0.142; Better Pension Scheme is significant and the reason for preferring the e–Money is significant.

### **6.3. Testing of Hypothesis and Results**

#### ***6.3.1 Statistical Analysis of Impact of e–Money on the Selected Bank Customers and to Find out their Financial Behaviour***

The researcher personally collected data from a total of 600 respondents in which the selected e–Money users of both Public Sector Banks and Private Sector Banks are considered. The questionnaire was personally administered to all of them. Clear-cut instructions were given to fill up the responses to the items in the tool. Respondents were assured that the information that they share will be used for academic research purpose only and will be kept confidential. After collection of questionnaires, data was entered and systematically used for further analysis. The questionnaire initially had about 62 items capturing the data on a five point likert scale. However, it was felt that there were too many items for statistical test to allow for appropriate statistical analysis, and hence it was decided to drop certain items. Accordingly, on judgmental analysis, pair of items with same underlying meaning was chosen and dropped.

In addition, those items with lesser importance to analysis were dropped based on researcher judgement. Next, for those items where in more than 78 per cent of responses favouring either “Agree” or “Strongly Agree” was not considered. This is due to skewness [Non – Uniformity] of responses. Thus, a total of 41 items were finally included for analysis. Based on suggestions given by experts from banking sector, the questionnaire was modified and the number of items was reduced to 64 variables to be responded on a five (5) point likert scale. Then, a pilot study was done in which the questionnaire was tried out on a sample of 50 e–Money users of both private and public banks. The reliability and the validity of the questionnaire were thus established.

The questionnaire consisted of 62 items/questions. No reverse scoring item is given in the questionnaire. The scoring was on a five point Likert scale from one (1) to five (5).

For a response Level of Influence or Impact – the scoring was one (1), the response for Not at all Influential – the scoring was two (2), Slightly Influential– the scoring was three (3), Somewhat Influence – the scoring was four (4), Very Influential and Extremely Influential–the scoring was five (5). Whereas the responses for “Strongly Agree, the scoring was five (5), for the response of 'Agree' the scoring was four (4), for the response of 'Neutral' the scoring was three, for the response of 'Agree' the scoring was two (2), for the response of 'Strongly Agree' the scoring was one (1). On the other hand, for few items, the likert scale scoring is: for the response of “Not at all satisfied, the scoring was one (1), for the response of 'Moderately Satisfied' the scoring was two, for the response of 'Can't Say' the scoring was three (3), for the response of 'Satisfied' the scoring was four (4), for the response of 'Very Much Satisfied' the scoring was five (5).

Data Reduction Technique – Factor Analysis - Factor analysis are of two forms; Exploratory factor analysis which tries to find the nature of the constructs influencing a set of responses and Confirmatory Factor Analysis which tests whether a specified set of constructs is influencing responses in a predicted way (De Coster, 1998, p.1). In present study, the Confirmatory Factor Analysis is used, as already the number of dimensions is decided. Confirmatory Factor Analysis (CFA) - As pointed out earlier, by using the Confirmatory Factor Analysis (CFA) with the number of dimensions, it is possible to place substantively meaningful constraints on the factor model. Researchers can specify the number of factors or set the effect of one latent variable on observed variables to particular values. CFA allows researchers to test hypothesis about a particular factor structure (e.g., factor loading between the first factor and first observed variable is zero). Unlike Exploratory factor Analysis (EFA), CFA produces many goodness – of – fit measures to evaluate the model but do not calculate factor scores.

The measurement model, giving relationships between latent variables and observed variables, aims to provide reliability and validity based on these variables. A Confirmatory Factor Analysis (CFA) using AMOS 20.0 was conducted to test the measurement model. It is necessary to test that the measurement model has a satisfactory level of validity and reliability before testing for a significant relationship in the general regression model (Fornell & Larcker, 1981; Ifinedo, 2006). With this background, a CFA has been carried out and presented below.

### **6.3.2. Testing of Hypothesis – I**

**H<sub>1</sub>:** The changes in the duration of holdings of *e-Money* are significantly influenced by socio – cultural, psychological, economic and financial aspects.

### **CFA for Socio Cultural Dimension**

Firstly, Confirmatory Factor Analysis (CFA) was conducted for the items for each unobserved or latent variable (unobserved) in CFA. Accordingly, four factors or components have eigenvalues more than one are considered for testing the propositions mentioned above. Based on the underlying meaning of the item, the first component (comprising of three items) could be termed as Digital Money Lifestyle (DMLS), the second factor (comprising of six items) as Financial Behaviour of e-Money users (FBeM), third factor (comprising of four items) as Traditional Dominance (TD) and Fourth factor (comprising of three items) as Ethnic Fellow feeling (EFF).

**H<sub>1a</sub>** : *Digital Money Lifestyle (DMLS)*”, of cultural dimension has significant impact on usage of *e-Money*;

**H<sub>2a</sub>** : *Financial Behaviour of e-Money users (FBeM)*”, of cultural dimension has significant impact on usage of *e-Money*;

**H<sub>3a</sub>** : *Traditional Dominance (TD)* of cultural dimension has significant impact on usage of *e-Money*; and

**H<sub>4a</sub>** : *Ethnic Fellow feeling (EFF)*” of cultural dimension has significant impact on usage of *e-Money*;

Table 6.15: Measurement of Instruments

<b>Digital Money Lifestyle (DMLS)</b>		
DMLS1	:	Affect Family Relationship
DMLS2	:	Forcing to Disclose the Password
DMLS3	:	Increases the Credit Purchases
<b>Financial Behaviour of e-Money users (FBeM)</b>		
FBeM1	:	Pride and Vanity
FBeM2	:	Social Diversity, Assets and Livelihood
FBeM3	:	Affects the spouse relationship
FBeM4	:	Increase the Spending habits
<b>Traditional Dominance (TD)</b>		
TD1	:	Increases the Cultural Freedom
TD2	:	Privacy as the control of Personal Identification Number (PIN)
TD3	:	User – Centered perspectives on social security
TD4	:	Effects of Globalisation on Macro – Economic Balances
<b>Ethnic Fellow feeling (EFF)</b>		
EFF1	:	Increases Socio – Culture Affinity
EFF2	:	Change in Perception with the cultural resemblances
EFF3	:	Strengthening civil society to enhance accountability of service
<b>Overall Impact</b>		
eM1	:	Felt that there is negative impact on social life style while using <i>e-Money</i>
eM2	:	Felt that with the increase in usage of <i>Digital Money</i> , there is force in terms of cultural, economic and psychological change in traditional banking systems
eM3	:	Feel that the satisfied Cultural, Economical and Psychological values have increased withholding of <i>e-Money</i> in their routine life styles

Table 6.16: (a) Reliability and Item Loadings Constructs

Measured Variables	Items	Standardized Loadings	Composite Reliability	Average Variance Extracted
<b>Digital Money Life Style (DMLS)</b>	DMLS1	0.5821	0.835	0.642
	DMLS2	0.8632		
	DMLS3	0.5688		
<b>Financial Behaviour of e-Money users (FBeM)</b>	FBeM1	0.233	0.682	0.522
	FBeM2	0.396		
	FBeM3	1.183		
	FBeM4	0.158		
<b>Traditional Dominance (TD)</b>	TD1	0.388	0.713	0.234
	TD2	0.411		
	TD3	0.586		
	TD4	0.389		
<b>Ethnic Fellow feeling (EFF)</b>	EFF1	0.526	0.633	0.456
	EFF2	0.610		
	EFF3	0.342		
<b>Overall Impact (eM) / (eMSC)</b>	eMSC1	0.516	0.724	0.349
	eMSC2	0.327		
	eMSC3	0.566		

Table 6.17(a): Correlation between the Factors

Measured Variables	(1) DMLS	(2) FBeM	(3) TD	(4) EFF	(5) eM
Digital Money Life Style (DMLS)	1.000				
Financial Behaviour of e-Money users (FBeM)	0.399*	1.000			
Traditional Dominance (TD)	0.083	0.188*	1.000		
Ethnic Fellow feeling (EFF)	0.086*	0.283*	0.132*	1.000	
Overall Impact (eM) / (eMSC)	0.012	0.058	0.068	-0.016	.000

\* Significant at 5 % level.

### **Construct Reliability (CR)**

Composite reliability was used to measure the reliability of a construct in the measurement model. CR offers a more retrospective approach of overall reliability and estimates consistency of the construct itself including the stability and equivalence of the construct (Hair, Black, Babin, Anderson, and Tatham, 2010). The formula to calculate CR is  $(\sum \text{standardized loading})^2 / (\sum \text{standardized loading})^2 + \sum \epsilon$  (where  $\epsilon$  = error variance and  $\sum$  is summation). A value of 0.70 or greater is deemed to be indicative of good scale reliability (Hair et al., 2010). It is represented the result of the calculated composite's reliability to support construct reliability. The reading of composite reliability of all latent variables is close to 0.70 and suggests that all latent variables have good reliability.

The test of the structural model was performed using SEM in order to examine the hypothesized conceptual framework by performing a simultaneous test. The goodness – of – fit for the model was met, Chi – Square/df = 3.863, CFI = 0.899, GFI = 0.824, AGFI = 0.807,

NFI = 0.900 and RMSEA = 0.040. The overall values provided evidence of a good model fit. All of the model-fit indices exceed the respective common acceptance levels suggested by previous research, following the suggested cut – off value, demonstrating that the model exhibited a good fit with the data collected. Thus it was possible to proceed to examine the path coefficients.

Table 6.18: (a) Goodness – of – fit Indices for Structural Model

Fit Indices	Accepted Value	Model Value
<b>Absolute Fit Measures</b>		
$\chi^2$ (Chi-square)		430.94
df (Degrees of Freedom)		149
Chi-square/df ( $\chi^2/df$ )	< 3	3.863
GFI (Goodness of Fit Index)	> 0.9	0.824
RMSEA (Root Mean Square Error of Approximation)	< 0.10	0.040
<b>Incremental Fit Measures</b>		
AGFI (Adjusted Goodness of Fit Index)	> 0.80	0.804
NFI (Normed Fit Index)	> 0.90	0.900
CFI (Comparative Fit Index)	> 0.90	0.899
IFI (Incremental Fit Index)	> 0.90	0.870
RFI (Relative Fit Index)	> 0.90	0.861
<b>Parsimony Fit Measures</b>		
PCFI (Parsimony Comparative of Fit Index)	> 0.50	0.623
PNFI (Parsimony Normed Fit Index)	> 0.50	0.801

Properties of the causal paths for the structural model (standardized path coefficients ( $\beta$ ), standard error, and hypotheses result) are signified. The square multiple correlations for the structural equations index connotes that the predictors **Adverse Impact on Digital Money Life Style, Social Diversity and Spending Behaviour, Cultural Sovereignty and Cultural Affinity** have together explained only 14.6 per cent of the variance in Cultural Impact.

Table 6.19: (a) Summary of Hypotheses Testing Results

Path		Estimate ( $\beta$ )	S.E.	C.R.	p	Results
Cultural Impact (H <sub>1</sub> )	<-- DMLS	-0.089	0.072	-1.236	0.263	Not Supported
Cultural Impact (H <sub>2</sub> )	<-- FBeM	0.211	0.311	1.888	0.053*	Supported
Cultural Impact (H <sub>3</sub> )	<-- TD	0.51	0.121	.062	0.863	Not Supported
Cultural Impact (H <sub>4</sub> )	<-- EFF	-0.076	0.132	-1.023	0.342	Not Supported
Overall eM on SC	<-- Socio – Culture	0.862	0.191	3.726	0.000*	Supported

Note:  $\beta$  = standardised beta coefficients; S.E. = standard error; C.R. = critical ratio; \* $p < 0.05$

Hypotheses H<sub>1a</sub>, H<sub>2a</sub>, H<sub>3a</sub> and H<sub>4a</sub> postulate the associations between cultural impact with the *Digital Money* and four predictors of culture dimension namely Digital Money Lifestyle (DMLS), Traditional Dominance (TD), and Ethnic Fellow feeling (EFF). As evident that, cultural impact is not significantly ( $p > 0.05$ ) influenced by any of the predictors of cultural dimensions except for one predictor namely **Social Diversity and Spending** ( $\beta_2 = 0.146$ ) which had significant cultural impact on usage of *e-Money* at 5 per cent level of significance.

## CFA for Economic Dimension

Similar to the cultural impact dimension, the economic dimension has also been derived using CFA and the grouping of items is presented and mentioned below. Based on the underlying meaning of each item, the first component (comprising of three items) is termed as Impact on Financial Budget (IoFB), the second factor (comprising of four items) as Inadequacy of Reserves (IoR), third factor (comprising of four items) as Financial Depression (FD) and fourth factor (comprising of four items) as Consumption Habit (CH). The measurement model is depicted.

**H<sub>1b</sub>** : **Impact on Financial Budget (IoFB)** of Economic dimension has significant impact on usage of *e-Money*.

**H<sub>2b</sub>** : **Inadequacy of Reserves (IoR)** of Economic dimension has significant impact on usage of *e-Money*.

**H<sub>3b</sub>** : **Fiscal Depression (FD)** of Economic dimension has Significant impact on usage of *e-Money*.

**H<sub>4b</sub>** : **Consumption Habit (CH)** of Economic dimension has significant impact on usage of *e-Money*.

Table 6.20: Measurement of Instruments of Economic (Financial Aspects) Dimension

<b>Impact on Financial Budget (IoB)</b>	
IoFB1	: <i>e-Money</i> transaction in country over cash transaction will help to curb black Money circulation in economy
IoFB 2	: In future the <i>e-Money</i> penetrations will be more in the society
IoFB 3	: The <i>e-Money</i> will affect the economy and growth of the nation
<b>Inadequacy of Reserves (IoR)</b>	
IoR1	: Due to lack of funds the card holders may not be able to utilize their <i>e-Money</i> services effectively provided by the banks
IoR 2	: The scarcity of funds is a major problem to the <i>e-Money</i> holders
IoR 3	: The scarcity of <i>e-Money</i> among the customers affects the economic development
IoR 4	: The economic development of the <i>e-Money</i> affects the financial inclusion of the country
<b>Fiscal Depression (FD)</b>	
FD1	: Thinking that the turndown value of economic affect the policy makers in designing the cards to the bank customers
FD2	: The Economic recession leads to the financial problems among the customers
FD3	: The unemployment affecting the purchasing power of the cardholders
FD4	: Felt that unemployment leads to difficulty in getting cards and find complicity in using <i>Electronic Money</i>
<b>Consumption Habits (CH)</b>	
CH1	: Due to lack of saving habits among the card holders leads to the difficulties in possession and usages of cards
CH2	: Feeling that the consumption pattern changes if you use the <i>e-Money</i> frequently
CH3	: Thinking and the consumption of the different cards lead to improve in your economic status
CH4	: Feeling of skillfulness in performing tasks and perception of impacting work outcomes in employees lead to high level of commitment of employees with organization
<b>Overall Impact (M)</b>	
eM1	: Felt that there would be negative impact on social life style using <i>Digital Money</i>
eM2	: Felt that with increase in usage of electronic money, there is an impact of change in traditional banking
eM3	: Felt that the satisfaction of Cultural, Economical and Psychological values has increased with holding of <i>e-Money</i>

Table 6.21: (b) Reliability and Item Loadings Constructs

Measured Variables	Items	Standardized Loadings	Composite Reliability	Average Variance Extracted
Impact on Financial Budget (IoFB)	IoB1	0.488	0.891	0.711
	IoB2	0.866		
	IoB3	0.783		
Inadequacy of Reserves (IoR)	IoR1	0.802	0.672	0.713
	IoR2	0.411		
	IoR3	0.886		
	IoR4	0.179		
Fiscal Depression (FD)	FD1	0.678	0.596	0.636
	FD2	0.899		
	FD3	0.512		
	FD4	0.272		
Consumption Habits (CH)	CH1	0.763	0.677	0.401
	CH2	0.813		
	CH3	0.296		
	CH4	0.444		
Overall Impact (eM) / (eMSE)	eMSE1	0.563	0.886	0.392
	eMSE2	0.292		
	eMSE3	0.569		

Table 6.22: (b) Correlation between the Factors

Measured Variables	(1) IoB	(2) IoR	(3) FD	(4) CH	(5) (eM)
Impact on Financial Budget (IoFB)	1.000				
Inadequacy of Reserves (IoR)	- 0.094*	1.000			
Fiscal Depression (FD)	0.044	0.016	1.000		
Consumption Habits (CH)	- 0.086	0.896*	0.016	1.000	
(5) Overall Impact (eM) / (eMSE)	0.052	- 0.042	- 0.045	- 0.043	1.000

### Construct Reliability

The result of the calculated composite's reliability to support constructs reliability. The reading of composite reliability of all latent variables is close to 0.70 and suggests that all latent variables have good reliability.

Table 6.23: (b) Goodness – of – fit Indices Economic Dimension (Financial Aspects)

Fit Indices	Accepted Value	Model Value
<b>Absolute Fit Measures</b>		
$\chi^2$ (Chi-square)		324.729
df (Degrees of Freedom)		136
Chi-square/df ( $\chi^2/df$ )	< 3	1.822
GFI (Goodness of Fit Index)	> 0.9	0.824
RMSEA (Root Mean Square Error of Approximation)	< 0.10	0.043
<b>Incremental Fit Measures</b>		
AGFI (Adjusted Goodness of Fit Index)	> 0.80	0.866
NFI (Normed Fit Index)	> 0.90	0.835
CFI (Comparative Fit Index)	> 0.90	0.912
IFI (Incremental Fit Index)	> 0.90	0.932
RFI (Relative Fit Index)	> 0.90	0.898
<b>Parsimony Fit Measures</b>		
PCFI (Parsimony Comparative of Fit Index)	> 0.50	0.547
PNFI (Parsimony Normed Fit Index)	> 0.50	0.522

The test of the structural model was performed using SEM in order to examine the hypothesized conceptual framework by performing a simultaneous test. It is depicted from the above table that the goodness - of - fit for the model was met, Chi - square/df = 1.822, CFI = 0.912, GFI = 0.824, AGFI = 0.866, NFI = 0.835 and RMSEA = 0.043.

The overall values provided evidence of a good model fit. All of the model-fit indices exceed the respective common acceptance levels suggested by previous research, following the suggested cut - off value, demonstrating that the model exhibited a good fit with the data collected. Thus it was possible to proceed to examine the path coefficients.

Properties of the causal paths for the structural model (standardized path coefficients ( $\beta$ ), standard error, and hypotheses result) are signified. The square multiple correlation for the structural equations index connotes that the predictors Impact on Financial Budget (IoFB), Inadequacy of Reserves (IoR), Fiscal Depression (FD) and Consumption Habits (CH) have together explained only 13.9 per cent of the variance in Economic (Financial aspects) Impact.

Table 6.24: Summary of Hypotheses Testing Results

Path		Estimate ( $\beta$ )	S.E.	C.R.	<i>p</i>	Results
Economic Impact	<--- IoFB	0.029	.039	.396	0.599	Not Supported
Economic Impact	<--- IoR	0.399	.632	.069	0.899	Not Supported
Economic Impact	<--- FD	-0.083	.454	-1.233	0.304	Not Supported
Economic Impact	<--- CH	0.086	.396	1.396	0.183	Not Supported
<i>eM</i> on SE	<--- Socio - Economic	0.443	.039	.422	0.593	Not Supported

Note:  $\beta$  = standardised beta coefficients; S.E. = standard error; C.R. = critical ratio; \**p* < 0.05

As evident from above, Economic impact is not significantly (*p*>0.05) influenced by any of the Predictors of Economic dimensions (Financial aspects) on usage of *e-Money*. All in all, Hypothesis H<sub>1b</sub>, H<sub>2b</sub>, H<sub>3b</sub> and H<sub>4b</sub> targeting the Economic and financial dimension, which then impacts on usage of *Digital Money*. Hence, the proposed hypothesis is not supported, *p* > 0.05.

### **Psychological Dimension**

Similar to the Economic impact dimension, the psychological dimension has also been derived using CFA and the grouping of items is presented in the study. Based on the underlying meaning of each item, the first component (comprising of four items) is termed as Self- Induced Collective Situation (SICS), the second factor (comprising of three items) as Digital Money Security and Verification Issues (DMSVI), third factor (comprising of four items) as Authority of the Digital Money users (AeMU).

**H<sub>1c</sub> : Self- Induced Collective Situation (SICS),)** of Psychological dimension has significant impact on usage of *e-Money*.

**H<sub>2c</sub>** : **Security and Verification Issues (SVI)** of Psychological dimension has significant impact on usage of *e-Money*.

**H<sub>3c</sub>** : **Authority of the Electronic Money Users (AeMU)** of Psychological dimension has significant impact on usage of *e-Money*.

Table 6.25: Measurement of Instruments of Psychological Dimension

**Self- Induced Collective Situation (SICS)**

**SICS1** : Due to the low level income, it is not able to use your *e-Money* effectively to the maximum benefits in you routine transactions and activities and it will affect you mind set

**SICS2** : The usage of *Digital Money* increase you social status

**SICS3** : Are you completely satisfied with the use of the *Digital Money*

**SICS4** : The thinking pattern will be change and in turn their life style

**Digital Money Security and Verification Issues (DMSVI)**

**DMSVI1**: The low level verification regarding the usages of the cards lead to security problems

**DMSVI2** : The *e-Money* always will be a problem with respect to the handling the credit or debit balances

**DMSVI3** : The *e-Money* accesses a customer's financial resources

**Authority of the Electronic Money Users (AeMU)**

**AeMU1** : The cardholders' authority and attention will change when you possess it

**AeMU2** : The need for alters to your mail account, mobiles and intimation about the usages alters need separate concentrations on your *Digital Money*

**AeMU3** : The customers felt that the using of *e- Money* is unethical

**AeMU4** : The advertisement on Television convinced by direct selling associates and benefits offered by credit card agency affect the customers

Table 6.26: (c) Reliability and Item Loadings Constructs

Measured Variables	Items	Standardized Loadings	Composite Reliability	Average Variance Extracted
<b>Self- Induced Collective Situation (SICS)</b>	SICS1	0.511	0.710	0.563
	SICS2	0.823		
	SICS3	0.432		
	SICS4	0.436		
<b>Digital Money Security and Verification Issues (SVI)</b>	DMSVI1	0.453	0.534	0.454
	DMSVI2	0.399		
	DMSVI3	0.403		
<b>Authority of the Electronic Money Users (eMU)</b>	AeMU1	0.489	0.572	0.496
	AeMU2	0.463		
	AeMU3	0.411		
	AeMU4	0.396		
<b>Overall Impact (eM) / (eMU)</b>	eMU1	0.489	0.605	0.489
	eMU2	0.396		
	eMU3	0.613		

Table 6.27: (c) Correlation between the Factors

Measured Variables	(1) SICS	(2) DMSVI	(3) AeMU	(4) eMU
Self- Induced Collective Situation (SICS)	1.000			
Digital Money Security and Verification Issues (DMSVI)	- 0.038	1.000		
Authority of the Electronic Money holders (AeMU)	- 0.033	- 0.056	1.000	
Overall Impact (M) / (eMU)	- 0.028	0.023	0.014	1.000

### **Construct Reliability**

The result of the calculated composite's reliability to support constructs reliability. The reading of composite reliability of all latent variables is less than 0.70 and suggests that all latent variables have no good reliability.

### **The Structural Model**

The test of the structural model was performed using SEM in order to examine the hypothesized conceptual framework by performing a simultaneous test.

Table 6.28: Goodness – of – Fit Indices– Psychological Dimension

Fit Indices	Accepted Value	Model Value
<b>Absolute Fit Measures</b>		
$\chi^2$ (Chi-square)		81.689
df (Degrees of Freedom)		86
Chi-square/df ( $\chi^2/df$ )	< 3	1.086
GFI (Goodness of Fit Index)	> 0.9	0.889
RMSEA (Root Mean Square Error of Approximation)	< 0.10	0.0436
<b>Incremental Fit Measures</b>		
AGFI (Adjusted Goodness of Fit Index)	> 0.80	0.877
NFI (Normed Fit Index)	> 0.90	0.823
CFI (Comparative Fit Index)	> 0.90	0.983
IFI (Incremental Fit Index)	> 0.90	0.988
RFI (Relative Fit Index)	> 0.90	0.788
<b>Parsimony Fit Measures</b>		
PCFI (Parsimony Comparative of Fit Index)	> 0.50	0.812
PNFI (Parsimony Normed Fit Index)	> 0.50	0.682

From the above it is depicted that the goodness – of – fit for the model was met, Chi-square/df = 1.086, CFI = 0.983, GFI = 0.889, AGFI = 0.877, NFI = 0.823 and RMSEA = 0.038. The overall values provided evidence of a good model fit. All of the model – fit indices exceed the respective common acceptance levels suggested by previous research, following the suggested cut – off value, demonstrating that the model exhibited a good fit with the data collected. Thus it was possible to proceed to examine the path coefficients.

Properties of the causal paths for the structural model (standardized path coefficients ( $\beta$ ), standard error, and hypotheses result) are signified in Table – 6.34. The square multiple correlation for the structural equations index connotes that the predictors Self- Induced Collective Situation (SICS), Digital Money Security and Verification Issues (DMSVI), Authority of the Digital Money users (AeMU) have together explained only 11.7 per cent of the variance in Psychological Impact.

Table 6.29: Summary of Hypotheses Testing Results

Path		Estimate ( $\beta$ )	S.E.	C.R.	<i>p</i>	Results
Psychological Impact	<--- SICS	- 0.086	.118	- 1.052	0.322	Not Supported
Psychological Impact	<--- DMSVI	0.040	.434	.377	0.748	Not Supported
Psychological Impact	<--- AeMU	0.040	.322	.450	0.742	Not Supported
eM on PF	<--- <b>Psychological factors</b>	0.578	.269	3.006	0.003*	Supported

Note:  $\beta$  = standardised beta coefficients; S.E. = standard error; C.R. = critical ratio; \* $p < 0.05$

As evidenced that, Psychological impact is not significantly ( $p > 0.05$ ) influenced by any of the Predictors of Psychological dimensions on usage of *e-Money*. All in all, hypothesis H<sub>1c</sub>, H<sub>2c</sub> and H<sub>3c</sub> targeting the Psychological Dimension, which then impacts on usage of *e-Money*. Hence, the proposed hypothesis is not supported,  $p > 0.05$ .

### 6.3.3 Testing of Hypothesis – II

**H<sub>2</sub>:** The intensity of *e-Money* holders' satisfaction with their transactions is different in terms of aforesaid four dimensions in the study;

#### Ordinal Logistic Regression

The model estimates the probability that the dependent variable be one (Y=1) i.e. the probability that a person finds a job through informal method. Since logit coefficients are in log – odd units, they cannot be read as regular Ordinal Least Square (OLS) coefficients. Hence, the interpretations are based on the odds ratio. The odds ratio (OR) represent the odds of Y=1 when X increases by one unit. These are the exponent (logit coefficient). If the OR>1, then the odds that Y=1 increases. If the OR < 1, then the odd that Y=1 decreases. The sign of the logit coefficient corroborates that. A negative sign of the coefficient implies an odds ratio of less than 1 whereas a positive sign implies an odds ratio of greater than one.

Table 6.30: Ordinal Logit Regression Results – Dependent Variables – Satisfaction Level

Independent variable	Co – efficient (B)	Odds Ratio	Robust Std. Error	Z	p – value
Age	0.139	1.143	0.081	1.99	0.059*
Income	0.089	1.084	0.064	1.46	0.179
AeMU	- 0.178	0.982	0.067	-0.26	0.793
CH	0.124	1.132	0.046	2.68	0.007*
DMLS	0.035	1.036	0.028	1.23	0.217
DMSVI	- 0.756	0.927	0.087	-0.87	0.386
EFF	0.041	1.042	0.033	1.25	0.210
FBeM	- 0.049	0.952	0.025	-1.90	0.057**
FD	- 0.633	0.938	0.052	-1.20	0.229
IoFB	0.073	1.076	0.029	2.48	0.013*
IoR	- 0.059	0.942	0.059	-1.01	0.311
SICS	- 0.173	0.982	0.032	-0.53	0.598
TD	0.027	1.027	0.026	1.01	0.311
<b>Intercept</b>					
Cut_1	- 0.239	-	0.988	-	-
Cut_2	2.099	-	0.986	-	-
Likelihood = -0.603, N =600, Psuedo R <sup>2</sup> = 0.186, chi-square= 32.45 p=value=0.02					

Source: Survey Data, 2018 – 2020, N = 600

\* Significant at 5% level. \*\* Significant at 10 % level.

### ***Results and Interpretation***

Among the socio cultural dimension variables, it can be observed that the logit coefficient for DMLS is negative and the odds ratio is lesser than one. This implies that items under DMLS have a lesser likelihood of having changes in the level of satisfaction. In other words, it means that with one unit increase in SDS dimension score (the scale rating increasing from one to two or two to three and so on), the odds of ***not at all satisfied*** versus the ***satisfied to some extent*** and ***completely satisfied*** combined customers will decrease by a factor of 0.952 given that all other factors are held constant. Likewise, the odds of the combined of ***Satisfaction to some extent*** and ***completely satisfied*** versus ***not at all satisfied*** will decrease by a factor of 0.952. The result is statistically significant at 5 per cent level. This perhaps reflects the pessimistic attitude of low level verification regarding the usages of the cards lead to security, the problem of handling the digital money or cash balances and also the psychological fear that digital money and its accesses a customer's financial resources. In essence, the probability of a new customer having *Digital Money* with complete satisfaction is still at a lower level. The negative Perception about the *Digital Money* not being adequately insulated against fraud,

against the handling and also against any illegal accesses towards account still haunt the customers.

Another statistically significant factor that is having influence on the levels of customers' satisfaction is Impact on Economy (IoE) dimension. It can be seen that the logit coefficient for IoE is positive and the odds ratio is greater than one. This implies that items under IoE have a higher likelihood of having changes in the level of satisfaction. In other words, it means that with one unit increase in IoE dimension score (the scale rating increasing from one to two or two to three and so on), the odds of **not at all satisfied** versus the **satisfied to some extent** and **completely satisfied** combined customers will increase by a factor of 1.076 given that all other factors are held constant. Likewise, the odds of the combined of **Satisfaction to some extent** and **completely satisfied** versus **not at all satisfied** will increase by a factor of 1.076. This dimension seem to be well accepted by customers that more digital money transaction in country over cash transaction will help to curb black money circulation in economy and also the perception of penetration of electronic cards in society more in future. This dimension is statistically significant at 5 per cent level. In simple words, there is a statistical evidence to say that to conclude that higher usage of Digital cash, there is likelihood of curb on black money circulation in the economy and other factors threatening the economy.

Similarly, another significant factor that is having influence on the levels of customers' satisfaction is Consumption Habit (CH). It can be seen that the logit coefficient for CH is positive and the odds ratio is greater than one. This implies that items under CH have a higher likelihood of having changes in the level of satisfaction. In other words, it means that with one unit increase in CH dimension score (the scale rating increasing from one to two or two to three and so on), the odds of **not at all satisfied** versus the **satisfied to some extent** and **completely satisfied** combined customers will increase by a factor of 1.132 (See Table – 6.35) given that all other factors are held constant. In essence, the consumption pattern in terms of usage more frequently and also consumption of different cards leading to improve of economic status has an influence on positive side of the satisfaction level.

Finally, with respect to age, the odds of **not at all satisfied** versus the **satisfied to some extent** and **completely satisfied** combined customers will increase by a factor of 1.152 with every unit increase in age as seen by the positive sign of the coefficient and the odds ratio which is greater than one. A one unit increase in age is estimated to increase the likelihood of **not at all satisfied** versus the **satisfied to some extent** and **completely satisfied** combined by a factor of 1.152. The result is statistically significant at 5 per cent level.

Table 6.31: Ordinal Logit Regression Results – Dependent Variable – Duration of Possession/users of Electronic Money

Independent variable	Co-efficient (B)	Odds Ratio	Robust Std. Error	Z	p-value
Age	0.018	1.022	0.086	0.47	0.822
Income	-0.006	0.999	0.062	-0.09	0.948
AeMU	0.013	1.051	0.048	1.04	0.297
CH	0.050	0.997	0.035	-0.07	0.945
DMLS	0.005	0.902	0.035	-2.88	0.004*
DMSVI	0.004	1.004	0.057	0.08	0.936
EFF	-0.002	1.036	0.029	1.20	0.228
FBeM	0.023	1.004	0.089	0.05	0.962
FD	0.004	1.001	0.029	0.32	0.749
IoFB	0.035	1.005	0.028	0.21	0.836
IoR	-0.032	1.023	0.026	0.89	0.376
SICS	-0.102	0.968	0.061	-0.53	0.598
TD	0.009	1.014	0.063	0.22	0.827
Intercept					
Cut_1	-0.188	-	1.146	-	-
Cut_2	3.455	-	1.151	-	-
Likelihood = -0.603, N =600, Psuedo R <sup>2</sup> = 0.175, chi-square= 28.33 p=value=0.02					

Source: Survey Data, 2018 – 2020, N = 600

\* Significant at 5% level. \*\* Significant at 10 % level.

Among the socio – cultural dimension variables, it can be seen that the logit coefficient for **DMLS** is positive and the odds ratio is greater than one. This implies that items under DMLS have a lesser likelihood of having changes in the level of duration of possession of *e- Money*. In other words, it means that with one unit increase in DMLS dimension score (the scale rating increasing from one to two or two to three and so on), the odds of **less than one year** versus the **one to three years** and **more than three years** combined customers will increase by a factor of 0.902 given that all other factors are held constant. The result is statistically significant at 5 per cent level. Likewise, the odds of the combined of **one to three years** and **more than three years** versus **less than one year** will increase by a factor of 0.902. This dimension of adverse impact on life style (Affecting family relationship, forceful disclosure of password and increases the credit purchase) would increase with the increase in duration of possession of *e-Money* which seems to be obvious fact given the present life style of urban economy.

### 6.3.4. Testing of Hypothesis – III

**H<sub>3</sub>:** The use of *e*-Money is not risky with the influential factors of socio – cultural, economic, psychological and financial in the selected sample study;

Test of Hypothesis: There is no association between the Risk levels and the duration of possessing the electronic card holding.

Table 6.32: Association between Risk Levels and Duration of Possessing the Electronic Money

Time	Levels of Risk			Total
	High Risk	Moderate Risk	Low Risk	
Less the one year	205 (87.7)	28 (11.9)	01 (0.4)	234 (100)
One to Three year	12 (3.5)	298 (88.4)	27 (8.1)	337 (100)
More than three year	02 (6.9)	06 (20.7)	21 (72.4)	29 (100)

Source: Survey Data, 2018 – 2020, N – Number of respondents (600).

Note: [Numbers/Figures mentioned in parenthesis ( ) represents the percentages]

The customers at different levels based on their rating on risk levels it is examined, using Chi – Square ( $\chi^2$ ) statistics (589.83) the level of association between risk levels and duration of possession of Digital *Money* by the respondents. It is highlighted that level of risk levels play one of the most important roles in possession or the impact of digital money. As it can be seen while only 0.4 per cent of respondents are having of the opinion that there is low level of risk within one year of possession of digital money, this percentage is as high as 84 per cent of respondents. But, the level of risk reduces with the increase in duration of possession of Digital *Money*. Tests carried out to check association shows significant association between the variables indicating that as level of possession increases, extent of risk levels moves from higher to lower risks about *e*-Money.

### 6.3.5. Testing of Hypothesis – IV

**H<sub>4</sub>:** The priority and preferences of the *e*-*Money* strongly influence the bank customers and the value addition – measured in terms of security features provided on digital money differs with type of bank.

Test of Hypothesis: There is no significant in mean rank scores on service delivery of digital cash utility between nationalized and private banks.

Table 6.33: Descriptive Statistics on Service Delivery With Respect to Private and Public Sector

Sectors Banks			
Type of bank	N	Mean Rank	Sum of Ranks
Public Sector Bank	211	203.42	92354.00
Private Sector Bank	389	426.68	91236.00
<b>TOTAL</b>	<b>600</b>	-	-

Source: Survey Data, 2018 – 2020, N – Number of respondents (600).

Table 6.34: Mann – Whitney U test Result on Service Delivery with Respect to Private and Nationalized Banks

Test	Service of the Selected Bank
Mann – Whitney U	52164.000
Wilcoxon W	92341.000
Z – Value	-3.724
Asymp. Sig. (2 – tailed)	0.049*

Source: Survey Data, 2018 – 2020, N – Number of respondents (600).

One of the objectives of the study was to analyse the services delivery (in terms of value addition) provided by Public Sector Bank and private banks to its customers. Respondents were asked to rate the overall service delivery of banks on a scale of one to four with one being worst and four being very good. Non parametric Mann – Whitney U Test was applied to test the difference of ranking between customers holding digital Money from both private and public banks. Observing the result, the p – value (0.049) is less than the significance level (0.05). Hence, the null hypothesis would be rejected and alternative hypothesis of existence of significant (statistically) difference between private and public banks customers regarding service delivery on *e-Money*. Now, looking at the mean rank scores, it is observed that the mean rank score of public bank (mean = 203.42) is higher than private bank (mean = 426.68). Hence, it can concluded that respondents possessing electronic money of public bank are rating better as compared to their private bank counterparts in terms of service delivery.

#### 6.4. Summary

To sum up, the data and analysis presented this chapter gives clear picture of digital Money awareness among the customers of both selected public sector and private sector banks in the selected sample size. It provides a detailed insight about the *e-Money* perception, attitude, satisfaction, usages, and other problems involved in using the *e-Money*. The study also covers the *e-Money* transactions among the users, prevention of theft, fraudulent activities and the measures to be taken while using the *e-Money*. Perceptions and the impact of *e-Money* users are studied in three dimensions such as Socio – culture, Economic (Financial aspects) and Psychological. The suitable tests are applied to test the formulated hypothesis and identified to check whether the objectives are achieved or not. The socio – economic profile of the selected bank customers of Tamilnadu and Karnataka State has been presented systematically. In this present study, to test the consistency level of data the statistical tools and techniques, reliability scale has been implemented.

- (a) Interestingly, the negative impact of holding possessing *e-Money* has emerged as the first factor. In essence, it is seen that component namely "*Digital Money impact on lifestyle*" basically comprising of pessimistic attitude related questions such as affecting the family relationship, increase credit purchase, change in behaviour and attitude and so on. Thus, the inference that could be drawn is that usage or possession of *e-Money* card has not helped – at least psychologically the respondents an improved lifestyle. Perhaps, due to decision making and agenda setting, personal use of force for coercion or social constraints, the *e-Money* has been adversely affecting the family structure and relationship. It also affects the individual power between the members of the family such democratic process, group charisma, persuasion and other social factors;
- (b) Furthermore, another critical component from a pessimistic perceptive has emerged as a second component namely "*Social Diversity and Spending*". The high inter – correlation among each item within this component based on responses of sample respondents under study indicates that there is not much of positive implication of possessing the *e-Money*. The degree of social identity and personal identity is more when they use *e-Money* such as digital cash, virtual money transactions for various routine activities in their life style. In addition to it, ethnicity of culture, behaviour etc., might have resulted in more of spending rather than savings.
- (c) The affirmative related items or questions have been loaded (based on inter-correlation) with lower ranking order. In other words, the lateral component such as *Saving Habits* has been loaded as third factor, Robust Security as fourth and cultural affinity as the fifth and last factor. It could be inferred that usage of different *e-Money* of any banks, it largely sets a pattern of good cultural affinity of human activity within a society or group of customers which symbolic structures that provides a greater significance.
- (d) From statistical analysis, it is further established that pessimistic attitude of low level verification regarding the usages of the cards lead to security, the problem of handling the credit or debit balances and also the psychological fear that virtual and digital money accesses an individual financial resources still persists with customers. Although, enough steps have been taken by banking sector with regard to security features pertaining to *e-Money*, yet there is a need for the Banking Sector to build more confidence in addressing the myths or negative perception towards *e-Money*.
- (e) Likewise, the odds of the combined of ***Satisfaction to some extent*** and ***completely satisfied*** versus ***not at all satisfied*** will increase by a factor of 1.076. This dimension seem to be well accepted by customers that more *e-Money* transaction in country over cash

transaction will help to curb black money circulation in economy and also the perception of penetration of *e-Money* in society more in future. Furthermore, there is a statistical evidence to say that to conclude that higher usage of *e-Money*, there is likelihood of curb on black money circulation in the economy and other factors threatening the economy. Similarly, the consumption pattern in terms of usage more frequently and also consumption of different cards leading to improve of economic status has an influence on positive side of the satisfaction level.

## SECTION VII

### 7. Summary of Major Findings, Suggestions and Conclusion

#### 7.1. Introduction

This section reports the major findings of the study on bank customers of the select Public and Private Sector banks in the Southern Zone of Karnataka, and Tamilnadu by taking into consideration the selected bank customers those who using the Digital Money or *e*-Money.

#### 7.2. Major Findings of the Study

Major findings of the study are presented as follows.

01. The survey on *e*-Money users in the selected region indicates that out of 600 customers from banks in the selected districts, In the study, 286 (47.67 per cent) are public sector bank customers and 314 (52.33 per cent) are from Private sector bank customer out of 600 customers who possess both the debit and credit cards of selected banks in the southern region;
02. It is clearly indicated that 52.17 per cent (313) of Males are *e*-Money holders and 47.83 per cent (287) are females are *e*-Money users among the 412 selected banks in Southern zone;
03. Overall male digital money users out of 600 are 52.17 per cent and female *e*-Money user are 47.83 per cent;
04. Out of 600 customers in each selected district, 222 respondents use their *e*-Money for payment purposes and mostly prefer the their routine activities for their payment system;
05. The opinion about the *e*-Money in the present study shows that about 41.3 per cent felt that *e*-Money is flawless/correct operations, 33.3 per cent for speed of conducting operations, 35.7 per cent for easy handling, 31.0 per cent for knowledge about the products and services, 37.0 is for understanding the benefits involved in operating without any ATMs, 36.3 per cent for Skills/Positive approach towards *e*-Money and 31.3 per cent for general assessment about services and they strongly agree with this;
06. *e*-Money is the safest mode for the transaction, less time processing, convenient, loyalty rewards, quick response, brand image, advisory services, friendly staff, better network, high speed in the transactions, international presence, private banking facilities, better pension plan/schemes, and it provide security;

07. The factors influencing the customers to use the *e*-Money through the family members. The factors to choose the Bank cards and digital cash are mainly for the withdrawal purposes, easy and fast service, shopping convenience and reliability; it is evidenced that 208 (34.67 per cent) of the shopping alone which is very high when compared to dinner, travel and any other purposes; and the respondents opined that 17.86 per cent of digital Money helps the family members;
08. The customers of the selected banks in all the southern zone uses the digital Money for their routine activities is very frequently i.e. almost daily;
09. It is evidenced that, 399 customers preferred Add – on cards by the selected bank customers in the southern zone, 163 do not prefer the add-ons and 38 customers did not have any opinion out of the sample customers, out of which 304 preferred the Digital cash / *e*-Money;
10. It is a surprise that the highest cards are used by friends / relatives which account to 124 *e*-Money and 234 virtual banking transactions, next parents, major is sons or daughters, spouse and others;
11. It is evident from the present study that 320 customers are sure about their balance on the *e*-Money by the selected banks, 271 don't have balance on their digital cash and only 8 customers don't express about this;
12. In all the selected districts it is proved that *e*-Money are economical which in the present study indicates that about 313 expressed positively and 287 expressed negatively on this;
13. In the present study, it is evidenced that most of the customers are using the *e*-Money for long period, i.e., 337 customers are using them from last one to three years, 233 customers using it for less than one year and only 30 customers are using for more than three years; and at the same time it is evidenced that most of the customers are using the Digital cash for long period; say 404 customers are using from last one – three years, 160 customers using it for less than one year and only 36 customers use for more than three years;
14. From the study, it is very clear that 238 customers felt that to bear the expenses in case default bank cards, 362 did not give positive opinion on *e*-Money;
15. It is evidenced that, 326 customers are well aware of the terms and conditions of virtual money users are about 274 customers are not aware of these; and at the same point it is also found that, 232 customers are well aware of the terms and conditions of *e*-Money 368 customers are not aware of these;

16. In the selected region, it is evident that 273 customers opinion towards the service provided by the Digital Money is positive and 263 felt that is not so good and 64 have any opinion on this;
17. In the present study 278 customers use their digital cash for spending purposes and only 265 not for this purposes and rest about 57 said that nothing;
18. *e*-Money usages and the transaction will help to overcome the Black Money Problem in the Indian Economy, majority of respondents (Selected Bank Customers) opinioned in the present study. About 307 customers gave positive opinion on this and 229 said negative. Only 64 were neutral;
19. The victim of Digital Money in the study shows that 287 said it is a fact, 250 had negative impression and rest 63 had no opinion;
20. The financial loss from the usage of Digital Cash is large in number in the current scenario, it is clearly stated in the present study and the collected statistics also show the loss, i.e., about 286 customers felt that there is a loss, 259 said it is not so, but 55 customers had no opinion on these issues;
21. The customers opined that the precautionary measures to be taken for the use of *e*-Money and in case if lost, about 331 felt it is must, 183 said it is not necessary and 86 had no opinion on this issue;
22. The selected customers in the study opined that while using the Personal Identification Number (PIN) and One Time Password (OTP) should be safe and they should not disclose PIN code in wallet should be avoided and also should not disclose to the friends/family members/relatives, even in some case to spouse also for the safer side;
23. Perception towards the use of *e*-Money are highly satisfied and strongly agreed by the customers. Among them select bank customers are ranked first as the highest response on this which accounts to 168 customers;
24. The convenience and service of Digital Money users account to 26.83 per cent which indicates highest and best service provided among the selected public and private banks in the selected region; and The most reliability in their services provided is by selected public and private banks which accounts to 21.31 per cent;
25. The highest *e*-Money used for transfer of money and payment purposes, where 28.05 per cent are the customers of public banks in the study who are leading in this regard;
26. It is evidenced that 30.50 per cent of the respondents uses *e*-Money for the purchases fortnightly and daily in the current study;

27. The *e*-Money of the selected bank are taking the measures when they lose their money in online transactions;
28. Only 25 per cent of the Digital Money users opined that the use *e*-Money is moderately secured;
29. The Socio – Cultural factors such as adverse impact on life style, social diversity and spending behavior, cultural sovereignty and cultural affinity has strong influence and has impact on the usage of the *e*-Money;
30. The economic and financial dimension evidenced that it has no significant impact on the *e*-Money users the southern region. Where the impact of economy, scarcity of the fund, economic recession and consumer habits are the factors which is used to measure the economic and financial dimensions in the present study which is not all influence the customers;
31. Psychological dimensions of the *e*-Money holders in the study by using the CFA such as – Psychosomatic, common position/ emotional status, security and verification issues and authority of the *e*-Money holder have no impact;
32. It is evidenced that the use of satisfied the level of the respondent from their dimension in the study; and
33. The Digital Money holder impact with respect to the socio – cultural, economic and psychological dimensions with the duration of possession of the *e*-Money shows strong impact.
34. Banking services require a high level of customer engagement and understanding of the requirements for a quality value proposition. These factors can be sustained long-term by adopting a customer-centric business strategy;
35. The rise of *e*-Money by volume of non – cash transactions indicates customer’s behavior is changing.

▪ ***Bank – Wise Survey Results and Findings***

***(i) Public Sector Banks***

- (a) The survey result shows that majority of Digital Money users fall in the age group of 40 – 49 and 50 – 59 which accounts to 38 (23.17 per cent).
- (b) It is clearly indicated that, 92 (56.10 per cent) males and 72 (43.90 per cent) females out of 164 customers use the Digital Money and they belong to the nationalised Bank customers whereas 63 (51.64 per cent) male and 59 (48.36 per cent) female customers out of 122 customers account to the Scheduled commercial group;

- (c) It clearly found that Digital Money user are having highest qualification of Post – Graduation which account to 45 (27.44 per cent) customers and 40 (24.39 per cent) customers out of 164 are having the graduation.
- (d) Occupation wise e-Money users accounts that majority fall in the group of students which indicates 29 (17.68 per cent)
- (e) It is found that Digital Money users by income level, in public Bank, most of the customers fall in the income group of below Rs. 20,000 – Rs. 30, 000 and the number of e-Money users are 62 (37.80 per cent) and 42 (34.43 per cent) respectively;
- (f) The type of bank accounts of the selected bank customers are 89 (54.27 per cent) saving of account for their transactions;
- (g) Awareness of Digital Money users in public sector banks are from friends which accounts to 62 (37.80 per cent) customers out of 164 and 42 (34.40 per cent) saving customers; and

***(ii) Private Sector Banks***

- (a) It is evidenced that the majority of Private banks Digital Money users fall in age group of 40 – 49 which accounts to 40 (23.81 per cent) customers ;
- (b) In the selected Private Sector Banks, 99 (58.93 per cent) male and 83 (56.85 per cent) females are using the digital cash and (43.15 per cent) female customers account respectively;
- (c) It indicates that select bank had the highest Post-Graduates who are the Digital Money users, which accounts to 40 (23.81 per cent) customers;
- (d) Occupation wise Digital Money users of private bank has very less number of professionals which indicates 32 ( 19.05 per cent) out of 168 e-Money users;
- (e) The e-Money users income level fall in the income group of below Rs. 20,000 – Rs. 30,000 and the number of users are 35 (20.83 per cent);
- (f) The type of customers bank accountshows that 72 (42.86 per cent) select customers are having savings bank account out of 168 which is high when compared to other type of accounts and 59 (40.41 per cent) similar type of accounts for their transactions;
- (g) Awareness of Electronic Money users in the private sector banks are from newspapers which accounts to 40 (23.81 per cent) customers and 41 (28.08 per cent) customers;
- (h) Digital Money awareness and users are 57 (33.93 per cent) and 42 (25.00 per cent) out 99 in case of virtual banking system and 42 (28.77 per cent) and 19 (13.01 per cent).

### 7.3. Suggestions of the Study

The suggestions in the present research based on the findings and analysis made by using the statistics provided by the reports of banks in India. This is divided into two ways namely customer point of view and from the bankers point of view to make better utilisation of new banking technology products.

- (a) In the present study, it is identified that their strong impact on the use of digital money on the customers, so, it's better that from the Economic - financial dimension digital money users have ensured banking and financial institutions to meet business challenges with more vigor and confidence;
- (b) Electronic Money affects the financial risks and hence proper precautionary measures to be taken from both the bankers and the customers;
- (c) The concept of innate and inhibited risk in consumers behavior in the use of *e*-Money should be avoided and Perceived Risk as an obstacle for the application of digital cash in electronic trade should also be minimized;
- (d) Fear of crime, poverty line, rigid thinking style, damp conditions, low level of assertion, financial problems, unrealistic beliefs and expectations, bereavement, inconsiderate people, discipline and focus, alertness and concentration and many other social activities/ interest should be handled carefully while using the Electronic Money;
- (e) In case if any customers are possessing the less degree of fashion consciousness and personal financial literacy, pride and vanity, superior qualities like durability resistance to deterioration, change in behavior and attitude, increases the credit purchase and affecting the family relationships or forcing to disclose the password, in such case it should be handled carefully with the cardholders;
- (f) Encouraging more adults to use Digital Money rather than the other groups to avoid financial risks; The role of bankers in creation of awareness about the banking technology products should be enhanced;
- (g) Educating the cardholders about safety handling of the *e*-Money users while doing shopping, online purchase or credit purchases is necessary; To create awareness about the cards swallow problems and trust in using virtual banking services through the digitalized system;
- (h) Measures to identify the theft or damage while in use of Digital Money are instructing the customers to enable high security through the accounts by banks and providing the knowledge about the cyber law among the *e*-Money users.

Electronic Money is the major tendency of clearings development in bank activity. There are about billions of Digital cash all over the world now. For clients it is convenience, reliability, economy of time and cash – out. Indian banking industry, today is in the midst of an IT revolution. A combination of regulatory and competitive reasons has led to increasing importance of total banking automation in the Indian Banking Industry. The following are the few other suggestions based on the statistics and informations provided by the bank reports in India are mentoned below.

- (a) To develop and ratify the concept of e-Payment technologies development. It allows making this process as organized, uniform system or the program of cooperation between all banks, engaged in electronic business;
- (b) To develop a line of laws on the confidential information that would serve as protection for the investor and as additional argument for the benefit of payment cards as a way of non-cash payments, and also would secure other participants of electronic money circulation;
- (c) Set up an Electronic Banking Group to provide guiding principles for prudent risk management of e-banking activities; and
- (d) Convert branches into boutiques catering to the requirements of clients and re-engineer the functions of branch banking using technology and delivery channels.

It is rightly observed in the study; all the customers have a role to play in minimizing the cardholder's problems and e-Payment frauds. The results were identified by the research are listed below.

#### ***(i) Suggestions for Customers***

- Customers must ensure that they are not careless about their Personal Identification Number and must not release their cards or delegate anyone to ATM machine.
- To protect themselves from shoulder surfing, customers must ensure that those who are on the queue for similar transaction are far away from where they are doing transaction with ATM machine.

#### ***(ii) Suggestions for Banks***

- Creating a designated time for the e-Money users. The customers can choose times for using smart phone with specific payment mode and technologies, thus reduce the hacking, cybercrime and payment failure, network problem and security issues;

- The Digital Money help to track the transaction records perfectly and timely with the implementation of advanced technology that will reduce the difficult to forge and incorrect documentation of transactions of customers;
- Banks can monitor the Digital Money continuously by installing closed-circuit cameras in smart phones and other devices;

#### **7.4. Scope for Future Research in the Area of the Present Study**

The following area are suggested for further research.

- (a) The study can be further elaborated with bigger sample group to look into the Impact of Digital Cash on the usages of bank customers focusing on different zones of India;
- (b) New Banking Frontiers – IT Innovation, Green Banking, Information Security and Big Data to drive the next phase of growth and efficiency;
- (c) Mobile Payment based on Near Field Technology (NFC) to counter stiff competition from mobile phone companies whose money transfer and mobile payments services have gained wide consumer acceptance;
- (d) The Digital Ecosystem Bank, where Mobile Bank become the center of an ecosystem powered by Mobile Selling Financial and Non-Financial Services. and
- (e) Virtual Wallets / E – Wallets or Digital Wallet users and its importance by the Electronic Money holders.

#### **7.5. Conclusion**

On the whole, it is observed that every customer is selective in using the Digital Money users and banking services in the present days. The new banking technology products and its e – banking has great impact and possibilities of fraudulent activities in the current scenario, but that would be dependent on the extent to which the cardholders use, and their perception towards electronic money, e-payment frauds can be controlled. There are many other products that are virtual banking system related that have been developed in developed countries. The Digital Money fraud – related problems must be solved. Such products are electronic fund transfer at the point of sale and electronic card products.

This study presents valuable empirical evidences of the impact of *e*-Money among the Selected Bank Customers of both public and private sector banks in the southern region of India. It also provides the Digital banking service perception in Indian banking system, satisfaction level, and impact of electronic money from different dimensions such as socio-cultural, economical, financial and psychological factors. The private sector banks are providing more satisfactory usage of Digital Money and the virtual banking service as

compared to public sector banks in the study area. However, empirical evidences show that the impact of the e-Money towards the selected respondents and their perception about efficiency, security and responsiveness, cost effectiveness, problem handling and compensation and Contact service related to Digital Banking service is low in both public and private sector banks. Hence, both public and private sector bank's should to enhance customers' or cardholders satisfaction and loyalty to their level best. Cost effectiveness is one of the most important service quality dimensions which is adversely affecting on customers' satisfaction. Therefore bank should reduce charges related e-Money service and credit card usages to provide cost effective Digital banking service to their customers.

Establishing Electronic Money history which is very important to the bank customers in the present changing environment where the customers has to upgrade themselves in adopting towards the using of new banking technology products. By understanding Digital Money and its payment practices, customers may make sound managerial and financial decisions when applying for, and using, their e-Money users. By better understanding the debit cards uses, the credit card payment practices among the public and private sector banks, Customer's affairs practitioners may identify groups that are at higher risk to be affected by some of the dangers of credit cards and perceptions towards the debit cards. It also made a remarkable change among the users of the electronic money particularly with respect to the Digital cash transaction with the companies may benefit from this research, as well.

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