

Business Requirements Definition

Version 1.0

Client: **Kwacha Access Finance Limited**

Project: **Loan Management System**

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SECTION 1 : ACRONYMS

NRB	:	National Registration Bureau
PSM	:	Payment Solutions Malawi
LAN	:	Local Area Network
HPPTS	:	Secure Hyper Text Transfer Protocol
TCP	:	Transmission Control Protocol
AES	:	Advanced Encryption Standard
OSWASP	:	The Open Web Application Security Project
ASVS	:	Application Security Verification Standard

SECTION 2 : EXECUTIVE SUMMARY

OVERVIEW

Kwacha Access Finance Limited is looking to implement a new Loan Management System as part of its digitalization drive. Realising that technology is a key enabler in the achievement of every strategy, the institution intends to procure a system to automate its current processes. What is being sought is an off the shelf system that can be customised with minimal effort to meet the specific minimum requirements that are outlined in this document.

OBJECTIVES

The objective of the project is to implement an enterprise level loan management system that will improve the following areas:

- Client onboarding
- Loan management
- Workflow management
- Document management
- Reporting & Analytics

SECTION 3 : SERVICE DESCRIPTION

The system will support the end to end process relating to Pinnacle's loan management process. Below is an outline of the expected service of the system. The project will involve the following activities:

- i. Hardware deployment and configuration
- ii. Base and dependency software installation, configuration, and optimisation
- iii. Deployment of an off-the shelf Loan Management System
- iv. System Customisation
- v. Report and dashboard building and deployment
- vi. End-user and administrator training.

3.1 SYSTEM ACTORS

The system will be used by different users and interfaced with external systems as follows:

- Sales Agents
- Sales Team
- Credit Team
- Finance Team
- Executive
- Systems administrators
- SMS service – notifications (Not mandatory)
- Email service – notifications
- NRB System – National ID card validation
- PSM – Entity and profitability validation (Dependant on availability of APIs)
- Customer employer systems – Staff ID validation (Dependant on availability of APIs)

3.1.1 Sales Agents

These are field officers on contract basis that will have access to the system for initial credit checks (loan calculations) and will also be responsible for capturing customer profiles and applications.

3.1.2 Sales Team

These are Pinnacles employees that will conduct the following functions in the system

- i. Reviewing and authorising customer profiles inputted by Sales Agents in the system.
- ii. Reviewing and approve loan requests created upon authorisation of customer profiles.
- iii. Attaching CRB and PSM reports

3.1.3 Credit Team

These are Kwacha employees that will perform detailed credit checks and will input and approve loans in the system.

3.1.4 Finance & Executive

These are Kwacha employees will share responsibility for approving loan disbursement requests. An employee in Finance will create a disbursement request and another in Finance will approve. Based on the loan amounts, some loan will have escalated to the executive for approval.

3.1.5 Systems Administrators

This group of users is responsible for overseeing the functionality and correctness of the system. They will be able to create and disable new and existing users of the system, respectively. System administrators will also act as the first point of support for end-users in an event that the system is not functioning as expected. They will carry out scheduled maintenance work with the system itself, any dependent software, the hardware the system is hosted, and the networking infrastructure that the system uses to communicate with other stakeholders. At the point that the Systems Administrators can't resolve a system issue, they will then escalate the issue to the service providers of the system

3.1.6 SMS Service

This actor (external system) is responsible for sending out SMS notifications to customers and business users when certain events are triggered based on the configured workflows.

3.1.7 Email Service

This actor (external system) is responsible for sending out email notifications to customers and business users when certain events are triggered based on the configured workflows.

3.2 ASSUMPTIONS

For the system to be effective, the following assumption will hold:

- Business users will receive adequate training in the use of computers,
- The recommended server hardware is in place
- Network connectivity is fully available

3.3 DEPENDENCIES

The system will have the following dependencies:

- Integration with an SMS and Email gateways
- Connection to NRB and endpoint integration
- Connection to PSM and endpoint integration
- Connection to credit reference bureau and endpoint integration

SECTION 4 : REQUIREMENTS

Kwachalists down the system requirements as follows:

4.1 REQUIREMENTS GROUPING AND DEFINITION

Number	Requirement	Use case
CUSTOMER ONBOARDING		
FR1	<p>The system should provide a loan calculator which will indicate how much a customer can access based on the following parameters:</p> <ul style="list-style-type: none"> • Tenor • Loan amount • Monthly repayment amount 	Loan calculator
FR2	<p>The system should allow field agents to remotely register customers through a web/online portal. At a minimum, the following customer bio data should be captured:</p> <ul style="list-style-type: none"> • Customer Name • Contact details • Employment details e.g., employer • Employment Number • Date of Birth • Bank details e.g. Bank name, Bank account number • Loan details e.g., amount being applied for • Next of kin and residence. • National ID number: 	Customer creation
FR3	The system should specifically allow the field agent to take an image of the following:	Customer creation

	<ul style="list-style-type: none"> • Customer • Letter of undertaking • Physical application form 	
FR4	<p>The system should perform the following validation checks on data input:</p> <ul style="list-style-type: none"> • Age check (only customers with age between 18 and 59.5 to be onboarded) • National ID validation check (depending on the availability of API with NRB) • Customer ID for existing customers • Employee number (depending on the availability of PSM API) 	Customer creation
FR5	As part of the system workflow management, the above captured information should be moved to another level of authorisation which will enable the 2 nd authoriser to confirm that the information captured is correct.	Customer creation
FR6	<p>Before authorisation, the system should allow the 2nd Authorizer to view all the captured information and allow the user to attach the following additional information to each customer profile:</p> <ul style="list-style-type: none"> • CRB report • PSM reservation report 	Customer creation
FR7	On authorisation, the system should generate a unique customer number for each customer.	Customer creation
FR8	As part of the system workflow management, the above captured information should be moved to another level of authorisation.	Customer creation
FR9	On creation of the customer profile, the system should generate a loan request (based on the information captured) for onward	Customer creation

	action by credit	
LOAN MANAGEMENT		
FR10	Before authorisation, the system should allow the 3 RD Authorizer to view all the captured information.	Initiate a loan
FR11	On authorization of the loan request, a loan account number will be created for each loan.	Initiate a loan
FR12	Specifically, each loan will populate a loan schedule clearly showing the following: <ul style="list-style-type: none"> • Monthly principal due • Monthly interest due • Monthly loan outstanding balance • Any other charges accrued on the loan 	Initiate a loan
FR13	The system should automatically collect the following charges: <ul style="list-style-type: none"> • Loan processing/origination fee • Insurance • CRB 	Initiate a loan
FR14	The system should allow single/bulk authorization for the loans.	Initiate a loan
FR15	Each loan request authorised by the credit inputter shall require 2 nd level authorisation before disbursement.	Initiate a loan
FR16	After 2 nd level authorisation, the system will create a disbursement request.	Loan disbursement
FR17	The disbursement schedule will require a maker/checker authorisation.	Loan disbursement
FR18	On authorisation, the system will generate a file (format to be shared) for upload onto an online banking portal. At very least	Loan disbursement

	<p>the file should have the following fields:</p> <ul style="list-style-type: none"> • Beneficiary name • Amount • Description • Account number • Bank name • Branch • Date 	
FR19	The system should support loan top-ups. The flow on initiations to be stated above for fresh loans.	Loan Top-up.
WORKFLOW MANAGEMENT		
FR20	<p>The system should allow the definition of custom loan workflows based on user groups. The workflow should also have escalation capabilities based on configurable triggers including but not limited to:</p> <ul style="list-style-type: none"> • Loan amounts 	Workflow management
FR22	Each data capture/manipulation or financial operation should have a maker/checker functionality.	Workflow management
LOAN RECOVERY		
FR23	The system should have capabilities to capture repayments to the loans. Users should be able to post repayments to a loan account. Maker/checker authorisation must be followed.	Loan Recovery
FR24	<p>The system must support loan prepayments. A user must be able to post a prepayment to a loan account. The system must allow the user to chose how the prepayment must affect the loan:</p> <ul style="list-style-type: none"> • Principle reduction – reduces the monthly instalments 	Pre-payment

	<ul style="list-style-type: none"> Term reduction – reduces number of future instalments 	
FR25	<p>The system must have capabilities for managing non-performing loans. At a minimum the system should allow for the following</p> <ul style="list-style-type: none"> Configuration of rules for NPLs Defaulter tracking 	Non-performing loans
DOCUMENT MANAGEMENT		
FR26	<p>The system should have full document management capabilities including but not limited to:</p> <ul style="list-style-type: none"> File uploads Image captures File exports and printing 	Document Management
REPORTING AND ANALYTICS		
FR27	The system should have a report and dashboard studio that will allow the design, customization and publishing of reports and dashboards.	Reporting & Dashboard
FR28	The system should allow for report scheduling and automated distribution via email.	Reporting
FR29	For the scope of implementation, the list of reports/dashboards required out of the box together with minimum fields per report will be shared.	Reporting & Dashboard

4.2 USE CASE FLOW OF EVENTS

This section will detail each use case defined above under functional requirements on how events will flow within a process.

Use Case: Loan calculator

Pre-conditions:

- N/A

Flow of events:

- 1) Field agent inputs the loan amount, loan tenor or monthly repayment amount on a loan calculator.
- 2) The loan calculator then accepts the above variables and then computes:
 - 2(a) The qualifying loan amount if the customer inputs the monthly repayment amount and tenor or
 - 2(b) The monthly loan repayment amount if the customer inputs the loan amount and tenor.
- 3) The calculator then displays the results based on variable inputted in 2(a) and 2(b).

Extensions:

- N/A

Use Case: Customer creation

Pre-conditions:

- Valid customer ID e.g., National ID, license, passport
- Valid employment number
- Valid banking details
- Letter of undertaking
- Customer application form

Flow of events:

- 1) For new customers, the field agent opens a new customer registration page on a web portal or mobile application.
 - 1 (a) The field agent captures the following information in the system:
 - Customer Name
 - Contact details e.g. valid phone number
 - Employment details e.g., employer
 - Employment Number
 - Date of Birth
 - Bank details e.g. Bank name, Bank account number

- Next of kin details and residence.
- Customer ID information e.g. National ID, passport, license

1(b) The system then accepts the above variables and then performs the following validation before committing:

- Age check (only customers with age between 18 and 59.5 to be onboarded)
- Check the validity of the ID provided (If National ID provided).
- Check the validity of employee number (depending on the availability of PSM API)

- 2) For existing customers, the field agent inputs a customer ID, then the system automatically populates all the customer bio information on a web page for confirmation.
- 3) After the bio customer information has been captured, the system opens another web page for the field agent to capture loan information.
- 4) Before committing, the system opens a page to allow the field agent to capture the following images:
 - Customer (in form of a selfie)
 - Letter of undertaking
 - Physical application form
- 5) After all the above information has been captured, the field agent commits the information and the information be moved to the 2nd authoriser to confirm that the information.
- 6) The system allows the 2nd authorizer to view all customer profiles which have been initiated by the field agents.
- 7) After reviewing the information, the system opens another page to allow the 2nd Authorizer to upload the following under each customer profile:
 - CRB report
 - PSM report showing that a reservation has been made.
- 8) After reviewing the information, the system to have an option for the 2nd Authorizer to authorize each customer profile.
- 9) For new customers, on authorization, the system will generate a unique customer ID.
- 10) Based on (8) and (9) above, the system will generate a loan request.

Extensions:

- N/A

Use Case: Initiate a loan

Pre-conditions:

- Valid customer number
- Approved customer profile

Flow of events:

- 1) The system to display all loan requests in the workflow.
- 2) The system to enable the credit officer to review each loan request.
- 3) After review of each loan request, the system to provide an option for the credit officer to initiate loan requests.
- 4) On initiation of the loan request, the system to have a page to show each loan's loan schedule clearly showing the following:
 - Monthly principal due
 - Monthly interest due
 - Monthly loan outstanding balance
 - Any other charges accrued on the loan.
- 5) In addition to the above, on initiation of the loan request, the system to automatically collect the following charges:
 - Loan processing / origination fee
 - Insurance
 - CRB fee
- 6) On initiation of the loan request, each loan to be assigned a unique loan account number.
- 7) On successful initiation of a loan request, the loan requests to be moved to the 2nd authoriser to confirm that the information captured is adequate and correct.
- 8) The system to provide a page for allowing the 2nd authorizer to view all loan requests which have been initiated.
- 9) Upon authorization, the system to initiate a loan disbursement request to the finance team.
- 10) The disbursement process in finance to require a maker/checker authorization.
- 11) On authorization, the system to generate a file for upload onto an online banking portal.

Extensions:

- The process will follow a similar flow for loan top-ups. Note that when topping up a loan, the old loan will have to be closed and new one booked.

Use Case: Loan Recovery
<p>Pre-conditions:</p> <ul style="list-style-type: none"> Valid and active loan account Customer repayment will have been confirmed by Finance
<p>Flow of events:</p> <ol style="list-style-type: none"> 1) The system will allow the user to enter the repayment window 2) The user will supply the loan account/customer number to search for the loan 3) The user will input the required data including the repayment amount and will commit the transaction 4) Another user will then have a window to authorise all repayments 5) Upon confirmation of correctness of the record, the second use will authorise the repayment. 6) Once the transaction is completed, the loan schedule will be updated accordingly.
<p>Extensions:</p> <ul style="list-style-type: none"> N/A

Use Case: Prepayment
<p>Pre-conditions:</p> <ul style="list-style-type: none"> Valid and active loan account Customer repayment will have been confirmed by Finance
<p>Flow of events:</p> <ol style="list-style-type: none"> 1) The system will allow the user to enter the pre-repayment window 2) The user will supply the loan account/customer number to search for the loan 3) The user will input the required data including the pre-repayment amount and will commit the transaction 4) The user will choose how the prepayment should affect the loan, either being a principal reduction or term reduction. 5) Another user will then have a window to authorise all repayments 6) Upon confirmation of correctness of the record, the second use will authorise the repayment. 7) Once the transaction is completed, the loan schedule will be updated accordingly. If the prepayment has settled the loan in full, the loan account would be closed.
<p>Extensions:</p> <ul style="list-style-type: none"> N/A

Use Case: Workflow Management
Pre-conditions: <ul style="list-style-type: none">• The system will have role-based access.
Flow of events: <ol style="list-style-type: none">1) The system will have a configuration window(s) that will allow system administrators to define loan approval workflows.2) Using the interface, the admin should be able to define the approval flow from inputter to authoriser across the various loan stages3) The admin should be able to define thresholds based on amounts for specific user groups
Extensions: <ul style="list-style-type: none">• N/A

4.3 USER INTERFACE REQUIREMENTS

4.3.1 Usability

- The system should be web based for the in-branch users and there should be a mobile app or publish web portal for the remote users. The web portal and/or mobile application should have user guides/manuals.
- The interface design must adhere to industry standard design principles that make applications as user friendly and convenient as possible.

4.3.2 Performance

The system will be expected to have the following performance characteristics:

- The system should be able to scale up resources under extreme workloads

4.3.3 Capacity

The system should have the capacity to retain data for at least 7 years to conform to regulatory requirements of the Reserve Bank of Malawi.

4.3.4 Availability

Include specific and measurable requirements for:

- 99.9% uptime.
- The system shall be accessible from anywhere within the office LAN unless restricted by network segmentation for security reasons.

4.3.5 Latency

The system shall give a response in less than 5 seconds for the majority of the workloads unless network connectivity is a challenge then the system cannot guarantee the normal expected response time.

4.4 MANAGEABILITY/MAINTAINABILITY

4.5.1 Monitoring

The system should provide a monitoring dashboard that will allow administrators to monitor several aspects of the system, including but not limited to:

- Status of services

4.5.2 Maintenance

The system shall be designed with maintainability in mind. These should include features that allow the system users to be notified of any scheduled work and to gracefully fail during maintenance.

4.5.3 Operations

The system will adhere to the following operation's rules:

- The system shall have a default session time out after 3 minutes of no user activity. However, this should be configurable.

4.5 SYSTEM INTERFACE/INTEGRATION

- The system shall use a relational DBMS to persist data.
- The system will also be able to interface with SMS and Email gateways.
- The system shall communicate mainly using the secure HTTPS protocol and may on occasion use TCP protocol for low latency workloads.
- Webservice integration with NRB
- Webservice integration with PSM
- Webservice integration with credit reference bureau

4.6 SECURITY

To ensure the system data is protected, the following mechanism will be applied:

- 256-bit AES for encryption at rest
- Authorization mechanisms
- System-wide authentication for every resource request
- Auditing of every insertion, editing, and deleting of records in the system

4.7 DATA MANAGEMENT/RETENTION

The data in the system shall adhere to data management compliance needs such as archiving the data older than 7 years, performing extensive user validation to ensure only valid and correct data is accepted into the system. Database relationship and normalization will be employed to ensure data

redundancy is greatly reduced. Also, relationships will allow for data integrity rules to be applied to avoid having data duplications

4.8 STANDARDS COMPLIANCE

The system shall comply to the following standards

- OWASP ASVA v4

SECTION 5 : SIGN-OFF

**Kwacha Access Finance
Limited**

Representative:

Position:

Signature:

Date Signed:

[Insert vendor name]

Representative:

Position:

Signature:

Date Signed:

APPENDIX A: LIST OF REPORTS AND DASHBOARDS

The following reports and dashboards will be required as deliverables