

Credit Card Analysis Dashboard

By using Power Bi

Project Report

Submitted by:

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Project Title: Credit Card Analysis Dashboard

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OVERVIEW:

This dashboard provides a comprehensive analysis of the 2019 credit card marketing campaign targeting millennial customers. Using customer segmentation, we identified four distinct personas based on spending behavior, credit usage, income, and engagement. Each segment's performance is evaluated through key metrics including monthly spend, Customer Lifetime Value (CLV), income, and churn rate.

The goal of this analysis is to:

- Identify high-value customer segments for strategic focus.
- Evaluate segment profitability and credit risk.
- Support marketing and sales teams with actionable insights to improve retention and ROI.

This data-driven approach enables smarter allocation of marketing budgets and informs cross-selling and retention strategies tailored to millennial behavior patterns.

DATASET DESCRIPTION:

1. Table: cost_type

This table focuses on marketing and cost-related data, breaking down costs by type and time periods.

- **CostPerType_Q:** Measure or column showing the cost associated with each type per quarter.
- **Marketing_Cost:** Created measure representing the marketing expenses incurred.
DAX- $\text{Marketing_Cost} = \text{SUM}(\text{cost_type}[\text{Marketing Cost}])$
- **MCAC:** Marketing Cost per Acquired Customer, a created measure indicating the cost efficiency of marketing.
DAX- $\text{MCAC} = \text{DIVIDE}([\text{Marketing Cost}], [\text{New Customers}])$
- **Profit:** Created measure showing profit after costs.
DAX- $\text{Profit} = [\text{Total Revenue}] - [\text{Total Cost}]$
- **Quarter:** Column representing the fiscal quarter (e.g., Q1, Q2).
- **Total Cost:** Created measure that sums all relevant costs.
DAX- $\text{Total Cost} = \text{SUM}(\text{cost_type}[\text{CostPerType_Q}])$
- **Type:** Cost category or type (e.g., marketing, operational).
- **Year:** Fiscal year column.

2. Table: Finance_all

This table contains financial and transactional data, customer revenue, and performance metrics.

- **Actual Revenue:** A created measure estimating total revenue.
DAX- `Actual Revenue = SUM(Finance_all[Revenue])`
- **Attrition_Flag:** Indicator showing if a customer has churned or stayed.
- **CLIENTNUM:** Unique identifier for each customer.
- **CLV:** Customer Lifetime Value, a created column estimating total value of the customer.
DAX - CLV = `Finance_all[Revenue] * Finance_all[Months_on_book]`
- **Date:** Date of the transaction or record.
- **First_Quarter:** Indicates the customer's first quarter in the data.
DAX - `First_Quarter = CALCULATE(MIN('finance_all'[Date]), ALLEXCEPT('finance_all', 'finance_all'[CLIENTNUM]))`
- **Months_on_book:** Number of months the customer has been active.
- **New_Customers:** Created measure indicating newly acquired customers.
DAX - `New_Customers = CALCULATE(DISTINCTCOUNT('finance_all'[CLIENTNUM]), FILTER('finance_all','finance_all'[Date] = [First_Quarter]))`
- **Quarter:** Fiscal quarter.
- **Revenue:** Created measure representing revenue generated.
- **RevenuePerCustomer:** Created measure showing average revenue per customer.
DAX- `RevenuePerCustomer = DIVIDE(SUM(finance_all[Revenue]), DISTINCTCOUNT(finance_all[CLIENTNUM]))`
- **Trans_Amount:** Created measure representing transaction amounts.

- **Type:** Type of financial record or transaction.
 - **Year:** Fiscal year.
-

3. Table: info_all

This table holds customer demographic, behavioral, and churn data.

- **Age_Group:** Customer age category (e.g., 18-25, 26-35).

DAX- `Age_Group = SWITCH(TRUE(),
info_all[Customer_Age] >= 23 && info_all[Customer_Age] <= 39, "Millennials",
"Others")`

- **Attrition_Flag:** Customer churn indicator.
- **Avg_Open_To_Buy:** Average credit available for use.
- **Avg_Utilization_Ratio:** Average ratio of credit used vs. credit available.
- **Card_Category:** Type of credit card held by the customer.
- **Churn Rate:** Created measure showing rate of customer churn.

DAX- `Churn Rate = DIVIDE(CALCULATE(COUNTROWS(info_all), info_all[Attrition_Flag]
= "Attrited Customer"), [Customer Count])`

- **Churned Customers:** Created measure or count of customers who churned.

DAX- `Churned Customers =
CALCULATE(COUNT(info_all[CLIENTNUM]), info_all[Attrition_Flag] = "Attrited Customer")`

- **CLIENTNUM:** Customer unique ID.
- **Contacts_Count_12_mon:** Number of times customer was contacted in last 12 months.
- **Credit_Limit:** Credit card limit amount.
- **Customer Count:** Count of customers in each segment/category

DAX- `Customer Count = DISTINCTCOUNT(info_all[CLIENTNUM])`

- **Customer_Age:** Age of the customer.

- **Date_Leave:** Date when customer left or churned.
- **Dependent_count:** Number of dependents for customer.
- **Education_Level:** Customer's highest education.
- **Gender:** Customer gender.
- **Income_Category:** Income bracket of customer.
- **Marital_Status:** Marital status of customer.
- **Months_Inactive_12_mon:** Number of months inactive in last year.
- **Months_on_book:** Duration customer has been active.
- **Quarter:** Fiscal quarter.
- **Tenure_Bucket:** Created categorization of customer tenure .

DAX- `Tenure_Bucket =`

```
SWITCH(TRUE(),
    info_all[Months_on_book] <= 6, "0–6 Months",
    info_all[Months_on_book] <= 12, "7–12 Months",
    info_all[Months_on_book] <= 24, "13–24 Months",
    info_all[Months_on_book] <= 36, "25–36 Months",
    "36+ Months")
```

- **Total_Relationship_Count:** Number of products or relationships customer has.
- **Total_Revolving_Bal:** Total revolving balance on the credit card.
- **Total_Trans_Ct:** Total number of transactions.
- **Utilization_Bucket:** Created bucket grouping based on utilization ratio.

DAX- `Utilization_Bucket = SWITCH(TRUE(),`

```
info_all[Avg_Utilization_Ratio] <= 0.2, "0–20%",
    info_all[Avg_Utilization_Ratio] <= 0.4, "21–40%",
    info_all[Avg_Utilization_Ratio] <= 0.6, "41–60%",
    info_all[Avg_Utilization_Ratio] <= 0.8, "61–80%",
```

"81–100%")

- **Year:** Fiscal year.
-

4. Table: Revenue Target

This table deals with revenue goals and their achievement, linked to customer and card category.

- **Card_Category:** Type/category of credit card.
- **CLIENTNUM:** Customer unique ID.
- **Date:** Date of record.
- **quarter:** Fiscal quarter.
- **Revenue_Variation:** Created measure showing variance against targets.

DAX- `Revenue_Variance = Finance_all[Actual Revenue] - 'Revenue Target'[Target Revenue 1]`

- **Target Achievement:** Created measure indicating extent to which targets were met.

DAX- `Target Achievement % = DIVIDE([Actual Revenue], [Target Revenue 1])`

- **Target Revenue:** Revenue goal for the given time period.
- **Target Revenue:** Possibly a created column flagging if target was achieved.

DAX- `Target Revenue = SUM('Revenue Target'[Target Revenue])`

- **Type:** Type of revenue or category.
 - **Year:** Fiscal year.
-

Data Model Relation:

This outlines the structure and relationships between the tables used for financial and client data analysis. The schema consists of four tables: REVENUE_TARGET, COST_TYPE, FINANCE_ALL, and INFO_ALL.

See the below table for relation.

Table name1 with column	Table name2 with column	Cardinality	Relation active status	Cross Filter Direction	Apply security filter in both directions
Finance_all CLIENTNUM	Info_all CLIENTNUM	Many to One	Yes	Both	Yes
Cost_type YEAR (cost)	Finance_all YEAR	Many to Many	Yes	Both	No
Finance_all Date	Revenue_target Date	Many to Many	Yes	Both	No
Revenue_target CLIENTNUM	Info_all CLIENTNUM	Many to Many	No	Both	No
Finance_all YEAR	Info_all YEAR	Many to Many	Yes	Both	No

DASHBOARD DESCRIPTION:

1. Dashboard Title: Credit Card Performance Summary

This dashboard provides a comprehensive overview of the credit card performance, combining key metrics, trends, and cost breakdowns to help assess the company's health and guide strategic decisions.

Section-wise Description of Visualizations

1. KPI Cards (Top Metrics)

- **Total Profit:** ₹33.2M — reflects the earnings after expenses.
 - **Total Customers:** 12K — the count of active credit card users.
 - **Churn Rate:** 0.17 — indicates 17% of customers are leaving, a sign of customer retention challenges.
 - **Total Revenue:** ₹2.09M — shows gross income from credit card activities.
 - **Total Cost:** ₹265K — total operational or acquisition cost.
 - **Customer Lifetime Value (CLV):** ₹305.18 — revenue expected from a customer over their engagement span.
-

2. Line Chart – Revenue & Profit Over Time

- **X-axis:** Quarters (Q4 2018 – Q3 2019)
 - **Y-axes:** Left = Revenue, Right = Profit
 - **Insight:** Visualizes how revenue and profit have trended quarterly, showing fluctuations and possibly identifying performance dips or growth phases.
-

3. Bar Chart – Customer Count by Quarter

- **X-axis:** Quarterly timeline
 - **Y-axis:** Count of customers
 - **Insight:** Highlights customer acquisition or churn patterns over time — stability or drops in customer numbers.
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4. Gauge Chart – Target Achievement

- **Value:** ₹2.09M achieved out of a ₹4.18M target.

- **Insight:** Shows the progress toward revenue goals — the business is at ~50% of its target, indicating a gap in achievement.
-

5. Pie Chart – Cost Distribution

- **Breakdown:**
 - Salary: ₹85K (32.05%)
 - Service: ₹67K (25.4%)
 - Marketing: ₹64K (24.34%)
 - IT: ₹48K (18.22%)
 - **Insight:** Visualizes how expenses are split across operational categories — useful for cost optimization.
-

Purpose of the Dashboard

To provide a quick, clear snapshot of business performance in the credit card domain — covering revenue, profit, cost, customer dynamics, and target tracking — so that management can make informed decisions.

2. Dashboard Title: Credit Business Overview

This dashboard provides detailed insights into the credit card customer profiles, usage patterns, and account status, helping stakeholders understand the demographic and behavioral trends within the credit business.

Section-wise Description of Visualizations

1. KPI Cards

- Avg Credit Limit: ₹8.57K — average credit assigned to customers.
 - Avg Utilization Ratio: 0.24 — on average, customers utilize 24% of their credit limits, indicating moderate usage.
 - Avg Revolving Balance: ₹1.01K — average unpaid balance carried forward.
 - Churned Customers: 2,018 — total number of customers who left during the period.
-

2. Pie Chart – Active vs Inactive Accounts

- **Insight:** Shows customer attrition:
 - 82.56% are existing customers.
 - 17.44% have churned (attrited).
 - Useful for understanding retention and engagement.
-

3. Card Type Distribution

- Displays customer preference across four card types: Blue, Gold, Platinum, Silver.
 - Helps identify which products are most popular.
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4. Education Breakdown

- Segments customers by education level: College, Graduate, Post-Graduate, Doctorate, etc.
 - Indicates the customer base's educational diversity and potential income trends.
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5. Pie Chart – Income Category

- Shows how customers are distributed across income brackets:
 - \$40K–\$60K (largest group at 37.43%)
 - <\$40K, \$60K–\$80K, and higher brackets.
 - A key factor for targeted marketing and risk assessment.
-

6. Bar Chart – Credit Limit Utilization % Distribution

- Shows how customers are grouped based on how much of their credit limit they use:
 - Majority fall into 0–20% utilization bucket.
 - Useful for analyzing credit behavior and identifying high-risk users.
-

7. Bar Chart – Customer Tenure Distribution

- Segments users by how long they've been customers:
 - Most customers have a tenure of 36+ months.
 - This helps assess loyalty, product stickiness, and churn risk.
-

Purpose of the Dashboard

To provide a comprehensive profile of credit card customers, highlighting demographics, product usage, account status, and customer longevity — supporting better product design, retention strategies, and credit risk management.

3. Dashboard Title: Customer Segmentation

This dashboard offers a deep dive into demographic segmentation of the credit card customer base, helping to identify patterns by gender, age, marital status, and education level.

Section-wise Description of Visualizations

1. Gender Ratio – Donut Chart

- **Male:** 53.55% (6.2K customers)
 - **Female:** 46.45% (5.38K customers)
 - Balanced gender mix provides opportunities for gender-targeted marketing.
-

2. Pie Chart – Millennials vs Non-Millennials

- **Millennials:** 21.43% (2.48K)
 - **Non-Millennials:** 78.57% (9.09K)
 - Indicates a mature customer base; scope to attract younger users.
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3. Bar Chart – Marital Status Breakdown

- **Married:** Largest segment (~7K+)
 - Followed by **Single** and **Divorced** customers.
 - Useful for understanding **lifestyle needs** and tailoring offers.
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4. Bar Chart – Education Level Breakdown

- **Graduate:** Dominant group (~5K+)
 - Followed by **College, High School**, and others.
 - Helps predict **income potential** and **product sophistication needs**.
-

5. Filter Options

- **Year:** 2018 or 2019 to compare changes over time.
 - **Gender, Card Type, Education:** Filter to focus on specific customer cohorts.
-

Purpose of the Dashboard

To segment the customer base using key demographics and understand which groups dominate the credit card space. This aids in designing personalized campaigns, refining credit risk profiles, and enhancing customer engagement strategies.

4. Dashboard Title: Customer Spending & CLV

This dashboard analyzes customer spending behavior and Customer Lifetime Value (CLV) across various income categories, transaction types, and time periods. It reveals which customer segments drive the most revenue and how spending evolves over time.

Section-wise Description of Visualizations

1. Bar Chart – Total Revenue by Type

- **Fuel**: Highest revenue generator (~0.6M)
 - Followed by **Shop**, **Eat**, and **Cash**
 - Highlights which transaction types are most profitable.
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2. Donut Chart – Spending by Category

- **Fuel**: 37.98% (27.97M)
 - **Shop**: 27.43% (20.2M)
 - **Eat**: 23.58% (17.37M)
 - **Cash**: 11.01% (8.11M)
 - Visualizes the distribution of total spending across transaction types.
-

3. Bar Chart – Total Spend vs Income

- **\$40K – \$60K**: Highest spenders (~22M)
 - Spending decreases with increasing income beyond this range.
 - Useful for identifying **high-value segments** by income.
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4. Line Chart – Quarterly Spending Trend

- Data from **Q4 2018 to Q3 2019**
 - Overall **downward trend** in transaction volume across all types.
 - Indicates potential **seasonality or market slowdown**.
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5. Table – CLV by Segment

- **\$40K – \$60K** income group has the highest CLV (~23.05M)
 - CLV split into **Attrited** and **Existing** customers
 - Helps understand **customer retention value** and loss impact.
-

6. Filter Options

- **Year:** 2018 or 2019
 - **Gender:** Male or Female
 - **Income Category & Marital Status:** For targeted analysis by segment
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Purpose of the Dashboard

To assess customer value and spending behavior across different demographics and transaction types. This helps in:

- Identifying **high-spending income segments**
 - Tracking **transaction trends over time**
 - Designing **targeted retention strategies**
 - Optimizing **product offerings** for profitable categories
-

5. Dashboard Title: Marketing & MCAC

This dashboard focuses on **Marketing Cost per Acquired Customer (MCAC)** and provides insights into **customer acquisition efficiency** across quarters and age groups. It helps evaluate how well marketing budgets are translating into new customer growth.

Section-wise Description of Visualizations

1. Pie Chart – MCAC Over Time

- **Q1:** Highest cost per acquired customer – ₹2.07 (37.27%)
 - **Q4:** Lowest cost – ₹1.14 (20.5%)
 - Reflects **quarter-wise marketing efficiency** and seasonal variations.
-

2. Pie Chart – Millennials vs Others

- **Others:** 80.98% (₹59.63M in transactions)
 - **Millennials:** 19.02% (₹14.01M)
 - Indicates that **non-millennials dominate spending**, influencing marketing focus.
-

3. Bar Chart – New Customers Per Year

- **2018:** 10,127 customers acquired
 - **2019:** 1,444 customers
 - Sharp drop in new customers suggests possible **budget shifts or market saturation.**
-

4. Bar Chart – Quarterly Marketing Cost

- **Q1:** Highest spend (₹25K+)
- Q2 to Q4: Even distribution (~₹13K each)
- Helps understand **budget allocation** across quarters.

5. Top Summary Metrics

- **Total Marketing Cost:** ₹64K
 - **Total New Customers:** 12K
 - **MCAC (Overall):** ₹5.57
 - Quick snapshot of marketing performance at a glance.
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6. Filter Options

- **Year:** Compare between 2018 and 2019
 - **Gender:** Male or Female filter
 - Enables **granular analysis** by time and demographics
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Key Findings

- Q1 had the **highest MCAC** at ₹2.07; Q4 had the **lowest** at ₹1.14.
 - **Non-Millennials** contributed 81% of total transaction value.
 - **10,127 customers** were acquired in 2018 vs **1,444 in 2019** – a significant decline.
-

Purpose of the Dashboard

To evaluate the **effectiveness of marketing efforts** by tracking costs and results over time and demographics. This helps:

- Optimize **marketing spend allocation**
- Improve **customer acquisition strategies**

- Identify the **most profitable customer segments**
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6. Dashboard Title: Revenue Achievement

This dashboard provides insights into **how well revenue targets were met** across time, card types, and transaction types. It evaluates **target vs actual revenue performance**, helping identify underperforming areas and opportunities for improvement.

Section-wise Description of Visualizations

1. Key Metrics – Top Cards

- **Target Achievement %:** 55% (i.e., only half the target met)
 - **Target Revenue:** ₹3.78M
 - **Actual Revenue:** ₹2.09
 - **Revenue Per Customer:** ₹180.77
 - Gives a concise view of **performance efficiency** and customer-level contribution.
-

2. Treemap – Variance Analysis

- Shows **revenue shortfall** by quarter.
 - **Q4 and Q1** show the largest gaps.
 - Helps visualize **which quarters missed targets the most**.
-

3. Bar Chart – Quarterly Revenue Per Customer

- **Q4**: Highest revenue/customer (~₹80)
 - Followed by Q1, with Q3 and Q2 being the lowest
 - Identifies **periods of strong customer performance**.
-

4. Bar Chart – Type-wise Revenue Target Comparison

- **Fuel** and **Shop** contributed the most to target revenue.
 - **Cash** was the weakest segment.
 - Helps in understanding **which services/products drive revenue**.
-

5. Line Chart – Actual vs Target Revenue Over Time

- Visual dip in revenue after Q4 2018.
 - Consistently **below target** throughout 2019.
 - Shows a **declining trend in revenue performance** post-2018.
-

6. Filter Options

- **Year**: 2018 or 2019
 - **Card Type**: Blue, Gold, Platinum, Silver
 - **Quarter**: Q1 to Q4
 - Enables detailed **segment-wise revenue tracking**.
-

Purpose of the Dashboard

To monitor **progress towards revenue targets**, evaluate **quarter-wise and type-wise revenue contributions**, and assess **overall business health**. It helps:

- Pinpoint **underperforming areas**
 - Plan **corrective campaigns**
 - Align **revenue strategy with customer behavior**
-

Navigation Overview – Dashboard Pages

The report features an intuitive **six-tab navigation** panel on the left, allowing users to seamlessly explore key areas of the credit card business:

- **Overview**
- **Credit Business Performance**
- **Customer Segments**
- **Customer Spending & CLV**
- **Marketing & MCAC**
- **Revenue Achievement**

This structure ensures quick access to targeted insights, supporting **data-driven decisions** across marketing, customer engagement, credit performance, and revenue growth.

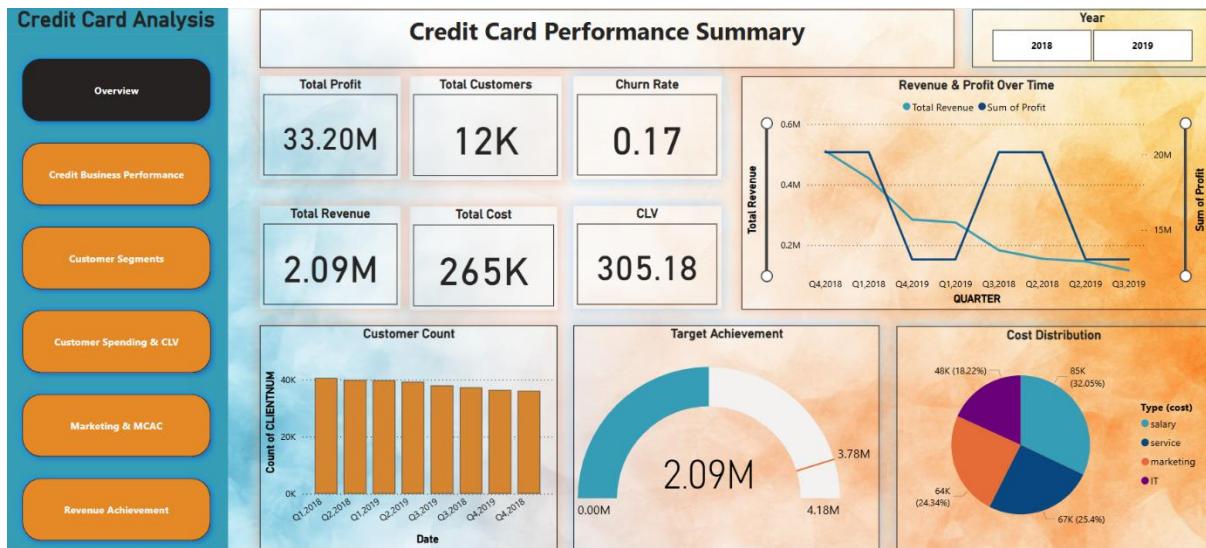


FIG1 : Overview



FIG2 : Credit Business Performance

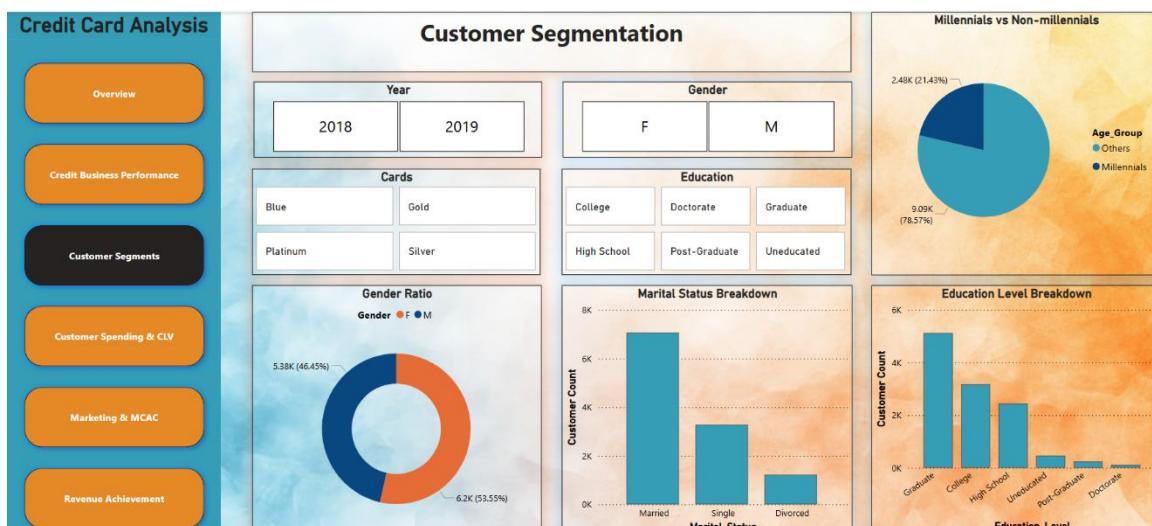


FIG3 : Customer Segmentation

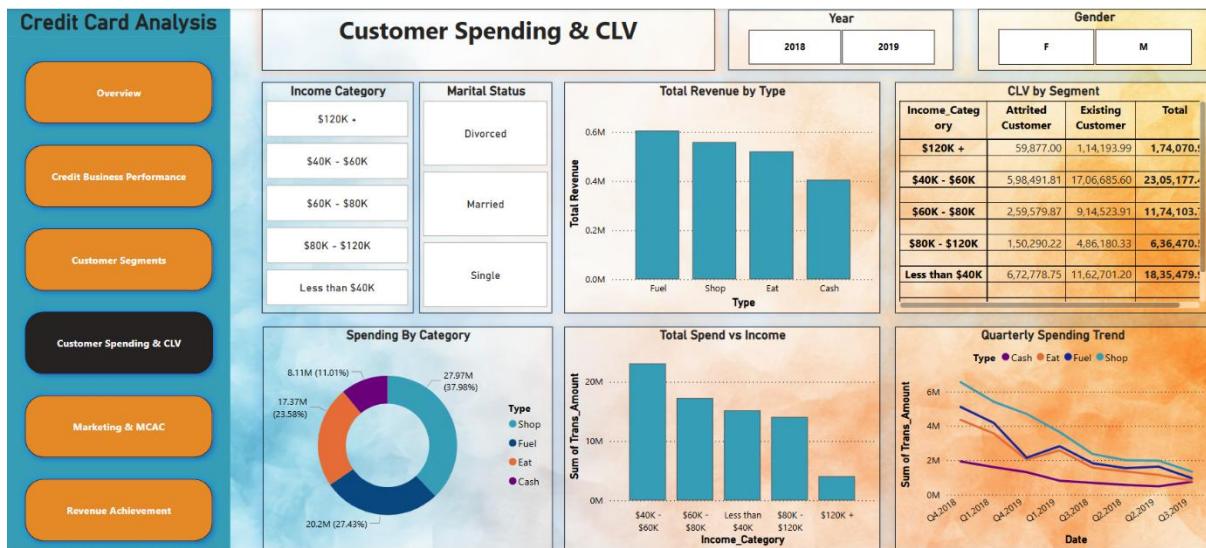


Fig4 : Customer Spending & CLV

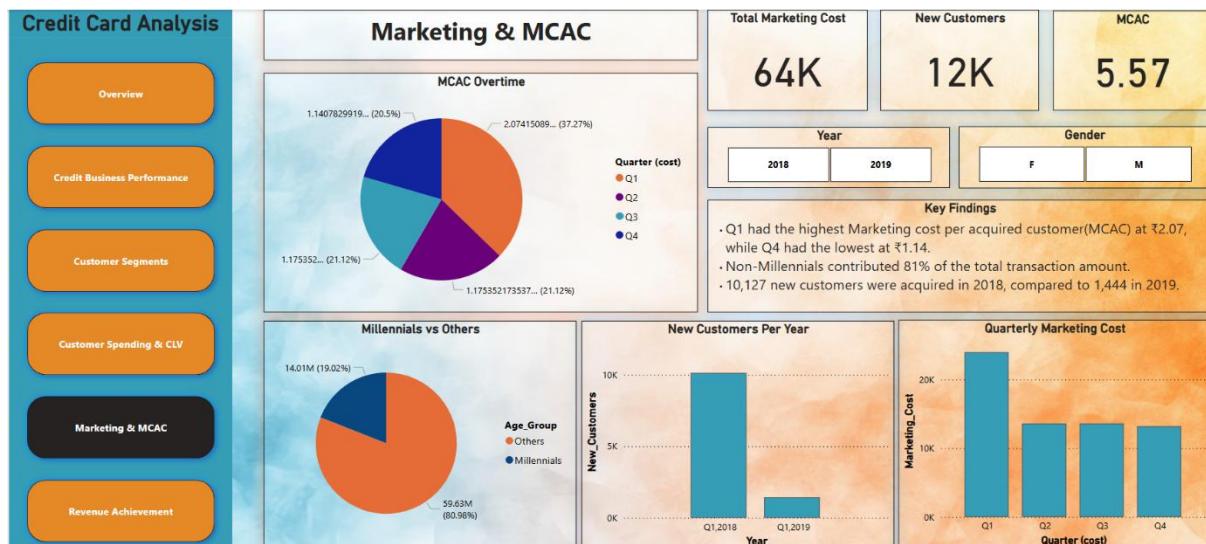


FIG5: Marketing & MCAC

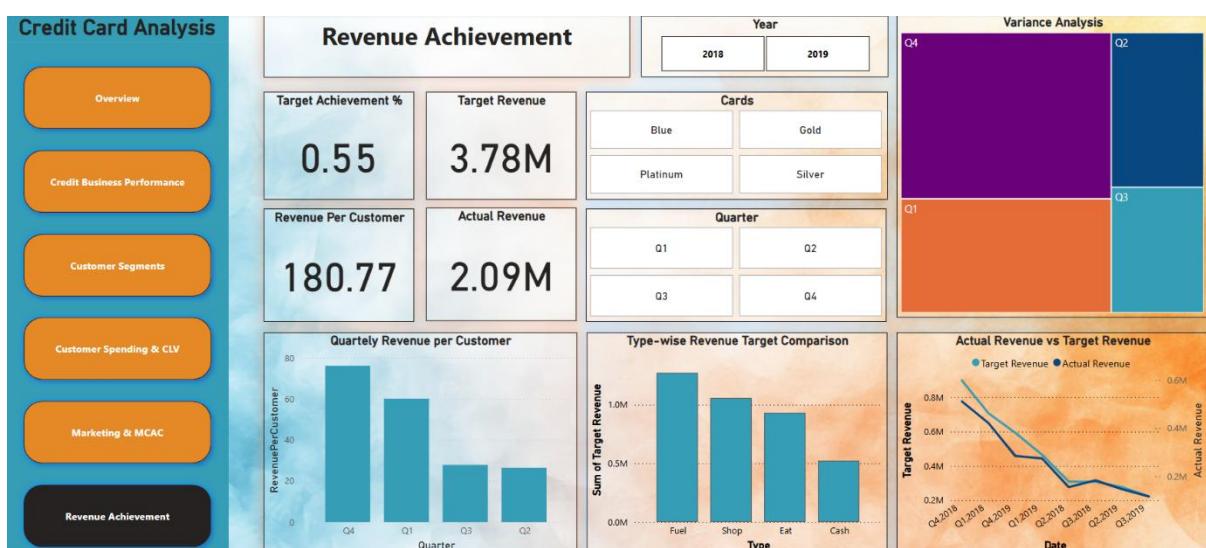


FIG6 : Revenue Achievement

Conclusion:

The dashboard provides a comprehensive overview of the credit card business performance following the 2019 marketing campaign targeting millennials. For the Vice President of Sales, the dashboard delivers insights into revenue growth, churn rates, and overall credit product performance, helping to evaluate the campaign's effectiveness and guide strategic decisions.

For the marketing team, detailed customer segmentation and spending behavior analysis enable a deeper understanding of millennial customers. Key metrics like Customer Lifetime Value (CLV) and Marketing Cost per Acquired Customer (MCAC) offer valuable guidance to optimize marketing investments and improve customer acquisition and retention strategies.

Together, these insights support data-driven decision-making aimed at increasing revenue and strengthening the brand's connection with younger audiences.

REFERENCE:

SOURCE: Kaggle

Uploaded by:

- Peachji
- Aunchisa Changthong
- Monjira Chaninprasert

<https://www.kaggle.com/datasets/peachji/credit-card-dataset>

