CHAPTER 1
INTRODUCTION AND RESEARCH METHODOLOGY

1.1 Introduction

‘Commerce’ is the trading of ‘something’ of value between two entities. That ‘something’ may be goods, services, information, money, or anything else the two entities consider to have value.¹ Trading was the main facility in earlier times with barter facility for goods and services. Later, currency was introduced as standardized money to facilitate a wider exchange of goods and services. Today’s era is an information era and the world is passing through an Information revolution. One of the profound consequences of the information revolution is its influence on how economic value is created and extracted. Today the information is more easily accessed, absorbed, arranged and is priced in different ways.

Markets are expanding from regional to global. Knowledge is replacing land, labour and capital as the key value driver. Intelligent networks and virtual spaces are limiting the need for surface and air travel. With the technological progression particularly in computers and Internet field has led to the birth of electronic commerce (e-commerce) which enabled the business processes to be more simplified, efficient, quick and accurate resulting in improved productivity with higher satisfaction level to the customers. Also, improved processes resulted in reduced cost of production and transaction cost and therefore the profitability of businesses increased manifolds. The emerging wireless and mobile networks have added another dimension of mobility and extended e-commerce to another research and application subject called Mobile Commerce popularly known as M-Commerce.

¹ E-Commerce and M-Commerce technologies: by P. Candace Deans, University of Richmond, USA
**M-Commerce** is the buying and selling of goods and services through wireless handheld devices such as mobile telephone and personal digital assistants (PDAs).\(^2\) M-Commerce is a platform where a mobile customer can avail various banking and other related commercial facilities through his mobile phone. M-Commerce is not the transaction itself. It provides services and information, which can trigger a future transaction. The scope of M-Commerce therefore goes beyond the initial one time commercial transaction. The main areas of M-Commerce use are in text messaging or SMS, mobile payment, financial & banking services, logistics, goods/services buy/sell, information services and wireless customer relationship management etc.

### 1.1.1 Benefits of M-Commerce:

The benefits of M-Commerce with respect to customers, merchants and banks are as below:

- Ubiquitous Personalized service – anywhere, anytime
- Remote payment for utility bills, insurance premiums, Credit card, bills, EMIs etc
- Integration with existing payment systems e.g. Credit/debit card payment option
- Promotion of Location based services
- Faster transaction time
- New business opportunities for stakeholders
- Point of Sale(POS) device may not require
- Branding and business opportunities for banks
- Higher volume in banking with less cash transaction
- Penetration into cash dominated category
- Help developing customer loyalty

\(^2\) M-Commerce breakthrough in developing countries [Master's Thesis] by Raymond Adjei Boadi
• Reduction in cost of infrastructure and usages

1.1.2 M-Commerce Services - Concept

M-Commerce Services Infrastructure to change the scenario of retail applications adopting **Wireless Technology** on GSM / CDMA. Ready platform is offered for deploying M Commerce Services by different organizations like:

a. Banks and Financial Institutes

b. Cellular Operators

c. Government

d. Loyalty Providers

e. Various Corporate

M-Commerce Infrastructure integrates front end applications, like **Wireless Point of Sale Terminals**, Micro Finance, vCash, **e-purse**, Bill Payment, Prepaid Top up Vouchers, Vending Machine operation, e-Governance etc. offered by different organizations with backend applications offered by other organizations, required to establish the working model. Being a manufacturer, E Cube India offers different hardware to support the applications desired by the client.

1.1.3 Types of M-Commerce

The M-Commerce can be classified broadly in the three main categories:

**M-Payment: Through Credit/debit cards:**

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3 http://en.wikipedia.org/wiki/Mobile_commerce
Mobile phones linked to credit/debit cards can be used to make payments. e.g. M-payment applications like mChek etc.

E-Money:
Cash loaded in the mobile phones. Consumers use this virtual cash as real value for all types of transactions. E.g. Prepaid cash card, recharge voucher amount etc.

M-Banking:
Mobile phone used for accessing the bank accounts. All payments are routed through the bank. e.g. Balance query, share trading alert, banking transactions etc.

1.1.4 M-Banking platforms/services agencies
The M-Commerce/M-Banking services are run by many Mobile banking application service providers with their tie-ups with banks and the telecom service providers. Different technologies and types of applications are available from them on the mobile platform; each offering a matrix of advantages and disadvantages, especially when the needs of the disadvantaged segments are taken into consideration. Some of the names of M-Commerce platforms/services are mChek, etc. From these platforms like m-check, ngpay require Java enabled handsets & GPRS facility to operate M-Commerce, while platform like PayMate does not require these. Most of the M-Banking transactions are between the bank accounts of the customers. Some of the platform like ‘Green Money transfer’ allows person to person transfer through their bank accounts. Bharat Sanchar Nigam Limited (BSNL) has also plans to launch a mobile banking platform with the help of Department of Post wherein a mobile subscriber will be able to send money orders electronically through SMSs which will be encashable at all post offices in the country.
1.1.5 Existing framework for M-Banking

Practically, Indore has implemented M-Banking services. Following are the guidelines given by RBI.4

1.1.5.1 Transaction limit:

Banks are now permitted to offer this service to their customers subject to a daily cap of Rs 50,000/- per customer for both funds transfer and transactions involving purchase of goods/services. Presently, such transactions are subject to separate caps of Rs 5000/- and Rs 10000/-respectively.

1.1.5.2 Technology and Security Standard:

Transactions up to Rs 1000/- can be facilitated by banks without end-to-end encryption. The risk aspects involved in such transactions may be addressed by the banks through adequate security measures.

1.1.5.3 Remittance of funds for disbursement in cash:

In order to facilitate the use of mobile phones for remittance of cash, banks are permitted to provide fund transfer services which facilitate transfer of funds from the accounts of their customers for delivery in cash to the recipients. The disbursal of funds to recipients of such services can be facilitated at ATMs or through any agent(s) appointed by the bank as business correspondents. Such fund transfer service shall be provided by banks subject to the following conditions:-

- The maximum value of such transfers shall be Rs 5000/- per transaction.

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4 Reserve Bank of India [www.rbi.org.in]
• Banks may place suitable cap on the velocity of such transactions, subject to a maximum value of Rs 25,000/- per month, per customer.

• The disbursal of funds at the agent/ATM shall be permitted only after identification of the recipient. In this connection, attention of banks is drawn to the provisions of the Notification dated November 12, 2009, issued by Government of India, under Prevention of Money Laundering Act, 2002, as amended from time to time.

• Banks may carry out proper due diligence of the persons before appointing them as authorized agents for such services.

• Banks shall be responsible as principals for all the acts of omission or commission of their agents.

1.1.6 Mobile Payment (m-payment) Solutions

There are broadly three different models available for m-payment solutions on the basis of payment:5

• Bank account/debit card based

• Credit card based

• Telecommunication company billing based

1.1.6.1 Bank Account/Debit based m-payment

In this model, the bank account/debit card is linked to the mobile phone number of the customer. When the customer makes an m-payment transaction with a

5 MPFI - Mobile Payment Forum of India [www.mpf.org.in]
merchant, the amount from the bank account of the customer is debited and the value is credited to the merchant account.

1.1.6.2 Credit Card based M-Payment

In the credit card based model, the credit card number is linked to the mobile phone number of the customer. When the customer makes an m-payment transaction with a merchant, the credit card is charged and the value is credited to the merchant account. Credit card based solutions have the limitation that it is heavily dependent on the level of penetration of credit cards in the country.

1.1.7 Applications of M-Commerce:

Various applications of Mobile Commerce⁶ are given the below Table:-

<table>
<thead>
<tr>
<th>Application</th>
<th>Example of M-Commerce services offered</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobile banking</td>
<td>Mobile Accounting&lt;br&gt;Mobile online stock transaction&lt;br&gt;Mobile banking information&lt;br&gt;Payment for insurance, recharge coupons etc</td>
</tr>
<tr>
<td>Mobile information services</td>
<td>Current affairs&lt;br&gt;Tour and travel information&lt;br&gt;Mobile search engines and directories</td>
</tr>
<tr>
<td>Mobile shopping</td>
<td>Purchase of goods and services&lt;br&gt;Content purchase &amp; delivery</td>
</tr>
<tr>
<td>Mobile ticketing</td>
<td>Sports and cultural events&lt;br&gt;Cinema Tickets</td>
</tr>
<tr>
<td>Mobile marketing</td>
<td>Mobile coupons&lt;br&gt;Mobile newsletters</td>
</tr>
<tr>
<td>Mobile entertainment</td>
<td>Mobile Gaming&lt;br&gt;Download of music, video and ring tones</td>
</tr>
</tbody>
</table>

⁶ http://www.gvsu.edu/business/ijec/v8n3/p007.html
Mobile Commerce is an evolving area of e-Commerce, where users can interact with the service providers through a mobile and wireless network, using mobile devices for information retrieval and transaction processing. M-Commerce services and applications can be adopted through different wireless and mobile networks, with the aid of several mobile devices. However, constraints of both mobile networks and devices influence their operational performance; therefore, there is a strong need for taking into consideration those constraints in the design and development phases of M-Commerce services and applications. Another important factor in designing M-Commerce services and applications is the identification of mobile users requirements. Furthermore, M-Commerce services and applications need to be classified based on the functionality they provide to the mobile users. This kind of classification results in two major classes: the directory and the transaction-oriented services and applications. This paper suggests adoption, analysis and impact of M-Commerce services and applications in India. This approach relies on mobile user's needs and requirements, the classification of the M-Commerce services and applications, as well as the current technologies for mobile and wireless computing and their constraints.

Mobile Commerce is about the purchase and sale of goods and services through the mobile devices such as cell phone, laptop etc. with the involvement of a financial institution.

Mobile Commerce includes the following:

a) Travel and Ticketing
b) Movie Ticketing

c) Bill payments to utility and service companies

d) Merchant & Retail Transactions

e) Money Transfer

1.1.8 Growth of Mobile Commerce

Mobile Commerce services are evolving rapidly due to the coming together of mobile service providers, banks and payment service providers to offer more products and secure transactions through mobile networks.

While e-Commerce is limited to PC users only, Mobile Commerce is open to almost everyone with a cell phone and mobile connection. Mobile Commerce is expected to grow because the mobile usage and ownership penetration is more than 4 to 5 times than a PC and growing at a very fast rate.

With Mobile Commerce offerings expanding, customers have the hand-held convenience of using their mobile phones for making payments for taxi fares and recharging prepaid phone cards.

1.1.9 Emerging Services of Mobile Commerce

- Increased mobile penetration and use of GPRS on handsets has resulted in the digital downloads market to cross Rs.4.34 Billion by end of March 2012, which will definitely increase in future.

- Monetary transfers or transactions through mobile phones are found to be much cheaper than traditional bank transfers as the transaction costs are much lower in the former.

- Innovative solutions for daily use such as payment of auto or taxi fares
• Inter-bank transfers services are also on the anvil. ICICI Bank Ltd, India’s largest private bank, has already started offering all its services through mobile phones (called mobile banking) since January 2012. Standard Chartered bank has launched a service that enables money transfer from any ATM to any mobile phone across the country. The recipient receives a pin number on his or her mobile phone and the sender has to convey the order number to the recipient. Using these two the recipient can withdraw money from the bank’s ATM’s.
• Feasibility studies are being conducted to offer Mobile Commerce to microfinance firms to enable them collect payments from remote areas.

The M-Commerce/M-Banking services are run by many Mobile banking application service providers with their tie-ups with banks and the telecom service providers. Different technologies and types of applications are available from them on the mobile platform; each offering a matrix of advantages and disadvantages, especially when the needs of the disadvantaged segments are taken into consideration. Some of the names of M-Commerce platforms/services are mChek, ngpay etc. From these platforms like m-check, ngpay, require Java enabled handsets & GPRS facility to operate M-Commerce, while platform like PayMate does not require these. Most of the M-Banking transactions are between the bank accounts of the customers. Some of the platform like ‘Green Money transfer’ allows person to person transfer through their bank accounts. Bharat Sanchar Nigam Limited (BSNL) has also plans to launch a mobile banking platform with the help of Department of Post wherein a mobile subscriber will be able to send money orders electronically through SMSs which will be in cashable at all post offices in the country.

1.1.10Transaction flows in case of M-Commerce

Possible overall transaction flows for intra-bank and inter-bank transactions are:-
1.1.10.1 Intra-bank transaction flows:

Bank connects to Mobile networks via MBAS (Mobile Banking Access Service provider).

- Sender and Receiver perform a registration at Bank.
- MBAS stores card number, or account number and Bank ID.
- Sender specifies a recipient Mobile number / account number and initiates a transfer request.
- MBAS performs checks and forwards the request to the Bank.
- Bank validates the From / To accounts, performs a fund transfer; responds to the sender and the receiver via MBAS.
• In the intra-bank transaction case service offerings is for bank’s customers only and Banks can offer customized services. Transaction processing and settlement transactions can be settled by the bank itself.

1.1.10.2 Inter-Bank transaction flows:

Fig. 1.2 Inter-Bank transaction flows

1.1.11 Mobile Banking services – insight and reports

Based on data gathered in April 2009 for Feb/March mobile banking urban Indian customers checking account balance is the most frequently cited reason for using mobile banking. 40 million Urban Indians used their mobile phones to check their bank account balances followed by viewing last three transactions. ICICI bank continues to maintain its leadership extending in mobile space, 42% of all mobile banking users bank with ICICI, followed by HDFC (25.3%).

1.2 REVIEW OF LITERATURE
In early of 1990, people never think about the fact that the services like booking a cinema ticket, railway ticket, mini bank account statement can be completed by sitting in a garden of house with a cup of coffee. For the above services one should have to go to the particular center and avail the service. No one think about the services offered by M-Commerce.

The invention of M-Commerce took place in 1997 which was a revolutionary invention for the person who really fades up to visit each department for various services.

The increase of workload sometime causes the increase of pending works such as electricity, telephone bills etc.

The M-Commerce give facility to take so many services without shifting from one place, which saves time as well as helps to complete the work on time.

The past history clearly specifies that most of the peoples do not like to stand in the queue for taking services and hence M-Commerce is the way to avoiding such problems and make life comfortable and hassle free.

Mobile banking (also known as M-Banking, M-Banking etc.) is a term used for performing balance checks, account transactions, payments etc. via a mobile device such as a mobile phone. Mobile banking is a way for the customer to perform banking actions on his or her cell phone or other mobile device. It is a quite popular method of banking that fits in well with a busy, technologically oriented lifestyle. It might also be referred to as M-Banking or SMS banking. The amount of banking you are able to do on your cell phone varies depending on the banking institution you use. Some banks offer only the option of text alerts, which are messages sent to your cell phone that alert you to activity on your account such as deposits, withdrawals, and ATM or credit card use. With the combination of two most recent technological advancements—internet and mobile phone, a new service (mobile data service) is thus enabled and the first
such wireless internet commercial transaction is performed by the banking industry (Barnes and Corbitt, 2003). It is believed that M-Banking will provide another new channel for banking services, especially for certain remote areas where online internet is still unavailable. Strategic implications and customer perception of M-Banking services are explored (Laukkanen and Lauronen, 2005) with a focus on the consumer value creation and a better understanding about the customer-perceived value of M-Banking services.

1.3 OBJECTIVE OF THE STUDY

The aim of the study is to specify the way of adopting the M-Commerce technologies as well as to analyze the impact of adopting the M-Commerce services. The M-Commerce features include ubiquity, personalization, flexibility, and localization. The goal of M-Commerce is to combine technology with new ways of operating through which all the activities can be made much more effective, transparent and responsive. Following are the specific objectives of present study:

- To evaluate, analyze and compare the opinions and satisfaction level of customers of M-Banking services provided by the HDFC and ICICI banks.
- To understand and compare the problems faced by the customers of HDFC and ICIC banks in using M-Banking services.
- To offer suggestions to improve the M-Banking customer services.

1.4 RATIONALE OF THE STUDY

This study will help to analyze the adoption of M-Commerce system in various organizations which helps to increase the efficiency, productivity, accountability
of the system. The Proposed study will target the use and impacts of M-Commerce in an organization.

1.5 HYPOTHESIS

The formulation of hypothesis is important stage of every research. The speed of research work depends to a large extent and is also gets direction through construction of hypothesis. On the basis of review of the available online services following hypothesis are designed by me for this study:

1. There is a significant difference between HDFC bank and ICICI bank of the respondents and the e-banking services.
2. There is a significant difference between HDFC bank and ICICI bank of the respondents and the problems of M-Banking services.
3. There is a significant difference between age, gender, occupation, education, monthly income of the respondents and the qualities of overall M-Banking services.
4. There is a significant difference between account access through internet of the respondents and the qualities of overall M-Banking services.
5. There is a significant relationship between various modes of services (mobile recharge, payment of telephone bill, payment of electric bill, money transfer, railway ticket booking, air ticket booking, filing of tax returns, investments and others) of the respondents and their overall M-Banking services.
6. M-Commerce system helps to create better banking environment for businesses.
7. M-Commerce system helps customer to complete their work without standing in a queue and hence it saves their time.
8. M-Commerce system reduces the cost and it increases the productivity of banking administration.
9. M-Commerce system reduces the complexity of processes and thus improves the relationship between bank and citizens.
1.6 RESEARCH METHODOLOGY

The basic aim of this study is to impact of M-Commerce and the challenges for adopting M-Commerce. The researcher has tried to find the answer on the questions that is:

1. How to collect data and its classification?
2. Which statistical tools require for statistical Analysis?
3. How to increase the participation of the customers?
4. How M-Banking takes place at bank and customers end?

This study uses both qualitative and quantitative analysis of the relevant research question. The study is investigative in nature.

Both primary and secondary data will be collected. Primary data will be collected through the administration of questionnaire, survey and discussions with people. Secondary data will be collected from the organizations already providing the services through M-Commerce, journals of M-Commerce and RBI. Analysis of the study is done with the help of the relevant statistical tools like Mann Whitney test, Chi-square test, T-test.

1.7 SCOPE OF THE STUDY

The application area of M-Commerce is very wide i.e. mobile banking, mobile information services, mobile shopping, mobile ticketing, mobile marketing, mobile entertainment, etc. Due to number of restraint in the form of efforts, resources and time, the proposed study is mainly restricted to mobile banking for selected banks.
As the title of the study signifies, scope covers to fulfilment of the objectives, which are cited above, for the study.

This research is based on the customers’ perception regarding M-Banking services. This research discusses the opinion of the customers regarding the M-Banking services provided by the selected new generation private banks and the qualities of the M-Banking services in the area of reliability, responsiveness, security, easy use, accessibility and efficiency. Also the research analyses the problems faced by the customers while using the M-Banking services. The research evaluates the relationship between the activities undertaken through M-Banking services by the customers, the qualities of M-Banking services and the problems of M-Banking services.

1.8 LIMITATION OF THE STUDY

Although there are various applications of M-Commerce for which different rules and framework are applicable, it is quite tough to study each and every application along with their framework and hence we are considering only single application of M-Commerce which is M-Banking only for selected banks.

The study is restricted to the customers’ perspectives. Therefore it does not cover any performance appraisal or opinion on M-Banking services from bankers’ perspective. The results of the study cannot be substantiated to other areas of the state and country.