Anomaly Detection in Credit Card Transactions using Power BI

About:-
Anomaly detection in credit card transactions refers to the process of identifying unusual or fraudulent activities in credit card transactions. It involves applying statistical, machine learning and Power BI techniques to detect patterns and deviations from normal behavior, helping to identify potential fraudulent transactions in real-time.

Data Preprocessing:-
1.I loaded the data from the CSV file that was provided by Newton School, which contains detailed information about Credit Card Fraud.
2. I used the Power query editor to clean and transform the data, such as removing duplicates, filling missing values, splitting columns, and renaming tables.
3.. I used new measures and some DAX functions for the KPI visual, such as calculating Max. Fraud Transactions, Average Normal Transactions, Total Credit Card Transactions, Total Credit Card Fraud Amount, % Fraud Transaction, Average Transaction Amount.
5. I created a dashboard with several visualizations, such as a Card Visual, Slicers, Clustered Column Charts, Line Chart, Scatter Chart, Clustered Bar Chart to show the key insights and trends of Credit Card Fraud.
6. I applied some filters and slicers to allow interactive exploration of the data, such as selecting different Name of Org, Steps Name Dest and to select type of payment.

Key Features:-

📈 KPIs at Your Fingertips: My dashboard showcases a wide array of Key Performance Indicators (KPIs) that Max. Fraud Transactions, Average Normal Transactions, Total Credit Card Transactions, Total Credit Card Fraud Amount, % Fraud Transaction, Average Transaction Amount. Data-driven decisions have never been easier!

🌐 Real-time Data: Stay in the loop with the latest Credit Card Transaction Fraud as my dashboard continuously updates to provide the most current insights.

📈Clustered Bar Chart - This chart used to analyzing which merchants have the highest number of transactions is an essential aspect of understanding transaction patterns and potential anomalies in credit card data. This information can be valuable for understanding transaction patterns and potential outliers. Given the Top 10 Merchants with Highest Transactions.

📈Scatter Plot - The primary goal of creating a scatter plot is to understand the relationship between the initial account balance ('oldbalanceOrg') and the transaction amount ('amount') for credit card transactions.

📈Line Chart - In conclusion, using a line chart to visualize transaction amounts over time is an effective method for tracking transaction trends and identifying unexpected spikes or drops that may be indicative of fraudulent activities.

📈Bar Chart - This chart used to analyzing merchants with a high occurrence of fraudulent transactions is essential for understanding potential patterns of fraud in credit card transactions. This analysis can help guide fraud detection and prevention efforts by focusing on specific merchants that exhibit unusual or suspicious transaction behavior.