**CAPSTONE PROJECT**

**PROBLEM STATEMENT:**

A small company Axon, which is a retailer selling classic cars, is facing issues in managing and analyzing their sales data. The sales team is struggling to make sense of the data and they do not have a centralized system to manage and analyze the data. The management is unable to get accurate and up-to-date sales reports, which is affecting the decision-making process.

To address this issue, the company has decided to implement a Business Intelligence (BI) tool that can help them manage and analyze their sales data effectively. They have shortlisted Microsoft PowerBI and SQL as the BI tools for this project.

**GOAL OF THE PROJECT:**

The goal of the capstone project is to design and implement a BI solution using PowerBI and SQL that can help the company manage and analyze their sales data effectively.

The solution should be user-friendly and easy to use for the sales team and management. The project will be successful if it helps the company effectively manage and analyze their sales data and improve their decision-making process.

**TOOLS REQUIRED FOR THE CAPSTONE PROJECT:**

These tools and technologies can be used to extract, clean, and analyze sales data and build interactive dashboards and reports. They are widely used in the field of Business Intelligence (BI) and can be leveraged to solve a variety of data-related problems.

1. Microsoft PowerBI
2. SQL

In addition to these tools, there are many open-source projects that can be used to solve BI-related problems, such as data visualization libraries (e.g., D3.js), data manipulation libraries (e.g., Pandas), and machine learning libraries (e.g., sci-kit-learn).

**STEPS TO BE FOLLOWED TO COMPLETE THE PROJECT:**

1. **Use the data source provided**: Use the MySQL database provided as a data source.
2. **Extract and clean the data**: The next step is to extract the data from the identified sources and clean it to make it ready for analysis. This may involve tasks such as removing duplicates, handling missing values, and ensuring data consistency.
3. **Load the data into a PowerBI**: The cleaned data can then be loaded into a centralized database.
4. **Design the dashboards and reports:** Using PowerBI, data can be visualized in the form of interactive dashboards and reports. These dashboards and reports can be designed to provide useful insights and information to the management.
5. **Perform advanced analytics**: Using SQL, advanced analytics can be performed on the sales data to extract insights and inform decision-making. This may involve tasks such as creating pivot tables, running queries, and creating views.
6. **Deploy the solution**: The final step is to deploy the BI solution, including the dashboards, reports, and advanced analytics, to the sales team and management. The solution should be user-friendly and easy to use to ensure adoption and success.

**DESCRIPTION OF EACH STEP IN DETAIL:**

**Use the data source provided:**

* Classicmodels is the database that has been provided.
* Firstly, we need to create this database in mysql.
* Here is a short description of the data tables included that contains typical business data such as customers, products, sales orders, sales order line items, etc.

The MySQL sample database schema consists of the following 8 tables:

* Customers: stores customer’s data.
* Products: stores a list of scale model cars.
* ProductLines: stores a list of product line categories.
* Orders: stores sales orders placed by customers.
* OrderDetails: stores sales order line items for each sales order.
* Payments: stores payments made by customers based on their accounts.
* Employees: stores all employee information as well as the organization structure such as who reports to whom.
* Offices: stores sales office data

**Extract and clean the data:**

* Once the database is created, the next step is to connect the database to powerbi and extract the sql file.
* Now, after doing that the next step is to clean the file.
* This may include few steps like checking the datatype of the columns, merging multiple columns if needed, removing the duplicates, dealing with the null values etc.
* The above steps are to be followed for all the tables in the database.
* Date table is created in order to deal with all the date datatype columns.

**Load the data into a PowerBI:**

* After transforming the data, we need to load the data into powerbi desktop to create reports and dashboards.

**Design the dashboards and reports:**

* Firstly, the reports are created by dragging and dropping the fields into the powerbi desktop resulting in the formation of the tables.
* These tables include the detailed information about customers, employees, products.
* After creating the reports, dashboards are created.
* The only difference between a report and a dashboard is that a report is a detailed version of a dashboard.
* In a dashboard, only the key elements are highlighted.
* In short a dashboard is the summary of report.

**Perform advanced analytics:**

* After creating a powerbi report, queries are written in mysql workbench.
* These queries include analysis of all the tables, window functions, common table expressions etc.

**Deploy the solution:**

* Now the powerbi report is ready for its deployment.
* The solution should be user-friendly and easy to use for the sales team and management. The project will be successful if it helps the company effectively manage and analyze their sales data and improve their decision-making process.

**REFERENCES:**

1. Sales Dashboard: This project involves creating a dashboard to visualize sales data using PowerBI. It includes charts, graphs, and tables that provide insights into sales performance over time, customer demographics, and product popularity.<https://www.netsolutions.com/casestudy-ecom-dashboard>
2. SQL Sales Analysis: This project involves using SQL to perform advanced analytics on sales data and extract insights that can inform decision-making. It includes tasks such as creating pivot tables, running queries, and creating views.<https://medium.com/swlh/data-anlysis-project-for-retail-sales-performance-report-using-sql-6ef1d4443712>