

Microfinance Loans Mobile Application

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Contact Person
Narayanaswamy VL
Lakshmanan CS
Raghuram

Bfsi Software Consulting Pvt. Ltd.
Bangalore, India

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Project Manager	Raghuram
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Acronyms and Abbreviations

Abbreviation	Description
bfsi	bfsi Consulting
RS	Requirement Specifications
MFI	Microfinance Institution
EOD	End of Day
BOD	Beginning of Day
KYC	Know Your Customer
ID	Identification
w.r.t	With respect to
SD	Secure Digital

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1 BUSINESS PROCESSES & REQUIREMENTS

1.1 Overview

Microfinance is a general term to describe financial services to low-income individuals, or to those who do not have access to typical banking services. Microfinance is also the idea that low-income individuals are capable of lifting themselves out of poverty, if given access to financial services.

Apart from financing, many of the MFIs accept Micro-deposits also, which inculcate saving habits to individuals.

Currently, most of the MFIs work on paper-based workflow, in which field agent visits various customers and updates internal register in written about all disbursements and collections done for the day. This process involves a lot of data entry errors between the actual data and the data given by field agent and the data fed in into core system at back office. There is also a delay in processing, and collecting loans using this strategy. Moreover MFI does not have any control over their field agents, who are dealing with cash given by MFI as in Loan disbursement, as well as cash given by customers as in Loan repayment.

To overcome above stated pain points, a solution is required for MFIs to automate various customer touch-point operations and to reduce the turnaround time for various processing. Solution should also reduce the risk of fraudulent third parties claiming themselves as a MFI agent, who collects money from MFI customers.

A mobile application is required for MFI field agents to perform below operations:

Security Management Operations

- A. Login into application
- B. Logout from application

Data Transfer Operations

- C. Sync Data with Intermediary server

Customer Touch-point Operations

- D. Advances disbursement to customer
- E. Advances repayment collection from customer

Reports/Inquiries

- F. Agents Agenda
- G. Transactional Activity
- H. Cash Position Inquiry

Other Operations

- I. Change Password
- J. Preferences Setup

1.2 Current business process & Proposed solution

1.2.1 App Registration

1.2.1.1 Proposed solution

Proposed mobile application should be installed in the device which is going to be given to agent. Post installation of application, the device has to be registered and authenticated through a feasible approach.

1.2.2 Login / Logout

1.2.2.1 Proposed solution

Prerequisites:-

1. User credentials for MFI field agents should have been created in Intermediary server through Admin module.
2. Proposed mobile application should have been installed in field agents' mobile device.
3. User credentials (including user id and password) should have been downloaded into MFI field agents mobile and should be stored in the mobile, considering all security aspects.

Login into application:

Proposed mobile application should have below capabilities w.r.t. Login functionality.

- a) MFI field agents should be able to login into proposed mobile application using their user id and password.
- b) Validations w.r.t. User id and password should happen against the user credentials stored in the particular mobile device of the field agent. System should allow the MFI field agent to login into application, only after the validation is successful. Otherwise, an error message has to be shown, in case if the validation is not successful.
- c) After successful login into proposed mobile application, field agent should be able to perform any of the below operations, by accessing relevant menus in the application:
 - i. Dashboard view
 - ii. Sync Data with Intermediary server
 - iii. Advances disbursement to customer
 - iv. Advances repayment collection from customer
 - v. Preferences setup
 - vi. Logout from application

Logout from application:

MFI field agent should be able to logout from the application at any point in time, provided he is not in the course of performing any other operations. In case if the field agent is in the middle of performing any operation such as Pull data from Intermediary server, Loan disbursement to customer, etc., and he wants to logout from the application, either he has to complete or he has to cancel the operation, which he is currently performing.

1.2.3 Sync Data with Intermediary server

1.2.3.1 Proposed solution

Prerequisites:-

1. Latest data from Core banking system (as of BOD today) should be available in Intermediary server. SMS, Customer and Loan related data should be available.

Intermediary server will be acting as a gateway between MFIs Core Banking System and Agents Mobile device. Intermediary server consists of a Database and an Application server.

Pull data from Intermediary server:

Data from Intermediary server should be available in mobile device while performing various customer touch-point operations mentioned in above sections through proposed mobile application.

Each and every customer is linked to an agent through a location code. So agent should only receive data based on linkage between Agent and customer.

Over and above, there should be an option available in Intermediary server to define the number of days w.r.t. download of loan accounts, which are due for repayment. For example, if the number of days for data download is defined as 7 calendar days and if an agent downloads data from the Intermediary server to his mobile device today, the data should also contain loan accounts for which repayment is due in the next 7 calendar days.

Push data to Intermediary server:

All the data captured during the day by field agents should be transmitted to core system, only then the details would be recorded and relevant accounting entries will be posted in core system.

Core system should receive this data before EOD process for the day starts in core banking. Hence field agents should push the data captured in their mobile device to Intermediary server.

After today's data of all field agents are sent to Intermediary server, the collective data can be sent from Intermediary server to core banking system, before the start of EOD process in core. Pushing the data from Intermediary server to core banking system can be done through a scheduled job or manually by invoking an option.

To accommodate above requirements, there should be a facility in mobile application to sync data (both pull and push) between intermediary server and mobile device. Data exchange between intermediary server and mobile device should be in encrypted manner.

Handling Disbursement transactions:

After the disbursement transaction has been done at customers end through proposed mobile solution by field agent, the data need to be synced between respective agents device and intermediary server. These disbursement transactions could have been done for auto disbursement loans, or manual disbursement loans, or both.

Once the data is available in intermediary server after successful disbursement transaction, auto disbursement loan transactions need not be synced further with core banking system. W.r.t. disbursement transactions, only manual disbursement loan transactions need to be synced with core

system in order to initiate a manual disbursement for the particular loan account in core system, so that relevant accounting entries would be posted.

After manual disbursement loan transactions are synced between intermediary server and core system, a manual disbursement transaction record would be created in core system for respective loan accounts based on the transaction data synced, and further accounting entries would be posted automatically by core system.

1.2.4 Advances Disbursement / Repayment Collection

1.2.4.1 Current business process

Loan Disbursement / Repayment Collection would be done generally through out-sourced agents of MFI. Agents will go to respective customers' locality and disburse the sanctioned loan to them and also collect the repayment against a loan from respective customers.

The Loan disbursement process comprises of below steps:

1. Agent collects the schedule from MFI on previous day for disbursements which are due for today.
2. Agent collects the total amount from MFI to be disbursed to customers.
3. Disburse the loan amount to customers.
4. Record the disbursement in borrowers' passbook.
5. Collect the voucher from customer with signature/thumb impression.
6. Submit the report and voucher to MFI.

The Loan repayment collection process comprises of below steps:

1. Agent collects the schedule from MFI on previous day for collections which are due for today.
2. Collect the loan installments from customers.
3. Record the collection in borrowers' passbook.
4. Record the collection in daily recovery sheet.
5. Issue receipt to customers for their payment.
6. Handover the total repayment amount collected for the day to MFI along with report.

1.2.4.2 Proposed solution

Prerequisites:-

After a loan has been sanctioned for a customer, a loan account with all relevant details should be created in core system. This is out of scope of the proposed mobile application.

Disbursement in core banking system:

Disbursement of sanctioned amount of a loan in core banking system can be done in two ways i.e., either through Auto disbursement or through Manual disbursement.

Auto disbursement process:

Loan can be created in core banking system with disbursement mode as auto disbursement along with one or more disbursement schedules.

After such loan accounts are created and authorized in core banking system, the disbursements would happen automatically according to the disbursement schedules maintained for the respective loan accounts.

Below accounting entries would be posted by core banking system automatically when there is an auto disbursement happens for a loan account.

Loan asset GL	Dr	<Disbursement amount>
Loan disbursement suspense GL	Cr	<Disbursement amount>

In such cases, when there is a disbursement happened for a loan account on a given date according to the schedules maintained, the disbursement details need to be synced with Intermediary server in order to include it in respective agents agenda. Once the particular loan account is available in respective agents disbursement agenda, the agent should be able to pick the loan account and do the disbursement transaction in his device.

If the disbursement has happened and subsequently the loan account has been reversed in core system, the reversal status need to be synced with intermediary server and further any pending disbursements or repayments associated to the particular loan account should be removed from respective agents agenda.

Manual disbursement process:

Loan can be created in core banking system with disbursement mode as manual disbursement, and actual disbursements can be followed immediately or at a later stage, at one shot or in multiple drawdowns.

For these type of loan accounts, only the loan account would be created in core system with necessary loan details except details related to disbursement schedules. No disbursement related accounting entries would have been posted in core system at the time of loan account creation.

Once the loan account has been created and authorized in core system, such loan account would be synced with intermediary server and made available for further processing. User should be able to maintain disbursement schedules for such loan accounts in intermediary server.

User should be able to maintain the disbursement schedule for the disbursement to be done today or for future disbursements.

Below details are to be maintained for a loan account as part of Disbursement schedule maintenance in intermediary server:

- Disbursement date
- Disbursement amount

While maintaining disbursement schedule for a loan account, there should be a validation that sum of disbursement amount maintained across various disbursement schedules for a loan account should not exceed the loan sanctioned for the particular loan account.

Below operations are to be supported as part of disbursement schedule maintenance screen:

- New disbursement schedule
- View disbursement schedule
- Delete disbursement schedule
- Authorize disbursement schedule
- Modify disbursement schedule

Based on disbursement schedule maintained, the particular loan account should be queued in agenda of respective agent to perform actual disbursement to customer on the field. Only authorized disbursement schedules should be synced with respective agents device.

In case if the disbursement schedule maintained in intermediary server has been modified, the modified data should be synced with respective agents device on subsequent sync session, and as a result, data in agents agenda should be modified accordingly.

System should not allow to modify disbursement schedules for which the disbursement date is less than today (back dated).

Advances disbursement to customer:

Proposed mobile application should have below capabilities w.r.t. Advances disbursement.

- a) Facility to record Loan disbursements given to customers.
- b) Various search criteria to fetch the loan account such as Customer id, Customer name, Advances number, Sanctioned amount, etc.,. Agent should be able to fetch the respective loan account(s) based on providing values for one or more search criteria.
- c) Field agent should be able to pick any one of the loan account at a time and view below details related to the particular loan account:
 - i. Advances number
 - ii. Currency
 - iii. Sanctioned amount
 - iv. Amount disbursed till date
- d) Facility for field agent to view photo and details of the customer.
- e) Agent should be able to record below details w.r.t. disbursement against the particular loan account:
 - i. Disbursement date
 - ii. Disbursement amount
 - iii. Narrative
- f) Agent should be able to save the disbursement details which he has captured through his mobile. The data should be saved in his mobile, considering all security aspects. Sensitive data are to be stored in encrypted manner.
- g) There should be validation w.r.t sanctioned loan amount and disbursement amount when agent saves disbursement details.
- h) Upon successful capture of disbursement details, agent should be able to print 3 copies of advice with below details through an external printer, which is connected to mobile device:
 - i. Name of the Field agent
 - ii. Advances number
 - iii. Currency
 - iv. Sanctioned amount
 - v. Total amount disbursed (excluding current disbursement)
 - vi. Date of disbursement
 - vii. Disbursement amount
- i) Field agent can get a signature / thumb impression from the customer in printed advice as a receipt for the loan disbursement made.
- j) Field Agent should also be able to delete disbursement details, if required.
- k) For deletion of a disbursement also, agent should be able to print 3 copies of advice with cancelled status included in addition to the details mentioned in the original receipt.
- l) Field agent can get a signature / thumb impression from the customer in printed advice generated for deletion of disbursement as a receipt for the loan disbursement deletion done.

Advances repayment collection from customer:

Proposed mobile application should have below capabilities w.r.t. Advances repayment collection.

- a) Facility to record Loan repayment collections received from customers.

- b) Various search criteria to fetch the loan account such as Customer id, Customer name, Advances number, Sanctioned amount, etc.. Agent should be able to fetch the respective loan account(s) based on providing values for one or more search criteria.
- c) Field agent should be able to pick any one of the loan account at a time and view below details related to the particular loan account:
 - i. Advances number
 - ii. Currency
 - iii. Sanctioned amount
 - iv. Amount disbursed
 - v. Principal outstanding
 - vi. Amount Due
- d) Facility for agent to view the repayment schedule for the particular loan account.
- e) Facility to view component-wise breakup of due amount. Details such as Date, Component name, Schedule amount, Amount paid and Pending amount are to be displayed.
- f) Facility for field agent to view photo and details of the customer.
- g) Agent should be able to record below details w.r.t. repayment collection against the particular loan account:
 - i. Date of Repayment
 - ii. Repayment amount
 - iii. Narrative
- h) Total Amount Due should be defaulted to Repayment amount field. Value defaulted in Repayment amount field should be amendable and can be higher or lower amount.
- i) Agent should be able to save the repayment details which he has captured through his mobile. The data should be saved in his mobile, considering all security aspects. Sensitive data are to be stored in encrypted manner.
- j) Upon successful capture of repayment details, agent should be able to print 3 copies of advice with below details through an external printer, which is connected to mobile device:
 - i. Name of the Field agent
 - ii. Loan account number
 - iii. Loan currency
 - iv. Sanctioned loan amount
 - v. Total amount disbursed till date
 - vi. Total principal outstanding (excluding current repayment)
 - vii. Date of repayment
 - viii. Repayment amount
- k) Field agent can provide the printed advice to customer as a receipt for the repayment made.
- l) Field agent can get a signature / thumb impression from the customer in printed advice for the loan repayment collected from customer.
- m) Field Agent should also be able to delete repayment details, if required.
- n) For deletion of a repayment also, agent should be able to print 3 copies of advice with cancelled status included in addition to the details mentioned in the original receipt.
- o) Field agent can get a signature / thumb impression from the customer in printed advice generated for deletion of repayment as a receipt for the loan repayment deletion done.

Handling Prepayments:

Prepayment of loan accounts should be handled. There may be cases where customers would like to do a prepayment for their loan accounts. Field agent should be able to record those prepayments.

Audit Trail:

Audit trail such as user id, date and time of the Transaction are to be recorded for each and every transaction done by the agent through mobile application. Recording of Audit trail is applicable for modify and delete operations also.

Audit trail is to be stored in Intermediary server. It is not required to be handed off to Core banking system.

1.2.5 Reports / Inquiries

1.2.5.1 Agents Agenda

1.2.5.1.1 Current business process

Agent collects the schedule from MFI on previous day or today for disbursements and repayments which are due for today. MFI/Bank user would generate, print and handover this schedule to a field agent. Field agent would do disbursements and collect repayments, based on the schedule given to him.

1.2.5.1.2 Proposed solution

There should be an option available for field agents to view Today's Agenda in his device mobile application.

Below are the details which should be displayed to field agents as part of the daily schedule screen.

Daily Schedule – Loan Disbursement:

- i. Loan account number
- ii. Loan currency
- iii. Sanctioned loan amount
- iv. Total amount disbursed till date
- v. Amount to be disbursed today
- vi. Address
- vii. Photo

Daily Schedule – Loan Repayment:

- i. Loan account number
- ii. Loan currency
- iii. Sanctioned loan amount
- iv. Total amount disbursed till date
- v. Total principal outstanding
- vi. Total Amount Due
- vii. Address
- viii. Photo

Along with each and every loan account in the schedule, there should be an option to navigate directly to the respective screen, where field agent can capture details of the transaction.

1.2.5.2 Agents Transactional Activity

1.2.5.2.1 Proposed solution

There should be an option available in the proposed mobile application for field agents to view the transactions done by them in past. An agent should be able to see all the transactions based on the search criteria selected by agent.

Below is the list of various search criteria which can be available in Agents transactional activity screen:

- i. Transaction type (Options: All, Loan Disbursement and Loan Repayment)
- ii. Date Range: From and To
- iii. Transaction Currency
- iv. Transaction Amount Range: From and To

Results should be displayed based on the search criteria selected by agent.

Maximum period for fetching the past transactions should be parameterized in Intermediary server. For example, if maximum period is defined as 7 calendar days in Intermediary server, agent should only be able to view the transactions of past 7 days including current date transactions.

1.2.5.3 Agents Cash Position Inquiry

1.2.5.3.1 Proposed solution

Agents current cash position should be displayed in this screen currency-wise. If agent is holding amount in more than one currency, the amount is to be displayed currency-wise for all the currencies which agent holds.

Agents current cash position would be arrived based on the open cash registered for the day by the agent, and considering the transactions which he has done for the day.

Below details would be displayed in the screen:

- i. Currency
- ii. Cash at Opening
- iii. Cash In
- iv. Cash Out
- v. Current Cash Position

If there is more than one currency, there has to be an option available in the screen for field agent to navigate to the next currency, till all the currencies are displayed. Similarly, there should also be an option to view the previous currency, till the first currency has been reached.

1.2.6 Other Operations

1.2.6.1 Change Password

There should be a facility available for field agent to change his password for the mobile application.

Below are the fields which are to be available in the screen:

- a) Old Password
- b) New Password
- c) Retype New Password

After agent keyed in old and new passwords, these details will have to be stored in mobile device and should also be sent to intermediary server when there is a data sync initiated from agents mobile device.

1.2.6.2 Preferences Setup

Direct Functions Setup

There should be a facility available for field agent to customize his mobile application home screen by setting his favorite screens as icons in his home screen.

Agent should be allowed to set some of the screens as his favorite screens, so that icons to represent selected screens should display in his mobile application home screen. By this way, agent would get direct access to the particular screen, without navigating to any additional menus.

Location Context

Agent should be allowed to set his location context in his mobile application home screen, based on which his agenda should automatically be filtered.

For example, if he needs to go to two locations and perform 100 transactions today, out of which 55 transactions are to be done in Location A, and 45 transactions are to be done in Location B.

In such case, if he wants to view only the pending transactions of Location A, he should be able to do so by setting up the location context as Location A.

1.2.6.3 Dashboard

Agents Dashboard should be displayed on his mobile application home screen, which should be the landing page, after agent has logged in into the application. Below details are to be included in Agents dashboard.

Cash Position:

Agents cash position should be displayed. It should display Cash opening, Cash in, Cash out and Current cash for all the currencies which agent holds.

Last Sync:

Date and time of latest data sync between agents mobile device and intermediary server should be displayed.

Task Pending %:

Percentage of tasks which are pending out of all the tasks scheduled for the particular agent for the day should be displayed.

Direct Functions:

Icons to represent selected direct functions screens should be displayed. By this way, agent would get direct access to the particular screen, without navigating to any additional menus.

1.2.6.4 Forgot Password

There should be a facility in application login screen for agents to retrieve their existing password or to get a new password, in case if they had forgotten their password. Best possible approach to be identified.

1.2.7 NLS Support

Multi-lingual capability should be supported. Mobile application should be multi-lingual enabled.

1.2.8 Annexure of Requirements

Requirement Ref No.	Requirements	RS Section Ref No.
C.1	App Registration	1.2.1
C.2	Login into application	1.2.2
C.3	Logout from application	1.2.2
C.4	Dashboard - Cash position, Direct functions, Task completion %	1.2.6.3
C.5	Sync data with intermediary server	1.2.3
C.6	Agents transactional activity (completed transactions)	1.2.5.2
C.7	Agents cash position inquiry	1.2.5.3
C.8	Forgot password	1.2.6.4
C.9	Change password	1.2.6.1
C.10	Direct functions preference setup	1.2.6.2
C.11	Setting up Location context	1.2.6.2
C.12	Audit trail	1.2.4
C.13	Multi-lingual capability	1.2.7
C.14	Encryption of data exchange as well as sensitive data stored in agents mobile devices	1.2.3, 1.2.4
L.1	Handling Loan prepayments	1.2.4
L.2	Advances disbursement - New operation	1.2.4
L.3	View photo and details of the customer during advances disbursement	1.2.4
L.4	Printing 3 copies of receipt for new operation of advances disbursement	1.2.4
L.5	Advances disbursement - Delete operation	1.2.4
L.6	Printing 3 copies of receipt for delete operation of advances disbursement	1.2.4
L.7	Advances repayment collection - New operation	1.2.4
L.8	View photo and details of the customer during advances disbursement	1.2.4
L.9	Printing 3 copies of receipt for new operation of advances repayment collection	1.2.4
L.10	Advances repayment collection - Delete operation	1.2.4
L.11	Printing 3 copies of receipt for delete operation of advances repayment collection	1.2.4
L.12	Agents agenda	1.2.5.1

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