MTN MoMo SMS Analysis - Project Report

1. Project Overview

This project was built to parse and analyze MTN MoMo SMS transaction data in XML format. The main goal was to extract structured insights from unstructured SMS data, categorize transactions, and display them in a web-based dashboard.

2. Approach

- XML data was parsed using Python (ElementTree).
- Messages were categorized into defined transaction types (Payments, Withdrawals, Bank Transfers, etc.).
- Cleaned and structured data was saved into an SQLite relational database.
- Flask was used to create an API to query the database.
- A frontend dashboard (HTML, CSS, JavaScript) was created to visualize the data using Chart.js.

3. Key Design Decisions

- **SQLite** was chosen for simplicity and portability.
- The backend uses **Flask**, a lightweight and easy-to-integrate Python framework.
- The **dashboard** is fully static and communicates with the backend API using JavaScript (fetch API).
- Unrecognized or uncategorized messages were logged separately in a `logs/` folder for transparency.

4. Challenges Faced

- Parsing inconsistently structured SMS messages.
- Extracting reliable date and amount formats from free-text messages.
- Handling special transaction types (e.g., third-party bundles, internet payments).
- Designing a UI that is both clean and data-rich.
- Ensuring the application works with minimal setup across systems.

5. Improvements & Next Steps

- Expand message detection using regex for deeper pattern matching.
- Add user authentication for more secure data handling.
- Create filters for date range, phone numbers, and advanced analytics.
- Containerize the app using Docker for easier deployment.

This project serves as a foundation for future financial tech applications that simplify and localize transaction tracking in Africa, especially Rwanda.