The database schema for the MoMo Transaction Analyzer is designed to transform unstructured XML logs into a robust, 3rd Normal Form (3NF) relational model. By analyzing the `modified_sms_v2.xml` data, we identified three primary functional entities—**Transactions**, **Users**, and **Categories**—alongside operational entities for **Labels** and **System Logs**.

A key design decision was the **normalization of Users and Categories**. In the raw XML, sender names and transaction types are repeated as plain text. By extracting these into standalone tables with unique Primary Keys (PK), we ensure **data integrity**. This allows a user's name or a category's description to be updated in one place without compromising the history of thousands of transactions. The `Transactions` table acts as the central 'Fact' table, utilizing Foreign Keys (FK) to link participants and classifications.

To satisfy advanced analytical requirements, we implemented a **Many-to-Many (M:N) relationship** between Transactions and Labels, resolved via the `Transaction_Labels` **junction table**. This structure is essential for fintech applications where a single payment (e.g., a 27,000 RWF transfer) might need multiple tags such as 'Rent' and 'Business Expense' simultaneously.

Finally, the **System_Logs** entity provides an isolated audit trail. By separating technical ETL performance data from financial records, we maintain a clean system architecture that is both searchable and scalable. The use of **Decimal(10,2)** for amounts ensures financial precision, preventing the rounding errors common with standard floating-point data types.