# 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.