

1. Introduction

1.1 Purpose

The purpose of this document is to define the software requirements for a system that registers companies, farmers, and agents involved in cotton purchasing and enables financial and operational interactions among them, including capital management, payments, and messaging.

1.2 Scope

The system will:

- Register companies, farmers, agents, agricultural officers, and farmland details.
- Manage company capital in a shared account and allocate funds per company.
- Facilitate communication with farmers.
- Manage cotton sales and payments through mobile money.
- Track and report transactions to companies.
- Manage farmer loans and ensure automatic deduction during sales.

1.3 Definitions, Acronyms, and Abbreviations

- **Farmer:** Individual who grows and sells cotton.
- **Agent:** Company representative handling purchases and farmer interactions.
- **Agricultural Officer:** Officer overseeing agricultural activities in an area.
- **Company:** Business entity investing capital and buying cotton.
- **System:** The software application being developed.

2. Overall Description

2.1 Product Perspective

The system is a new, independent web and/or mobile application that manages all stakeholders involved in the cotton purchasing ecosystem.

2.2 Product Functions

- Registration of entities (companies, farmers, agents, officers, farms).
- Capital management and tracking per company.
- Communication (messaging system).
- Payment processing and tracking.
- Loan management and deductions.
- Reporting to companies.

2.3 User Classes and Characteristics

- **Admin:** Manages system configurations and all registrations.
- **Company User:** Monitors capital, receives reports.
- **Agent:** Executes farmer payments, registers area activities.
- **Agricultural Officer:** Manages area oversight and payment approvals.
- **Farmer:** Receives advice, sells cotton, applies for loans.

2.4 Operating Environment

- Web application (accessible via browsers).
- Mobile application (Android/iOS) for agents and farmers.
- Integrates with mobile money payment systems.

2.5 Design and Implementation Constraints

- Compliance with mobile money integration APIs.
- Secure and auditable transaction processing.

2.6 Assumptions and Dependencies

- Availability of mobile network and mobile payment infrastructure.
- Farmers have mobile devices capable of receiving messages and payments.

3. Specific Requirements

3.1 Functional Requirements

3.1.1 Registration and Management

- The system shall allow registration of companies, specifying company details and capital.
- The system shall allow registration of farmers, including farm size (acres).
- The system shall allow registration of agents assigned to companies and specific areas.
- The system shall allow registration of agricultural officers and their respective areas.

3.1.2 Capital Management

- The system shall maintain a single pool account where all company capitals are deposited.
- The system shall record and track the individual capital contribution of each company.
- The system shall deduct payments made to farmers from the respective company's capital.
- The system shall maintain and display the remaining capital per company.

3.1.3 Messaging and Advisories

- The system shall send SMS or app notifications to farmers providing advice on best farming practices and mid-harvest cotton preparation.

3.1.4 Cotton Sales and Payments

- The system shall allow agents and agricultural officers to record cotton purchases from farmers.
- The system shall initiate mobile money payments to farmers upon sale confirmation.
- The system shall ensure the payment amount is deducted from the relevant company's capital.
- The system shall notify the company about each payment, including details of the farmer, agent, amount paid, and remaining balance.

3.1.5 Loan Management

- The system shall allow farmers to apply for agricultural loans from a specific company.
- The system shall record the farmer's loan and link it to the company.
- The system shall automatically deduct loan amounts when the farmer sells cotton, even if sold to another company.

3.1.6 Reporting

- The system shall generate and send payment and balance reports to companies in real time.
- The system shall provide transaction logs for auditing purposes.

3.2 Non-Functional Requirements

3.2.1 Performance Requirements

- The system should handle at least 10,000 concurrent users without performance degradation.
- Payments and notifications should be processed within 5 seconds.

3.2.2 Security Requirements

- Support secure authentication and role-based access control.
- Encrypt all sensitive data, especially financial transactions and personal data.
- Integrate with secure mobile money APIs.

3.2.3 Reliability and Availability

- System uptime should be at least 99.5%.
- Provide failover mechanisms for payment services.

3.2.4 Usability

- The system should be user-friendly for non-technical users such as farmers and agents.
- Multi-language support may be required depending on the region.

3.2.5 Maintainability

- The system shall be modular and follow best software design practices to allow future expansion.

3.3 External Interface Requirements

3.3.1 User Interfaces

- Web dashboards for admin and companies.
- Mobile app or USSD/SMS interface for farmers and agents.

3.3.2 Hardware Interfaces

- Compatible with standard smartphones and web browsers.

3.3.3 Software Interfaces

- Mobile money API for payment processing.
- SMS gateway API for messaging.

3.3.4 Communications Interfaces

- Internet for web and mobile app connectivity.
- GSM/USSD for SMS-based features.

4. Appendices