Software Requirements Specification (SRS) for Loaning Management System (LMS)

for Fanders Microfinance Inc.

1. Introduction

Guides: What is the purpose of this document and the product? Who should read this, and what is the scope of this particular release?

1.1 Purpose

<Identify the product, its revision/release number, and the different types of reader (developers, managers, testers) who will use the document.>

This SRS specifies the functional and non-functional requirements for the **Loaning Management System (LMS)**, a comprehensive digital solution for **Fanders Microfinance Inc.**, intended to replace their current Excel-based operations.

The document is intended for several types of readers:

- **Business stakeholders** to validate the requirements and make approval decisions.
- **System developers** for implementation guidance and technical specifications.
- **Project managers** for planning, tracking, and resource allocation.
- **Quality assurance teams** to develop test cases and validation criteria.
- **System administrators** for deployment planning and security configuration.

1.2 Document Conventions

<Describe any standards, typographical conventions, or naming conventions (e.g., requirement ID formats) used.>

Requirement identifiers follow a standard format: **UR-XXX** for User Requirements and **FR-XXX** for Functional Requirements. Specific business terms are defined in the Glossary (Appendix A).

1.3 Project Scope

<Provide a short description of the software and its purpose. Define the boundaries: what the system WILL and WILL NOT do.>

The Loaning Management System (LMS) is a complete digital solution that will streamline **loan**

monitoring, payment processing, accounting functions, and financial reporting for Fanders Microfinance Inc..

The primary goals of the project are:

- Eliminating calculation errors caused by manual data entry.
- Ensuring data integrity through centralized database storage.
- Automating the creation of the daily cash blotter and accurate financial statements.
- Implementing a secure, cloud-based backup solution to address storage limitations.

The system will encompass the **entire loan lifecycle** from initial application entry and approval to final payment processing and reporting.

1.4 References

<List any documents or resources (e.g., contracts, style guides, source documents) to which this SRS refers. Include titles and sources.>

- Loaning Management System Project Plan (Fanders Microfinance Inc.)
- Requirements Engineering Documentation of Loaning Management System for Fanders Microfinance Inc.
- Loaning Management System Requirements Specification

2. Overall Description

Guides: What is the high-level context, environment, and limitation of the product?

2.1 Product Perspective

<Describe the product's context (new system, replacement, next version) and its relationship to any larger systems. Include diagrams if possible.>

The LMS is an **entirely new digital system** intended to replace the existing manual, **Excel-based operations**. It is a self-contained, comprehensive solution that encompasses loan monitoring, payment processing, accounting, and reporting. The system is designed using a **layered architecture** (Presentation, Business Logic, Data Access, Database, Integration).

2.2 User Classes and Characteristics

<Identify the anticipated user roles and describe their relevant characteristics, responsibilities, and access levels.>

The system supports four distinct user roles, each with **role-based access control** and unique responsibilities.

Role	Access Level & Key Responsibilities
Administrator	Full System Access: Manages user accounts (Managers, Cashiers, Account Officers). Manages system configuration and performs secure backups. Accesses all financial reports and audit trails.
Manager	Oversight and Approval: Reviews and approves loan applications. Accesses all financial reports and monitors overall cash position and performance.
Cashier	Operational Processing: Processes weekly client payments (FR-004), Loan Release (SLR) documentation (FR-007), and generates the Digital Cash Blotter (FR-006).
Account Officer (AO)	Field Operations (Limited Access): Processes collection sheets and client payment entries in the field. Views data only for assigned clients.

2.3 Operating Environment

<Describe the hardware platform, operating systems, database, networking, and other software components the system will rely on or interact with.>

- **Platform:** Web-based system.
- **Database:** Relational database system, specifically **MySQL**.
- **Back-end Technology: PHP**.
- **Users/Location:** Currently assumes single branch operations with 10 concurrent users.
- **Backup:** Daily automated backups to a **secure cloud storage** location are mandatory.

2.4 Design and Implementation Constraints

<List factors that limit the developers' options: corporate policies, specific tools/languages, required interfaces, fixed algorithms.>

- **Technology Stack:** Must use **PHP/MySQL**.
- **Loan Logic:** System must adhere to the fixed business rules: **5% monthly interest** over a **4-month loan term (17 weeks)**, and a fixed **P425 insurance fee**.
- **Security:** Must implement **role-based access control** and use secure password hashing

(e.g., **Bcrypt** with salt).
- **Audit Trail:** The system must log **100% of user activities and data changes** (audit trail) for all system activities.

2.5 Assumptions and Dependencies

<List factors assumed to be true that, if false, would affect the requirements (assumptions). List external factors outside the project's control (dependencies).>

- **Business Model:** The current system design assumes a business model based on **standard 4-month loans at 5% monthly interest rates**. Changes to these fixed terms would require major system modifications.
- **User Volume:** Initial development assumes single branch operations with **10 concurrent users**.
- **Data Accuracy:** It is assumed that the system's reliance on automated calculations and validation will guarantee 100% financial accuracy.

3. System Features

Guides: List and describe the major services the product provides. How does the system respond to user actions? What capabilities must be implemented?

3.1 Phase 1: Core Financial Automation (High Priority)

<This section details the functional requirements (FRs) of each core feature, often including a brief description, stimulus/response sequences, and the specific FRs.>

FR ID	Requirement	Key Action
FR-001	**Loan Record Creation**	Accepts client info, amount, terms; generates unique ID.
FR-002	**Interest Calculation**	Automated calculation: Principal $\times 0.05 \times 4$.
FR-003	**Payment Schedule Generation**	Automatically creates the **17-week payment schedule**.
FR-004	**Payment Recording**	Processes weekly payments; updates outstanding balance.
FR-005	**Balance Calculation**	Calculates outstanding

		balances in **real-time** upon payment entry.
FR-009	**Fee Management**	Calculates fixed P425 insurance fee.

3.2 Phase 2: Cash Flow & Operational Oversight (Medium Priority)

FR ID	Requirement	Key Action
FR-006	**Digital Cash Blotter**	Generates automated daily cash blotters (inflows/outflows).
FR-007	**Collection Processing**	Processes Account Officer collection data for Cashier posting.
FR-008	**Loan Release (SLR) System**	Processes loan disbursements; records release; updates cash position.
FR-010	**Transaction History**	Maintains complete chronological payment records with full **audit trail**.
FR-012	**Alert System**	Generates alerts for overdue payments and upcoming due dates.

3.3 Phase 3: Reporting, Administration, & Final Polish (High/Medium Priority)

FR ID	Requirement	Key Action
FR-005 (Cont.)	**Comprehensive Reporting**	Generates balanced financial statements; includes **PDF/Excel export**.

Admin (Section 6)	**Full Admin Management**	Manages user accounts (password resets, deactivation) and system configuration.
Security (UR-008)	**Automated Backup**	Implements the secure, Automated Backup strategy to cloud storage.

4. Data Requirements

Guides: What data objects does the system consume or produce? How is the data structured, acquired, and maintained?

4.1 Logical Data Model

<Describe the data objects and the relationships between them (e.g., Entity-Relationship Diagram reference).>

The system uses a relational database system. Key relationships include one-to-many from Client-to-Loan, Loan-to-Payment (17 payments per loan), and User-to-Transaction (for accountability).

4.2 Data Dictionary (Key Tables)

<Define the composition of key data structures, including field names, data types, and constraints (e.g., fixed values, uniqueness).>

Table Name	Key Fields	Fixed Values/Constraints
users	id, name, role, email	Passwords hashed using Bcrypt.
clients	id, name, phone_number	Stores borrower information.
loans	id, client_id, principal, total_loan_amount	interest_rate is fixed at 0.05. term_weeks is fixed at 17. insurance_fee is fixed at 425.00.
payments	id, loan_id, user_id, amount	Records weekly client

		payments.
cash_blotter	id, blotter_date (Unique), total_inflow, total_outflow	Tracks daily cash position.
transactions	id, user_id, transaction_type	Complete audit log for all system activities.

4.3 Reports

<Identify any reports the system generates and their key characteristics (content, format).>

The system must generate **balanced and accurate financial statements**. Reports must include the capability to **export to PDF and Excel formats**.

4.4 Data Acquisition, Integrity, Retention, and Disposal

<State requirements for data integrity (accuracy, verification), how it is acquired (manual/automated), and policies for retention (backups) and disposal.>

- **Integrity:** All financial transactions must maintain **100% accuracy**, protected through validation and **rollback mechanisms**.
- **Logging:** The system must log **100% of user activities and data changes**.
- **Retention:** Daily automated backups must have a minimum **30-day retention**.

5. External Interface Requirements

Guides: How does the system communicate with the users, hardware, and other software components?

5.1 User Interfaces

<Describe the logical characteristics of each interface: GUI standards, screen constraints, necessary components.>

The system uses a **web-based, responsive interface** to support all user roles across various devices. The interface must provide a clean **Dashboard** view with role-specific metrics and enable quick, validated data entry (e.g., Payment Entry Interface).

5.2 Software Interfaces

<Describe connections to other software (databases, libraries, applications) and the nature of the exchanged data (purpose, formats).>

- **Database Interface:** Handled through the **PHP/MySQL** stack.
- **Report Export Interface:** Enables on-demand export of reports in **PDF and Excel**

formats.

5.3 Hardware Interfaces

<Describe interactions with hardware components (if any) and system resources (CPU, RAM).>

- **Server:** Minimum dual-core 2.4GHz CPU and 8GB RAM.
- **Client Workstation:** Requires modern web browser compatibility.

5.4 Communications Interfaces

<State requirements for network functions, protocols (HTTP), and security of communications (encryption).>

- **Network:** Requires 10Mbps broadband connectivity.
- **Backup System Interface:** Manages **daily automated export** of database backups to **secure cloud storage**.

6. Quality Attributes

Guides: Specify non-functional requirements that define the quality of the product (quantitative and verifiable).

6.1 Usability

<Specify requirements for ease of use, ease of learning, efficiency, and adherence to UI standards.>

- **Ease of Learning:** Training time for basic system use should be **under 4 hours**.

6.2 Performance

<State specific, measurable requirements for speed (response time) and capacity (scalability, throughput).>

- **Response Time:** All transaction processing must complete **within 3 seconds** under normal load conditions.
- **Scalability:** The system must support **10 or more simultaneous users**.

6.3 Security

<Specify requirements for access control, data protection, privacy, and security policies.>

- **Access Control:** The system must implement **Role-Based Permissions** for the four user roles.
- **Authentication:** User passwords must utilize **Bcrypt hashing with salt-based security**.
- **Data Encryption:** All sensitive data (Client Personal Data, Financial Transactions) must be **encrypted** both in storage and transmission.

6.4 Safety

<Specify requirements concerned with preventing loss, damage, or harm to people, assets, or data.>

- **Risk Management:** The system must prevent data loss and ensure financial data cannot be corrupted by unauthorized actions, particularly concerning the audit trail and transaction logging.

6.5 Reliability

<Specify requirements for uptime (availability), recovery time, and data correctness.>

- **System Availability:** The system must maintain **99.5% uptime** during business hours.
- **Recovery Time:** Complete system restoration must be achievable **within 4 hours** following any system failure.

7. Internationalization and Localization Requirements

Guides: Specify requirements for adapting the product for different regions, cultures, or languages (currency, date formats, language).

No specific internationalization or localization requirements are currently defined as the system is scoped for a single domestic client (Fanders Microfinance Inc.).

8. Other Requirements

Guides: List any remaining requirements not covered elsewhere (legal, regulatory, installation, audit trails).

- **Financial Accuracy:** All financial calculations must be accurate to the **centavo level**.
- **Compliance:** Maintain complete **audit trails** for 100% transaction traceability.

Appendix A: Glossary

Guides: Define all specialized terms, acronyms, and abbreviations used in the document.

Term	Definition
Account Officer (AO)	Field-based staff member responsible for client relationships and payment collection.
Audit Trail	A complete log of all system changes and transactions.
Cash Blotter	The daily record of cash inflows and outflows for each branch.

Insurance Fee	Mandatory insurance component fixed at **P425** per loan.
Interest Rate	The monthly charge applied to the loan amount, fixed at **5% per month** for all loans.
Outstanding Balance	The remaining amount owed by a client.
Payment Schedule	The weekly payment plan for loan repayment, standardized at **17 weeks**.
SLR	Summary of Loan Release; documentation confirming loan disbursement to clients.

Appendix B: Analysis Models

Guides: Includes or points to analysis models (ERD, data flow diagrams, state-transition diagrams) that support the requirements.

- **Logical Data Model/Entity-Relationship Diagram (ERD):** Detailed in Section 4.1, which visually represents the key entities (users, clients, loans, payments, cash_blotter, transactions) and their relationships.
- **Loan Status State Machine:** Shows the defined lifecycle of a loan, including states like Applied, Approved, Fund Disbursed (Active), Fully Paid (Closed), Missed Payment, and Defaulted.