Innovation & Entrepreneurship Hub for Educated Rural Youth (SURE Trust – IERY)

Credit Card Data Analysis and Dashboard Creation using Power BI, and Automated Data Collection in MySQL through Google Forms

The domain of the Project
Power BI and SQL

Under the guidance of
Ms.Siddhika Shah (Software Engineer)

By
Ms. Prachi Saini (M.Sc Mathematics and Computing Student)

Period of the project
May 2025 to August 2025

SURE TRUST

PUTTAPARTHI, ANDHRA PRADESH

DECLARATION

The project titled *"Credit Card Data Analysis and Dashboard Creation using Power BI, and Automated Data Collection in MySQL through Google Forms"* has been mentored by Ms.Siddhika Shah and organized by SURE Trust from May 2025 to August 2025, for the benefit of the educated unemployed rural youth for gaining hands-on experience in working on industry relevant projects that would take them closer to the prospective employer.

I declare that to the best of my knowledge the members of the team mentioned below, have worked on it successfully and enhanced their practical knowledge in the domain.

Team Member:

> Prachi Saini
> M.Sc 2nd year Mathematics and Computing

Mentor's Name:

> Ms. Siddhika Shah
> Software Engineer
> HCL Technologies

Seal & Signature:

> Prof. Radhakumari
> Executive Director & Founder
> SURE Trust

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Executive Summary

 This project integrates Power BI dashboards with MySQL databases to provide a comprehensive analysis. The Power BI dashboard consists of two interactive pages that present insights through a variety of visualization tools such as Stacked Bar Charts, Tree Maps, Cards, and Slicers. Power BI not only helps in cleaning and transforming raw data but also allows the creation of visually appealing and meaningful dashboards for better decision-making.

On the other project, MySQL serves as a powerful tool for managing the backend data. It enables updating, deleting, and modifying records efficiently using SQL queries. For this project, responses were collected through Google Forms and integrated with MySQL using Pabbly Connect. This integration ensures that as soon as new responses are recorded in the linked Excel sheet, they are automatically inserted into the MySQL table, keeping the database up to date in real-time.

 By combining the analytical power of Power BI with the reliability of MySQL, this project demonstrates a streamlined workflow—from data collection and storage to analysis and visualization—providing valuable insights into credit card transactions and customer behaviour as well as Students data.

Introduction

Background and Context:

The growing Amount of financial data, particularly credit card transactions, requires efficient systems for storage, analysis, and visualization. Traditional spreadsheets are limited in handling dynamic datasets, making tools like MySQL and Power BI more effective. .

Goals of the Project:

- To create the dashboard for easy analysis of data which we collect from Kaggle.
- To collect the data of general survey of the students systematically using Google forms and My SQL.
- To ensure real time updates I use Pabbly connect to make a connection between Google forms and My SQL.
- To create a reliable workflow that combines data collection, data manipulation and visualization for decision making.

Scope:

This project mainly focuses on the collection, storage and visualization of credit card transaction and customer data. The data stored in My SQL is managed using queries for updates and modifications.

The project is mainly focuses on data integration, management and visualization and it does not include advanced predictive modelling or machine learning.

Limitations:

- As this project is limited to only some tools and not involving advanced techniques. The accuracy of the insights is totally depends on the quality and completeness of the data collected through Google forms.
- Since, the responses are inserted into MySQL via third party application (Pabbly Connect), any error in the connectivity may affect the real time updates.
- The power bi dashboards are restricted to the given data information and independent to the external factors which are influencing the credit card usage.

Innovation:

Unlike the traditional methods where we manually collect the data and updates it. This project uses pabbly connect to automatically transfer responses from google forms to My SQL databases in real time.

This practice ensures data accuracy, values time and reduces manual error and also minimize the risk of errors.

This project demonstrates an efficient and modern approach towards handling Financial data.

Project Objectives

Project Objectives and Expected Outcomes:

1. To perform the data cleaning, transformation on dataset collected from kaggle using Power Query editor in Power BI.
   Expected Outcome: Two interactive Power BI dashboards displaying credit card transaction and customer insights using charts, maps, card.

2. To integrate the collected data from google forms with My SQL through Pabbly connect for real time storage and management.

   Expected Outcome: A detailed and reliable My SQL database that automatically updates with new responses from Google Forms. A scalable workflow that can be adapted for similar data-driven projects in the future.

3. To generate meaningful insights into customer behaviour and transaction patterns that can support decision making.
   Expected Outcome: Clear, visualized reports that simplify complex financial data for easier interpretation.

Deliverables:

1. **Comprehensive Power BI Dashboard:**
   I have created two interactive dashboards to provide a complete view of credit card transactions and customer details.

2. **My SQL Database**:
   A relational database was designed with data collected from Google forms using Pabbly Connect Then the Database schema is optimized for storing and retrieving the students' data.

4. **Strategic Recommendations:**
   A set of data driven recommendations was built to enhance marketing strategies, customer retention and also helpful in business growth.

Methodology and Results

Methods/Technology Used:

1. Data Sources and Collection.
2. Data Preparation and Modelling.

Tools/Software Used:

1. Kaggle(website):
Kaggle is a Great source for downloading the relatable dataset as per your need.

2. Power BI (Data visualization Tool):
Used for data cleaning, data transformation using Power query editor.
And also used for making interactive dashboards.

3. Google forms:
Used for creating a form for general survey of students' of
Different colleges. It has some questions related to their course, area of interest etc.

4. My SQL:
Used for modify the data in relational database using the sql queries.

Data Collection Approach:

I simply go to the Kaggle website and download the dataset of customer details and customer transaction details and then load it to the Power BI for further process.
And for My SQL I used google forms to collect student's data.

Project Architecture :
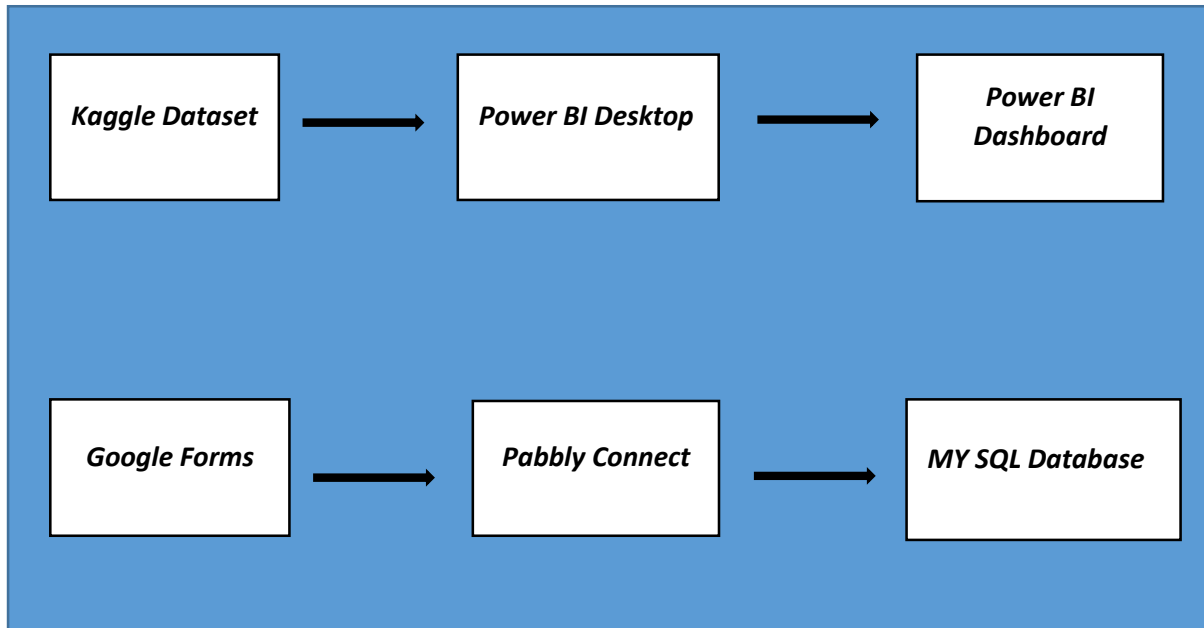
1. Data Ingestion:

Our data pipeline starts with two primary sources. The first is the dataset containing credit card transaction and customer data, downloaded from Kaggle. The second is collecting students' data for general survey via a Google form.

An automated workflow was established using the third party tool Pabbly Connect to insert responses from the Google form. Each new Responses is automatically pushed and stored in a defined table (table name: general_survey1) in the database, which ensures us that data is always up to date.

2. Data Modelling and Analysis:

The Power BI Desktop application serves as the central hub for data modelling and analysis. The credit card dataset was loaded directly in the Power BI.

And on the other project of My SQL a live connection was established to the database to pull the students information.

In the particular stage, data from both sources was modelled and integrated using the different tools as mentioned above.

3. Final Presentation:

Now, the final output of this architecture is a set of interactive Power BI Dashboards. These dashboards serve as the main picture of the whole project, providing a visual and intuitive way to explore key business insights.
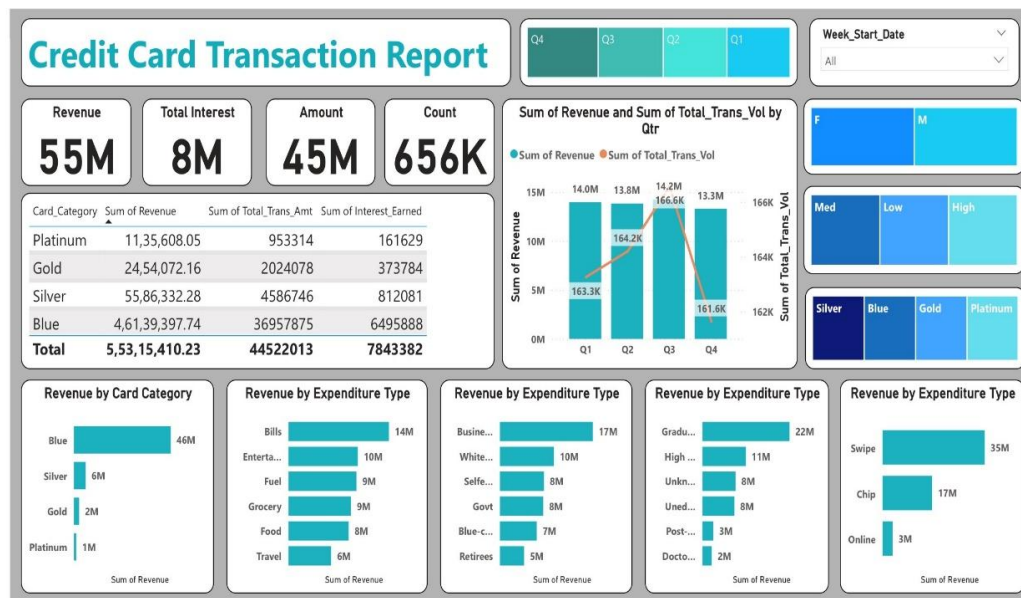
Results:

• Overall Performance and Key Metrics:

Figure 1: Credit Card Transaction Dashboard

- **Total Revenue:** The total revenue generated from credit card transactions was $55 million.
- **Total Transactions:** A total of 656,000 transactions were recorded with a total transactions amount of $45 million.
- **Total Interest:** The business has $8 million in interest.
- **KPI Summary:** The dashboard successfully provides a high level view of these crucial metrics, serving as a primary tool for tracking business performance.

- ## Analysis of Card Categories and Revenue:
    - **Platinum Cards Lead Revenue:** The Platinum card category was the highest contributor to revenue, accounting for a significant portion of the total. This indicates that Platinum cardholders are the most valuable customer segment.
    - **Gold and Silver Performance**: The Gold and Silver card categories followed, generating the next highest levels of revenue.
    - **Transaction Value:** While the number of transactions may vary, the average transaction value appears to be highest for Platinum cards.

- ## Spending Patterns and Transaction Types:
    - **Top Expenditure Types:** The highest spending categories were Bills, Entertainment, and Fuel. This insight can inform targeted marketing and partnership opportunities.
    - **Dominant Transaction Type:** The Swipe transaction type was the most common, followed by Chip and Online.

- ## Customer Demographics and Revenue Contribution:

Figure 2: Credit Card Customer Dashboard

- **Revenue by Occupation:** Customers in the Self-employed and White-collar segments generated the highest revenue. This finding

suggests a focus on these occupational groups could maximize business growth.

- **Revenue by Age Group:** The 30-40 and 40-50 age groups were the largest contributors to revenue, highlighting the most valuable age demographics.

- **Revenue by Gender and Marital Status:** The dashboard also shows the distribution of revenue by gender and marital status. (e.g., "Male customers contributed more to revenue than female customers," or we can say that "Married individuals showed higher spending.")

- ## **Country based Analysis:**

  - **Top 5 States:** Using the Filters option in Power BI I showed the top 5 states on the basis of sum of revenue. The states of TX, NY, CA, FL, and NJ were the top five contributors to revenue. This suggests that marketing and promotional efforts should be concentrated in these high-performing regions.

- ## **In MySQL Project :**

Figure 4: Figure showing the Pabbly Connect

• **Steps of connecting both of them using Pabbly Connect are:**

Figure 4 shows Two pictures where we connect Google forms using webhook URL and then connect My SQL database having table name general_survey1 and we add the action event as "Insert Row". We also use the map option for all the fields in the table which automatically replace the previous responses with new responses in the table.

Figure 5: Responses getting store in the table in My SQL

Figure 5, shows how the data automatically get stored in the table "general_survey1" in My SQL. As the responses get filled in the excel sheet of the google form then they automatically get fetched by My SQL and it stored them in the relational database.

GitHub Link

https://github.com/Prachi-s1803/Power-BI-and-SQL-Project

Learning and Reflection

1. <u>Key Learnings:</u>

- **Data Integration:** By connecting different data sources I learned how the data pipelines work in real. And how the automated, real time data pipelines functions as we connect google and sql using Pabbly Connect.

- **Power BI Skills:** As I work on this Project my Power BI skills enhanced a lot. I started focusing on the details of the dashboard. And try to make the dashboard more attractive and insightful. I found DAX formulas very useful for data transformation and also they are very easy to use in the Power Query Editor. As I have used many DAX functions one of them is to calculate revenue per customer.

- **Business Acumen:** As I have worked on this project I have learned more about real world applications of these tools. And how it will help to enhance the business. It really expands my knowledge after analysing customer demographics and spending habits provided insights into customer segmentation and business strategy.

2. <u>Experience:</u>

- This project reinforced my understanding of DAX concepts and their practical application in transforming Data. I believe this project had really enhanced my skills for the roles like data analyst, business intelligence analyst, or data scientist role. It also improved my problem-solving skills by addressing real-world problems.

Conclusion and Future Scope

Objectives:

The primary goals of this project were:

- To develop an interactive dashboard to visualize and analyse key performance indicators (KPIs) such as total revenue, total interest, and total transactions from the provided credit card data.
- To find out actionable insights into customer behaviour by analysing demographics (age, occupation, gender), spending patterns (top expenditure categories), and geographical performance.
- To Implement an automated workflow to connect Google Forms responses to a MySQL database, creating a real-time data source for analysis.

Achievements:

- Based on the integrated analysis, provide strategic recommendations to optimize marketing efforts and improve customer satisfaction.

Future Scope:

- We can utilize a machine learning model to predict which customers are at risk of leaving. The model could use historical transaction data and customer data as key features to identify at-risk customers.