**ERD Design Documentation (Draft)**

Our ERD for the MoMo Transaction Analytics system was designed to capture the core elements required for storing, querying, and analyzing mobile money data. The main entities are:

* **Transactions** – stores transaction\_id, amount, currency, date\_time, status, and links to category and user details.
* **Users** – keeps sender/receiver data such as user\_id, full name, phone, email, and registration\_date.
* **Transaction\_Categories** – defines transfer, payment, cash-out, bill payment, and other transaction types.
* **Transaction\_Participants** – a bridge table connecting Transactions and Users, with fields (transaction\_id, user\_id, role) to show if the user is a sender or receiver.
* **System\_Logs** – stores pipeline and dashboard logs (log\_id, event\_type, details, created\_at).

We chose a **1:M** relationship from Categories → Transactions, a **1:M** from Transactions → Logs, and an **M:N** between Transactions and Users, resolved with the Transaction\_Participants table. This structure supports scalability, allows multiple users per transaction, and enforces referential integrity through foreign keys.

Primary keys and indexes were added for efficiency (transaction\_id, user\_id, category\_id). Data types (INT, DECIMAL, VARCHAR, DATETIME) match the business rules for precision and future growth. This schema ensures fast querying for analytics while keeping the data model clean and normalized.