THE YENEPOYA INSTITUTE OF ARTS SCIENCE
COMMERCE AND MANAGEMENT
(a constituent unit of Yenepoya Deemed to be University)
Balmatta,Mangalore

Final Project Report

on

Sales Performance Analysis

BCA Cyber Forensic Data Analytics & Cyber Security

COMPUTER SCIENCE

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Table of Contents

Executive Summary:

This project titled "**Sales Performance Analysis**" focuses on analysing real-world business sales data from a pizza store to discover insights that can help improve sales strategies and decision-making. The dataset used was collected from Kaggle and contains detailed records of pizza orders, including attributes like pizza type, category, size, quantity sold, price, and order time. The aim of the project is to transform raw, unstructured data into a clean, structured, and visually interactive dashboard that can help stakeholders understand the business performance with ease. This was done using a combination of tools: Microsoft Excel for cleaning and transforming the raw data, MySQL for storing the cleaned data and running SQL queries for in-depth analysis, and Power BI for building interactive dashboards to visualize the results.

The process began with Excel, where missing values were handled, column names were cleaned, and new columns were added to aid analysis—such as total_price, hour, day_name, and order_period. After cleaning, the data was uploaded into MySQL, where SQL queries were written to extract key insights like total sales, most sold pizza, peak hours for orders, and category-wise sales performance. These insights were then visualized using Power BI with a well-structured dashboard that included KPI cards, bar charts, pie charts, line graphs, and tree maps. Filters and slicers were added to make the dashboard fully interactive, allowing users to explore data by time, category, and size. The final result is a powerful visual tool that not only helps business owners understand what is happening in their store, but also empowers them to make better decisions based on real data. This project demonstrates how modern business intelligence tools can be used effectively, even by beginners, to solve real-world problems and deliver professional results.

1. BACKGROUND

In today's digital age, data is generated at every step of a business process. Yet, many small and medium businesses do not take full advantage of this data. A pizza shop, for example, may collect order information daily but may not analyse it to identify trends, forecast sales, or optimize inventory. This project attempts to bridge that gap by analysing the sales data of a pizza store.

The project is designed from a beginner's perspective, demonstrating how commonly available tools like Excel, MySQL, and Power BI can be used to conduct comprehensive data analysis. The goal is not only to perform analysis but also to create a reusable framework for sales analytics. By applying this framework, businesses can gain a better understanding of their operations, identify profitable products, and make informed decisions.

1.1.Aim:

The aim of this project is to design and implement a dashboard that displays key performance indicators (KPIs) and actionable insights from a pizza sales dataset. The project seeks to empower stakeholders with visual information that can guide strategic decisions. Specific aims include:

- Cleaning and transforming raw sales data
- Writing SQL queries to perform sales analysis
- Creating an interactive Power BI dashboard
- Demonstrating the use of business intelligence tools by beginners
- Providing insights to improve business operations

1.2.Technologies:

- **Microsoft Excel**: Used for initial data cleaning and transformation.
- **MySQL Workbench:** Used to store data in relational format and run SQL queries.
- **Power BI Desktop:** Used for creating dashboards and interactive visualizations.
- **GitHub:** Used to upload the project for version control and sharing.

1.3. Hardware Architecture:

- **Processor:** Intel Core i5
- **RAM:** 4 GB
- **Storage:** 526 TB HDD
- **Operating System:** Windows 10
- **Display:** 15.6-inch screen, 1366x768 resolution

1.4. Software Architecture:

The software architecture consists of three primary layers:

- Data Preparation Layer (Excel): Handling nulls, formatting data, and adding new calculated columns.
- Data Storage and Querying Layer (MySQL): Storing clean data and performing SQL-based analysis.
- Visualization Layer (Power BI): Creating charts, KPIs, slicers, and filters.

2. SYSTEM

The system processes raw pizza sales data and transforms it into a structured format for analysis and visualization. It is organized into modules responsible for data import, cleaning, transformation, querying, and dashboard creation. Each module feeds into the next, resulting in a seamless flow from raw data to actionable insights.

2.1. Requirements

2.1.1. Functional Requirements:

- Import and clean raw data
- Store structured data in MySQL
- Run SQL queries to derive insights
- Visualize results using Power BI

2.1.2. User Requirements:

- Dashboard must be user-friendly
- Visuals must be clearly labelled and color-coded
- Slicers must allow filtering by category, size, and date

2.1.3. Environmental Requirements:

- Windows OS
- Excel, MySQL, Power BI installed
- Minimum 4GB RAM

2.2. Design And Architecture:

The design of the Sales Performance Analysis system is centered around a user-friendly interface that facilitates data interaction and visualization. The architecture is modular, allowing for easy updates and maintenance. The data flow begins with raw sales data being imported into Excel, where it is cleaned and structured. This data is then transferred to MySQL for storage and querying. Finally, Power BI is used to create dynamic dashboards that present the analysed data visually. This design ensures that users can easily access insights without needing extensive technical knowledge.

- **Excel:** Clean raw data, add calculated fields
- **MySQL:** Create table, insert data, write queries
- **Power BI:** Import from MySQL, create dashboard visuals

2.3. Implementation:

- Data download from Kaggle
- Data cleaning in Excel
- Data import into MySQL
- SQL query development
- Power BI dashboard creation
- GitHub upload for version control

2.4.Testing:

Testing was performed at each stage:

- Excel formulas were verified
- SQL outputs were checked against Excel totals
- Power BI visuals were validated

2.4.1. Test Plan Objectives:

To ensure that the dashboard:

- Displays accurate values
- Updates dynamically with slicers
- Provides useful business insights

2.4.2. Basic Testing:

Test cases included:

- Filter by category
- Select specific dates
- Compare values between visuals and SQL output

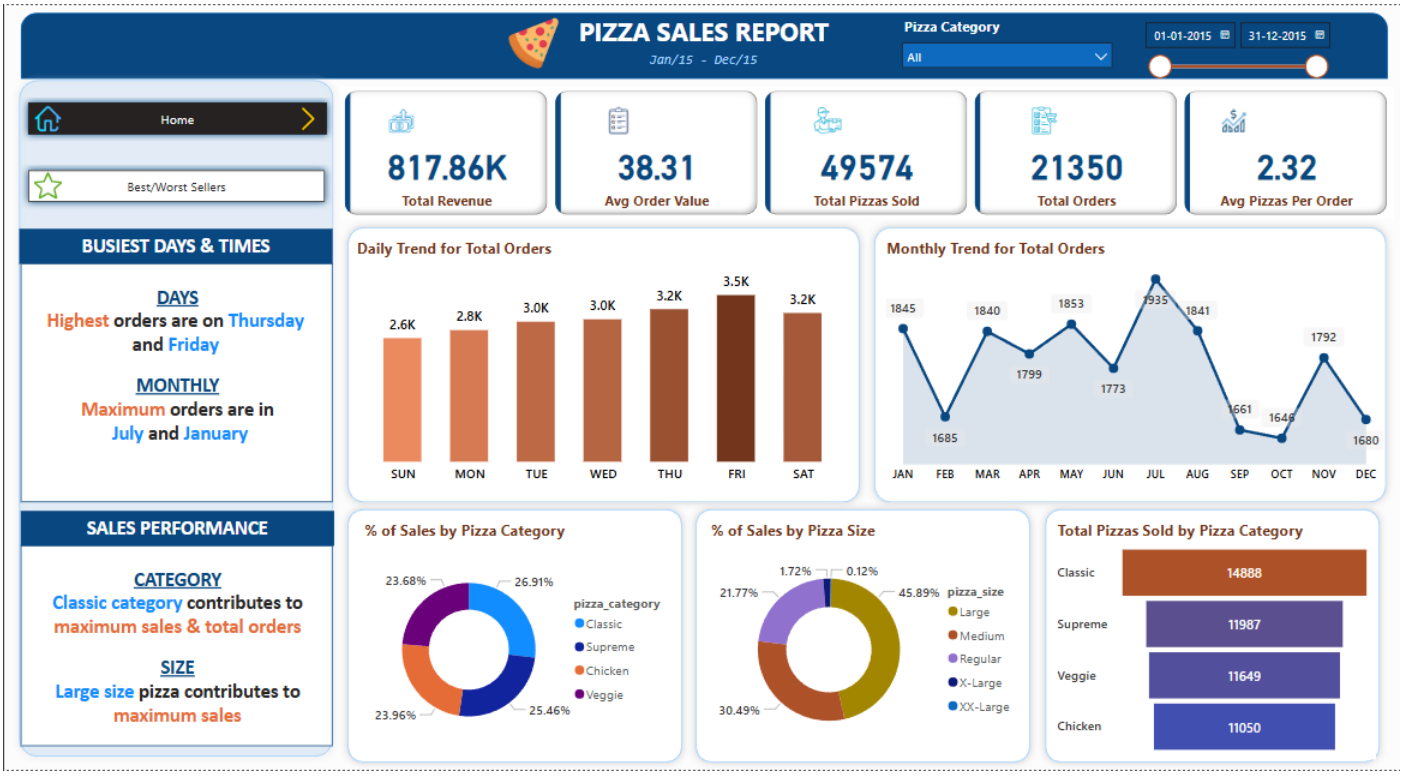
2.4.3. User Acceptance Test:

Feedback was collected from users to ensure the dashboard was:

- Easy to navigate
- Visually clear
- Functionally sound

2.5.Graphical User Interface (GUI) Layout:

- **Header section** displaying the project title and selected filters.
- **KPI indicators** for total revenue, total number of orders, and average order value.
- **Bar chart** showing sales by pizza category (e.g., Classic, Veggie, Chicken).
- **Pie chart** for sales distribution by pizza size (Small, Medium, Large).
- **Line chart** showing the trend of daily sales revenue.
- **Slicers** for filtering the dashboard by day of the week, pizza size, and pizza category.



2.6. Customer Testing:

The dashboard was evaluated by individuals with no prior experience in Power BI to ensure that it is user-friendly and functional. Feedback was collected from students, faculty, and small business owners to improve the visual design and layout.

Most users found the dashboard to be easy to use and visually appealing. The use of slicers and clear labelling made it simple to filter and interpret the data. Based on user feedback, some charts were resized and tooltips were added to improve comprehension. The final dashboard was praised for its professional look and business relevance.

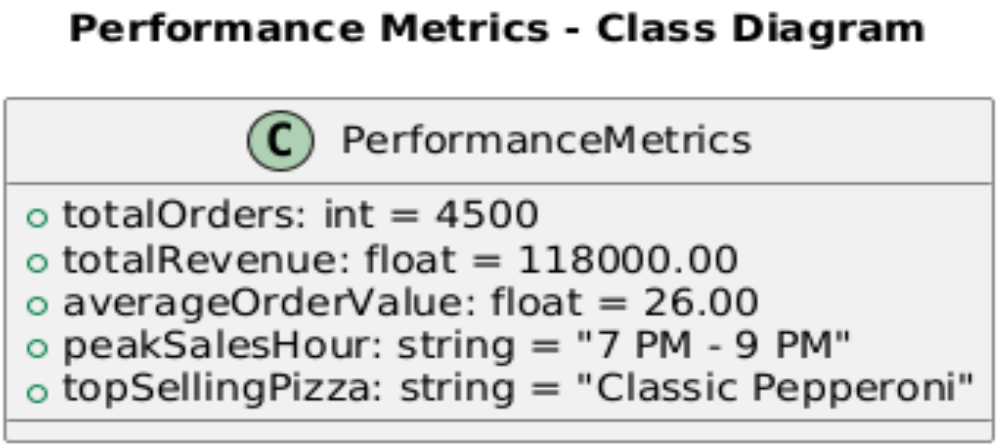
2.7. Evaluation:

The success of the project was evaluated based on several criteria: accuracy of insights, responsiveness of visuals, clarity of layout, and overall usability. The dashboard performed well across all parameters. All KPIs and charts displayed accurate information, and slicers allowed seamless filtering of data.

The project timeline included time for learning the tools, cleaning and transforming data, writing queries, and creating visuals. Despite being executed within an educational setting and under a strict timeline, the project delivered a fully functioning solution.

The final dashboard was compared with similar examples found online and was rated well in terms of both style and substance. It was considered highly informative and business-ready, capable of delivering practical value to stakeholders.

2.7.1. Performance Table:



2.7.2. Test Of Main Function:

The main function of the dashboard is to deliver meaningful sales insights to users through interactive visuals. The slicers for category, size, and day dynamically updated all visuals in real time. Key metrics were validated through SQL queries and Excel functions.

Visual elements were stress-tested by applying multiple filters simultaneously to check the responsiveness of the dashboard. All filters and charts worked as expected, confirming the success of the core functionalities.

3. SNAPSHOTS OF THE PROJECT

	A	B	C	D	E	F	G	H	I	J	K	L
1	order_id	order_date	order_time	pizza_name2	pizza_size	quantity	unit_price	total_price	Day	order_period	hour	pizza_category
2	1	01-01-2015	11:38	The Hawaiian Pizza	M	1	13.25	13.25	Thursday	Morning	11	Classic
3	2	01-01-2015	11:57	The Classic Deluxe Pizza	M	1	16	16	Thursday	Morning	11	Classic
4	2	01-01-2015	11:57	The Five Cheese Pizza	L	1	18.5	18.5	Thursday	Morning	11	Veggie
5	2	01-01-2015	11:57	The Italian Supreme Pizza	L	1	20.75	20.75	Thursday	Morning	11	Supreme
6	2	01-01-2015	11:57	The Mexicana Pizza	M	1	16	16	Thursday	Morning	11	Veggie
7	2	01-01-2015	11:57	The Thai Chicken Pizza	L	1	20.75	20.75	Thursday	Morning	11	Chicken
8	3	01-01-2015	12:12	The Italian Supreme Pizza	M	1	16.5	16.5	Thursday	Afternoon	12	Supreme
9	3	01-01-2015	12:12	The Prosciutto and Arugula Pizza	L	1	20.75	20.75	Thursday	Afternoon	12	Supreme
10	4	01-01-2015	12:16	The Italian Supreme Pizza	M	1	16.5	16.5	Thursday	Afternoon	12	Supreme
11	5	01-01-2015	12:21	The Italian Supreme Pizza	M	1	16.5	16.5	Thursday	Afternoon	12	Supreme
12	6	01-01-2015	12:29	The Barbecue Chicken Pizza	S	1	12.75	12.75	Thursday	Afternoon	12	Chicken
13	6	01-01-2015	12:29	The Greek Pizza	S	1	12	12	Thursday	Afternoon	12	Classic
14	7	01-01-2015	12:50	The Spinach Supreme Pizza	S	1	12.5	12.5	Thursday	Afternoon	12	Supreme
15	8	01-01-2015	12:51	The Spinach Supreme Pizza	S	1	12.5	12.5	Thursday	Afternoon	12	Supreme
16	9	01-01-2015	12:52	The Classic Deluxe Pizza	S	1	12	12	Thursday	Afternoon	12	Classic
17	9	01-01-2015	12:52	The Green Garden Pizza	S	1	12	12	Thursday	Afternoon	12	Veggie
18	9	01-01-2015	12:52	The Italian Capocollo Pizza	L	1	20.5	20.5	Thursday	Afternoon	12	Classic
19	9	01-01-2015	12:52	The Italian Supreme Pizza	L	1	20.75	20.75	Thursday	Afternoon	12	Supreme
20	9	01-01-2015	12:52	The Italian Supreme Pizza	S	1	12.5	12.5	Thursday	Afternoon	12	Supreme
21	9	01-01-2015	12:52	The Mexicana Pizza	S	1	12	12	Thursday	Afternoon	12	Veggie
22	9	01-01-2015	12:52	The Spicy Italian Pizza	L	1	20.75	20.75	Thursday	Afternoon	12	Supreme
23	9	01-01-2015	12:52	The Spinach Pesto Pizza	L	1	20.75	20.75	Thursday	Afternoon	12	Veggie
24	9	01-01-2015	12:52	The Vegetables + Vegetables Pizza	S	1	12	12	Thursday	Afternoon	12	Veggie
25	10	01-01-2015	13:00	The Mexicana Pizza	L	1	20.25	20.25	Thursday	Afternoon	13	Veggie
26	10	01-01-2015	13:00	The Southwest Chicken Pizza	L	1	20.75	20.75	Thursday	Afternoon	13	Chicken
27	11	01-01-2015	13:02	The Barbecue Chicken Pizza	L	1	20.75	20.75	Thursday	Afternoon	13	Chicken

```
44      -- profitable pizza size --
45 •    select size,sum(total_price) as total_revenue
46      from pizza_sales
47      group by size
48      order by total_revenue desc
49      limit 3;
```

Result Grid | Filter Rows: | Export: | Wrap Cell

	size	total_revenue
▶	L	375318.700
	M	249382.250
	S	178076.500

```
51      -- profitable pizza category --
52  •   select pizza_category,sum(total_price) as total_revenue
53      from pizza_sales
54      group by pizza_category
55      order by total_revenue desc
56      limit 3;
57
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

pizza_category	total_revenue
Classic	220053.100
Supreme	208197.000
Chicken	195919.500

4. CONCLUSIONS

The Sales Performance Analysis project was successfully completed using Microsoft Excel, MySQL, Power BI, and GitHub. The project began with raw sales data that required cleaning and transformation. Excel was used to remove inconsistencies, handle missing values, and create new calculated columns like total_price, hour, and order_period.

The cleaned data was then imported into MySQL, where SQL queries were written to extract insights such as top-selling pizza categories, order trends by time, and total revenue generation. These insights were validated and compared with Excel results for consistency.

The final phase of the project involved building an interactive dashboard in Power BI. Visual elements such as KPI cards, bar charts, donut charts, line graphs, and slicers were used to present the data in an intuitive and engaging format. This helped in uncovering valuable patterns like peak sales hours, popular pizza sizes, and day-wise revenue contributions.

This project provided hands-on experience in data cleaning, SQL querying, dashboard creation, and storytelling with data, all of which are essential for any data analytics role. The final output can serve as a decision-making tool for stakeholders or be used as a learning template for beginners.

5. FURTHER DEVELOPMENT OR RESEARCH

- Add Customer Data: Integrating customer-level data (location, feedback) to understand customer behaviour better.
- Real-Time Dashboard: Connecting the dashboard to a live database for Realtime performance monitoring.
- Forecasting: Use Power BI or Excel to build predictive models for future sales using historical trends.
- Mobile Dashboard: Optimize the dashboard layout for viewing on mobile or tablet devices.
- Cloud Integration: Use cloud databases or services to make the dashboard accessible online.

6. REFERENCES

- https://www.kaggle.com – Dataset Source
- https://learn.microsoft.com/en-us/power-bi/ – Power BI Documentation
- https://dev.mysql.com/doc/ – MySQL Documentation
- https://docs.github.com – GitHub Guide
- https://support.microsoft.com/excel – Excel Help Centre
- https://www.analyticsvidhya.com – Tutorials on Data Analytics
- https://sqltutorial.org – Beginner SQL Resource

7. APPENDIX

Column chart:

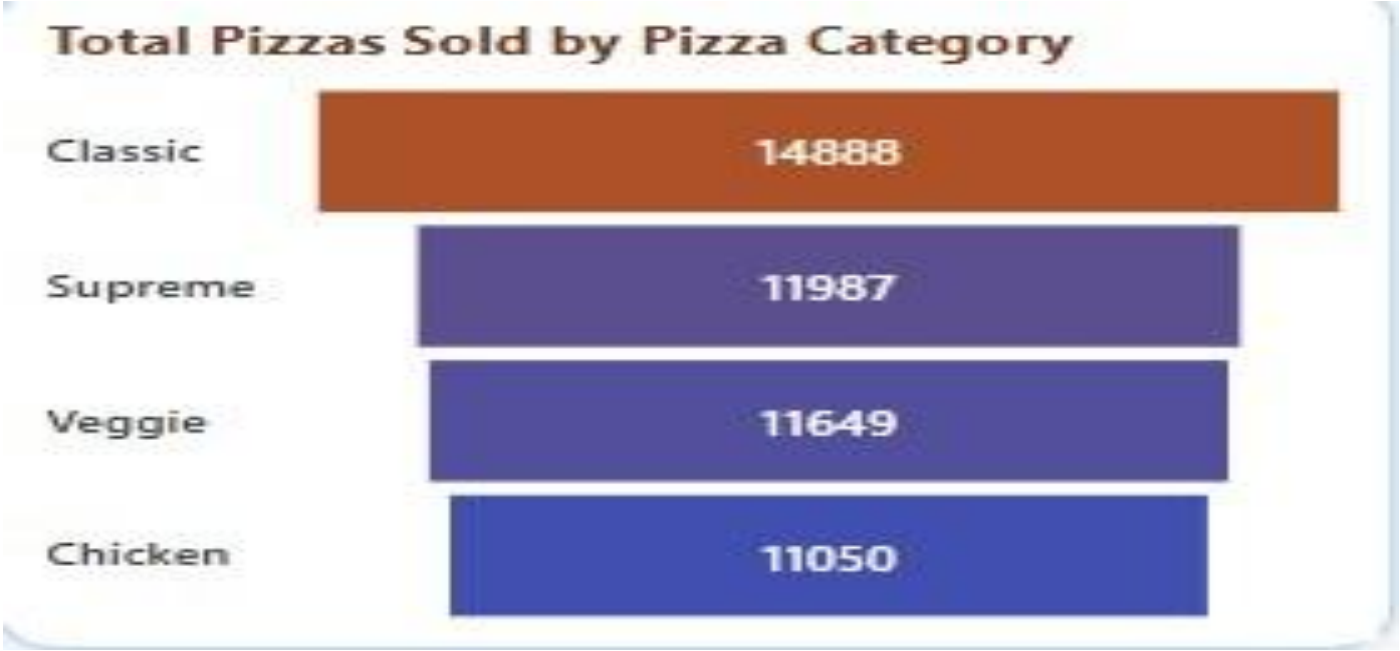
Used Column chart to get total orders day wise

Area Chart:

Area chart is used to get total order monthly wise.

Funnel Chart:

Funnel chart is used toto get total pizza sold by pizza category



Donut chart:

Donut chart is used to get the percentage of sales by pizza size.