

**VISVESVARAYA TECHNOLOGICAL UNIVERSITY
BELAGAVI-590 018, KARNATAKA**



**REPORT
ON
“DATA SCIENCE AND VISUALISATION”**

Quarterly sales analysis using Tableau

Submitted in the partial fulfilment of requirements for the award of Degree

B.E. in Computer Science and Engineering

Submitted by

Ratan Shet

4BD21CS116

Submitted To

Prof. Priya V

Assistant Professor

Department of CS&E



**Bapuji Institute of Engineering and Technology
Department of Computer Science and Engineering
Davanagere-577004
2023-24**

INTRODUCTION

Analyzing quarterly sales data is essential for understanding business performance and informing strategic decisions. By utilizing Tableau, this analysis focuses on visualizing sales trends and identifying patterns over multiple quarters. The ability to visualize data allows stakeholders to gain deeper insights into sales dynamics, facilitating informed decision-making processes.

The quarterly analysis examines various factors affecting sales performance, including seasonal trends, promotional impacts, and changes in consumer behaviour. By breaking down the sales data by quarter, we can effectively identify periods of growth and decline, enabling a clearer understanding of the business landscape. This approach not only highlights successes but also uncovers areas that may require attention or strategic adjustments.

Tableau's powerful visualization tools enhance this analysis by transforming complex datasets into intuitive charts and dashboards. These visualizations allow for quick comparisons and trend assessments, making it easier to communicate findings to stakeholders. The analysis provides a comprehensive view of quarterly sales performance, enabling businesses to identify opportunities for growth and areas for improvement.

Ultimately, this quarterly sales analysis aims to equip decision-makers with actionable insights that can drive strategic initiatives and improve overall profitability. By closely monitoring sales trends over time, organizations can better anticipate market demands and adapt their strategies accordingly, ensuring sustained growth and competitive advantage in an ever-changing business environment.

Through this analysis, we seek to foster a data-driven culture that prioritizes informed decision-making, ultimately leading to enhanced business outcomes and long-term success.

DATA AND METHODOLOGY

The analysis is based on a dataset containing sales records. The dataset includes key fields such as order date, sales amount, product categories, and customer information. Tableau was used as the primary tool for data visualization, enabling dynamic insights through interactive charts and dashboards.

Data source

- **Source:** CSV file
- **Major Fields:** SALES, ORDERDATE, QTR_ID, MONTH_ID, YEAR_ID

Sample Data Sets

SALES	ORDERDATE	QTR_ID	MONTH_ID	YEAR_ID
2871	2/24/2003 0:00	1	2	2003
2765.9	#####	2	5	2003
3884.34	#####	3	7	2003
3746.7	8/25/2003 0:00	3	8	2003
5205.27	#####	4	10	2003
3479.76	10/28/2003 0:00	4	10	2003
2497.77	#####	4	11	2003
5512.32	11/18/2003 0:00	4	11	2003
2168.54	#####	4	12	2003
4708.44	1/15/2004 0:00	1	1	2004
3965.66	2/20/2004 0:00	1	2	2004
2333.12	#####	2	4	2004
3188.64	5/18/2004 0:00	2	5	2004
3676.76	6/28/2004 0:00	2	6	2004
4177.35	7/23/2004 0:00	3	7	2004
4099.68	8/27/2004 0:00	3	8	2004
2597.39	9/30/2004 0:00	3	9	2004
4394.38	10/15/2004 0:00	4	10	2004
4358.04	#####	4	11	2004

METHODOLOGY

Data Import

1. Connect to Data Source:

- Open Tableau and click on File -> Open or Connect to Data.
- Select your data source (e.g., Excel, CSV) where your sales data is stored.
- Import the dataset into Tableau.

Data Preparation

2. Date Field Formatting:

- Ensure that the ORDERDATE field is recognized as a date type.
- If necessary, change the data type of ORDERDATE to Date. Right-click on ORDERDATE in the Data pane, select Change Data Type -> Date.

3. Extracting Quarters:

- Create a new calculated field to extract the quarter from the ORDERDATE.
- Right-click in the Data pane, select Create -> Calculated Field.

Visualization

4. Creating the Bar Chart:

- Drag the newly created Quarter field to the Columns shelf.
- Drag the SALES field to the Rows shelf.
- Tableau will automatically aggregate the sales data. Ensure it is set to SUM to display total sales for each quarter.

5. Enhancing the Visualization:

- **Labels:** Add labels to the bars to display the sales figures.
 - Click on the Label button in the Marks card.
 - Check the box to show marks label.
- **Colour and Formatting:** Customize the colours and formatting to make the chart visually appealing.
 - Click on the Colour button in the Marks card to select colours for the bars.
 - Adjust font sizes, bar spacing, and other formatting options as needed.
- **Filters:** Add filters if needed (e.g., by PRODUCTLINE, COUNTRY) to enable more detailed analysis.
 - Drag relevant fields to the Filters shelf and configure filter options.

6. Saving the Dashboard:

- Once the chart is complete, save it as a worksheet or dashboard.
- Click on File -> Save As to save your Tableau workbook.

Detailed Steps:

- **Data Connection:** Connected to the CSV file containing sales data using Tableau's data connection features.
- **Data Inspection:** Inspected the data to ensure all necessary fields were present and correctly formatted.
- **Data Cleaning:** Cleaned the data by checking for any inconsistencies or missing values in crucial fields like ORDERDATE and SALES.
- **Calculated Fields:** Created calculated fields for Quarter to segment the data into quarterly periods.
- **Visualization Building:** Built the bar chart by dragging and dropping fields onto the Columns and Rows shelves, adjusting chart types, and applying necessary formatting.
- **Interactive Features:** Added interactive features like filters and tooltips to enhance user experience.

ANALYSIS

Sales Quarter Report



The bar chart displays total sales for each quarter over the selected time period. Each bar represents a specific quarter, allowing for quick visual comparisons of sales performance across different quarters.

- **X-Axis: Quarters:**
 - The X-axis is labelled as Orderdate and displays the quarters (Q1, Q2, Q3, Q4).

- Each bar corresponds to one of these four quarters, indicating the sales performance for that quarter.
- **Y-Axis: Total Sales Amount:**
 - The Y-axis is labelled as Sales and represents the total sales figures for each quarter.
 - The sales amounts are aggregated to provide a clear picture of the overall sales performance for each quarter.

Key Observations

1. Quarterly Sales Performance:

- **Q1:** The total sales amount is approximately \$2,350,818.
- **Q2:** The total sales amount is approximately \$2,048,120.
- **Q3:** The total sales amount is approximately \$1,758,911.
- **Q4:** The total sales amount is significantly higher at approximately \$3,874,780.

2. Trend Analysis:

- The chart reveals that sales tend to vary significantly across different quarters.
- The sales in Q1 and Q2 are relatively similar, with Q1 having a slight edge over Q2.
- Q3 shows a noticeable drop in sales compared to Q1 and Q2.
- Q4 exhibits a substantial increase in sales, almost doubling the sales amount of Q3.

3. Peak Sales Period:

- Q4 is identified as the peak sales period, with the highest sales figures among all quarters.
- This peak could indicate successful holiday season sales, end-of-year promotions, or other significant factors driving higher sales.

4. Seasonal Trends:

- The data indicates a possible seasonal trend, with sales peaking in the last quarter of the year.
- This trend can be crucial for planning marketing strategies, inventory management, and resource allocation.

5. Comparative Analysis:

- By comparing the bars, it's evident that Q4 outperforms all other quarters by a significant margin.
- This comparison helps in understanding the sales dynamics and strategizing accordingly for future periods.

CONCLUSION

The quarterly sales analysis conducted using Tableau provides essential insights into sales performance, underscoring the importance of understanding temporal trends and seasonal variations. The data reveals a clear pattern of fluctuating sales across the four quarters, with Q4 emerging as the standout period due to significantly higher sales figures. This peak suggests successful end-of-year promotions or seasonal demand, which businesses can leverage for strategic planning. By visualizing these trends, organizations gain a comprehensive understanding of their sales dynamics, allowing them to make informed decisions regarding marketing strategies, inventory management, and resource allocation. Overall, the analysis emphasizes the necessity for continuous monitoring of quarterly performance to drive growth and profitability effectively.