Building a Micro-ATM for Financial Inclusion and Rural Banking

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Abstract— In current scenario especially in rural areas banks and MFI's are gathering clients information manually in record book and its not cost effective to install ATM's everywhere, so we develop a micro-ATM which can be used to perform all financial transactions. The main advantage of this is we can overcome the delay factor and moreover in earlier practices there were no authentication procedures with the help of biometric we can gain higher level of authorization. With this approach we can reduce the usage of paper and automation of work can be gained. The application built on this micro-ATM is commercially available but we are developing and contributing to open source platform.

Keywords—Micro-ATM, financial Transaction, collection Sheet, Aadhaar Bridge.

I.   Introduction

Micro Finance Institutes(MFI) and other rural banks are procuring the customers data physically by keeping up a record book i.e a MFI representative who will be involved in gathering the un-banked people(poor individuals) and gathering their own data, for example, name of the customer, signature, required advance sum, address and so forth. He records this data in a book and reworks it in bank server, this prompts delay in overhauling the data on bank server and with this postpone the bank powers can't concoct the continuous investigation and they neglect to produce precise reports. This customer data all together is termed as Management Information System (MIS).So assembling and handling of MIS information is dull as we can't prepare the crude information physically.

To beat this we propose a thought of building a smaller scale ATM called micro ATM in which the product application is customized according to the necessities of the MFI's. Here the agent will be furnished with the smaller scale ATM rather than record book, fundamentally this miniaturized scale ATM is only the altered tablet-PC which comprise of biometric gadget and a printer. The main advantage of this is we can overcome the delay factor and moreover in earlier practices there were no authentication procedures with the help of biometric we can gain higher level of authorization. With this methodology we can decrease the use of paper and mechanization of work can be picked up. The application in view of this micro ATM is financially available yet we are making and adding to open source stage. The open source stage to which we are contributing this application is Micro-Finance Open Source (MiFOS).
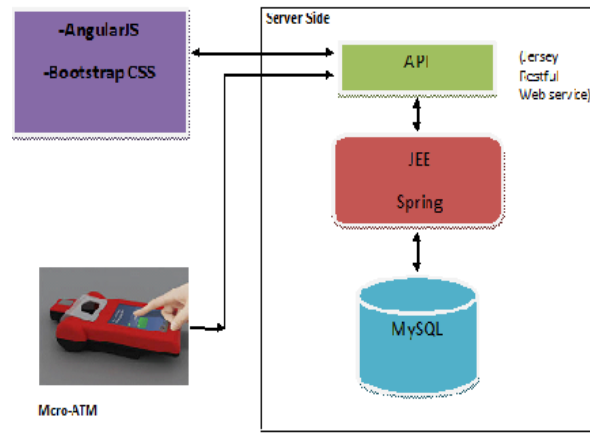
Fig.1.Technology Flowchart

II.   Literature Review

The early micro ATMs were just a handheld device with few features of banking and could not meet all the requirements of financial institutes. For specifically they were just compared with the calculators and nothing more than that. Then came the revolution in the development of this device, few software companies started integrating printer to this hand held device to generate the receipt . It just computed the things and generated the acknowledgement. So based upon this I came up with a idea of developing a micro ATM.

A. Problem Definition

Currently the MFI representative is gathering the client information in a record book which is the oldest way of gathering the MIS data. MFI authorities have to analyze the gathered MIS data manually by looking into the records prepared by the representative which is tedious work. MFI representative first has to collect the data from the clients and then stores it MFI server. There is no specific authentication process carried out while doing transaction. And mainly for banks it's not viable to install ATM in all the places especially in rural areas because of low volume of transaction.

B. Solution

We build a micro ATM gadget which will be connected with MIS data and the application programming is readied in light of the details of the MFI. MFI delegate will convey this tweaked gadget to accumulate the customer data, the gadget comprise of printer to produce small scale explanations, account data and to get other account related data. The gadget is implanted with a biometric and, this helps in verification of the customer. In other words make use of the AADHAAR Bridge service.

C. Objectives

- Cut down the expense of coordinating ATMs into banks' systems.

- To develop a micro ATM that performs budgetary exchanges in provincial regions.

- Guarantee secure and straightforward transactions.

- Avoiding human flaws and upgrading bank server continuously.

III.   Existing System

MFI representative collects client information in a record book which is the most outdated technique for gathering the MIS data. Micro finance powers need to analyze the gathered MIS data physically by researching the records organized by the operator which is repetitive work. MFI appoint first needs to accumulate the data from the clients and after that stores it MFI server. There is no particular authentication process completed while doing transaction.

IV.   Limitations of Existing System

Delay in updating MFI server, as representative has to undergo gathering data manually and then updating it back to server. Authorities cannot perform real time analysis, it's all because delay factor caused during data rewriting in server. Processing of raw information is exceptionally unimaginable in existing framework. There is no appropriate confirmation while performing financial transaction.

V.   Proposed System

We develop a micro ATM and the application programming is readied in view of the particulars of the MFI as calculations and features vary from one MFI to other.
MFI delegate will carry this customized gadget to accumulate the customer data, the gadget comprise of printer to produce little articulations, account data and to get other record related data. The device is embedded with a biometric device which will be

linked with MIS data and AADHAAR Bridge this helps in authentication of the client as MIS data contains client's Unique Identification Authority of India (UIDAI) number and his biometrics.

VI.   Design

The technical architecture explains about the web based application and the mobile client where both share a common API. Our micro Atm communicates using retrofit which acts as a http client. In order to share the data locally on the device we make use of Sugar ORM and lite Sql. The business logic runs on the server side. Any request sent from the micro ATM has to undergo sequential layers and gets the response in the same direction.
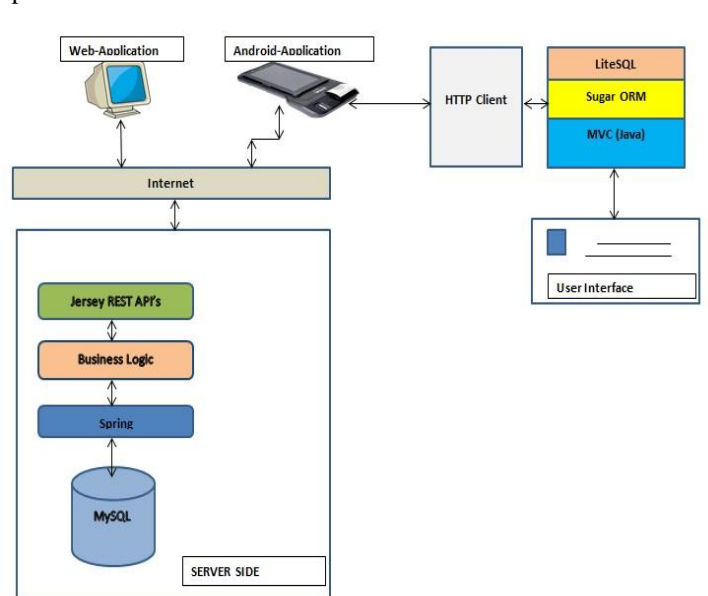

Fig.2.Proposed Architecture

Conclusion

The problems faced by Micro Finance institutes were eliminated and now the bank ops can perform the real time analysis and keep track of the repayments with the help collection sheets. More promisingly the offline feature helped to collect and perform transaction even during the unavailability of network.

References

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