



# UNLOCKING THE WORLD OF BANKING: UNDERSTANDING PROCESSES AND PROTOCOLS

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# Executive Summary

This report provides an in-depth analysis of the Banking sector. It explores important conclusions, revelations, and suggestions that come from in-depth study and data analysis. The first section of the study looks at the state right now, noting significant trends, problems, and possibilities. It then goes on to examine different tactics and industry best practices.

Furthermore, the report notes a comprehensive analysis of diverse banking processes utilizing Exploratory Data Analysis (EDA) techniques using Data Modelling and Data Visualization via Microsoft Power BI. Several suggestions are made in light of these findings to solve current issues and take advantage of the potential. These suggestions cover generating the synthetic data and making it work.

To sum up, this study is an invaluable source for those involved in the banking sector who want to learn more about the processes that are involved with the bank and create well-informed plans to spur innovation and growth.

## Background

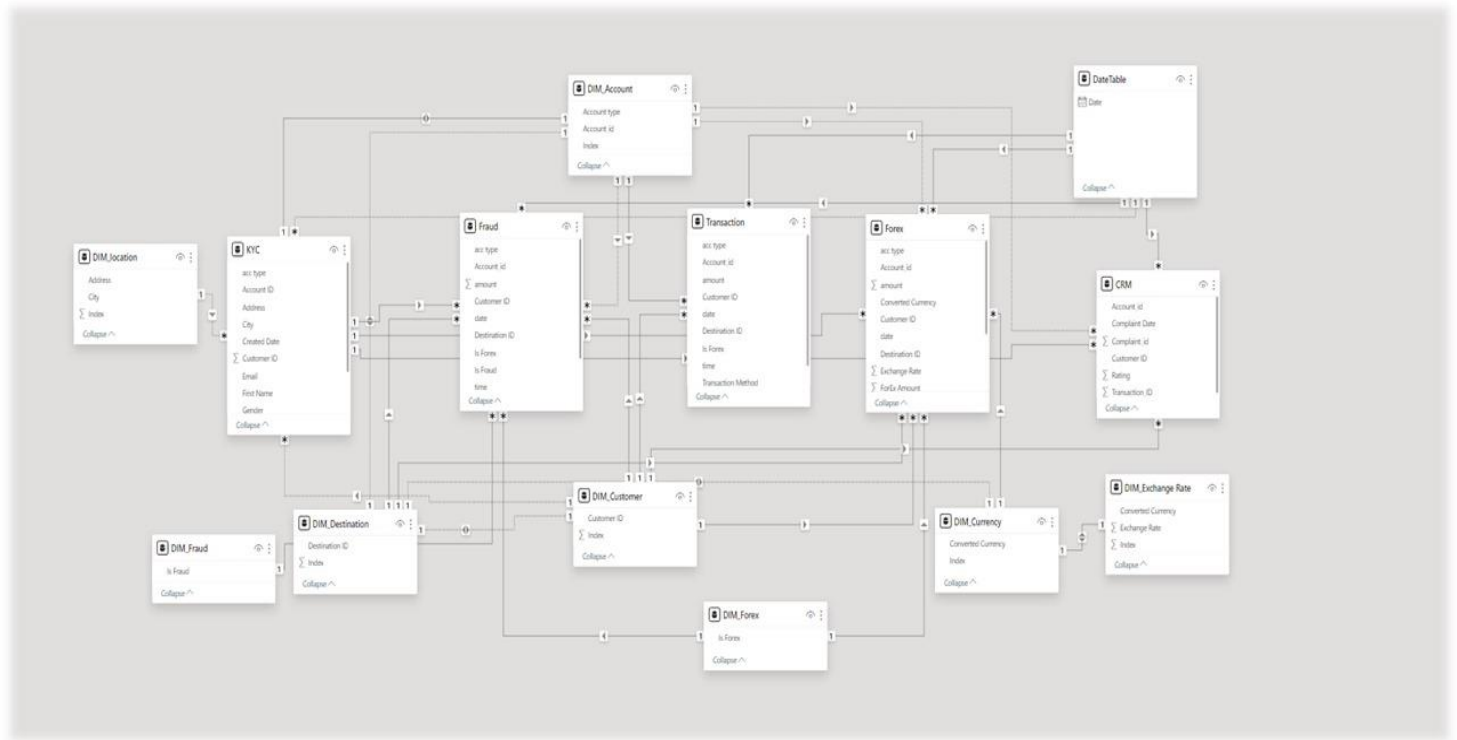
The banking sector serves as a cornerstone of the global economy, facilitating financial transactions, investments, and economic growth. Banking procedures have changed dramatically over time due to changes in customer behavior, legal frameworks, and technological improvements.

In the past, traditional brick-and-mortar branches served as the main hub for banking operations, where clients could transact business and use banking services. But as the globe has become more digitally connected, online and mobile banking services have become more popular, providing users with ease and accessibility from anywhere in the world.

Furthermore, banks now face more scrutiny and compliance requirements as a result of regulatory reforms implemented in the wake of the global financial crisis, which has an impact on their operational procedures and risk management strategies.

Now this report gives you the insights and patterns, identifies specific areas for fraud transactions, and assesses safety precautions on how to overcome and bring up the solution. These goals aim to enable evidence to guide decisions, improve customer satisfaction, and ultimately make the banking process work more efficiently. In view of the importance of visualization in this process, the use of clear visualization plays a vital role in the extraction of meaningful information from data. In this context, it is also important to create charts with highlight temporal trends so that the patterns can be identified over time. In addition, an emphasis on clear graphics has been reinforced to facilitate ease of understanding.

## Consolidated Data Model:



### Attributes/Columns and their significance:

Columns	Description	Data-Type
Customer_ID	Unique ID'S of the customer	Whole Number
First Name	First Name of the Customer	String
Last Name	Last Name of the Customer	String
Gender	Sex of the Customer	String
Address	Location of the Customer	String
City	City	String
Created_Date	Account creation date of the Customer	Date
SIN	Social Insurance Number of the Customer	Whole Number
Phone Number	Contact Details of the Customer	Whole Number
Account_ID	Account ID of the Customer	Whole Number
Account_Type	Account Type Created (Savings, Chequeing, Credit)	String

Email	Contact Detail of the Customer	String
Transaction_Date	Total transactions Date	Date
Transaction_Time	Total Transactions Time	Time
Amount	Transaction Amount	Decimal Number
Destination_ID	Receiver's ID	Whole Number
Transaction_ID	UID for Transaction	Whole Number
Transaction_Method	Method through which transaction has been done (UPI, Online, Mobile, Internet)	String
Is_Forex	Whether transaction is Forex or not (1-Forex, 0-Not Forex)	Boolean
Original Currency	Currency through which exchange has been made (base currency)	String
Converted Currency	Base currency converted at destinations currency(Receiver's end)	String
Exchange Rate	Medium (Rate) through which the exact remitted amount is decided to be received in destination account	Decimal Number
Forex Amount	Final converted amount	Decimal Number
Is_Fraud	Whether transaction is Fraud or not (1-Fraud, 0-Not Fraud)	Boolean
Rating	Rating of the customer	Whole Number
Complaint_ID	UID for each complaint raised	Whole Number
Complaint_Date	Complaint date when registered	Date

# Analysis:

## 1) KYC

Know Your Customer" (KYC) is a critical process adopted by banks and financial institutions globally to verify the identity of their clients. This concept has evolved significantly over time, tracing back to the establishment of formal banking regulations. The essence of KYC lies in preventing financial fraud, money laundering, identity theft, and terrorist financing. This section delves into the history of KYC, highlighting its inception, evolution, significance, the process involved, and its undeniable necessity in today's banking ecosystem.

### Business Objective

#### KYC procedures are vital for several reasons:

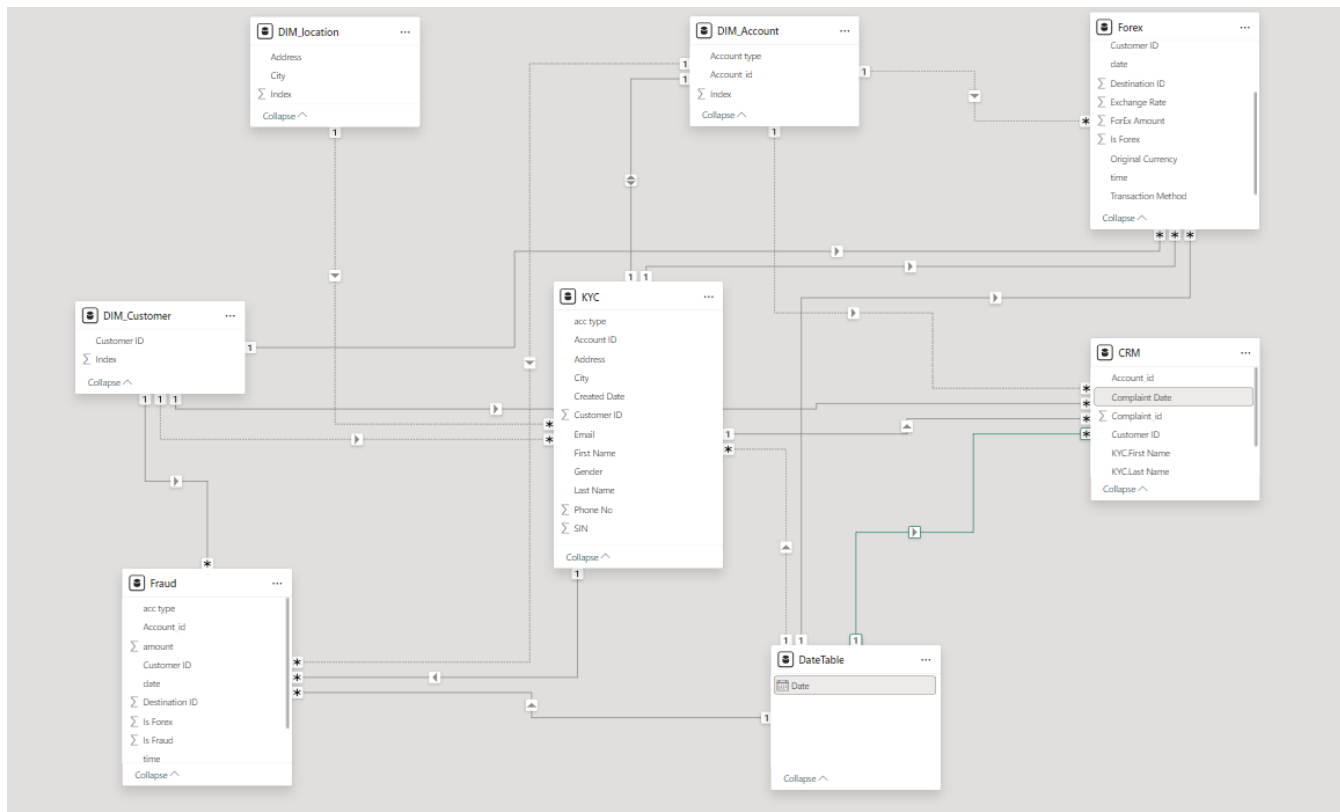
**Preventing Illegal Activities:** They help in identifying suspicious activities and preventing money laundering, terrorism financing, and other illegal undertakings.

**Protecting Customers:** By ensuring that financial services are not misused, KYC helps in protecting customers from fraud and theft.

**Compliance with Regulations:** Financial institutions must adhere to KYC regulations to avoid legal penalties and sanctions. Compliance also builds trust with regulators and enhances the institution's reputation.

**Risk Management:** KYC enables banks to understand their customers better and manage risks more effectively.

### Data Modelling:



Fact: KYC

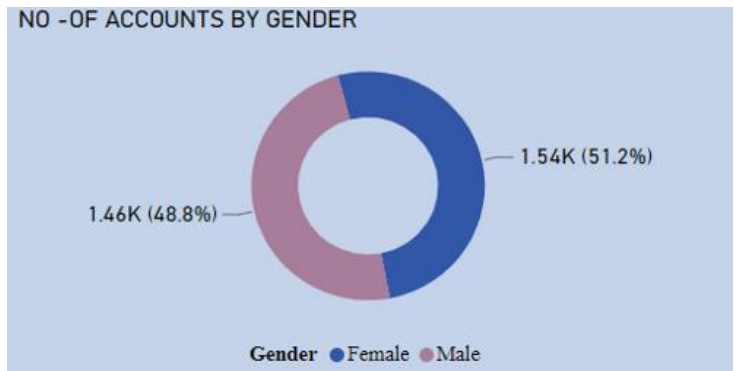
Dimensions: Dim\_location, Dim\_account, Dim\_customer, Dim\_Date table

Explanation: All the dimensions in 'KYC' process are Conformed & Outtrigger (Except For Dim\_Location which is a conformed dimension of only 'KYC' process)

## Data Visualization:



Over the period, the highest number of accounts were created in Indore in 2019, while the lowest was in Sirsa.



Total male-to-female ratio of customers is 1464:1536

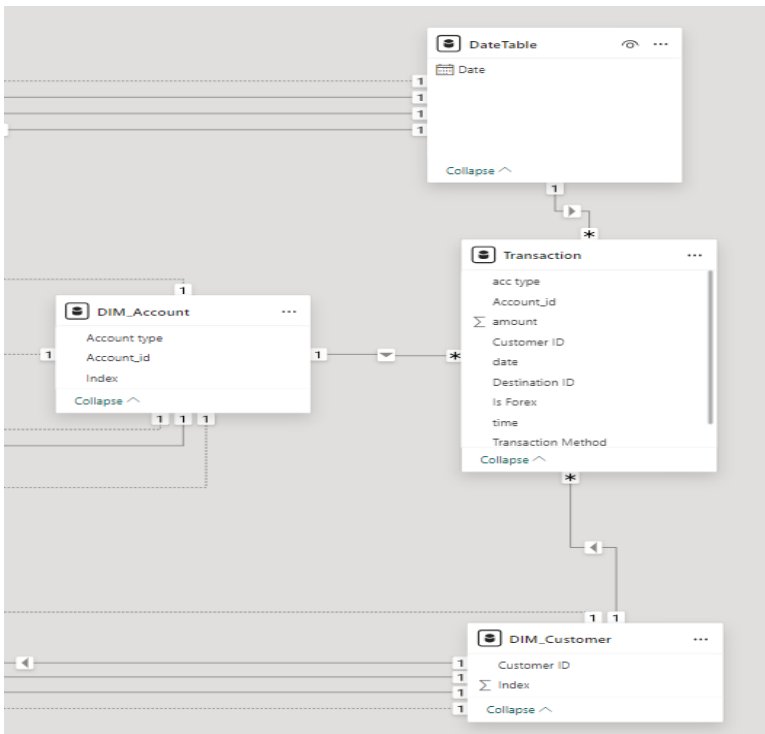
## 2) Transaction

A transaction refers to the exchange of funds or assets between two parties, typically involving the transfer of money from one account to another.

### Business objectives

Enhance Operational Efficiency and Customer Experience: Utilize transaction visualization to gain insights into customer behavior, channel preferences, and account usage patterns. By analyzing the number of transactions and total transaction amounts across online banking, mobile banking, UPI, and different account types (checking, credit, savings), the objective is to optimize banking operations, tailor services to meet customer needs, and provide personalized experiences. Additionally, the visualization aims to identify opportunities for process improvements, product innovation and targeted marketing strategies to drive customer engagement, loyalty, and overall business growth.

## Data Modelling

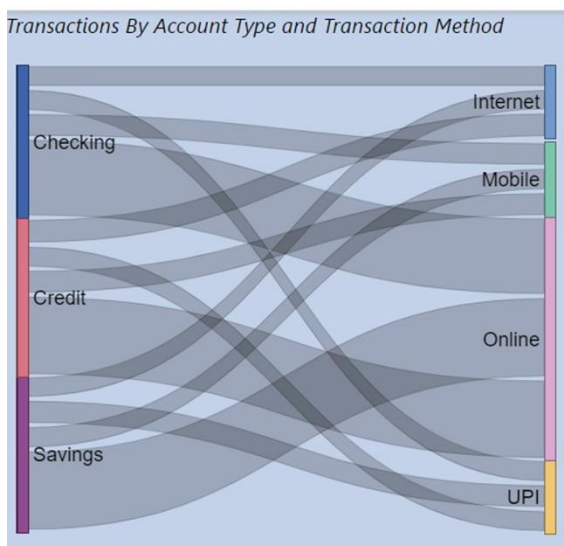


Fact: Transaction

Dimensions: Date Table, DIM\_Account, DIM\_Customer

Explanation: All the dimensions in 'Transaction' process are Conformed & Outtrigger.

## Data Visualization



This visualization provides a comprehensive overview of customer transactions categorized by account types and transaction methods. By highlighting the various channels utilized by customers, including online banking, mobile banking, and UPI, alongside their respective account types such as checking, credit, and savings, this analysis offers valuable insights into customer behavior and preferences. Such visualization serves to inform strategic decision-making processes aimed at optimizing service offerings, enhancing customer experience, and driving operational efficiency within the banking ecosystem.

**8000**

Transaction

**2.16bn**

Total Transaction Amount - Online

**628.74M**

Total Transaction Amount - Mobile

**612.08M**

Total Transaction Amount - UPI

**607.67M**

Total Transaction Amount - Internet

This business card provides key information regarding customer transactions during a specific data cycle period. It includes the total transaction volume and the total transaction amount transferred through various channels, including online banking, mobile banking, UPI, and internet transactions. Such details offer valuable insights into customer behavior and preferences, aiding in strategic decision-making processes aimed at enhancing service offerings and optimizing operational efficiency within the banking sector.



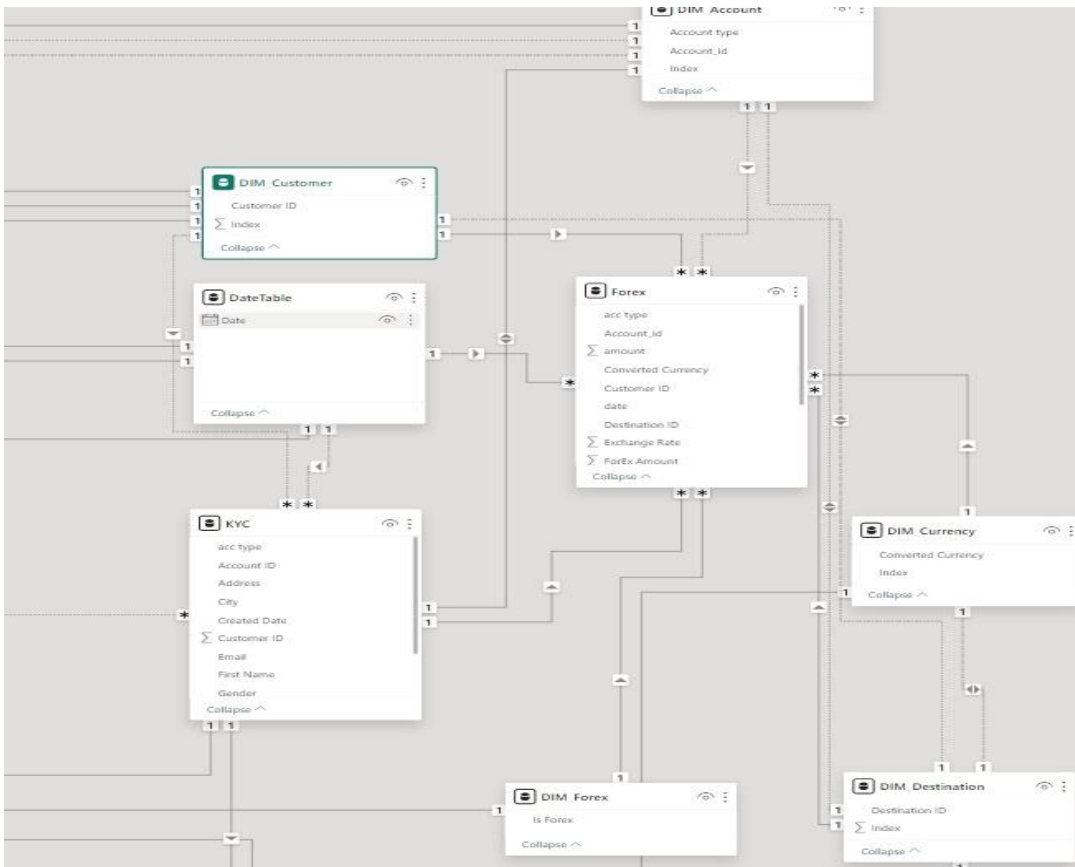
### 3) Forex

Forex is a global marketplace where currencies are traded. It's the largest and most liquid financial market in the world, with an average daily trading volume exceeding trillions of dollars.

#### Business Objective

The primary business objective of forex trading is to profit from fluctuations in currency exchange rates. Participants, including banks, financial institutions, corporations, hedge funds, and individual traders, engage in buying and selling currencies to generate profits through speculation, hedging against currency risk, exploiting arbitrage opportunities, diversifying investment portfolios, generating income through trading strategies, and providing liquidity to the market.

#### Data Modelling:

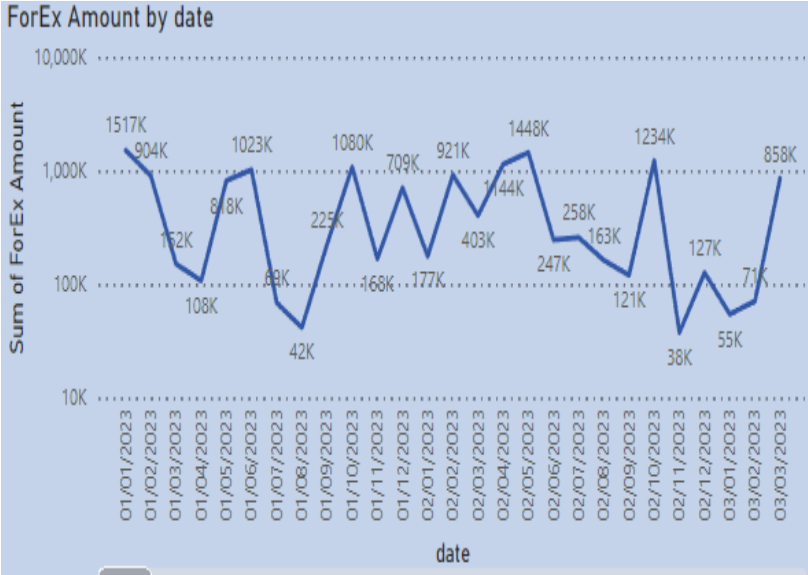


Fact Table: Forex

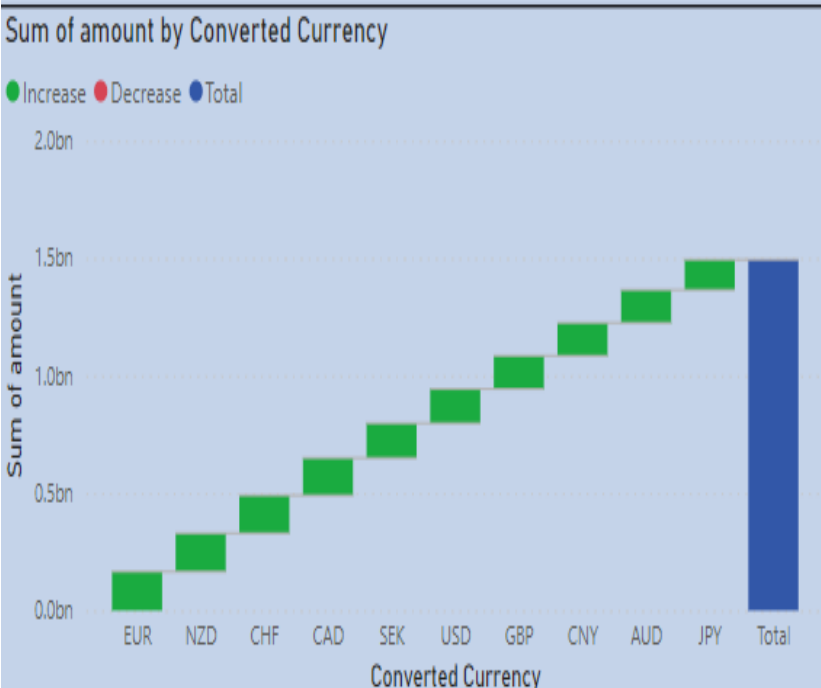
Dimensions: Date Table, DIM\_Customer, DIM\_Currency, DIM\_Destination, DIM\_Account, DIM\_Forex

Explanation: All the dimensions in 'Forex' process are Conformed & Outtrigger. (Dim\_Forex is a conformed dimension of only 'Forex' process)

Data Visualization



We can see the trend in the data that shows the movement of exchange rates to relatively higher and lower values over time.



The Japanese Yen commands the highest trading volume while the Euro registers the lowest activity among currencies traded.

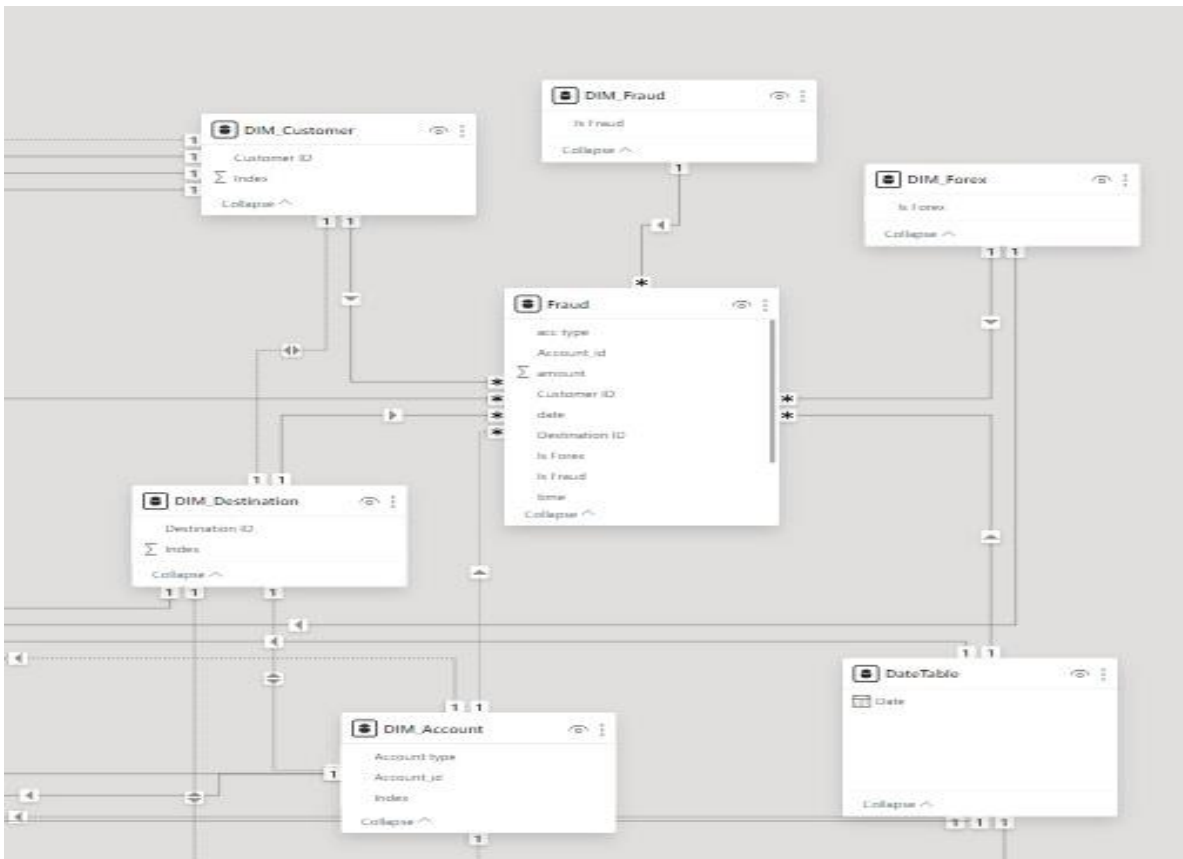
## 4) Fraud Detection

Fraud detection involves analyzing customer transactions and behaviors and identifying and preventing fraudulent activities to safeguard the bank's assets and maintain customer trust.

### Business Objectives:

The primary business objective of fraud detection in banking is to safeguard financial assets and maintain trust by identifying and preventing fraudulent activities, including unauthorized transactions, identity theft, and other deceptive practices, thereby minimizing financial losses and protecting customers' interests.

### Data Modelling:

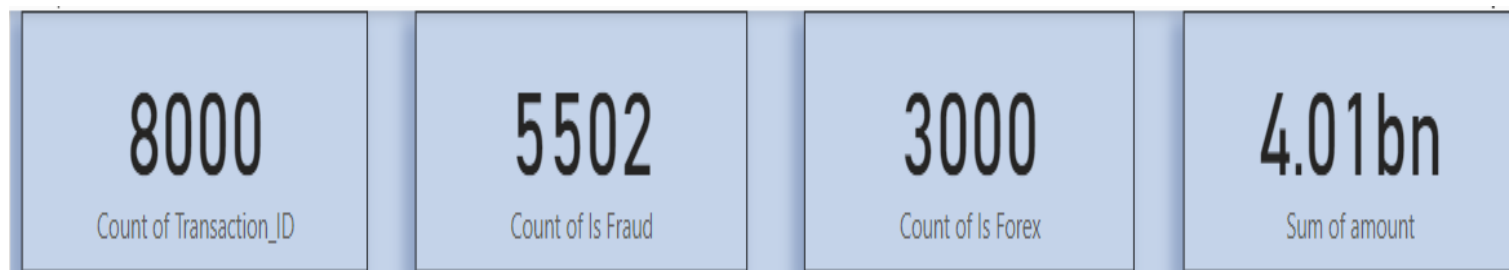
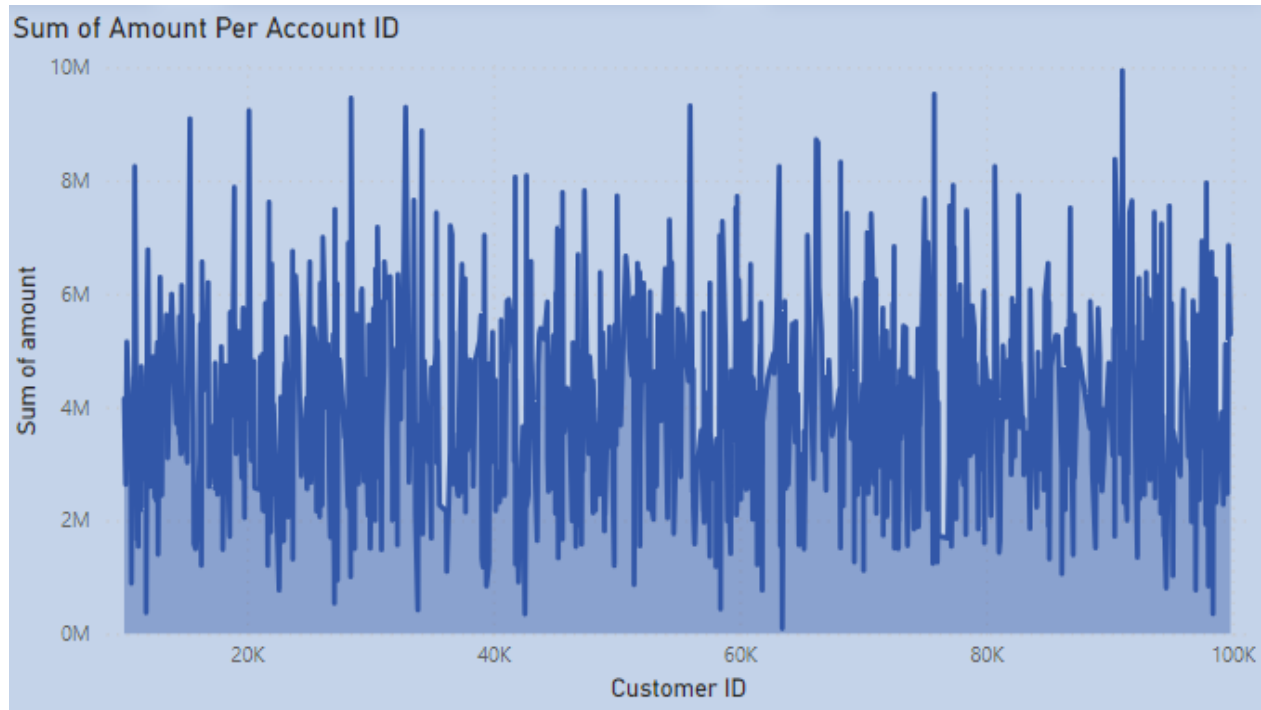


Fact Table: Fraud

Dimension Table: Date Table, DIM\_Customer, DIM\_Currency, DIM\_Destination, DIM\_Account, DIM\_Forex, DIM\_Fraud

Explanation: All the dimensions in 'Fraud' process are Conformed & Outrigger. (Except for Dim\_Fraud which is only a conformed dimension in 'Fraud' process)

## Data Visualization:



Total Transactions: There were 8000 transactions, totaling 4.01 billion.

Fraudulent Transactions: 5502 transactions amounting to 2.76 billion.

Non-Fraudulent Transactions: 2498 transactions totaling 1.25 billion.

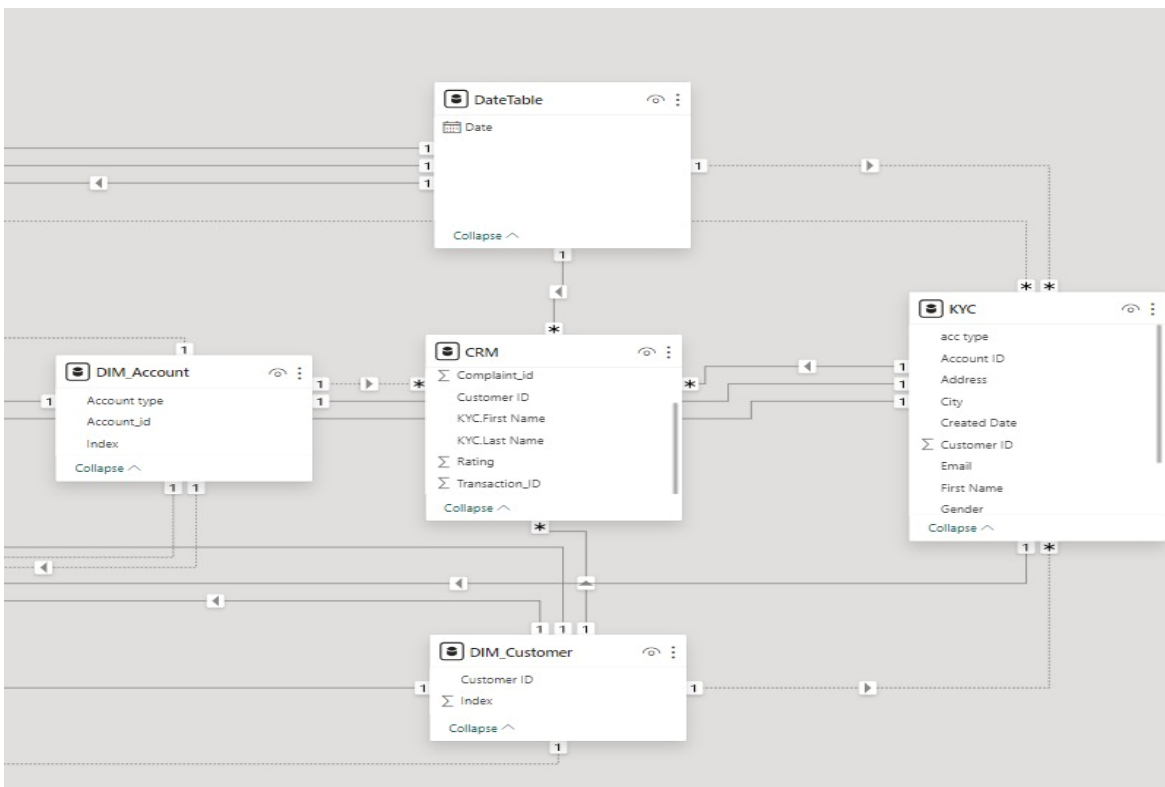
## 5) CRM

CRM refers to strategies, processes, and technologies that banks use to manage and analyze interactions with their customers throughout the entire customer lifecycle,

### Business Objective:

The primary business objective of customer relationship management (CRM) is to enhance customer satisfaction, loyalty, and retention by effectively managing interactions and relationships with customers, understanding their needs, preferences, and behaviors, and ultimately maximizing profitability through improved customer acquisition, retention, and cross-selling opportunities.

### Data Modelling:

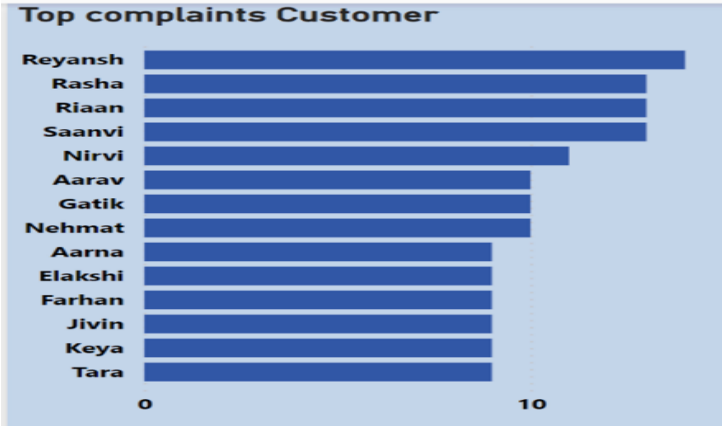


Fact Table: CRM

Dimensions: DIM\_Account, Date Table, DIM\_Customer

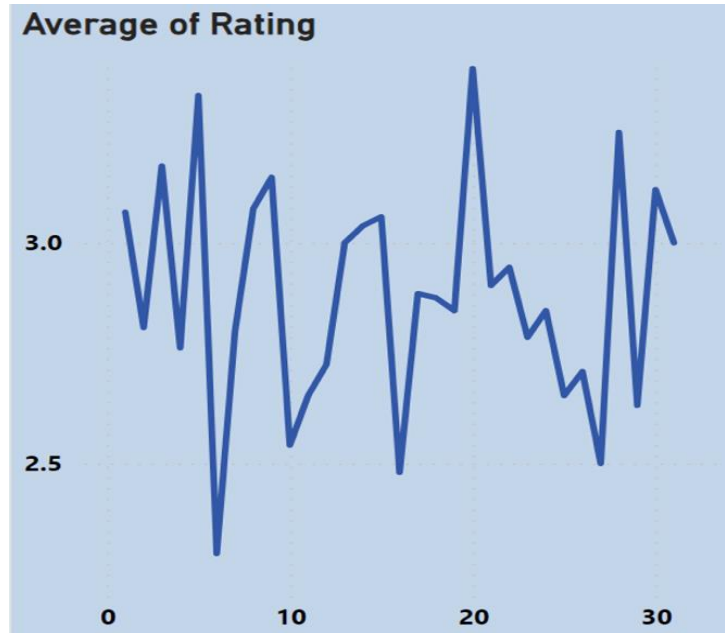
Explanation: All the dimensions in 'CRM' process are Conformed & Outrigger.

Data Visualization



This visual shows the top complaints by customers throughout the customer life cycle.

- Reyansh has lodged the highest number of complaints, whereas Tara filed comparatively fewer grievances, indicating different levels of feedback participation.



The average rating experiences a decline during the second week of the month, reaching its peak by the fourth week, demonstrating fluctuations in satisfaction levels over the course of the month.

In summary, the analysis underscores the importance of prioritizing improvements in service quality, security measures, and overall customer satisfaction to foster a more positive customer experience and enhance business performance.

**Conclusion:**

The comprehensive report offers valuable insights into the dynamics of Banking processes over the years. It identifies areas that are most significant where transactions like Forex and Fraud take place. Notably, the report underscores a peak in customer complaints over time. Fluctuations in currency exchange rates occur due to global economic factors. Additionally, it shows periods of growth have influenced customer behavior and complaint patterns. Additionally, the analysis reveals that most of the dimensions are interconnected across multiple fact tables.

**Recommendations:**

The findings pave the way for actionable recommendations aimed at enhancing customer satisfaction. These recommendations include the implementation of security measures over transactions to address specific challenges and mitigate potential risks. Furthermore, the report advocates for the adoption of anti-fraud strategies through continuous monitoring.

**References:**

Mockaroo : [Mockaroo - Random Data Generator and API Mocking Tool | JSON / CSV / SQL / Excel](#)