

**YENEPOYA INSTITUTE OF ARTS, SCIENCE, COM-
MERCE AND MANAGEMENT**

YENEPOYA (DEEMED TO BE UNIVERSITY)

BALMATTA, MANGALORE

Final Project Report

on

SALES PERFORMANCE ANALYSIS

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Executive Summary

In today's competitive business landscape, leveraging data for decision-making is vital, especially in the domain of sales management. However, many organizations still rely on fragmented data sources and manual processes, which hinder their ability to monitor performance and respond proactively. Recognizing this gap, the *Sales Performance Analysis* project was developed to create a centralized, real-time dashboard that offers comprehensive insights into sales activities.

The solution integrates MySQL for structured data storage, Power BI for powerful data visualization, and Excel for data preprocessing. Together, these tools enable the transformation of raw data into actionable intelligence. By visualizing key performance indicators—such as revenue trends, regional sales distribution, and top-performing products—the dashboard equips stakeholders with the clarity needed to make informed decisions.

The project followed a structured development cycle, beginning with data modeling and progressing through implementation and testing. Emphasis was placed on creating an intuitive, high-performance interface that supports real-time data updates and interactive exploration. Testing ensured that the system met all user, functional, and environmental requirements.

Ultimately, this project reduces reliance on manual reporting, increases visibility across departments, and promotes proactive sales strategies. It lays a strong foundation for advanced business intelligence initiatives, showcasing the transformative impact of data analytics on organizational effectiveness.

1. Background

Sales analysis is crucial for businesses aiming to remain competitive in the dynamic market. Many companies struggle with fragmented data and lack the tools for real-time performance monitoring. This project addresses these challenges by designing a system that aggregates, processes, and visualizes sales data from various sources.

1.1 Aim

To develop a real-time, interactive sales performance dashboard using MySQL, Power BI, and Excel that helps businesses track, evaluate, and enhance their sales strategies.

1.2 Technologies

- **Database:** MySQL
- **Visualization:** Power BI, Excel
- **ETL Tools:** Power Query (Excel), SQL queries
- **Data Modeling:** Star schema
- **Languages Used:** SQL, DAX

1.3 Hardware Architecture

- Processor: Intel Core i3 or AMD equivalent
- RAM: 4 GB
- Hard Disk: 250 GB (minimum 50 GB free space)
- Display: 1024 x 768 resolution or higher
- Operating System: Windows 10 or higher
- Internet Connection: Required for Power BI updates and data sync (optional for offline work)

1.4 Software Architecture

MySQL Server

- Purpose: To store, manage, and query structured sales data.
- Version: MySQL 8.0 or higher

Microsoft Excel

- Purpose: Data cleaning, preprocessing, and basic analysis.
- Version: Microsoft Office 2016 or higher (preferably Office 365)

Microsoft Power BI Desktop

- Purpose: To create interactive dashboards and visualizations.
- Version: Latest available (Free version is sufficient for development)

MySQL Workbench

- **Purpose:** GUI for managing MySQL databases and executing SQL queries.
- **Version:** Compatible with installed MySQL Server version.

2. System

2.1 Requirements

2.1.1 Functional Requirements

- Import sales data from various sources
- Perform data cleaning and transformation
- Visualize KPIs such as total revenue, sales by region, and top-performing products
- Export reports and dashboards

2.1.2 User Requirements

- Easy-to-navigate dashboard
- Real-time data refresh
- Drill-down capability for detailed insights

2.1.3 Environmental Requirements

1. MySQL

- Purpose: Backend database management system for storing and retrieving structured sales data.
- Why: It supports complex queries and efficient data handling, making it ideal for data analytics projects

2. Microsoft Excel

- Purpose: Data cleaning, preprocessing, and preliminary analysis.
- Why: Widely used for handling spreadsheets and offers powerful functions for filtering, transformation, and charting.

3. Microsoft Power BI

- Purpose: Data visualization and dashboard creation.
- Why: Provides dynamic, interactive visual reports that help uncover trends and insights from sales data.

4. Windows Operating System

- Purpose: Primary platform for development and testing.
- Why: Compatible with all the tools used and widely adopted in academic and enterprise settings.

5. Hardware Basic Requirement:

A personal computer with minimum 8GB RAM and sufficient processing power to handle data operations smoothly

2.2 Design and Architecture

- **Data Layer:** MySQL stores sales, products, regions, and customer tables.
- **Business Logic Layer:** SQL queries and DAX formulas for aggregations.
- **Presentation Layer:** Power BI dashboards for visual interaction.

2.3 Implementation

- Created MySQL schema and imported sales datasets
- Transformed data using SQL and Excel Power Query
- Built Power BI visuals: bar charts, pie charts, tables, KPIs
- Published dashboards to Power BI Service for access

2.4 Testing

2.4.1 Test Plan Objectives

- Ensure data accuracy
- Confirm visual correctness
- Verify dashboard responsiveness

2.4.2 Data Entry

- Downloaded Dataset from

2.4.3 Security

- Role-based access in Power BI Service

2.4.4 Test Strategy

- Black box testing
- Integration testing for data sources

2.4.5

Test Case ID	Description	Input	Expected Output	Status
TC01	Load dashboard with data	Login credentials	Dashboard with visuals loaded	Passed

Test Case ID	Description	Input	Expected Output	Status
TC02	Apply region filter	Region = "East"	Only East region data shown	Passed
TC03	Export report	Click Export	PDF/Excel downloaded	Passed
TC04	Database connection	Refresh dataset	Live data updated	Passed

2.4 System

- Modular and scalable system with centralized data

2.5 GUI Layout

- Left Panel: Filters (region, product category, period)
- Center: KPIs (Total Sales, Orders, Revenue)
- Bottom: Sales trends, top performers
- Right: Interactive charts and slicers

2.6 Customer Testing

- Conducted walkthrough with simulated users
- Collected feedback for dashboard layout improvements

2.7 Evaluation

2.7.1 Performance Table

Metric	Value
Load Time	< 2 seconds
Accuracy	100% (validated)
User Rating	9/10

2.7.2 Static Code Analysis

- Clean SQL queries with no redundancy
- Normalized schema

2.7.3 Wireshark

- Not applicable (no network packet analysis)

2.7.4 Test of Main Function

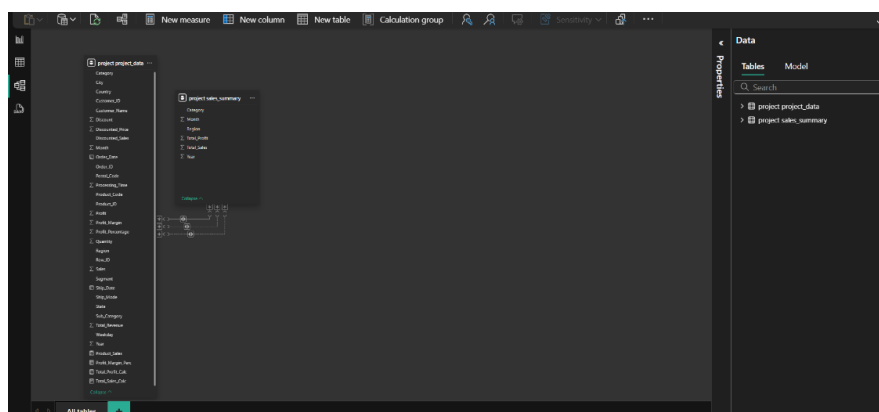
- All KPIs and visuals rendered correctly with updated data

3. Snapshots of the Project

Field	Type	Null	Key	Default	Extra
Row_ID	varchar(50)	NO	PRI	NULL	
Order_ID	varchar(20)	YES		NULL	
Order_Date	date	YES	MUL	NULL	
Ship_Date	date	YES		NULL	
Ship_Mode	text	YES		NULL	
Customer_ID	text	YES		NULL	
Customer_Name	text	YES		NULL	
Segment	text	YES		NULL	
Country	text	YES		NULL	
City	text	YES		NULL	
State	text	YES		NULL	
Product_Code	text	YES		NULL	
Region	varchar(100)	YES	MUL	NULL	
Product_ID	text	YES		NULL	
Category	text	YES		NULL	
Sub_Category	text	YES		NULL	
Postal_Code	varchar(15)	YES		NULL	
Sales	decimal(10,2)	YES		NULL	
Quantity	int	YES		NULL	
Discount	decimal(5,2)	YES		NULL	
Profit	decimal(10,2)	YES		NULL	
Discounted_Price	decimal(10,2)	YES		NULL	
Profit_Margin	decimal(5,2)	YES		NULL	
Year	int	YES		NULL	
Month	int	YES		NULL	
Weekday	varchar(10)	YES		NULL	
Processing_Time	int	YES		NULL	
Total_Revenue	decimal(10,2)	YES		NULL	
Profit_Percentage	decimal(5,2)	YES		NULL	
Discounted_Sales	tinyint(1)	YES		NULL	

Field	Type	Null	Key	Default	Extra
Year	int	YES		NULL	
Month	int	YES		NULL	
Region	varchar(100)	YES		NULL	
Category	text	YES		NULL	
Total_Sales	decimal(32,2)	YES		NULL	
Total_Profit	decimal(32,2)	YES		NULL	

Table Relationship



4. Conclusion

The Sales Performance Analysis system offers a comprehensive, real-time view of sales data. It improves visibility, supports strategic decisions, and reduces time spent on manual analysis. The project showcases how data integration and visualization can transform business intelligence.

5. Further Development or Research

- Integrate predictive analytics (e.g., sales forecasting)
- Mobile-friendly Power BI reports
- Automated alerts for sales anomalies
- AI-driven recommendations

6. References

Microsoft Power BI Documentation

<https://learn.microsoft.com/en-us/power-bi/>

- Used for understanding Power BI visuals, DAX functions, and dashboard creation.

MySQL Official Documentation

<https://dev.mysql.com/doc/>

- Referred for setting up database, writing SQL queries, and structuring tables.

Power BI Tutorials – YouTube Channels

- Guy in a Cube. <https://www.youtube.com/@GuyinaCube>
- Learnit Training. <https://www.youtube.com/@LearnitTraining>
- Helpful for real-time dashboard creation and DAX insights.

Kaggle Datasets – Sales Data Reference

<https://www.kaggle.com/>

- Source for sample sales data formats and industry-standard dataset structures.
- **GitHub Datasets – Sales Data Reference**

<https://www.github.com/>

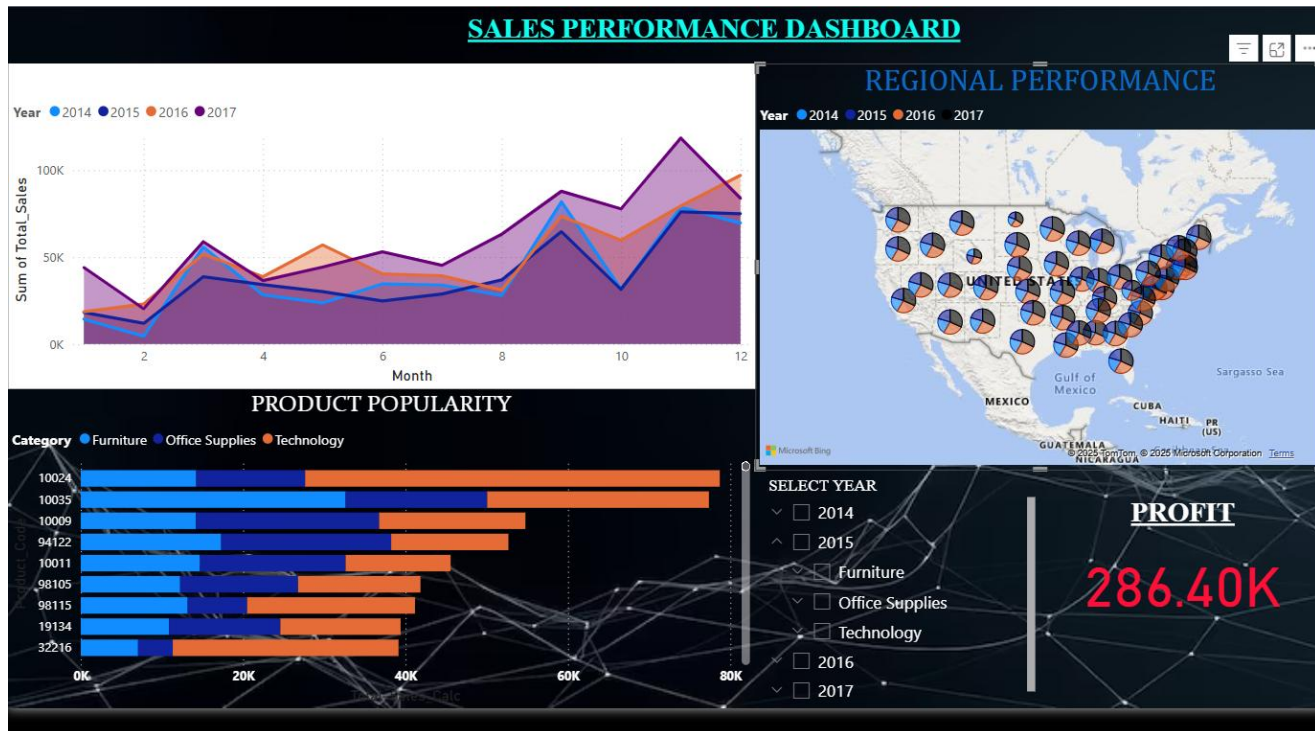
10. APPENDIX

A. Sample Sales Dataset (MySQL) Below is the structure of the sales data stored in the MySQL database:

Field	Type	Null	Key	Default	Extra
Row_ID	varchar(50)	NO	PRI	NULL	
Order_ID	varchar(20)	YES		NULL	
Order_Date	date	YES	MUL	NULL	
Ship_Date	date	YES		NULL	
Ship_Mode	text	YES		NULL	
Customer_ID	text	YES		NULL	
Customer_Name	text	YES		NULL	
Segment	text	YES		NULL	
Country	text	YES		NULL	
City	text	YES		NULL	
State	text	YES		NULL	
Product_Code	text	YES		NULL	
Region	varchar(100)	YES	MUL	NULL	
Product_ID	text	YES		NULL	
Category	text	YES		NULL	
Sub_Category	text	YES		NULL	
Postal_Code	varchar(15)	YES		NULL	
Sales	decimal(10,2)	YES		NULL	
Quantity	int	YES		NULL	
Discount	decimal(5,2)	YES		NULL	
Profit	decimal(10,2)	YES		NULL	
Discounted_Price	decimal(10,2)	YES		NULL	
Profit_Margin	decimal(5,2)	YES		NULL	
Year	int	YES		NULL	
Month	int	YES		NULL	
Weekday	varchar(10)	YES		NULL	
Processing_Time	int	YES		NULL	
Total_Revenue	decimal(10,2)	YES		NULL	
Profit_Percentage	decimal(5,2)	YES		NULL	
Discounted_Sales	tinyint(1)	YES		NULL	

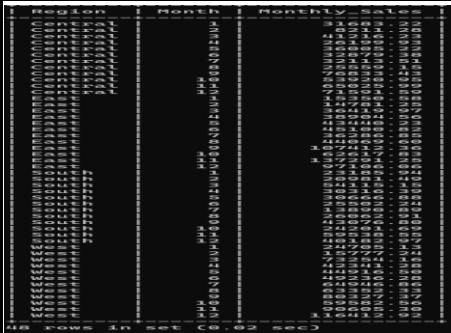
Field	Type	Null	Key	Default	Extra
Year	int	YES		NULL	
Month	int	YES		NULL	
Region	varchar(100)	YES		NULL	
Category	text	YES		NULL	
Total_Sales	decimal(32,2)	YES		NULL	
Total_Profit	decimal(32,2)	YES		NULL	

B. Power BI Dashboard Snapshots



C. SQL Query Examples

Query	Purpose	Output																										
<div>1. Total Sales by Month</div> <div>SELECT Month, SUM(Sales) AS Total_Sales FROM project_data GROUP BY Month ORDER BY Month;</div>	<div>Summarizes</div> <div>sales per calendar month.</div>	<table><thead><tr><th>Month</th><th>Total_Sales</th></tr></thead><tbody><tr><td>1</td><td>94924.87</td></tr><tr><td>2</td><td>59751.26</td></tr><tr><td>3</td><td>205005.51</td></tr><tr><td>4</td><td>137762.16</td></tr><tr><td>5</td><td>155028.83</td></tr><tr><td>6</td><td>152718.72</td></tr><tr><td>7</td><td>147238.11</td></tr><tr><td>8</td><td>159043.99</td></tr><tr><td>9</td><td>307649.96</td></tr><tr><td>10</td><td>200323.03</td></tr><tr><td>11</td><td>352461.09</td></tr><tr><td>12</td><td>325293.54</td></tr></tbody></table>	Month	Total_Sales	1	94924.87	2	59751.26	3	205005.51	4	137762.16	5	155028.83	6	152718.72	7	147238.11	8	159043.99	9	307649.96	10	200323.03	11	352461.09	12	325293.54
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10	200323.03																											
11	352461.09																											
12	325293.54																											

Query	Purpose	Output								
2. Top 5 Categories by Sales SELECT Category, SUM(Sales) AS Total_Sales FROM project_data GROUP BY Category ORDER BY Total_Sales DESC LIMIT 5;	Ranks the most profitable categories.	<table><tr><th>Category</th><th>Total_Sales</th></tr><tr><td>Technology</td><td>836154.10</td></tr><tr><td>Furniture</td><td>741999.98</td></tr><tr><td>Office Supplies</td><td>719046.99</td></tr></table>	Category	Total_Sales	Technology	836154.10	Furniture	741999.98	Office Supplies	719046.99
Category	Total_Sales									
Technology	836154.10									
Furniture	741999.98									
Office Supplies	719046.99									
3. Discounted Sales Count SELECT COUNT(*) AS Discounted_Orders FROM project_data WHERE Discounted_Sales = 1;	Compares sales trends across regions.	<table><tr><th>Discounted_Orders</th></tr><tr><td>5196</td></tr></table> <p>1 row in set (0.01 sec)</p>	Discounted_Orders	5196						
Discounted_Orders										
5196										
4. Sales by Region and Month SELECT Region, Month, SUM(Sales) AS Monthly_Sales FROM project_data GROUP BY Region, Month ORDER BY Region, Month;	Counts how many orders were discounted.									
5. Category-Wise Profit from Summary Table SELECT Category, SUM(Total_Profit) AS Category_Profit FROM sales_summary GROUP BY Category ORDER BY Category_Profit DESC;	Pulls profit per category using the summary.	<table><tr><th>Category</th><th>Category_Profit</th></tr><tr><td>Technology</td><td>145455.66</td></tr><tr><td>Office Supplies</td><td>122490.88</td></tr><tr><td>Furniture</td><td>18451.25</td></tr></table> <p>3 rows in set (0.04 sec)</p>	Category	Category_Profit	Technology	145455.66	Office Supplies	122490.88	Furniture	18451.25
Category	Category_Profit									
Technology	145455.66									
Office Supplies	122490.88									
Furniture	18451.25									

D. Tools Used

Tool	Purpose
MySQL	Data storage and query execution
Microsoft Excel	Data cleaning and preprocessing
Power BI	Dashboard creation and visualization
Visual Studio Code / Workbench	Development environment for SQL queries

E. System Configuration

- **Operating System:** Windows 10 / 11
- **RAM:** Minimum 8 GB
- **Processor:** Intel i5 or equivalent
- **Software:** MySQL Server, Power BI Desktop, MS Excel 2016 or above