Chapter 1

Introduction

1.1 Introduction

This chapter will discuss the problem domain, motivation to the project, background materials, references and proposed solution.

1.2 Problem domain.

Below mentioned key issues have been identified with the existing money transferring methods, in Sri Lanka.

1. Most of the commercial banks may not have branches all over the country. Especially rural areas have only a few bank branches, so many people would have to travel far to do a simple financial transaction.
2. Mostly in rural areas and urban area as well, access to financial services is very limited, and resulting in a large percentage of the population operating on a cash basis only and outside of the formal banking system.
3. Fewer people have credit cards.
4. Small retailers find it difficult to reach the cost of the card readers.
5. Credit Card fraud has caused apprehension among customers. Therefore fear of using Credit Cards has prevented many a potential customer to shop using credit card.

Therefore it is essential to have secure and fast method to pay without using credit card or cash. Developing market economies have benefited hugely from mobile telephony bringing a communications revolution to the masses.

Therefore money transferring methods in the Sri Lanka is not in a satisfactory level and difficult to reach the modern world economy very fast. Mobile device could be used to transfer money easily. Most of the population in Sri Lanka is using the mobile phone. Therefore this would be more secure and cost effective when compare with the existing money transferring methods in Sri Lanka.

The purpose of this project is to analyze the usefulness of such a system for Sri Lanka, Implement a prototype for person to person mobile money transferring, Improve the prototype to handle cashless payments using a mobile device mainly for goods purchasing.

1.2 Motivation.

Popularity of mobile networks in the country has created a unique opportunity to provide financial services over the mobile network. Mobile communication is very popular in the country even in rural areas and the total figure is about 6.5 million mobile users. This is a good sign of the growing size of international and national payments. This opportunity could have significant implication.

1.3 Background Materials.

Reference materials came across learning the literature review.
(See Appendix C to background materials found)

1.4 Aim and Objectives

Aim

Aim of this project is to develop a fast and cost effective Mobile Money Transfer system for Sri Lanka, with the use of Java and SMS technology.

Objectives

- To study of the possibilities and potential in Mobile money transfer methods.
- To study suitable technologies for authentication.
- To design and develop a prototype to enable peer to peer money transfer for day today business activities.
- To design and develop a prototype to enable cashless purchasing at super market.
- Gain knowledge of the OO design, java technology and prepare the necessary documentation. (SRS, SDD).
- Design and develop a simulate system for solving the problem
- Evaluation of the proposed solution
- Preparation of the final documentation

1.5 Proposed Solution

This section, describes the general overview of the proposed system and its requirements.

1.6 Scope

The scope of the project is,

- Transfer cash from one user to another user (Peer to peer money transfer).
- Cashless purchasing at super markets.

1.6.1 Transfer cash from one user to another user.

One objective of this project is to transfer money from one user to another user (Peer to peer money transfer). As showed in figure 1.1, the person sends a request SMS to the bank from his/her mobile by entering the receivers NIC number, PIN number, Mobile number and amount. Then the bank would validate the request and send a SMS to the receiver via the Mobile Company if the validation is successful. So receiver will get a

SMS include the authentication key (password). So he/she will go to the bank or a branch and collect money by providing his NIC and the SMS message.

Also this can be further extended to withdraw money from the ATM machine using the one time generated key via SMS. It is very useful if the customer forget to bring his/her ATM card then can be accessed the ATM machine using the generated transaction id. Even the requester and the receiver could be the same person. Figure 1.1 describes the flow of the transaction.

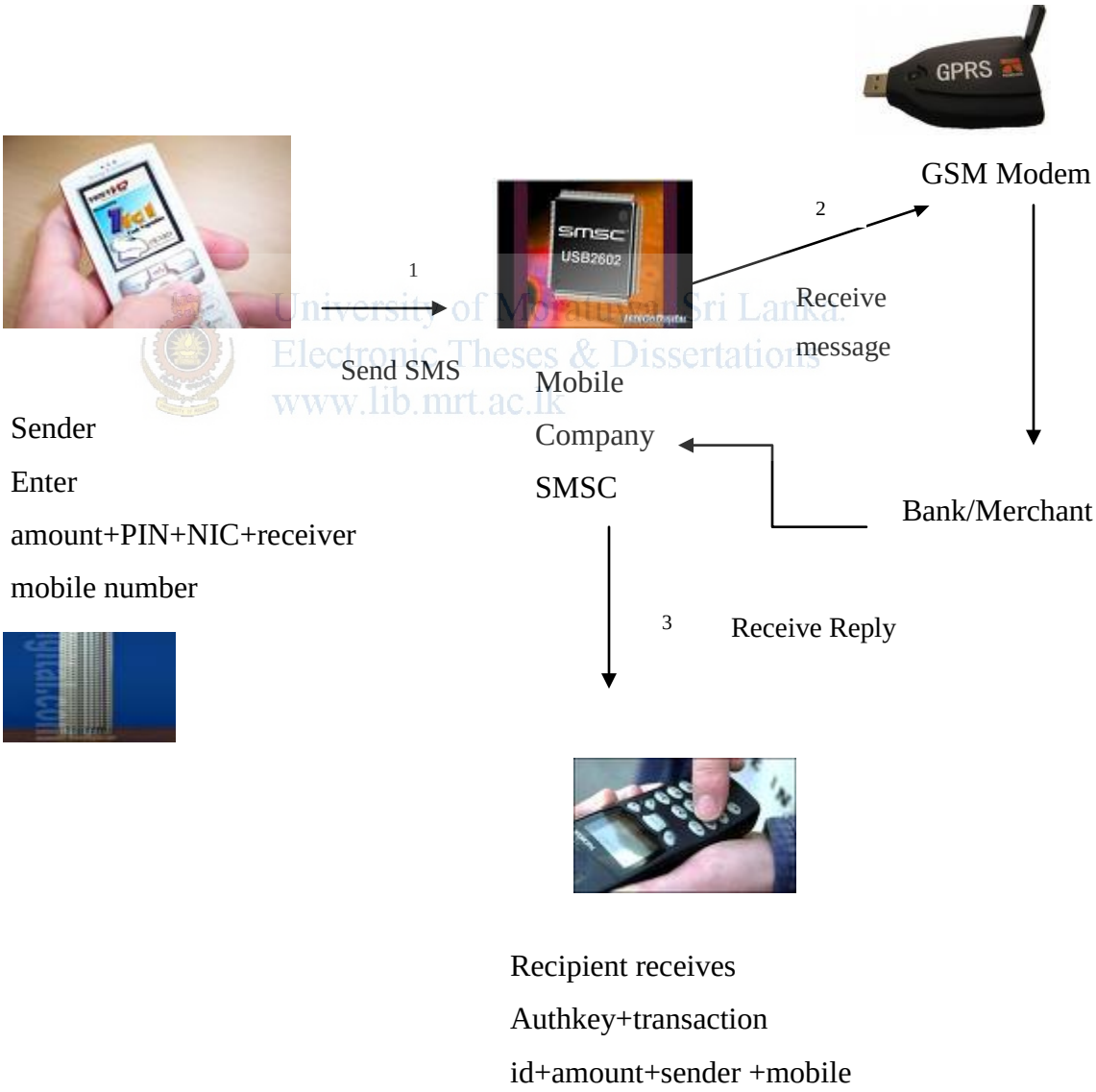

Figure 1.1-Peer to peer money transfer

1.6.2 Cashless purchasing at super markets.

The other concept is to transfer money to retailers when purchasing goods from their shops. Retailer would originate the transaction request through his own mobile phone terminal. Subject to the customer having a credit balance to cover the intended purchase, the customer receives an authorization request via SMS.

Once authorization is given, the retailer and customer accounts are updated and the customer and retailer receive confirmation of the transaction via SMS. (See figure 1.2)

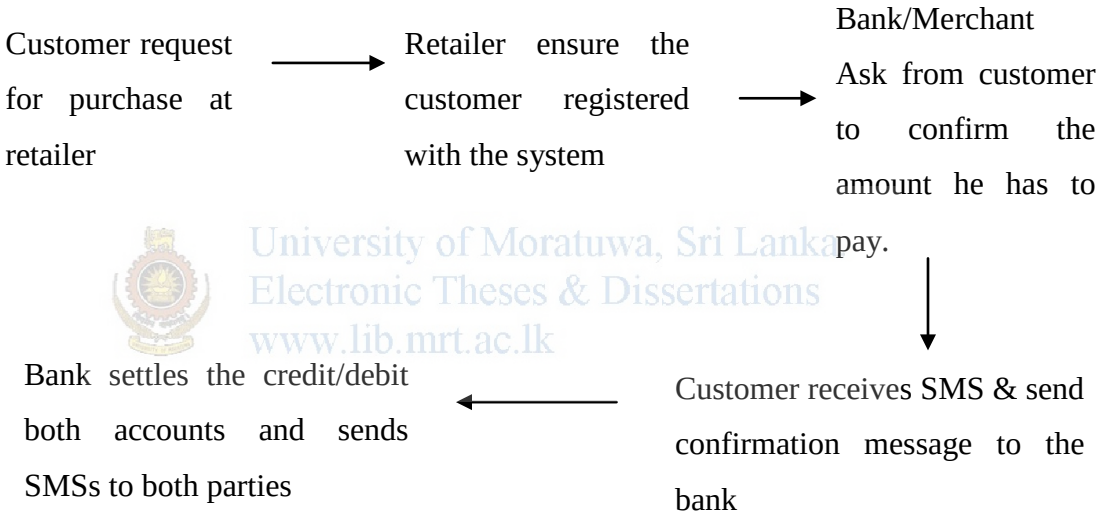

Figure 1.2 – Flow of cashless purchasing sub system.

Except these modules various reports would be generated to check the status and to see the number of transactions to auditing purpose.

According to the Figure 1.3 the Mobile Money Transfer System contains following main modules.

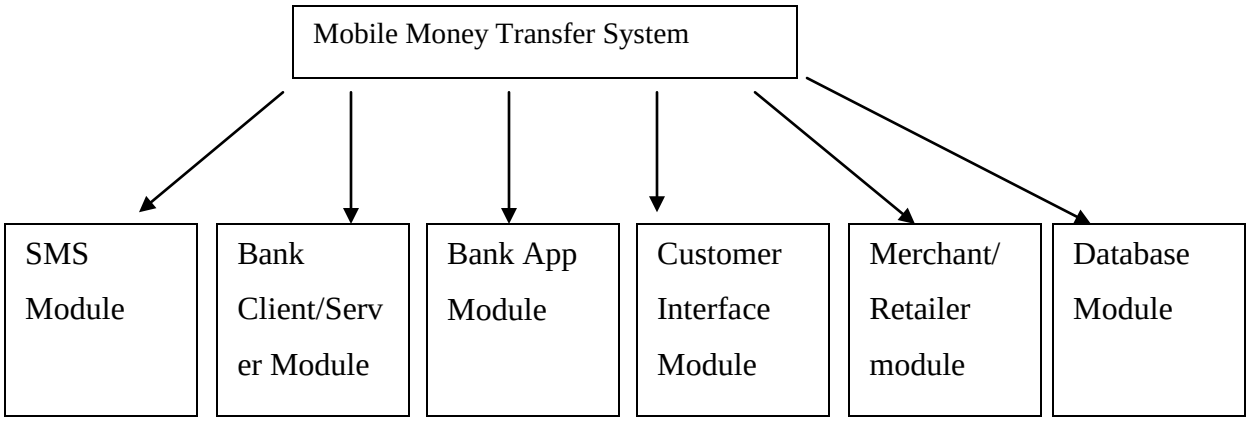

Figure 1-3 – Description of main modules.

Following Figure 1.4 is showing the high level flow of the system.

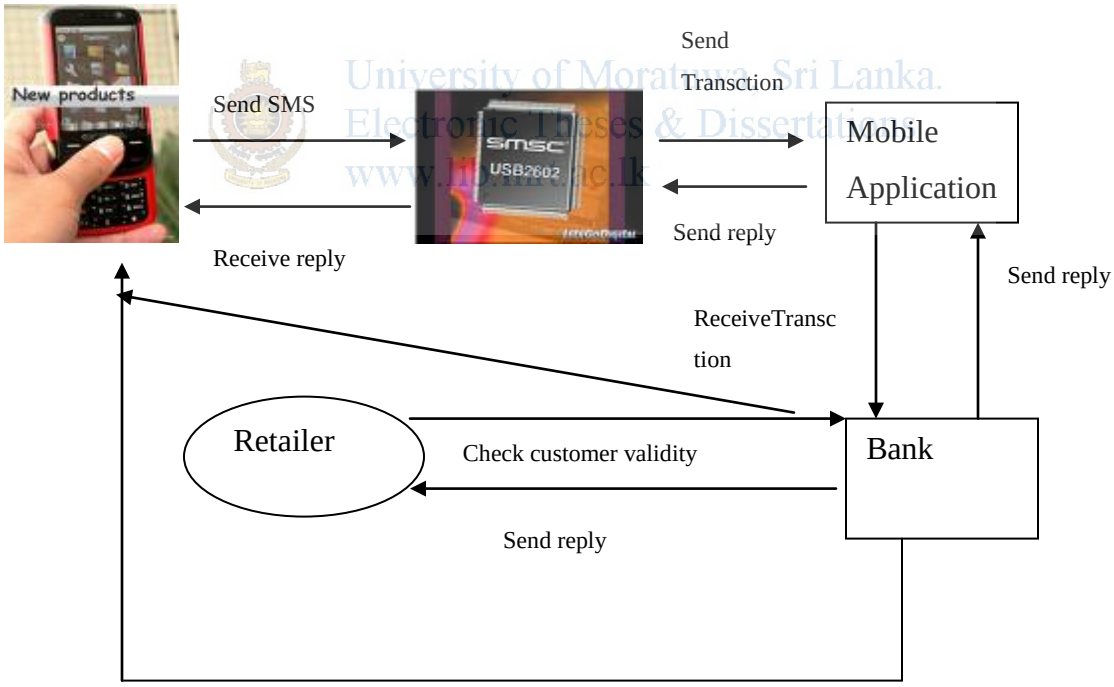

Figure 1-4 – High level flow of the system.

1.7 Product Features

Following are the main features of the system:

1. Menu based mobile user interface to the user.
2. SMS sending facility via a GSM Modem or through via a 3G data modem.
3. Internal socket (client and server) based system for the bank and the mobile provider
4. Web interface for retailer to view the validity of the customer
5. Tracking module for user transactions.
6. Report generation modules for bank and mobile provider.

1.8 Operation Environment

Operating Systems:-

1. Mobile Device operating system.
2. Development environment is Windows Vista
3. Application deployment (back end) environment is Sun Solaris version 10 or Windows Vista, Windows XP.

Web browsers

1. Internet Explorer 5.0 upwards
2. Mozilla Firefox

Databases

MySQL Sever 5.0

1.9 Technology

JAVA programming language has been used to implement the system. TCP/IP server and client sockets used to connect the bank and the mobile operator. Used JSMSEngine open source API for send and receive SMS via the 3G modem.

AJAX, JSP/embedded HTML technology has been used to develop front end web applications and java bean classes have been used to develop back end. Web server is Sun Java System Application Server 9.1. MYSQL Server 5.0 used as the database. To design the system used UML language and design tool as a Rational Rose and MS-Visio. *(See Terms, Acronyms on page ix)*

1.10 Input, Output and Process

Figure 1.5 gives brief description about the input, output and process of peer to peer money transfer process.

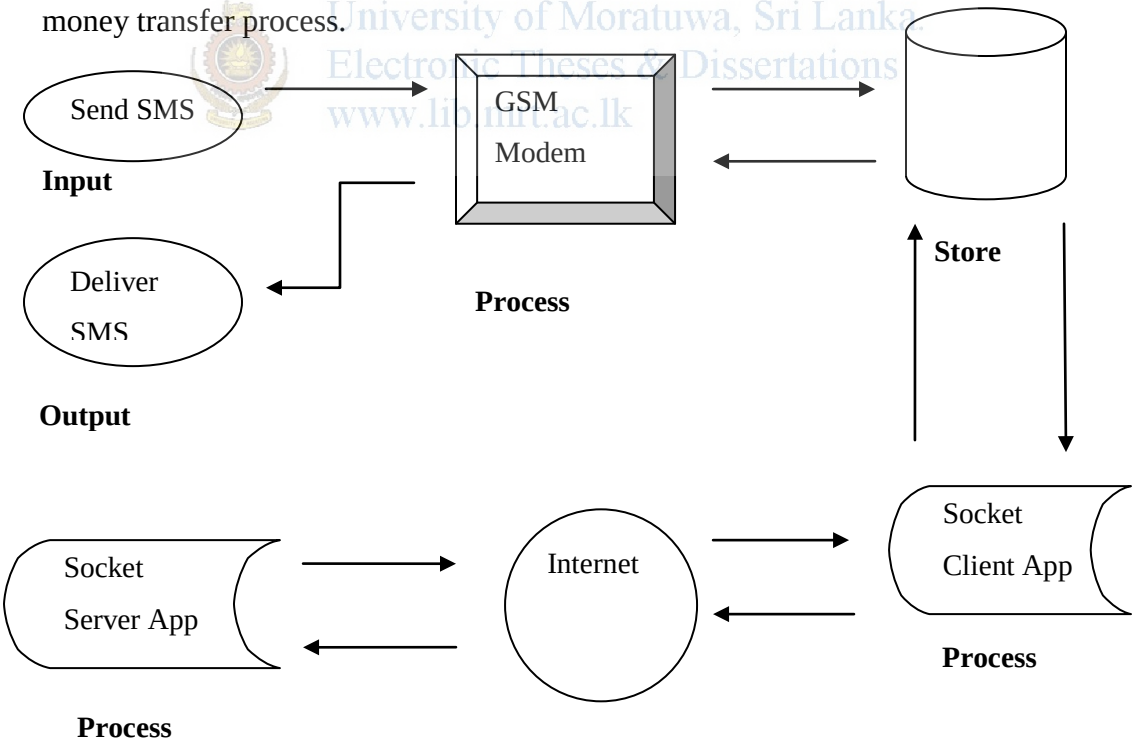

Figure 1.5- Input output process of the peer to peer money transfer.

Figure 1.6 gives brief description about the input, output and process of cashless purchasing process.

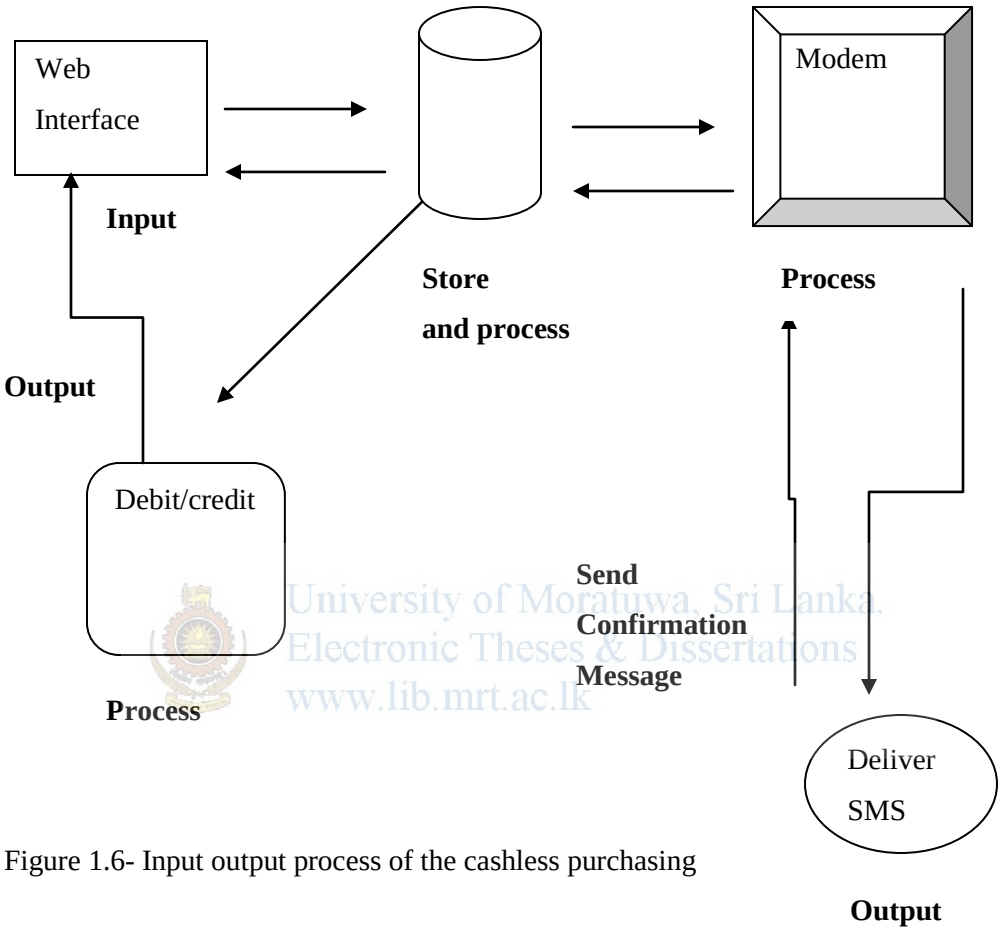

Figure 1.6- Input output process of the cashless purchasing

1.11 Structure of the dissertation

Beginning of the project it has been described the abstraction of the project. Chapter 1 describes the brief and overall description of the project. It contains sub sections for motivation, background materials, references, scope, user classes and characteristics, product features, technology, operating environment etc.

Chapter 2 describes the problem domain and it will describe about the issues of the current money transfer methodologies and some other approaches for solve the problem. Also it will discuss the strength and weaknesses of those approaches.

Chapter 3 describes the technologies used to implement the system. Also sub sections present the brief description about these technologies and how they involved implementing the project.

Chapter 4 will discuss various approaches to develop this project and how the best approach was selected.

Chapter 5 will explain the analysis and design part of the project. Chapter 6 will discuss the implementation of each modules defined in the previous chapter.

Chapter 7 will discuss evaluation of the project. Chapter 8 will discuss the conclusion of the project and further work.

Appendix A shows all design diagrams. Appendix B describes pseudo code, parts of source codes, user interfaces and implementation details. Appendix C describes the background materials refer. Appendix D contain system user guide and Appendix E contains terms and acronyms. Reference section is defined end of the chapter 8.

1.12 Summary

Chapter 1 describes the brief and overall description to the project. It contains sub sections like problem domain, motivation, background materials, product features, scope, technology, operating environment etc.

Next chapter will describe about the issues of the current money transfer methodologies and other's approach for solve the problem. Also it will discuss the strengths and weaknesses of those approaches.