**Credit card analysis dashboard**

This project is a deep dive into the world of credit card users, where I built an interactive dashboard using Power BI, Power Query, and DAX. I started with a raw SQL database containing multiple relational tables customer data, transaction details, credit usage patterns, and more. I connected this SQL data source directly to Power BI, ensuring real-time query handling and better performance when filtering and analyzing.

The idea behind the project was simple: If I were a data analyst at a financial institution, how could I help the company understand its credit card customers better? With that in mind, I focused on identifying key user behaviors like spending patterns, cash advances, credit utilization ratios, and average monthly transactions. The dashboard was designed to be dynamic, easy to interpret, and focused on actionable business insights.

I handled the data transformation in Power Query and created several DAX measures to calculate KPIs like Monthly Spend, Usage Ratio, and Customer Segmentation. This helped break down insights by demographic filters like age group, gender, and card type. The goal was to not just visualize data, but to tell a story through it a story that could help business leaders make smarter decisions.

Although I initially explored this concept by watching a few online tutorials, I made sure to build this version entirely on my own writing SQL queries, cleaning datasets, creating relationships, and designing visuals from scratch. This dashboard reflects both my technical skillset and my ability to think from a business point of view.

**1. Project Overview**

This project presents a comprehensive **Credit Card Analysis Dashboard** built using **SQL, Power BI, Power Query**, and **DAX**. The main objective was to extract insights from customer credit card usage data to help financial institutions understand user behavior, identify high risk or high value customers, and make data driven strategic decisions.  
The dashboard was built by directly connecting Power BI with a SQL database, allowing real time updates and scalable data handling.

**2. Business Problem**

Financial institutions gather massive amounts of data related to customers and their credit card transactions. However, without proper structuring, cleaning, and visualization, this data remains underutilized.  
The absence of interactive dashboards can lead to missed opportunities in detecting trends, forecasting risk, and targeting customer segments.  
This project solves that by creating an end-to-end automated dashboard which delivers key business metrics and customer insights through clear visual storytelling.

**3. Project Objectives**

* Analyze customer spending behavior, frequency, and transaction patterns.
* Identify and segment customers based on usage and credit performance.
* Track KPIs like credit utilization ratio, cash advance ratio, and monthly spending.
* Build a dynamic and filterable dashboard to explore trends by age, gender, and card type.

**4. Tools & Technologies Used**

* **SQL Server:** To extract, clean, and join relational tables from the database.
* **Power Query:** To perform data transformation and pre-processing in Power BI.
* **DAX:** To build custom measures and calculated columns (e.g., utilization ratio, monthly average spend)
* **Power BI:** To build an interactive dashboard that enables business storytelling.

**5. Key Features of the Dashboard**

* Real-time data pulled from SQL database into Power BI
* Segmented insights based on customer demographics (Age, Gender, Card Type)
* KPIs visualized:
  + Credit Utilization Ratio
  + Average Monthly Spend
  + Payment Behavior
  + Cash Advance Ratios
* Easy-to-use filters and slicers for interactive exploration

**6. Results & Insights**

* Customers aged 26 - 35 had the highest transaction volume and spending amount, indicating they are active users and a valuable segment for credit upgrades or rewards targeting.
* Female customers showed slightly higher average monthly spending compared to male customers, suggesting potential for gender-focused marketing strategies.
* Platinum and Gold card holders had higher credit limits but lower utilization, which could mean they are financially stable or under-leveraging available credit. These users are ideal for upselling other financial products.
* Users with higher Cash Advance transactions had lower repayment ratios, indicating potential risk and need for monitoring. These users may be facing liquidity issues or engaging in riskier credit behavior.
* Customers with a higher number of months on book (tenure) also showed better payment behavior, suggesting customer loyalty often correlates with credit discipline.
* The Credit Utilization Ratio emerged as a key KPI:
  + 1. High utilization (>60%) often coincided with high transaction counts,
    2. But also flagged customers at greater risk of default, especially if not matched by timely payments.
* Segmentation filters revealed that users with high transaction change rates between Q4 and Q1 were either showing improved engagement or signs of financial distress, depending on other metrics.

**7. Conclusion**

This project demonstrates both technical and analytical skills: integrating SQL with Power BI, building clean data models using Power Query, and crafting KPIs using DAX.  
The final dashboard is a tool that could be used by analysts or decision-makers at a bank to monitor credit card operations, user behavior, and growth opportunities.

By independently building this project from scratch using SQL query writing, dataset preparation, dashboard design, and business logic I gained strong hands-on experience with BI tools and analytics thinking.