

DTM: Distributed Teller Machine

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ABSTRACT—

A teller machine is a programmed set of machinery which is able to deliver cash. It consists of a mainframe system which enables it to read a debit/credit card, interact with user and bank servers, deliver cash via a cash machine integrated into it and provide receipts with an integrated printer. Also, modern ATMs can have deposit machines which are able to deliver as well as accept cash from users with their credentials. The DTM is an android based application which makes these tasks possible with a smart mobile device.

In this research paper we have done analysis of an android application being developed by us as DTM. This paper refers the aim behind developing this android application. Also mentioned how the application works, what platform it uses, the concept of DTM and its uses, the benefits of the application to the general user and the banks. In addition this paper also gives an introduction to the Unified Payments Interface.

Keywords: Withdraw, Deposit, Transaction, Location, GPS, UPI, Android application.

I. INTRODUCTION

Cash withdrawals and deposits are generally performed with an ATM machine and a deposit machine in ATM vestibules across the globe. The said system follows certain steps to carry out the process:

A person goes to an ATM vestibule and inserts his debit/credit card into the reader opening in an ATM machine. The machine asks the person to input some information step by step like his personal identification number or PIN, the language, the type of service he needs to avail, amount of transaction, type of bank account, etc. The machine communicates the asked information to the bank server on private network or bank's WAN. After successful verification the machine checks for the available cash and delivers cash if available in any denominations combinations and sends a confirmation to banks server. The user receives cash and a printed receipt.

This paper represents an android application for making this process mobile and overcome most of the problems associated with the existing system of cash withdrawal and deposit. It also gives a very convenient and quick way to perform said transactions with ease. The application uses easy to use UI and navigation for achieving its goal.

For developing this application we are using android studio and java for coding, a database to store the data, Map API to locate users and payments interface to carry out transactions..

II. LITERATURE REVIEW

Smart Phones have changed life for everyone. Along with basic features, Applications in Smart Phones allows to do a lot more than just communication, from playing games to do business. The development of an app described in present paper has given a strong understanding of various challenges associated with design and development of apps. The experience has been quite challenging, motivating as well as satisfying. [1]

Android is a completely open and free mobile device platform, with powerful functionality and good user experience being rapidly developed into this most popular mobile operating system. [3]

Unified Payments Interface is payment interface developed by the national payments corporation of India. It allows instant settlements from bank account to bank account via a smart mobile device. [2]

Digital payments have changed life for banks as well as its customers. They have enabled users to perform transactions without taking money out of their bank accounts and standing in long queues to withdraw money from banks. Lessening the use of cheques to make payments to merchants or people. The said system has made it easy to send and receive money. As a result, people are getting attracted towards instant money settlements solutions and digital currencies for quick and efficient payments.

The banking activities performed at the ATMs like cash withdrawal and deposition can sometimes be a headache or

not be carried out as expected. ATMs are claimed to be available for 24x7x365 but it doesn't turn out to be true as there are several problems which can be associated with an ATM –

- **Cash receiving limit**

Automated teller machines have a limited capacity for receiving cash. Once the maximum number of currency notes is reached for any denomination, no further cash is accepted by the machine. In frequently used deposit machine this problem is well known.

- **Cash dispensing limit**

An ATM can hold up to a sum of 12,00,000/- as per RBI [4] guidelines in India. Once the amount is withdrawn completely, the machine is unable to dispense any more cash. Also, the machine cannot dispense an amount if it requires any denomination note which is no more available in the machine.

- **Power failure**

Though in urban areas power failures are rare in case of ATMs as they have a good power backup, but in rural areas the failure might occur as these areas get less attention towards maintenance of ATMs.

- **Network error**

ATMs work on private network of a bank. In case of network breakdown or communication failure, ATMs cannot serve the customers.

- **Closed for maintenance or some other reason**

ATMs are several times not available due to some maintenance activities or some other reason. Recently, the government advised banks to close ATMs in less populated areas in the night time as the robberies of ATMs were on the rise.

- **Some location constraint**

A person might not always find an ATM nearby of his own bank. Furthermore, the banks allow a limited number of free transactions to be done with an ATM card.

- **Long queues**

Using an ATM can many times become a headache as there are often times when you have to wait in a queue for your turn to use one.

- **Time to deposit or withdraw cash**

A user on an average takes 5 to 10 minutes to complete a transaction on an ATM as the steps to use an ATM involve dipping the card, entering the PIN, selecting various options in sequence, entering the amount, waiting for transaction to process, wait for machine to dispense or accept cash and finally to print a receipt.

III. PROPOSED SYSTEM

The proposed application provides a user friendly system and design to the user. The application enables the user to use a smart mobile device to perform a withdrawal or deposit activity. The application uses the UPI interface to carry out the said process. User interacts with the application and presents its requirement. The application searches for people with the opposite requirement and shows a list of them. The user selects a person and consents to reveal identity. The two users meet and perform a cash transaction on whose verification the application performs an UPI transaction from withdrawer's to depositor's bank account and instantly settles the request.

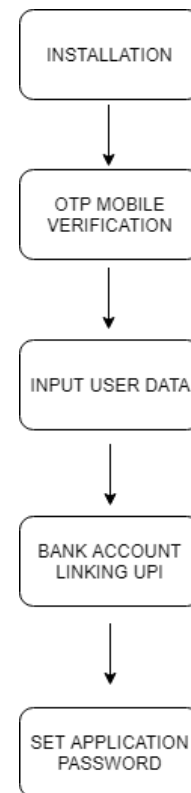
With the help of our proposed application following functions can be performed:-

Withdraw money from bank account

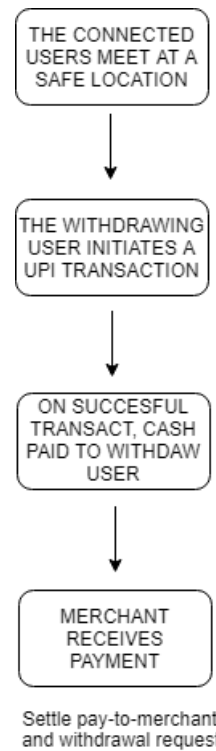
Deposit money to bank account

Check balance

The application works in minimal steps as given in the flowcharts:-



Install and set up DTM



IV. TECHNOLOGY USED

Minimum hardware required:

Core 2 duo processor

Hard Drive having 3 GB Free Space.

128 MB RAM (1 GB preferred for Android Emulator) or an Android device (if possible).

Graphic card (recommended for smooth operation of emulator)

Software required:

Android SDK

Android studio (latest available)

Java JDK & JRE (latest vailable)

Android API's (version 2.3 preferred as most device run this version).

Windows or Linux OS preferred

V. ADVANTAGES

The installation of this application is very simple and it is easy to operate. This application is easy to understand by user.

The application requires very low system resources.

The application allows user to settle withdraw and deposit requests without the need of going to an ATM.

The application is online 24x7x365 and instantly settles requests.

The application overcomes the problems of cash unavailability at an ATM.

VI. LIMITATIONS

This android application has some limitations as:
The user may not find another user nearby when no one is available to perform the required opposite transaction .
As the application uses GPS to track location, it may detect location with less precision and result in unsatisfactory suggestions.

The application cannot be used if UPI servers are down.

VII. FUTURE ENHANCEMENT

In current application we are making transactions between individuals and settling deposit and withdraw requests, there can be much more to the application like:

Merchant payments with cash using DTM:

Payments can be made to online merchants by making cash payments to withdrawing requests and UPI transaction towards merchant after which excess amount settled to depositors account or application wallet.

Make DTM wallet:

Creation of a wallet for the DTM application which enables users to deposit cash to DTM wallet or withdraw cash from DTM wallet. Wallet also enables users to pay quickly to online merchants.

Area recommendation for users:

Future development of the application can provide users with area insights for eq. how likely an area is to provide a DTM user to settle a request or how safe an area is to make a DTM transaction based on previous transactions feedback. Also, Background widget can track location and recommend for potential and safe areas to settle requests on the go.

Integration of crypto-currencies to DTM wallet:

DTM wallet can be enhanced to keep record of user's crypto-currencies and foreign currencies as well. User in a foreign country can use DTM to acquire required currency from nearby people and pay by home country account subjected to finance and foreign exchange rules of the concerned governments.

VIII. CONCLUSION

The proposed application is user friendly and has minimum navigation. This application is simple and most useful for serving banking needs currently served by ATMs.

This application is most useful for saving time and problems faced in an ATM.

IX. ACKNOWLEDGEMENT

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