Bank Transaction Analysis

Agenda

- Problem Statement
- Approach
- Data Overview
- Project Workflow
- Exploratory Data Analysis
- Key Insights
- Dashboard Preview
- Recommendation

Problem Statement

Problem Statement

Banks generate large volumes of transaction data through deposits, withdrawals, online transfers, and card payments across multiple customer segments. However, this data often remains underutilized due to the lack of integrated analysis and visualization.

The absence of a centralized analytical system makes it difficult for banks to monitor transaction trends, understand customer behavior, identify high-value customers, and detect operational inefficiencies such as failed transactions.

This project aims to perform exploratory data analysis using Excel, extract meaningful insights using SQL, and build an interactive Power BI dashboard to support data-driven decision-making in the banking domain.

Objectives

- To analyze **customer behavior** based on transaction volume, frequency, and value.

- To identify **high-value and low-engagement customers** for strategic decision-making.

- To analyze **failed transactions** and identify operational bottlenecks.

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Approach

Approach – Three phase solution

Exploratory Data Analysis

1. Deep dive into Customer, Loan & Transactions data.

2. Understanding of data, trends and patterns.

SQL Query

1. Write and Perform SQL queries for efficient data extraction.

Interactive Dashboard in Power BI
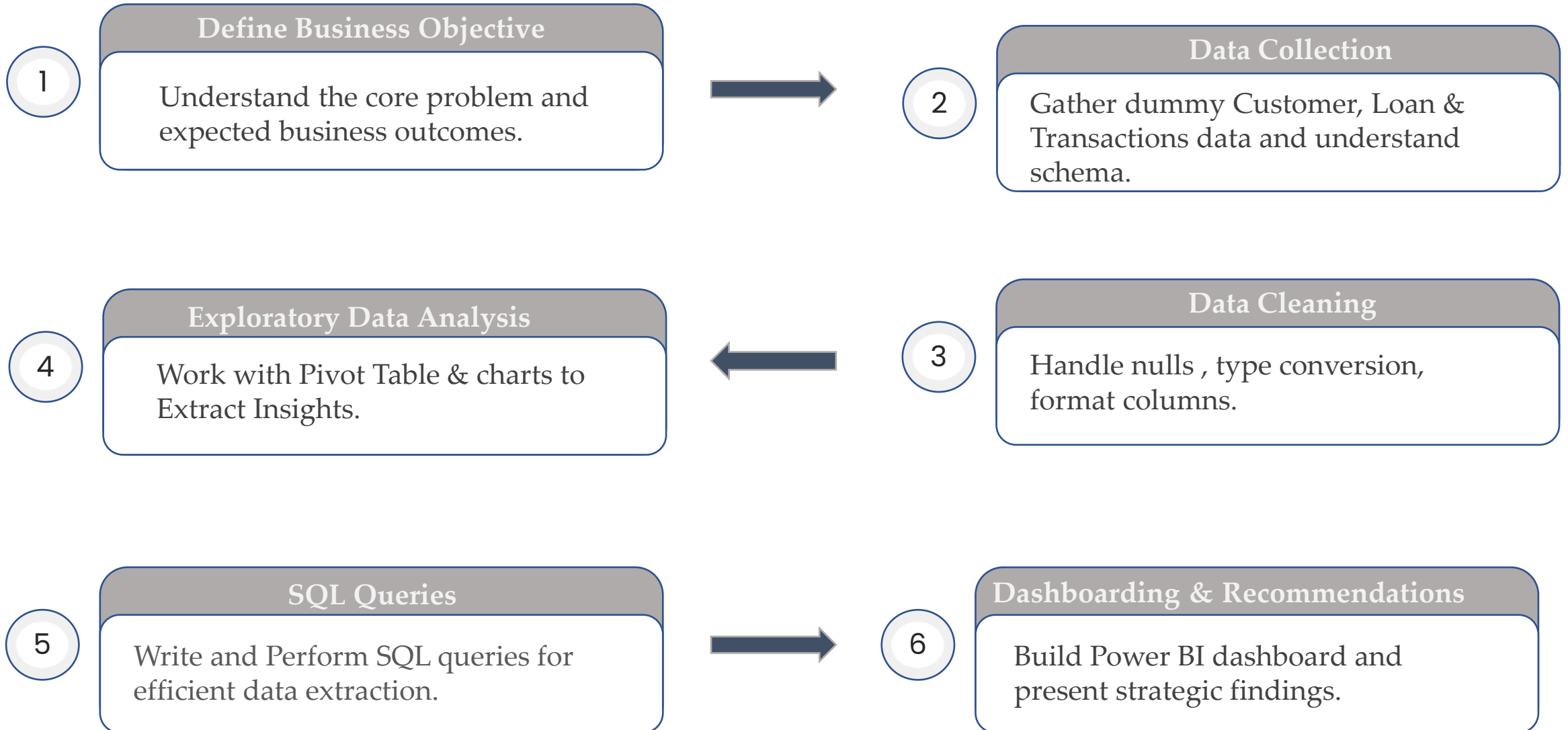
1. Build a live view for business Users to self serve insights.

2. Enable slicing by session for dynamic view of the dashboard.

Project Workflow

Project Workflow

1 — **Define Business Objective**
Understand the core problem and expected business outcomes.

2 — **Data Collection**
Gather dummy Customer, Loan & Transactions data and understand schema.

4 — **Exploratory Data Analysis**
Work with Pivot Table & charts to Extract Insights.

3 — **Data Cleaning**
Handle nulls , type conversion, format columns.

5 — **SQL Queries**
Write and Perform SQL queries for efficient data extraction.

6 — **Dashboarding & Recommendations**
Build Power BI dashboard and present strategic findings.

Exploratory Data Analysis

Raw Dataset Structure – Before Processing

Given data is banking data from Jan 2023 to July 2023
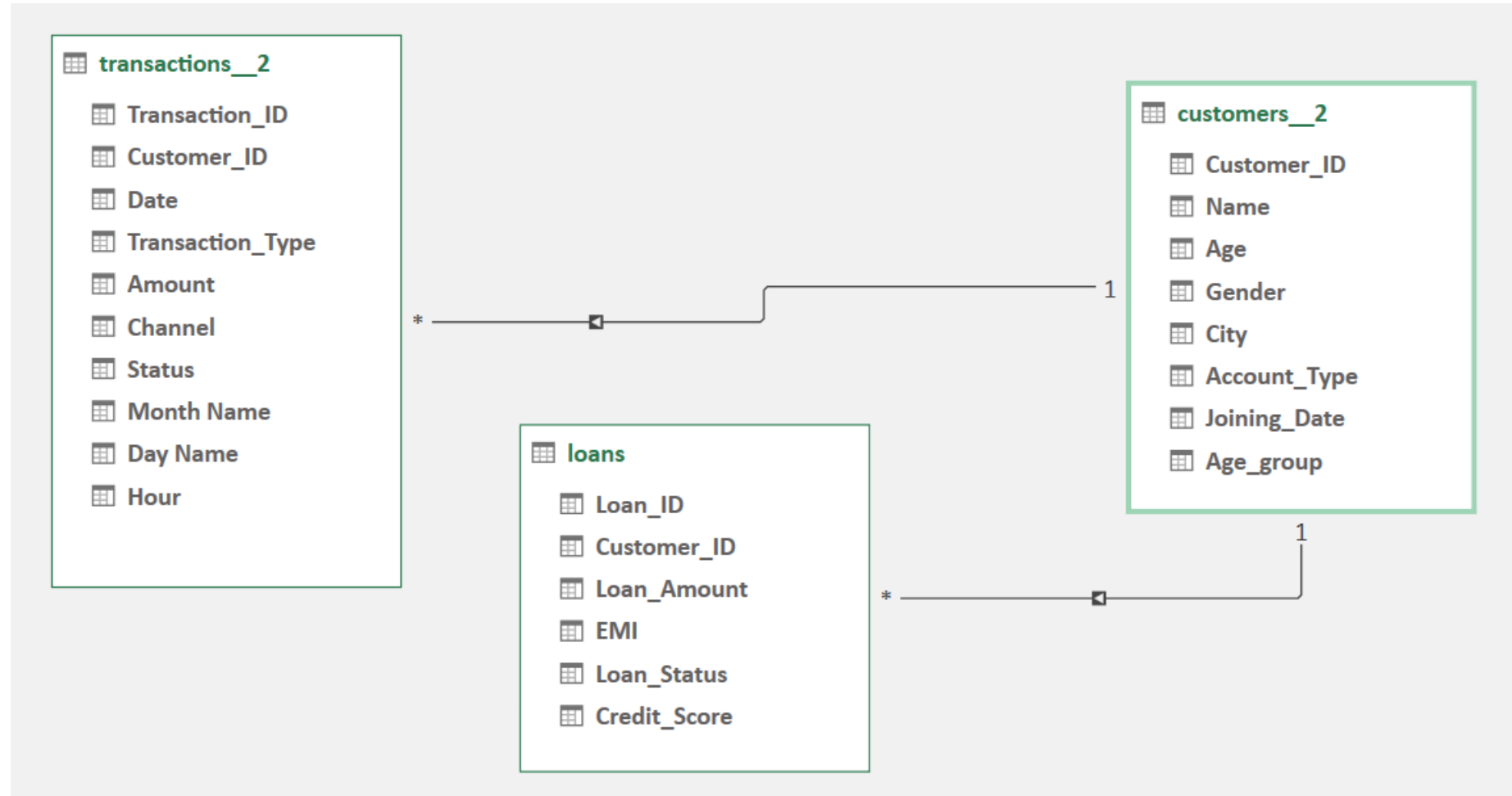
Exploratory Data Analysis (EDA)

Uncovering patterns, trends, and business insights from historical data !

Understanding the "What, Where & Why" behind the sales numbers

Exploring data through visuals, aggregations, and comparisons

Laying the groundwork for informed recommendations

Let's Dive In

EDA: Step-by-Step Process

- Load Data in Excel Power Query

- Initial Exploration

- Pre-processing & Cleaning

- Feature Engineering

- EDA & Visualization

- Key Insights

- Recommendations

Pre-processing & Feature Engineering

The necessary steps applied to prepare this dataset for analysis.

- Load dataset and perform Data profiling.

- Remove Null values from all three dataset.

- Performing data type conversion on necessary columns.

- Create Custom column(Age_group) with help of age column in loan dataset.
- Create Month, Day & Hour columns in transactions dataset.

- Drop unwanted columns to make dataset understandable.

- Checking and Removing of duplicated data from dataset.

Charts & Insights

Transaction Amount distribution by Transaction_type

Total Transaction by Transaction Type

- Card Payment
- Deposit
- Online Transfer
- Withdrawal
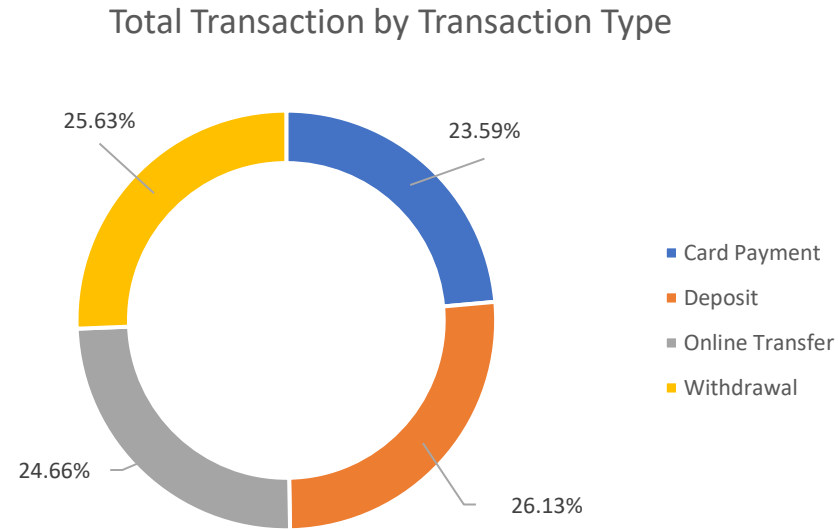
💡 **Insights**

- Most Transaction type : **Deposit (26.13%)**.
- Withdrawal & Online Transactions comes **2nd and 3rd** respectively.
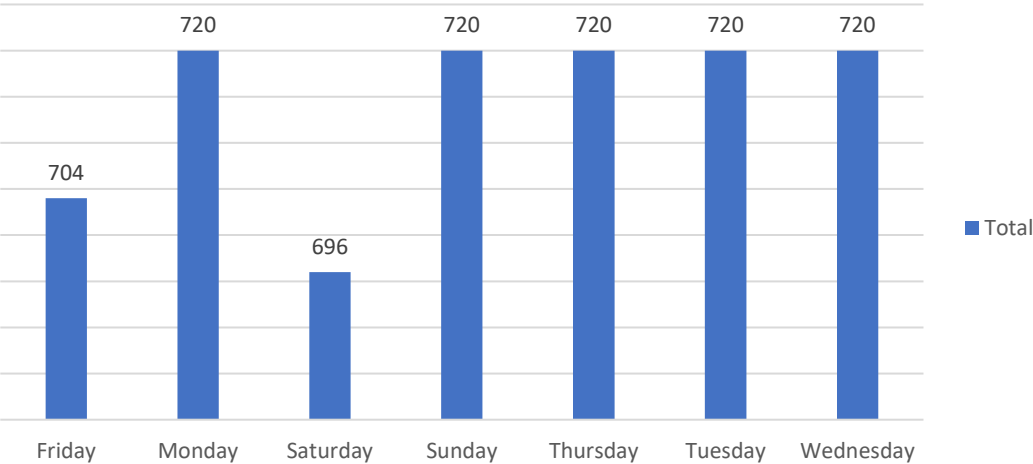
Month & Day wise Transactions

Insights

Month Wise Transaction
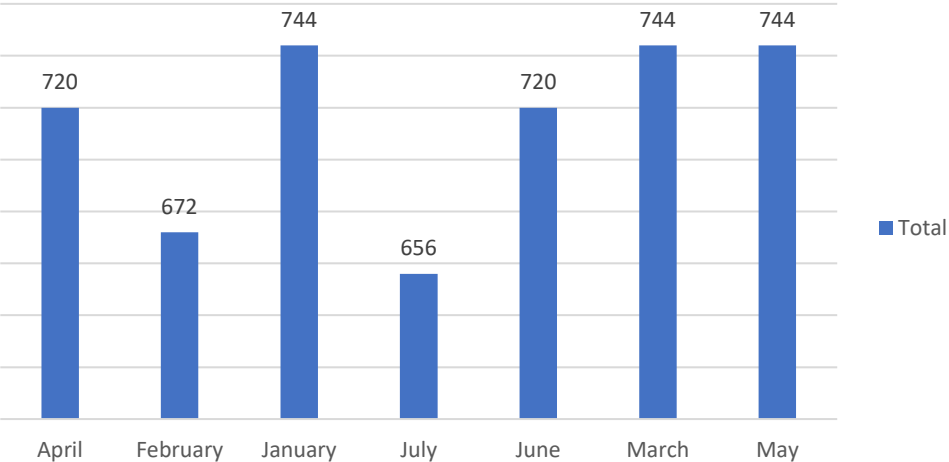
- Most transactions are occurred in **January, March & May** months
- **February & July** is least transactions occurred Month

Day Wise Transactions

- **Nearly Equal transactions occurred each Day**
- Due to Saturday off least transaction occurred as Saturday

Age and Gender wise Transaction Amount
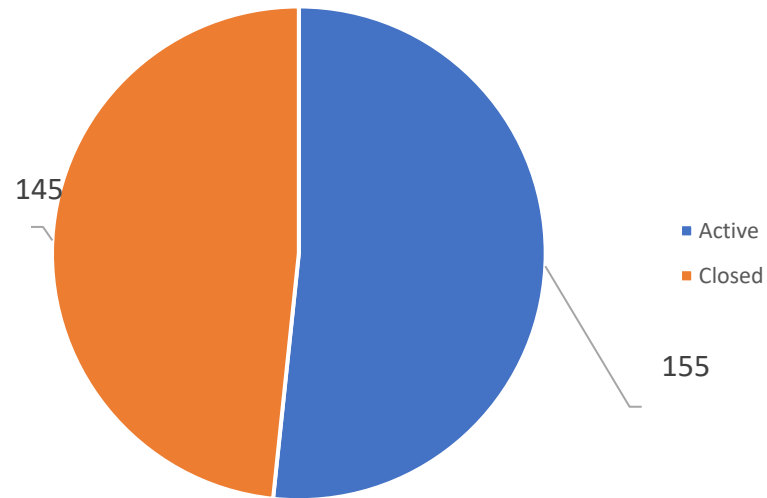
Age And Gender wise Transactions
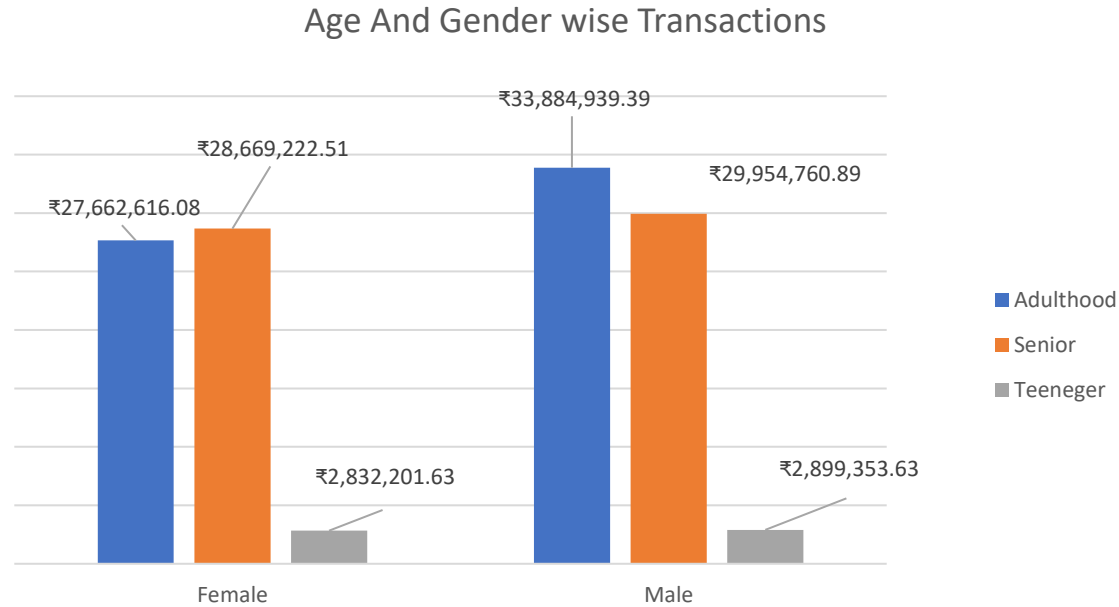
💡 **Insights**

- Male in Adulthood age class perform most transactions (~ 33.8M)
- In Female Senior age class perform transactions as compare to Adulthood age class
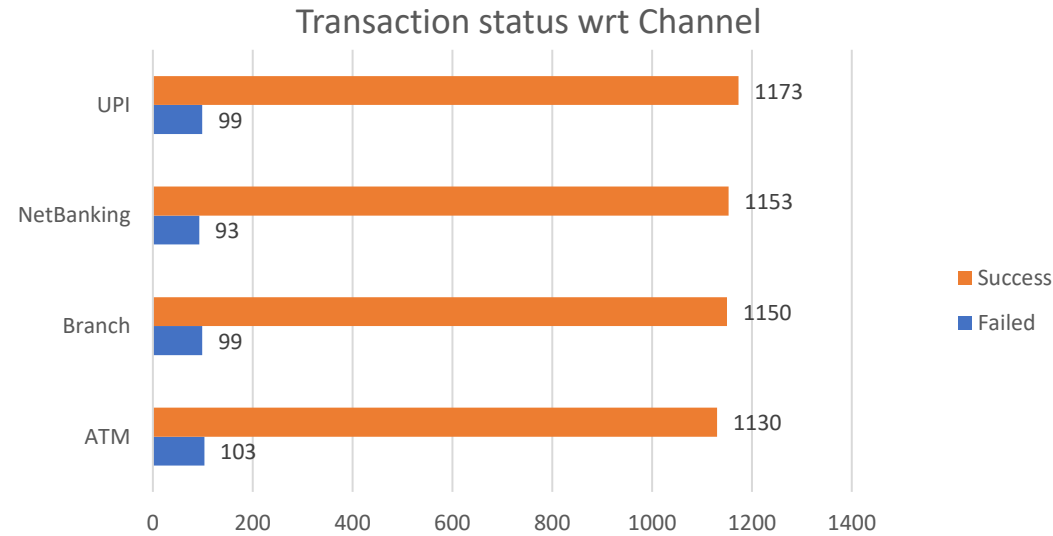- In both Gender Teenagers perform nearly same Transactions

Loan Status

Active vs Close Loan

145

155

- Active
- Closed

💡 **Insights**

- There are 145 Customers who Nill there loan & 155 customers loan is still pending

Channel wise Transaction Status
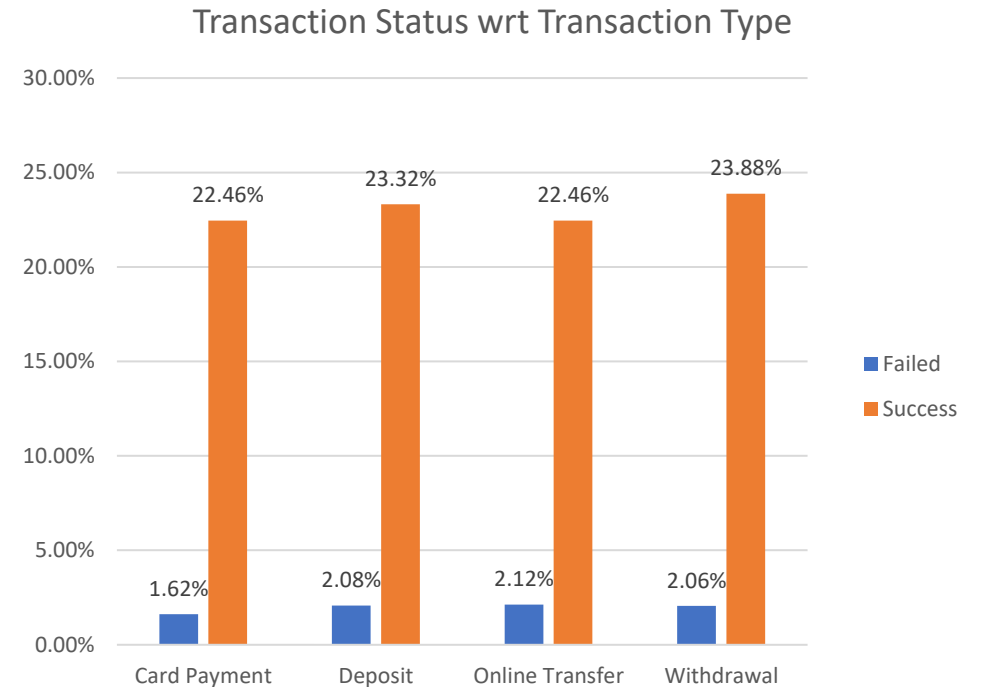

Transaction status wrt Channel

💡 **Insights**

- UPI is Most Use Transaction Channel (success transactions 1173 & failed transactions 99)
- ATM is least Use Channel for transaction and also Most in term of Failed Transaction status
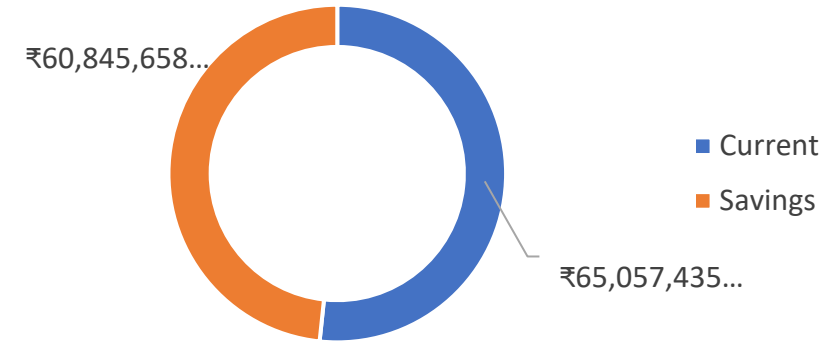
Transaction Amount Status by Transaction Type

💡 **Insights**

- Success rate and failed rate in deposit type is 23.94% & 2.19% respectively.
- Card payment have least transaction failed rate .

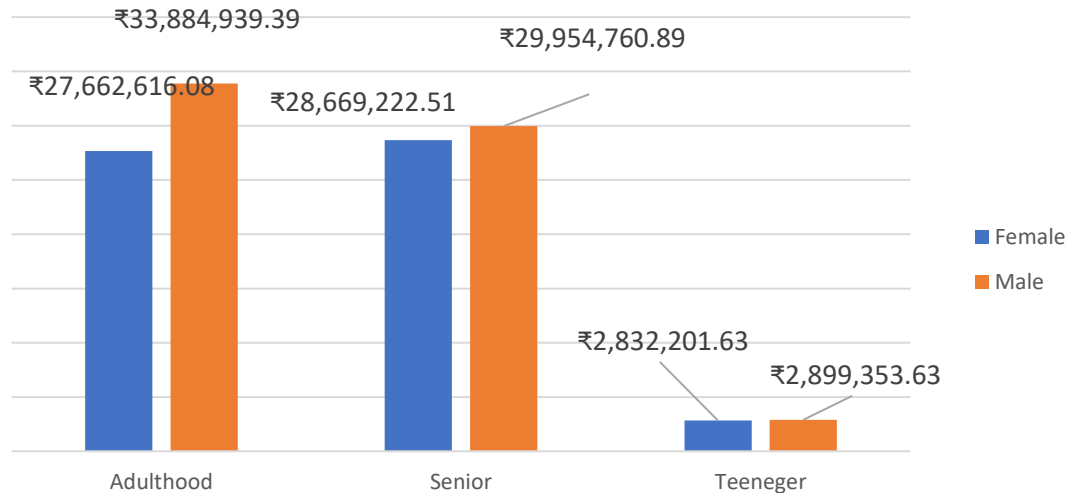### Transaction Status wrt Transaction Type

Legend:
- ■ Failed
- ■ Success

Transaction Type	Failed	Success
Card Payment	1.62%	22.46%
Deposit	2.08%	23.32%
Online Transfer	2.12%	22.46%
Withdrawal	2.06%	23.88%

💡 **Insights**

- Transaction occurred by Current and Saving Account is 65.05M and 60.85M respectively

Transaction wrt to Account Type

₹60,845,658...

■ Current
■ Savings

₹65,057,435...

Age Group wise Transactions

₹33,884,939.39

₹29,954,760.89

₹27,662,616.08

₹28,669,222.51

■ Female
■ Male

₹2,832,201.63

₹2,899,353.63

Adulthood   Senior   Teeneger

- In all Age groups Male perform Most Transactions

Key Insights

Key Insights 📊

- Total Success Transaction Amount is **~116.26M**.

- ATM is Most used channel contributing over **25.47%** all transactions.

- **Withdrawal** is highest transaction type by count.

- Male in Adult and Female in Senior Perform Most Transaction Amount.

- **Most Transactions are occurred in Chennai**.

- **Failed transactions are highest in ATM channel (due to network issues)**.

- The bank saw around **49%** is digital transactions.

- Online transfers show a consistent growth trend.

- **310.76M** is Total loan amount and **23.66K** is Avg EMI Amount

- Customer 860 & Customer 347 is most and least Loan paying Customers respectively.

Dashboard Preview

Page 1

Banking Transactions Analysis

| Transaction View | Customer View | Loan & Status Analysis |

Page 2

Total Transaction Amount
₹ 125.90M

Avg Transaction Amount
₹ 25.18K

Total Transactions
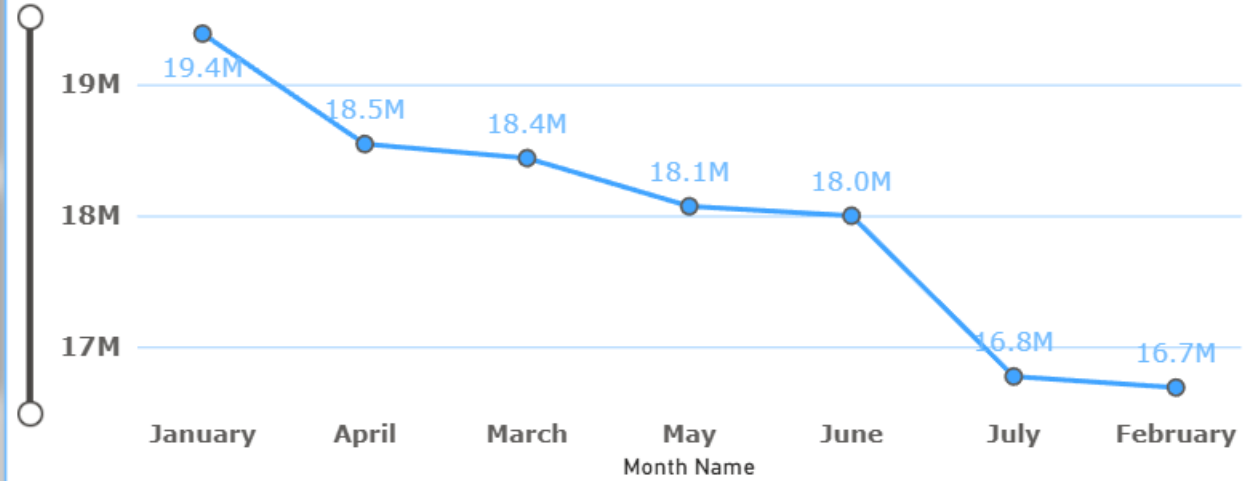5000

Total Success Transaction Amount
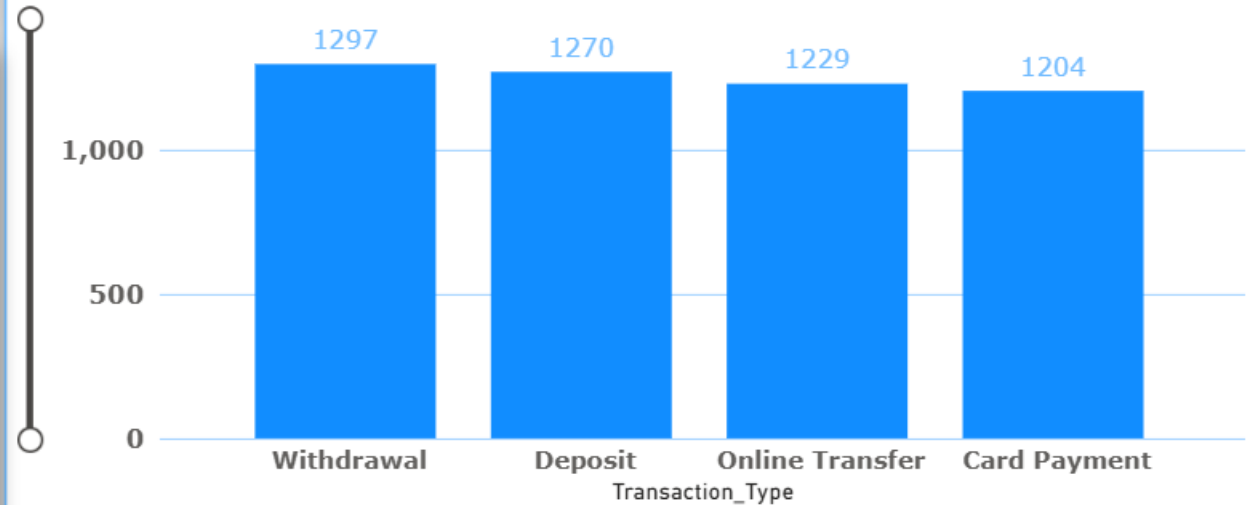₹ 116.26M

Status
☐ Failed
☐ Success

Channel
☐ ATM
☐ Branch

Month Wise Transaction

19.4M — January
18.5M — April
18.4M — March
18.1M — May
18.0M — June
16.8M — July
16.7M — February

19M
18M
17M

Month Name

Count of Transaction_ID by Channel

1.23K (24.66%)
1.27K (25.44%)
1.25K (24.92%)
1.25K (24.98%)

Channel
● UPI
● Branch
● NetBanking
● ATM
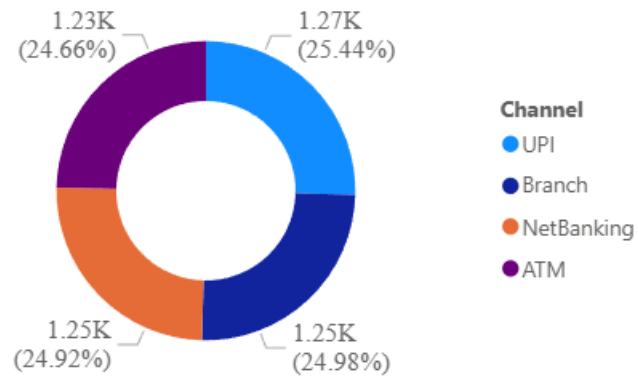
Count of Transaction_ID by Transaction_Type

1297 — Withdrawal
1270 — Deposit
1229 — Online Transfer
1204 — Card Payment

1,000
500
0

Transaction_Type

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Page 4

Thank You…