

Project Overview

This project involved developing an interactive Credit Card Financial Dashboard in Power BI to visualize transaction and customer data stored in a SQL database. The dashboard provided real-time insights into key financial metrics like revenue, customer segmentation, and spending behaviour, enabling stakeholders to make data-driven decisions about product offerings and marketing strategies.

Objectives and Stakeholders

- **Primary Goal:** To create a comprehensive dashboard that visualizes revenue trends, customer demographics, and spending habits.
- **Stakeholders:** Business leaders and marketing analysts in the credit card department, aiming to better understand customer behaviour and revenue patterns.

Challenges and Methodologies

Challenges Identified:

- **Customer Segmentation Complexity:** Customers varied significantly in demographics and spending patterns, making it essential to develop meaningful segmentation.
- **Real-Time Revenue Analysis:** Weekly revenue tracking required real-time data transformations and visualizations.
- **Data Integration:** Combined customer and transaction datasets stored in a SQL database to derive insights across multiple metrics.

Methodologies Applied:

- **DAX Functions:** Custom calculations like AgeGroup, IncomeGroup, Current_week_Revenue, and Previous_week_Revenue to segment data effectively.
- **Data Modeling:** Defined relationships in Power BI to combine data from multiple sources for holistic insights.
- **SWITCH Function:** Used for categorizing customers by age and income, simplifying segmentation analysis in visuals.

Solution and Tools Used

For each area, I applied specific solutions and tools to meet the objectives:

1. Revenue Analysis

1. **Solution:** Aggregated transaction data to visualize revenue trends by week, quarter, and card category.
2. **Tools Used:** Power BI for dashboarding, DAX for creating custom revenue metrics (Current_week_Revenue and Previous_week_Revenue).
3. **Outcome:** Enabled stakeholders to track revenue fluctuations in real time and identify patterns in transaction amounts.

2. Customer Segmentation

1. **Solution:** Segmented customers by age, income, job, and education to identify high-value demographics.
2. **Tools Used:** DAX (SWITCH function) for grouping, Power BI for visual representation.
3. **Outcome:** Provided actionable insights into customer profiles, guiding targeted marketing efforts.

3. Spending Pattern Analysis

1. **Solution:** Created visuals for expenditure categories (e.g., grocery, entertainment) to understand where revenue was concentrated.
2. **Tools Used:** Power BI visualizations (bar charts, pie charts).
3. **Outcome:** Identified popular spending categories, helping refine product features and marketing campaigns.

4. Card Usage Trends

1. **Solution:** Visualized usage by card type (Blue, Silver, Gold, Platinum) and usage method (Swipe, Chip, Online).
2. **Tools Used:** Power BI, SQL queries for data preprocessing.
3. **Outcome:** Insights into which card types were most popular and their preferred usage methods, informing product development.

Results and Impact

The Credit Card Dashboard had several measurable impacts:

- **Improved Customer Insights:** The segmentation allowed the team to target campaigns toward high-value customer groups (e.g., high-income and high-spending categories).
- **Enhanced Revenue Tracking:** Weekly and quarterly revenue visuals helped monitor performance and adjust strategies to improve quarterly earnings.

- **Data-Driven Marketing Decisions:** By understanding spending patterns, the marketing team could better position campaigns around popular categories like groceries and entertainment.
- **Optimized Card Product Features:** Usage data highlighted preferences for certain card types and usage methods, guiding the development of future card offerings.

Visual Aids and Dashboards

- **Revenue by Age Group:** Bar chart showing revenue contributions by different age groups (e.g., highest revenue from ages 30-40 and 50-60).
- **Expenditure Patterns:** Breakdown of revenue by category, with visuals on the top categories like grocery and entertainment.
- **Card Category Performance:** Chart comparing revenue by card type (Blue, Silver, Gold, Platinum) and usage trends (Swipe, Chip, Online).

Key Skills Highlighted

This project demonstrates my skills in:

- **Data Analysis:** Used DAX and SQL to create calculated columns for segmentation and revenue analysis.
- **Data Visualization:** Built an interactive Power BI dashboard that displays complex financial data in a user-friendly format.
- **Customer Segmentation:** Defined segments based on customer demographics and spending patterns.
- **Stakeholder Communication:** Presented dashboard findings to the marketing team, explaining key metrics and how they could inform strategy.

Reflections and Lessons Learned

This project reinforced the importance of:

- **Segmentation for Insights:** Dividing customers by age and income provided clearer insights than a one-size-fits-all approach.
- **Real-Time Data Tracking:** Weekly revenue tracking enabled agile decision-making for the business.
- **Interactive Dashboards:** A well-designed dashboard not only informs but also engages stakeholders, helping them derive meaningful insights.