## **Banking on Insights: Data Analysis Report**

**Project Name:** Banking on Insights **Date:** June 17, 2025

### **1. Introduction**

This report presents an in-depth analysis of customer, account, and transaction data from a digital bank. The objective is to leverage SQL skills to explore the provided datasets, identify meaningful patterns, anomalies, and trends, and generate actionable insights that can inform the bank's strategies for customer service and smarter decision-making.

The analysis utilizes three distinct datasets: Customers, Accounts, and Transactions, which were successfully imported into a MySQL database named banking\_insights.

### **2. Data Overview**

The analysis began with a fundamental understanding of each dataset's scope:

* **Customers Table:** Contains individual customer details, including customer\_id, name, gender, age, location, and date\_joined.
* **Accounts Table:** Details bank accounts, linking to customers via customer\_id, and includes account\_id, account\_type, balance, and is\_active status.
* **Transactions Table:** Records individual financial movements, with transaction\_id, account\_id, transaction\_type, amount, and transaction\_date.

Key high-level statistics from the data:

* Total Customers: 30
* Total Accounts: 47
* Total Transactions: 949

### **3. Key Insights and Analysis**

The following insights were derived by combining and analyzing the data across the three tables:

#### **3.1. Basic Data Distribution**

* **Customer Demographics:**
  + **Gender Distribution:** Analysis revealed the distribution of male and female customers, providing a baseline for targeted marketing.  
    - Male Customers: 14
    - Female Customers: 16
  + **Geographic Distribution:** Customers are primarily located in specific areas, indicating potential regional focus for service expansion or localized promotions.  
    - Top Locations: Kisumu-9

Eldoret-8

Nakuru-7

Nairobi- 6

* + **Age Groups:** Customers are segmented into age groups, allowing for tailored product offerings.  
    - Age Group Distribution: 18-24=3

25-34=9

35-44=9

45-54=6

55- =3

* **Account Landscape:**
  + **Account Types:** The bank offers various account types (e.g., current, savings, business), with varying popularity.  
    - Account Type Distribution: Savings-18

Current-16

Business-13

* + **Overall Financial Health:** The average balance across all accounts provides a general indicator of the bank's collective liquidity.  
    - Average Balance: 52596.498298
  + **Account Activity:** A significant portion of accounts are active, but inactive accounts may present a churn risk.  
    - Active Accounts: 39
    - Inactive Accounts: 8
* **Transaction Activity:**
  + **Transaction Types:** The most common transaction types indicate typical customer behavior.  
    - Top Transaction Types: Withdrawal-389

Deposit-343

Payment-113

Transfer-104

* + **Total Monetary Flow:** The overall sum of transactions indicates the volume of financial activity through the bank.  
    - Total Transaction Amount: 9326339.65

#### **3.2. Customer-Account Relationships**

Understanding how customers utilize multiple accounts and their combined balances is crucial:

* **High-Value Customers (Total Balance):** Identifying customers with the highest aggregate balances across all their accounts can help the bank prioritize premium services or personalized relationship management.  
  + Example: Top Customer: e.g Name-Customer\_28

Customer\_id- CUST028

Total balance-188031.82

* **Multi-Account Holders:** Customers holding multiple accounts or diverse account types may indicate higher engagement or specific financial needs.  
  + Customers with multiple account types: e.g Name-Customer\_3

Customer\_id-CUST003

Number of accounts-2

* **Inactive Customer Identification:** Customers whose *all* accounts are inactive represent a significant churn risk. Proactive outreach or re-engagement campaigns could be designed for these individuals.  
  + Example: customer\_id CUST005, name Customer\_5 has only inactive accounts.
* **Geographic Wealth Distribution:** Average balances vary by location, providing insights into regional economic disparities or varying customer segments.  
  + Top Location by Avg Balance: Nakuru=69656.575000

Eldoret=57082.590000

Nairobi=55681.113333

Kisumu=32145.387143

#### **3.3. Transactional Behavior Analysis**

Focusing on how money moves helps identify liquidity patterns and potential fraud:

* **Account Activity by Transaction Type:** Analyzing the sum of deposits, withdrawals, and payments per account provides a detailed view of individual account usage.  
  + Example: Account ACC0001 shows total deposits of 47023.57 and total withdrawals of 26830.60.
* **Monthly Transaction Trends:** Tracking transaction volume and amount over time helps identify peak periods, seasonal trends, or anomalies.  
  + Example: Month 2023-01 had the highest transaction volume/amount.
* **Average Transaction Value:** Different transaction types have distinct average amounts, which can inform fee structures or fraud detection thresholds.  
  + Example: Average deposit amount is 9821.946997 vs. average withdrawal amount of 9767.231954.
* **High-Volume Accounts:** Accounts with a high number of transactions might belong to active businesses or individuals requiring efficient transaction processing.  
  + Top 10 accounts by transaction count: ACC0036-29

ACC0012-28

ACC042-28

ACC0026-24

ACC0022-26

ACC0030-26

ACC0019-26

ACC0011-26

ACC0003-25

ACC0007-26

#### **3.4. Cross-Table Insights (Customer Behavior & Transactions)**

Combining customer demographics with transactional data yields deeper behavioral insights:

* **Age Group Transaction Behavior:** Different age groups exhibit distinct transaction patterns and average amounts across various transaction types. This can guide product development or marketing messages specific to each demographic.  
  + Example: Age group '18-24' might show higher average *transfer* amounts, while '55+' might have higher average *deposit* amounts. E.g 18-24 exhibit a higher average transaction amount of 11956.358750
* **Location-Based Transaction Volume:** Understanding which locations generate the highest transaction value helps optimize branch placement, ATM networks, or digital service focus.  
  + Top 3 Locations by Total Transaction Amount: Nakuru=2631628.93

Kisumu=2491795.93

Eldoret=2412894.41

Nairobi=1790020.38

* **Account Types in Transfers:** Identifying which account types are predominantly used for transfers can reveal insights into inter-account movements or specific customer needs.  
  + Example: 'Current' accounts might be dominant in transfers. Savings transfer amount is 438515.04, Current account transfer amount is 359611.36 and business account transfer amount is 254914.71

**High-Activity Recent Joiners:** Pinpointing new customers with significant early transaction activity allows the bank to quickly identify and nurture potentially valuable relationships.

* + Example: Customer CUST023, Customer\_23 joined in 2022 and has over 10 transactions.
* **Identifying "Power Users":** Combining high account balances with high transaction volumes identifies the bank's most valuable customers, who deserve special attention and tailored services.  
  + Top 5 "Power Users": CUST023,Customer\_23 has 52 transactions, has a balance of 3845123.07 with a total transaction value of 556072.23

CUST018,Customer\_18 has 48 transactions, has a balance of 3733430.52 with a total transaction value of 473079.87

CUST016,Customer\_16 has 43 transactions, has a balance of 3392087.62 with a total transaction value of 445727.02

CUST024,Customer\_24 has 38 transactions, has a balance of 2957384.47 with a total transaction value of 370165.64

CUST027,Customer\_27 has 55 transactions, has a balance of 2849330.32 with a total transaction value of 488836.29

### **4. Recommendations and Future Steps**

Based on these insights, here are some recommendations and areas for further exploration:

* **Customer Retention:** Implement a targeted campaign for customers identified with "only inactive accounts." This could involve personalized offers or educational resources.
* **Product Development:** Analyze the most frequent transaction types and age-group-specific behaviors to develop new products or features that cater to identified needs (e.g., enhanced transfer services for younger demographics).
* **Marketing & Outreach:** Tailor marketing efforts based on geographic and age-group distributions. For example, higher-value locations might receive more personalized offers.
* **Risk Management:** Further investigate accounts with very low balances or unusual transaction patterns (e.g., very high withdrawal frequency) as potential indicators of financial distress or unusual activity.
* **Service Optimization:** Use insights from top transacting accounts/locations to optimize resource allocation, such as staffing at physical branches or digital support for specific regions.

**Future Data Needs:**

* To gain even deeper insights, the bank could collect data on:  
  + Customer onboarding source (e.g., online, branch referral).
  + Customer income levels.
  + Credit scores or loan data.
  + More granular transaction details (e.g., merchant categories for payments).

This report provides a strong foundation for understanding the bank's data. By continually leveraging SQL for data exploration and insight generation, the bank can make more informed and strategic decisions.