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

for Fanders Microfinance Inc.

Version 1.0 Approved
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Revision History

Name	Date	Reason For Changes	Version
Project Team	09/12/2025	Initial draft based on Requirements Engineering Documentation.	0.5
Project Team	10/25/2025	Incorporated template structure, assigned authorship, and added functional guides.	0.9
Carillo, J. A.	10/27/2025	Finalized all prose and quantitative requirements based on 100% system completion.	1.0

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? **MANDATE: ANALYZE THE FINAL CODEBASE**

AND CONFIRM ALL PROJECT CONTEXT AND BOUNDARIES REFLECT THE V1.0 SYSTEM.
*** Authored By: Carillo, John Andrei (Project Context & Scope)**

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?
MANDATE: VERIFY USER ROLES, OPERATING ENVIRONMENT (PHP/MySQL), AND NON-NEGOTIABLE FIXED BUSINESS RULES AGAINST THE FINAL IMPLEMENTATION. *
Authored By: Carillo, John Andrei (Project Context & Constraints)

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? **MANDATE: ANALYZE THE CODEBASE AND VERIFY ALL FUNCTIONAL LOGIC (FRs) AND THE EXECUTION OF FIXED BUSINESS RULES (e.g., INTEREST CALCULATION HOOKS) ARE CORRECTLY REPRESENTED. * Authored By: Gadiano, Noriel S. & Gavino, Kim Joshia (Functional Core & Business Logic)**

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**	**Input:** Client info, Principal, Terms. **Processing:** Generates unique ID, validates data. **Output:** Complete loan record.
FR-002	**Interest Calculation**	**Input:** Principal, Rate (5%), Term (4 months). **Processing:** Applies formula: Principal $\times 0.05 \times 4$. **Output:** Exact total interest amount.
FR-003	**Payment Schedule Generation**	**Input:** Principal, Interest, Fees. **Processing:** Divides Total Amount by 17 weeks. **Output:** Complete 17-week payment schedule.
FR-004	**Payment Recording**	**Input:** Client ID, Amount, Date. **Processing:** Updates Outstanding Balance, logs

		transaction. **Output:** Payment confirmation and updated balance.
FR-005	**Balance Calculation**	**Input:** Total Loan Amount, Payments Made. **Processing:** Applies formula: Total Amount - Sum of Payments. **Output:** Current balance owed by the client.
FR-009	**Fee Management**	**Input:** Loan Details. **Processing:** Calculates fixed **P425 insurance fee** and variable savings amounts. **Output:** Complete fee breakdown for payment schedule.

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

FR ID	Requirement	Key Action
FR-006	**Digital Cash Blotter**	**Input:** Daily collections and loan releases. **Processing:** Summarizes all cash movements by category. **Output:** Comprehensive daily cash position report.
FR-007	**Collection Processing**	**Input:** Account Officer ID, Client payments, Date. **Processing:** Validates payments against records; aggregates data by officer. **Output:** Collection summaries for cash blotter integration.
FR-008	**Loan Release (SLR) System**	**Input:** Approved loan details, Amount, Client

		Confirmation. **Processing:** Records release; updates cash position. **Output:** Release confirmation and updated cash blotter entry.
FR-010	**Transaction History**	**Input:** All system activities. **Processing:** Stores payment history with full audit trail capabilities. **Output:** Complete activity and payment history reports.
FR-012	**Alert System**	**Input:** Payment schedules, current date. **Processing:** Checks for payments 1 day overdue and 1 week in advance. **Output:** Alert notifications for staff and management.

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

FR ID	Requirement	Key Action
FR-005 (Cont.)	**Comprehensive Reporting**	**Processing:** Generates balanced financial statements. **Output:** Financial reports, analytics, and dashboards (with **PDF/Excel export**).
Admin (Section 6)	**Full Admin Management**	**Action:** Manages user accounts (creation, password resets, deactivation), ensuring accountability is preserved through audit trails.

Security (UR-008)	**Automated Backup**	**Action:** Implements daily automated export of database backups to secure cloud storage with 30-day retention.

4. Data Requirements

*Guides: What data objects does the system consume or produce? How is the data structured, acquired, and maintained? **MANDATE: ANALYZE THE FINAL DATABASE SCHEMA AND VERIFY ALL DATA TYPES, CONSTRAINTS (e.g., UNIQUE, DECIMALS), AND RELATIONSHIPS MATCH THE IMPLEMENTED CODE. * Authored By: Mana, Mark (Database & Data Structure)**

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? **MANDATE: ANALYZE THE IMPLEMENTED UI/UX, REPORTING EXPORT, AND BACKUP INTERFACES. VERIFY THE PHP/MySQL STACK IS CONSISTENTLY MENTIONED. * Authored By: Gutierrez, Nigel (Interface & Integration)**

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). **MANDATE: ANALYZE THE SYSTEM'S PERFORMANCE METRICS AND SECURITY IMPLEMENTATIONS (e.g., BCRYPT, RBAC) TO CONFIRM ALL QUANTIFIABLE VALUES (e.g., 3 SECONDS, 99.5%) ARE ACCURATE AND DEFENSIBLE. * Authored By: Agustin, Joshua Vone (Quality Assurance & Security)**

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). **MANDATE: CONFIRM THAT THE ARCHITECTURE (SECTION 2.3) REMAINS DOMESTIC AND DOES NOT REQUIRE SCALING FOR NEW MARKETS. * Authored By: Mana, Mark (Database & Architecture)**

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). **MANDATE: RE-VERIFY THAT THE FINANCIAL ACCURACY (CENTAVO LEVEL) AND COMPLIANCE CLAIMS ARE TRUE AND SUPPORTED BY THE AUDIT LOG. * Authored By: Agustin, Joshua Vone (Compliance & Financial Accuracy)**

- **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.
Authored By: Carillo, John Andrei (Project Context & Consistency)

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.
Authored By: Gutierrez, Nigel (Interface & Modeling)

- **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.