Bhagirathi

The Bhagirathi Co-operative Milk Producers' Union Limited

(A Govt. of West Bengal Project)

Annexure-A

Software Requirement Specification (SRS)

Title: Web-Based DBT Reporting & Messaging System with WhatsApp Business API Integration

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1. Introduction

1.1 Purpose

The purpose of this software is to automate the management and communication of Direct Benefit Transfer (DBT) information for Dairy Cooperative Societies (DCS). The system will allow importing DBT lists (Excel format provided by NDDB Portal), generate DCS-wise PDF reports, and distribute them via WhatsApp Business Cloud API. It will also provide an admin panel for master data management, reporting, and messaging functionalities.

1.2 Scope

- Web-based application hosted on AWS cloud.
- Secure user authentication and role-based access.
- Integration with WhatsApp Business Cloud API for messaging and document sharing.
- Support for Excel file imports (compatible with NDDB portal format) and Auto-generation of DCS-wise PDF files from "Farmer-wise DBT Statement" & "Member Milk Collection Summary".
- The system must support uploading of Microsoft Word (.docx) or Microsoft Excel (.xlsx) as a template and Microsoft Excel (.xlsx) as data list. Once uploaded, the system should allow DCS-wise PDF generation by merging the uploaded template with the uploaded data list (similar to the Mail-Merge feature in MS Office).
- Centralized admin panel to manage DCS master, user master, and reporting.
- Analytical reports (Bill-wise, monthly, yearly, comparative).
- Messaging interface to send text and media files (PDF, Word, Image, voice, etc.) to DCS.

1.3 Users

- **Admin Users:** Manage DCS Master, User Master, Reports, Messaging.
- **Operators/Staff:** Upload DBT Excel files, generate PDFs, send messages, etc.
- **DCS Recipients:** Receive PDFs and messages via WhatsApp.

2. Functional Requirements

2.1 Data Import

- System must allow uploading of Excel files ("Farmer-wise DBT Statement" & "Member Milk Collection Summary") in the format exported from the NDDB portal. Data fields include:
  - **For Farmer-wise DBT Statement:** Sl. No., DCS Code, Farmer Name, Bank Name, IFSC Code, Account Number, Amount, etc.
  - **For Member Milk Collection Summary as on NDDB AMCS Portal:** Member Name, Quantity, Amount, Deduction, Net Payable, Bank Name, Branch, Account No, IFSC Code, etc.
- Validation checks for incorrect/missing data.
- **For Mail-Merge features:**
  - Users can upload MS Word (.docx) and MS Excel (.xlsx) files.
  - System should validate to ensure file compatibility (Word 2007+ and Excel 2007+).
  - Uploaded files should be stored securely on the server for processing.

2.2 PDF Generation

- **For Farmer-wise DBT Statement & Member Milk Collection Summary as on NDDB AMCS Portal:**
  - Auto-generate DCS-wise PDF files from uploaded data.
  - Users should be able to download the generated files individually or in bulk (as ZIP).
  - Each PDF should contain
    - ➢ DCS Header (Code, Name, Address, Bill Period, etc.) for both cases
    - ➢ Farmer-wise list with payment details. (For Farmer-wise DBT Statement)
    - ➢ Farmer-wise list with Milk Collection details & Bank details. (For Member Milk Collection Summary as on NDDB AMCS Portal)
- **For Mail-Merge features:**
  - System should identify placeholders (e.g., {{FarmerName}}, {{DCSCode}}, {{Amount}}) in the Word template.
  - Users should be able to map placeholders with uploaded Excel dataset fields.
  - For each DCS, the system should generate a separate PDF by replacing placeholders with actual values from uploaded Excel data.
  - Users should be able to download the generated files individually or in bulk (as ZIP).
  - Each PDF should contain
    - ➢ Bhagirathi Logo
    - ➢ Template Body with replaced placeholder value (Uploaded as MS Word or MS Excel file)
- All PDFs should be downloadable and stored securely.

2.3 WhatsApp Messaging

- Integration with WhatsApp Business Cloud API.
- Ability to send:
  - Text Messages
  - Media Files (PDF, Word, Images, voice, etc.)
- Each DCS receives its respective PDF via WhatsApp.
- Bulk message sending to all selected DCS. (All, Route wise, Block wise, Sub-division wise, etc.)
- Message delivery and read status tracking (if supported by API).
- One-click option to resend previously sent any messages.

2.4 Admin Panel

- **DCS Master Management**
  - Add/Edit/Delete DCS records
  - DCS info list (Code, Name, Route, Sub-division, Block, Primary Contact No, Secondary Contact No, Reception Place, etc.)
  - Maintain DCS WhatsApp number
- **User Master Management**
  - Role-based access (Admin, Operator, Viewer)
  - Add/Edit/Delete users
- **Reports & Analytics**
  - Monthly report (farmer-wise & DCS-wise payment summary)
  - Yearly report (farmer-wise & DCS-wise payment summary, aggregated payments)
  - Comparative report (between 2 bills, 2 months, or 2 years)
  - Export reports in Excel/PDF.

2.5 Security & Compliance

- Role-based authentication.
- Encrypted storage of sensitive data (Bank A/C, IFSC, etc.).
- Audit trail of uploads, messages, and report generations.
- Compliance with the IT Act and Data Privacy guidelines.

3. Non-Functional Requirements

3.1 Technology Stack

- **Frontend:** ReactJS / Angular / Bootstrap
- **Backend:** NodeJS / Java Spring Boot / .NET / CodeIgniter(to be finalized)
- **Database:** MySQL / PostgreSQL
- **Server:** AWS Cloud (EC2, RDS, S3, CloudWatch)

- **Messaging API:** WhatsApp Business Cloud API

3.2 Performance

- Import of 25,000+ farmer records in one Excel file within 1 minutes.
- PDF generation within 10 seconds per DCS.

3.3 Reliability & Availability

- 99.9% uptime SLA (excluding planned maintenance).
- Auto-backups of database and documents on AWS S3.

3.4 Scalability

- System should support growth to 1000+ DCS and 50000+ farmer records.

3.5 Cost Considerations

- WhatsApp messaging cost as per WhatsApp Business Cloud API pricing.
- AWS cloud usage payable as per actual consumption (billed directly from AWS principal).

4. Deliverables

- Web application hosted on AWS.
- WhatsApp Business Cloud API integration.
- PDF generation and automated delivery.
- Admin Panel with Master Management.
- Reports and Analytics module.
- Documentation & User Manual.
- Training & Support.

5. Assumptions & Dependencies

- Client will provide access to NDDB Excel sample formats.
- WhatsApp Business API account will be registered and billed to the Union.
- AWS account will be Union-owned for direct billing.
- Internet connectivity is available at the DCS end.

6. Acceptance Criteria

- Successful upload and processing of NDDB portal's Excel files.
- Correct PDF generation for each DCS.
- Verified delivery of PDFs via WhatsApp.
- Reports generate accurate and consistent data.
- System performance meets specified benchmarks.

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