

Capstone Project: Axon BI Solution Implementation Report

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1. Introduction

The Axon BI Solution Implementation project addresses the challenges faced by Axon, a classic car retailer, in managing and analysing sales data. The primary objective is to implement a Business Intelligence (BI) solution using Microsoft PowerBI and SQL. This report details the steps taken, tools used, and outcomes achieved during the project.

2. Project Scope and Objectives

2.1 Scope

The project scope includes:

- Creation of a MySQL database (classicmodels) based on the provided sample schema.
- Extraction of data from MySQL into PowerBI.
- Cleaning and transformation of data to ensure accuracy and consistency.
- Design of interactive reports using PowerBI Desktop.

2.2 Objectives

- Provide accurate and up-to-date sales reports to Axon's management.
- Enhance decision-making processes through data-driven insights.
- Improve overall sales data management for better strategic planning.

3. Tools and Technologies

The tools and technologies utilized in the project are:

- Microsoft PowerBI: For creating interactive reports.
- MySQL: As the database management system.

4. Data Source

4.1 Data Loading Process

- Downloaded the sample database schema file.
- Loaded the schema into MySQL.
- Exported all the tables from MySQL database to CSV files.
- Imported all the CSV files into PowerBI desktop.

4.2 MySQL Sample Database Schema

The MySQL sample database schema comprises eight tables:

- Customers
- Products
- ProductLines
- Orders
- OrderDetails
- Payments
- Employees
- Offices

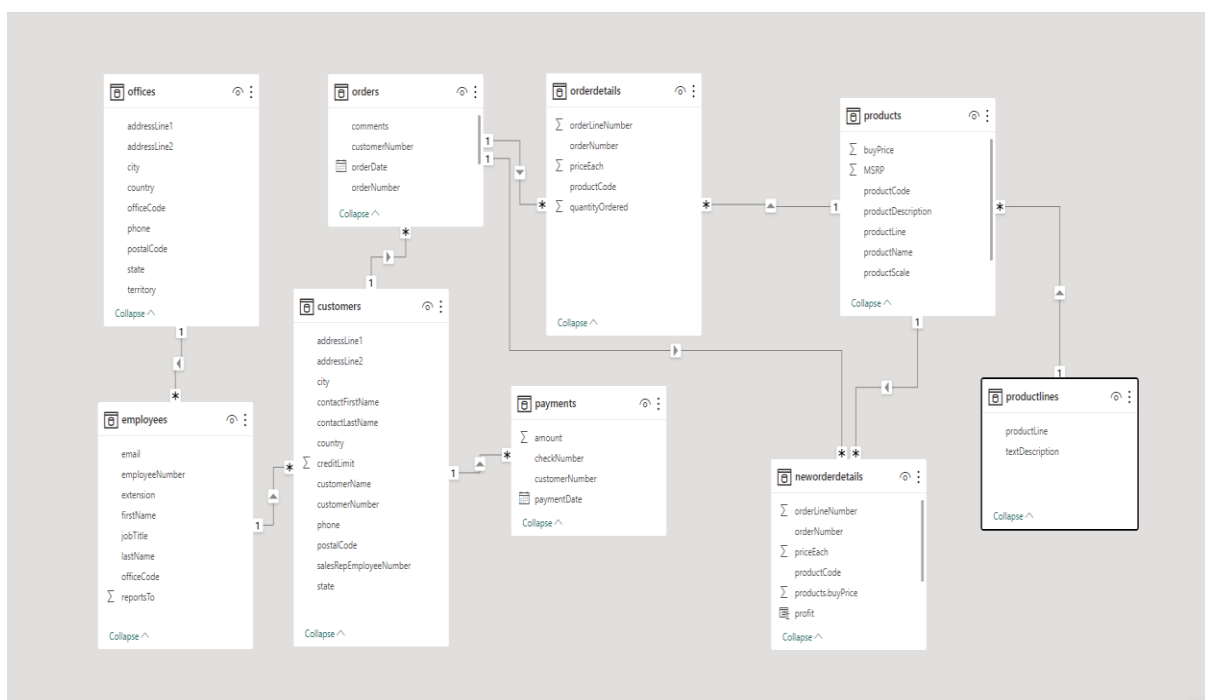
4.3 Data Cleaning and Transformation

Tasks performed include:

- Created relationships between all the tables in model view of PowerBI desktop.
- Created snowflake schema between tables to connect them in an appropriate way.
- Created the first row as the header in the Productlines table.
- Removed extra blank columns present in the Productlines table.
- Created an extra table named as neworderdetails by merging orderdetails and products.
- Created extra columns in neworderdetails named as total_sales, total_cost & profit by using DAX.
- Ensured data consistency by making sure that tables don't have any duplicate values, null values & errors.

4.4 Data Modelling

Created a snowflake schema to make connections between all the tables for further analysis and to make data workable in report design. The schema looks as follows-



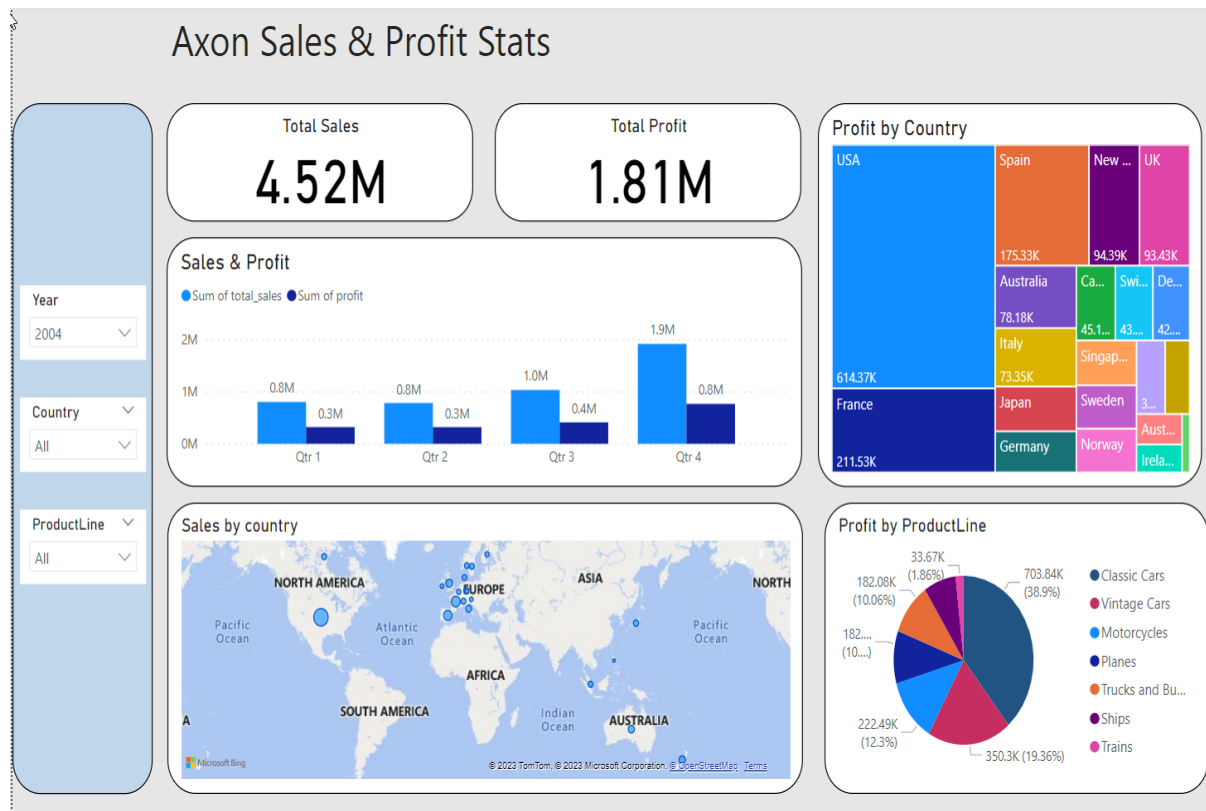
5. PowerBI Report Design

The PowerBI report comprises of:

- 4 report pages named as Sales & Profit, Sales & Profit YoY, Products, Customers & Employees.
- Reports are containing charts like Bar chart, Column chart, Pie chart, Donut chart, Map, TreeMap.
- Slicers & Cards.

6. Reports

6.1 Sales & Profit



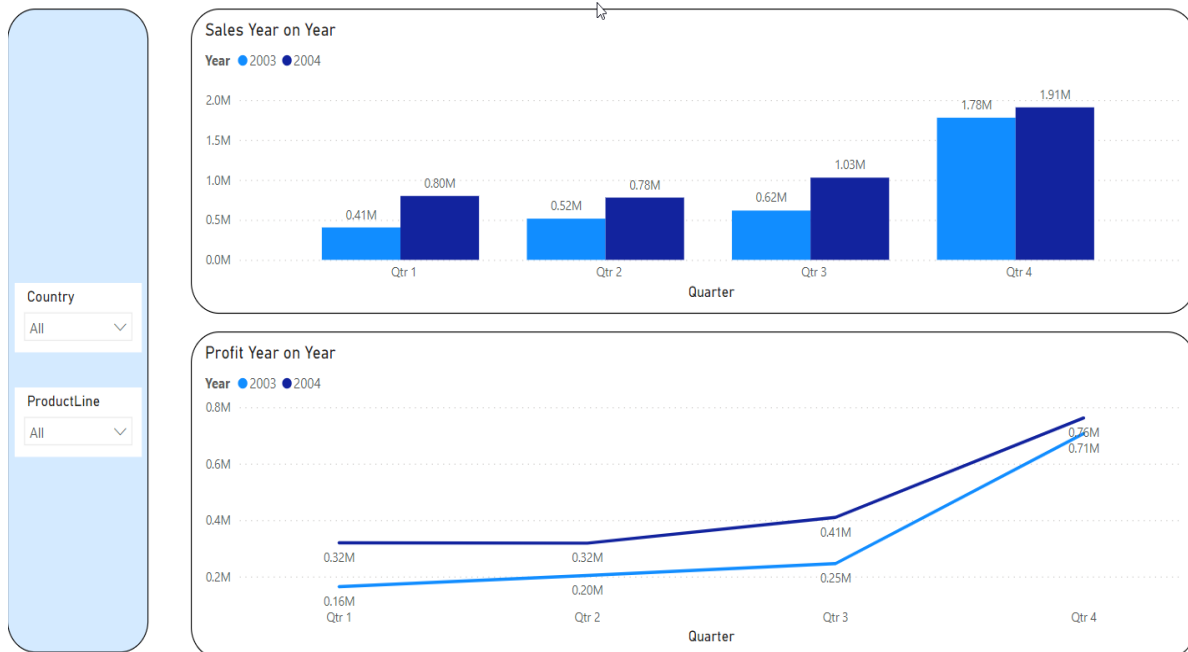
Sales & Profit report is prepared from sales and profit data. It has three slicers named as Year, Country & Productline. These slicers make the dashboard very interactive.

Some important key insights from the dashboard are as follows-

- At 3,687,448.62, Qtr. 4 had the highest total_sales and was 124.08% higher than Qtr. 3, which had the lowest total_sales at 1,645,585.70.
- Total_sales and total profit are positively correlated with each other.
- Qtr. 4 accounted for 38.39% of total_sales.
- total_sales and profit diverged the most when the Quarter was Qtr. 4, when total_sales were 2,218,447.92 higher than profit.
- At 3,273,280.05, USA had the highest total_sales and was 7,097.06% higher than Hong Kong, which had the lowest total_sales at 45,480.79.
- USA accounted for 34.08% of total_sales.
- Across all 21 countries, total_sales ranged from 45,480.79 to 3,273,280.05.
- Classic Cars accounted for 39.89% of Sum of profit.

6.2 Sales & Profit YoY

Axon Sales & Profit YoY

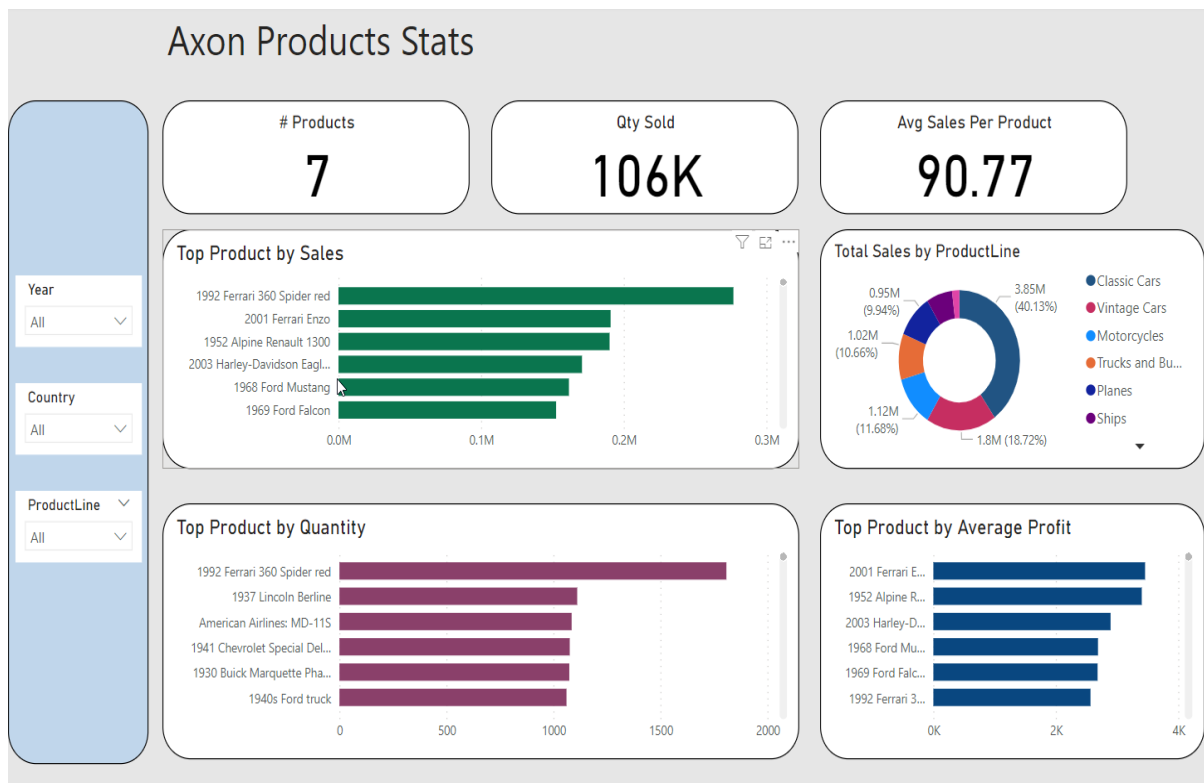


This dashboard is prepared to show Year on Year growth of company sales and profit as well. Two slicers Country and Productline are also added to the dashboard.

Some important key insights are as follows-

- Total_sales for 2003 (338.62% increase) and 2004 (138.67% increase) both trended up between January 2003 and October 2004.
- The most recent total_sales anomaly was in October 2003, when 2003 had a high of 1,779,084.61.
- Total_sales for 2004 started trending up in January 2004, rising by 138.67% (1,108,784.70) in 3 quarters.
- Profit for 2003 (331.31% increase) and 2004 (138.45% increase) both trended up between January 2003 and October 2004.
- The most recent Profit anomaly was in October 2003, when 2003 had a high of 706,930.28.
- Profit for 2004 started trending up in January 2004, rising by 138.45% (442,473.68) in 3 quarters.

6.3 Products

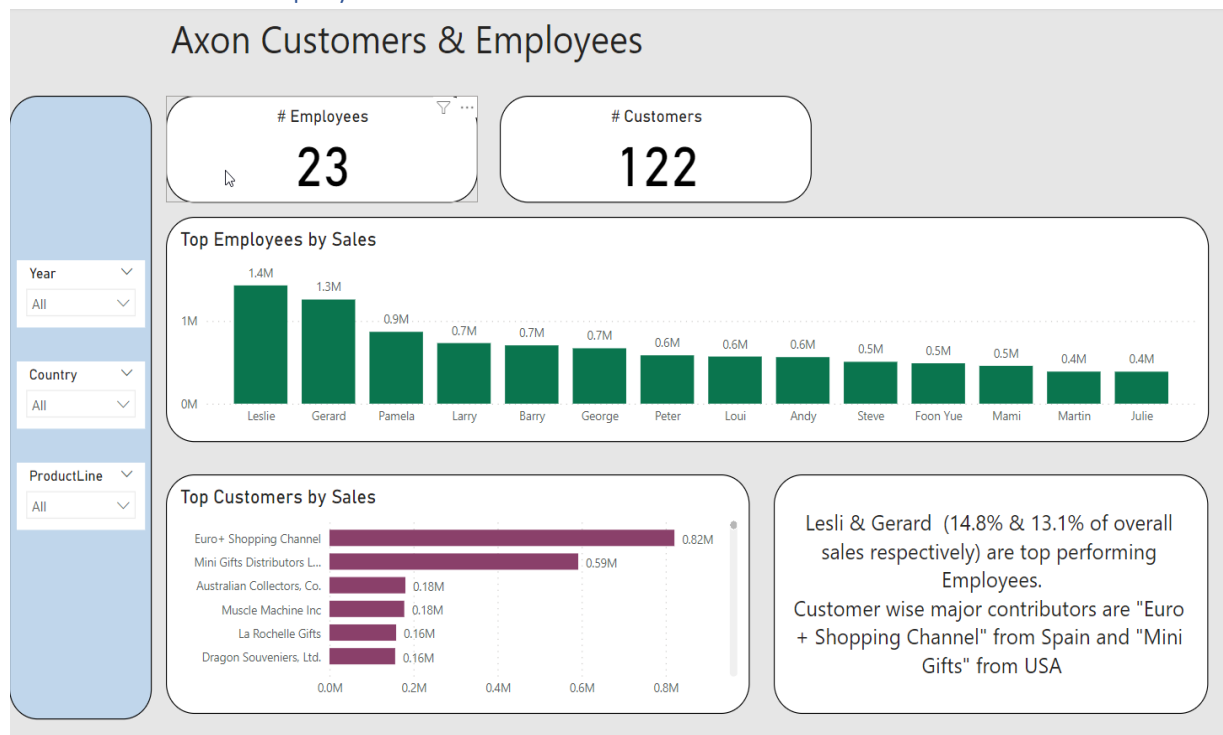


This dashboard shows all product related stats of the company.

Some key findings of the dashboard are-

- At 276,839.98, 1992 Ferrari 360 Spider red had the highest total_sales and was 886.85% higher than 1939 Chevrolet Deluxe Coupe, which had the lowest total_sales at 28,052.94.
- 1992 Ferrari 360 Spider red accounted for 2.88% of total_sales.
- Across all 109 productName, total_sales ranged from 28,052.94 to 276,839.98.
- At 1808, 1992 Ferrari 360 Spider red had the highest quantityOrdered and was 135.72% higher than 1957 Ford Thunderbird, which had the lowest quantityOrdered at 767.
- 1992 Ferrari 360 Spider red had the highest quantityOrdered at 1808, followed by 1937 Lincoln Berline and American Airlines: MD-11S. 1957 Ford Thunderbird had the lowest quantityOrdered at 767.
- 1992 Ferrari 360 Spider red accounted for 1.71% of quantityOrdered.
- Across all 109 productName, quantityOrdered ranged from 767 to 1808.
- Classic Cars accounted for 40.13% of total_sales.
- At 3,457.39, 2001 Ferrari Enzo had the highest Average profit and was 1,302.02% higher than the 1939 Chevrolet Deluxe Coupe, which had the lowest Average profit at 246.60.
- Across all 109 productName, the Average profit ranged from 246.60 to 3,457.39.

6.4 Customers & Employees



This dashboard gives some important insights of the customer and employees data of the company. Those are-

- At 1,429,063.57, Leslie had the highest total_sales and was 269.59% higher than Julie, which had the lowest total_sales at 386,663.20.
- Leslie accounted for 14.88% of Sum of total_sales.
- Across all 14 Employees, Sum of total_sales ranged from 386,663.20 to 1,429,063.57.
- At 820,689.54, Euro+ Shopping Channel had the highest total_sales and was 10,264.07% higher than Boards & Toys Co., which had the lowest total_sales at 7,918.60.
- Euro+ Shopping Channel accounted for 8.55% of total_sales.
- Across all 98 customerName, total_sales ranged from 7,918.60 to 820,689.54.

7. Testing

- Data accuracy and consistency checks are done.
- Verification of PowerBI dashboard functionality.

8. Conclusion

In conclusion, the Axon BI Solution Implementation project has successfully addressed the data management and analysis challenges faced by Axon. The PowerBI dashboards & SQL analytics provide a comprehensive solution for improving sales data management and decision-making processes.