Developing Web and Mobile Based Relationship Management System for Microfinance Institutions

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Abstract

Microfinance in Ethiopia came to existence to help low income people create their own job and improve their lifestyle. Currently there are 30 licensed microfinance institutions (MFIs) working in the country and they are serving more than 2.7 million clients, with a total asset of Birr 10.2 Billion and outstanding loan of net Birr 6.8 Billion which is a big amount of money for these institutions.

Currently these MFIs are facing a problem while giving service to low income citizens. This is because after they give loan service they can't get the outstanding money since customers don't pay their loan on time and also have no time to personally go to the office and pay their loan. This problem is vital because MFIs use traditional way of communication making contact using telephone and going directly to the customers' work place or by contacting the guarantee of the customer.

The main objective of this paper is to enable customers to use mobile application to get notification message about due date of their payment and get payment information. The other feature is online payment which saves time, energy and also increases accessibility.

The study used design science research which undergoes through different stages like gathering requirement from the institutions' employees and their customers using interviews and questionnaire. After the requirement is gathered and the problem of the existing system is known, then designing the new system was done.

An implementation has been done which includes two parts: due date reminder that notifies customers whose due date is on for loan collection using customers mobile phone and online payment system using mobile and computers per users convenience.

Keywords: Microfinance Institutions; Mobile Network Operator; Microfinance Customer Interaction

1. Introduction

The delivery of financial services to low income people in Ethiopia was performed in an ON and OFF manner, especially through non-government organizations (NGOs). Such credit programs were not well organized and hence could not serve the public on continuous and sustainable basis. Through the passage of time, however, after making sufficient analysis on their pros and cons, the government of Ethiopia issued proclamation No. 40/1996 to establish and supervise MFIs [3].

The purpose of all MFIs in Ethiopia is to help low income people create their own job and improve their lifestyle [3]. Currently there are 30 licensed microfinance institutions working in the country and they are serving more than 2.7 million clients, with a total asset of Birr 10.2 Billion and outstanding loan of net Birr 6.8 Billion [3].

Currently these MFIs are facing a critical problem of late repayment while giving service to these low income citizens. This problem is critical because the institutions use traditional way of communication (make contact using telephone and going directly to the customers' work place or by contacting the responsible person of the specific customer which is a guarantee). For this problem, there has to be a

solution and this research studied the core problem inside and outside the institutions to find a solution.

After customers get service from MFIs, they face difficulties in paying their loans on time because of different reasons mainly forgetting the day they have to repay their loan, they don't have time to pay their loan personally by going to the office and this makes them pay extra penalty and extra interest. This results for the microfinances to have large amount of money as an arrear which makes MFIs more vulnerable to portfolio quality risks.

The general objective of this paper is to develop a web/mobile based microfinance customer interaction through mobile System (MCITS) for microfinances and their customers that would allow customers to pay their loan repayment through their mobile easily and providing notification to enable to get notification of the due date of their payment.

2. Related Work

In the past decade or so, many MFIs have experimented alternative delivery channels to reduce costs, facilitate greater outreach to hard-to-reach areas, and increase customer convenience. In theory, mobile phones could be used to reach many more customers at a lower cost than any existing delivery channel. Yet despite this potential and in the vast majority of countries, there is not yet an m-banking service that MFIs can leverage. M-banking to date has largely been driven by Mobile Network Operator (MNOs) and, to a lesser extent, by some large banks. MFIs have by and large not played a significant role in the implementation of m-banking services [1].

In January 2013, Swadhaar, a microfinance institution in India, and Accion, an international NGO, launched a mobile money pilot project in partnership with Airtel Money and Axis Bank [4]. In January 2014, Accion and Swadhaar were awarded a GSMA Connected Women Innovation Fund grant to improve the pilot mobile money solution, in particular by revising customer education materials and implementing a Peer Educator Connection Programme [4].

The Super Account service allowed Swadhaar's clients to repay their monthly loan installments through their mobile handsets rather than paying a Swadhaar loan officer who collects payments in cash door-to-door. Customers can repay their monthly loan installments using mobile money that saves their time in going to the office.

Thirty seven percent of customers in the pilot reported using mobile money for loan repayment and only 5% reported making other mobile money transactions besides loan repayment. Low uptake was, in part, a function of the nascent nature of mobile money in India with Swadaar being the first microfinance institution to adopt mobile money in partnership with an MNO.

Swadhaar FinAccess also revised the training modules to teach customers on how to repay their loans using Airtel Money, and eventually use their mobile money account for savings and a variety of other financial transactions. The revised training materials included new content featuring visuals, different pedagogical approaches such as storytelling and demonstrations, and a new customer education journey with multiple touch points.

In a survey after the changes, 69%, 29%, and 36% of new customers reported using mobile money for loan repayment, saving and other transactions, respectively. Among the group of new customers who were assisted directly by peer educators, these figures increased to 84%, 41% and 47%, respectively. This is a big improvement over the earlier version of the materials. In addition, 30% of new mobile money users reported being able to use the service independently [4].

After being in the wholesale microfinance lending business for two years in Philippines, BanKO (which is licensed as a savings and thrift bank) was ready to jump into retail microfinance using mobile phone as its main channel [2].

The MFI invested in technology that links customers' mobile wallets (m-wallets) to their MFI accounts providing the following advantages.

- It allows customers to access their MFI accounts via their mobile phones and to move money between the account and m-wallet.
- The MFI leverages the network of the existing m-banking provider to facilitate cash-in and cash-out transactions into the customer's m-wallet and subsequently into the MFI account.
- This option may provide more attractive solution for MFIs trying to mobilize savings than the first strategy since savings transferred into the MFI account are still accessible through the customer's m-wallet and at the existing m-banking provider's agent network [2].

SMEP DTM Limited is a Kenyan MFI that offers its168, 000 customers the ability to use M-PESA for loan repayments, loan disbursements, and savings mobilization. SMEP DTM initially started out in 2009 merely using the M-PESA bill pay functionality [5].

The MFI had all of the common concerns about the potential impact on group cohesion, and therefore, repayment rates, and whether mobile repayments would increase efficiency or complicate the lives of the loan officers by introducing time-consuming manual reconciliation processes.

After several years of experience, SMEP DTM reports that despite reducing the frequency of group meetings from weekly to monthly, customers have successfully made transition without negatively impacting repayment performance.

To overcome concerns with manual reconciliation, SMEP DTM invested in a middleware that better integrates its MIS with M-PESA. This has significantly reduced the requirement for manual reconciliation and eased loan officers' concerns. Loan officers now fully support the use of M-PESA, which has had positive influence on the willingness of group members to adopt this payment option.

Before offering loan repayments via M-PESA, group customers went through a lengthy repayment process that involved depositing cash into a Faulu account at a commercial bank branch and attaching the deposit slip to the repayment form to present at a Faulu branch or group meeting. Now customers can repay loans or make deposits using their mobile phone through M-PESA.

Within two years of launching this service in December 2010, almost 54% of Faulu's 300,000 customers had registered for m-banking, although only 15,000 of them were using the service regularly.

3. The Proposed Solution

The proposed solution for the above stated problems is designing a new interaction method between microfinances and customers through mobile which replaces the traditional face to face and interaction using phone line. These interaction method is chosen as a solution based on the data that is collected from both sides which they prefer this interaction method. From the data analysis, the following outcomes are obtained.

- From the site observation (about 7 branches were under site observation) it is concluded that the customers of these institutions are paying extra amount of money because of their late repayment due to not remembering the exact date of payment for their loan.
- From questionnaire very useful information has been gathered. 100% of the respondents from employees side have answered their customers are paying penalty because of their late repayment, 47% of these customers are paying penalty because they forget the date of repayment for their loan, and 78% of the respondents want a modern way of communication with their clients which have a feature of mobile application that provides due date notification and online payment.
- For further clarification interviewing the higher authorities of the institution has been held and gathered all the necessary information regarding the interaction method with their customers and the payment process.

- Prototyping: for the process of developing a new interaction method for MFIs and their customers Demo has been prepared and very useful feedback has been collected. For these demonstration different stakeholders have been involved like selected customers, employees and also ICT experts of the institution.

After the analysis of the data subsystem decomposition of Microfinance Customer Interaction Through Mobile (MCITM) has been done. Each subsystem has its own specific task to be performed by users. To mention:

- System Access Subsystem: handles log in, exit, and checks for access permissions.
- Registration Subsystem: Handles registration process of customers.
- Payment process Subsystem: Handles order payment, payment conformation or failure, canceling payment orders.
- Schedule info Subsystem: Schedules time information of the loan process.
- Payment info Subsystem: Payment information of the loan process.
- Database Subsystem: Contains the data we need to store for the application. It provides standard store, retrieve and order functions for the data that is stored.

The customer first creates the interaction initiation process with the microfinance institution which provides the loan service. After the loan process is finalized, the customer will be registered (profile and payment detail) and the payment process and payment detail information will be provided based on the specific request that comes from the customer. If it is payment details information request, the system displays the requested schedule information and if it is payment process request, the system directs them to the mobile payment application and checks for the balance and sends confirmation message to the customer and the institution.

3.1 High Level System Platform Architecture

The extension of the payment franchise to mobile can be as simple as a bank channel enablement or as complex as a complete bank system implementation depending on what infrastructure already exists, that can be re-used as part of the implementation. A typical microfinance and customer interaction system will have the platform architecture as shown in Figure 1.

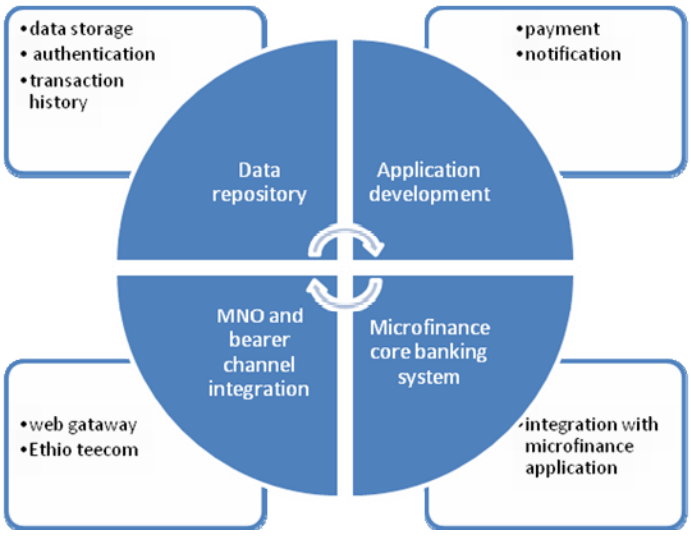

Figure 1: MCITM System Platform Architecture

Figure 1 reflects a typical mobile interaction system service. The service would require integration into an MNO to facilitate in the usage of the network's bearer channels in order to access the customer's mobile phone.

The Data Repository stores enough customer information to facilitate the processing of financial transactions information. The data repository would also house sufficient information to authenticate the customer in transaction. By housing transactional and customer's data, the repository would also facilitate customer information, and payment schedule, payment detail and financial transactions that use the application development environment to fulfill those services.

The Application Development Environment facilitates the actual service development to the customer, such as payment and notification. It may house the integration of third parties in supporting value added services such as payments. The application development environment fosters the intelligence delivered to the customers handset, whether client or server side.

The microfinance core banking system would act as the interface to the MCITM system. Instructions (requests) collected by the application development environment through the MNO interface, and using data from the data repository, are translated into a transaction format that the customer and the microfinance can use.

3.2 Deployment Architecture

This view defines the physical environment in which the system is intended to run, including the hardware environment, the technical environment requirements for each node (or node type) in the system, and the mapping of the system elements to the runtime environment that will execute them.

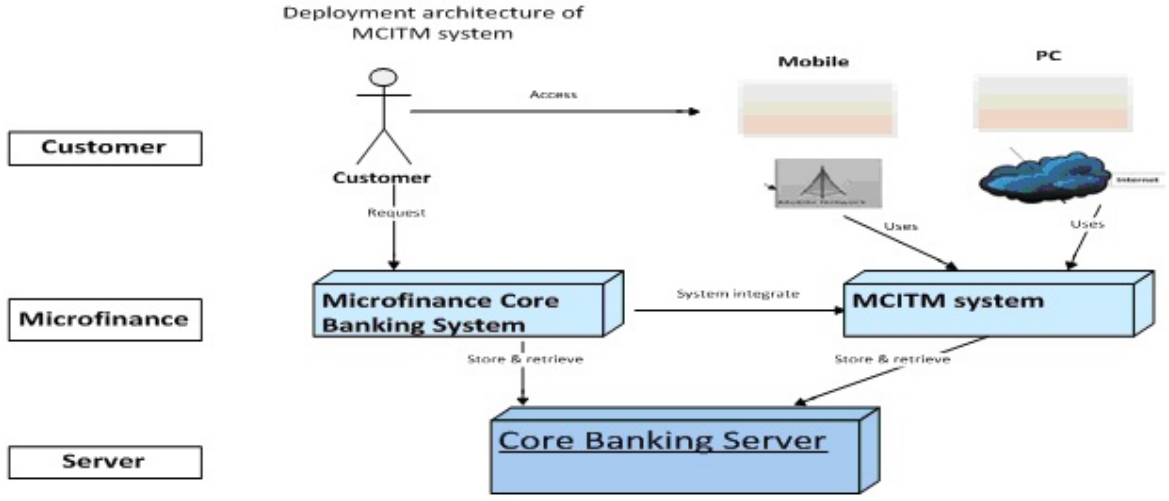

Figure 2: MCITM Deployment Interaction Architecture

Figure 2 shows how a customer accesses the system from the start to the end. When a customer comes to the microfinance institution and requests for a service, s/he can use a mobile or a computer. Then the microfinance registers the customer to the microfinance core banking system. The MCITM system integrates with core banking server either through database or getting web service from the core banking interface, and fetch the necessary information and give back the service (due date notification and online payment) to its customers.

4. Implementation

a. User login page

The super Admin logs into the system and registers different types of users as shown in Figure 3.

Figure 3: User login page

b. User Registration Page

Here all users of users are registered according to their role.

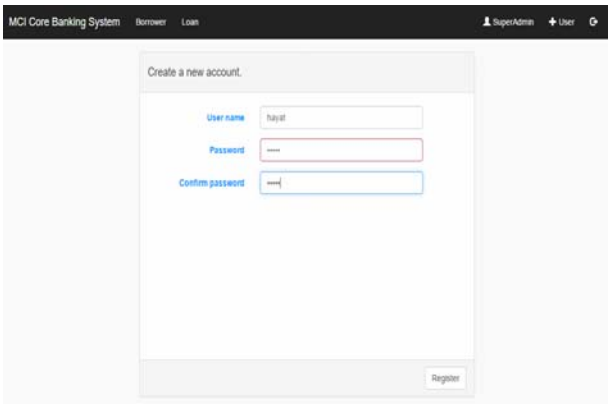

Figure 4: User Registration Page

c. Customer Registration Page

Customers profile information is registered in this page. All the customer information is filled.

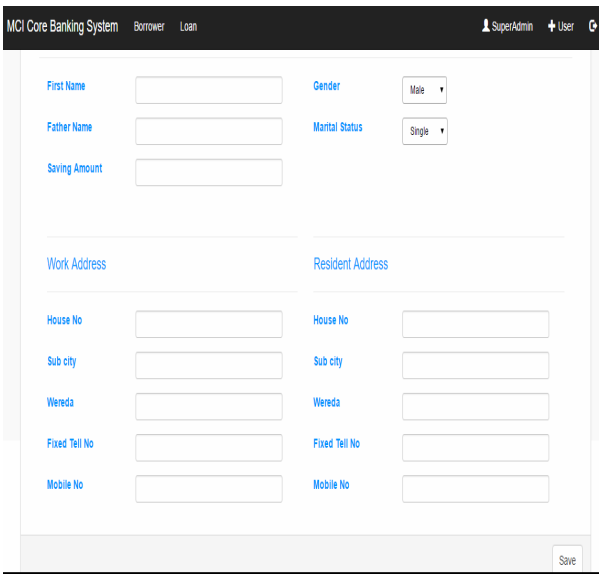

Figure 5: Customer registration page

d. Loan Detail Registration Page

After completing profile registration of the loan customer, the loan detail information is recorded and move to the next step.

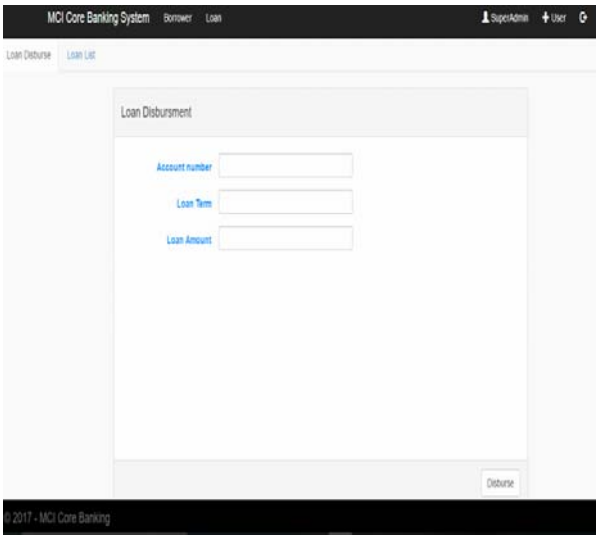

Figure 6: Loan Detail Registration Page

e. Payment Process Page

After the completion of the above two, loan and profile registration, the next part will be online payment and sending due date notification to customers.

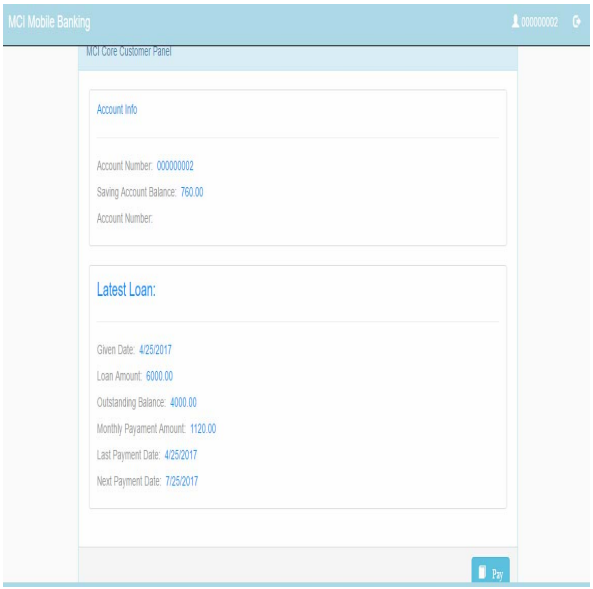

Figure 7: Payment Process Page

5. Conclusion and Future Work

Nowadays Microfinances are increasing in number all over the world (mostly in Africa and Asia) because of small and medium works that are owned by poor people.

As observed from these MFIs in Ethiopia, the collection of outstanding money on time from their customers is becoming a problem from time to time. This paper identified the main challenges of MFIs and customers by collecting data from these target groups regarding their communication gaps. From these gaps, the functionality of the system is identified and implemented. Features of the system include integration with the core banking system of the microfinance and sending and receiving notification of due date of the payment through mobile. The last feature is online repayment of loan.

Different stakeholders will benefit from this work including MFIs, customers, and NGOs (that have a direct connection with the community which provide loan service through these microfinances).

Institution and customer interaction problems are more than what is stated in this paper. Further studies will be done to add more features to this application to solve more problems.

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