SQL Data Analysis Project: Superstore Sales Data

This presentation details a comprehensive SQL data analysis project utilizing the Superstore Sales Dataset. We will explore various aspects of sales performance, regional insights, customer behavior, product profitability, and order/shipping logistics. The analysis aims to uncover key trends, identify areas for improvement, and provide actionable insights for business growth.

Each section will present key metrics, trends, and specific SQL queries used to derive these insights, demonstrating a robust approach to data-driven decision making.

CREATED BY : MIT TRIVEDI

Sales Performance: Key Metrics Overview

$2.3M

Total Sales

The aggregate revenue generated from all sales transactions.

$286K

Total Profit

The overall profit realized across all sales, indicating financial health.

12.4%

Profit Margin

The percentage of revenue that translates into profit, a key efficiency indicator.

5.5%

Return Rate

The percentage of orders that were returned, highlighting potential product or service issues.

15.6%

Average Discount

The average discount applied across all orders, impacting profitability.

```
SELECT
    SUM(Sales) AS "Total Sales",
    SUM(Profit) AS "Total Profit",
    (SUM(Profit) * 100.0 / SUM(Sales)) AS "Profit Margin (%)",
    (COUNT(CASE WHEN Order_Status = 'Returned' THEN Order_ID END) * 100.0 / COUNT(Order_ID)) AS "Return Rate (%)",
    AVG(Discount) * 100 AS "Average Discount (%)"
FROM
    ORDERS;
```

Sales & Profit Trends Over Time

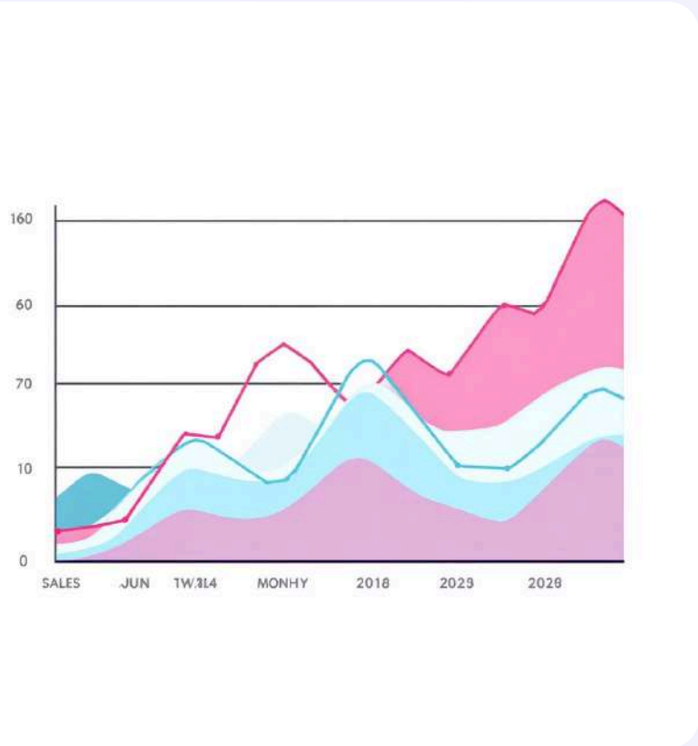
Yearly Performance

Analyzing sales and profit trends on a yearly basis reveals the overall growth trajectory and identifies periods of significant change. Understanding these long-term patterns is crucial for strategic planning and forecasting.

```
SELECT
YEAR(ORDER_DATE) AS YEAR,
FORMAT(ROUND(SUM(SALES), 2),'N2') AS TOTAL_SALES,
FORMAT(ROUND(SUM(PROFIT), 2),'N2') AS TOTAL_PROFIT
FROM ORDERS
GROUP BY YEAR(ORDER_DATE)
ORDER BY YEAR;
```

Monthly Performance

A detailed look at monthly sales and profit trends helps in identifying seasonal fluctuations, peak performance periods, and potential dips. This granular view supports more agile operational adjustments and marketing campaign timing.




```
SELECT
MONTH(ORDER_DATE) AS MONTH,
FORMAT(ROUND(SUM(SALES), 2),'N2') AS TOTAL_SALES,
FORMAT(ROUND(SUM(PROFIT), 2),'N2') AS TOTAL_PROFIT
FROM ORDERS
GROUP BY MONTH(ORDER_DATE)
ORDER BY MONTH;
```

Product Performance: Categories & Top Sellers

Sales by Category & Sub-Category

Understanding which categories and sub-categories drive the most sales is vital for inventory management, marketing focus, and product development. This analysis highlights the most lucrative product segments.


```
SELECT
CATEGORY,
SUBCATEGORY,
ROUND(SUM(SALES), 2) AS TOTAL_SALES
FROM ORDERS
GROUP BY CATEGORY, SUBCATEGORY
ORDER BY TOTAL_SALES DESC;
```

Top 10 Products by Sales

Identifying the top-selling products allows for focused efforts on promotion, stock optimization, and understanding customer preferences. These products are often the backbone of the business's revenue.

```
SELECT TOP 10
PRODUCT_NAME,
ROUND(SUM(SALES), 2) AS TOTAL_SALES
FROM ORDERS
GROUP BY PRODUCT_NAME
ORDER BY TOTAL_SALES DESC;
```

Unprofitable Products: High Sales, Negative Profit

A critical area of analysis involves identifying products that generate high sales but result in negative profit. This indicates potential issues with pricing, cost management, or excessive discounting. Addressing these products can significantly improve overall profitability.

```
SELECT
PRODUCT_NAME,
ROUND(SUM(SALES), 2) AS TOTAL_SALES,
ROUND(SUM(PROFIT), 2) AS TOTAL_PROFIT
FROM ORDERS
GROUP BY PRODUCT_NAME
HAVING SUM(SALES) > 5000
AND SUM(PROFIT) < 0
ORDER BY TOTAL_SALES DESC;
```

Further investigation into the cost structure, supplier agreements, and competitive pricing for these products is recommended to convert them into profitable assets or consider discontinuation.

Regional Performance & Profitability

Sales & Profit by Region

Geographical analysis helps in understanding market strengths and weaknesses. Regions with high profit can be leveraged for expansion, while underperforming regions may require targeted strategies.

```
SELECT REGION, ROUND(SUM(SALES), 2) AS
TOTAL_SALES,
ROUND(SUM(PROFIT), 2) AS TOTAL_PROFIT
FROM ORDERS GROUP BY REGION ORDER
BY TOTAL_PROFIT DESC;
```

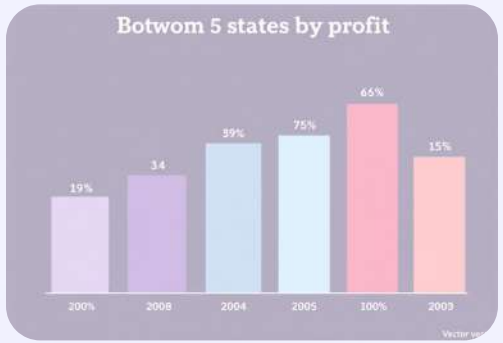
Top 5 States by Profit

Pinpointing the states that contribute most to profit allows for focused resource allocation and replication of successful strategies in other areas.


```
SELECT TOP 5 STATE, ROUND(SUM(PROFIT),
2) AS TOTAL_PROFIT
FROM ORDERS GROUP BY STATE ORDER BY
TOTAL_PROFIT DESC;
```

Bottom 5 States (Loss Making)

Identifying states with negative profit is crucial for intervention. This could involve re-evaluating marketing, logistics, or product offerings in these specific locations.




```
SELECT TOP 5 STATE, ROUND(SUM(PROFIT),
2) AS TOTAL_PROFIT
FROM ORDERS GROUP BY STATE ORDER BY
TOTAL_PROFIT ASC;
```

Customer Analysis: Value & Segments

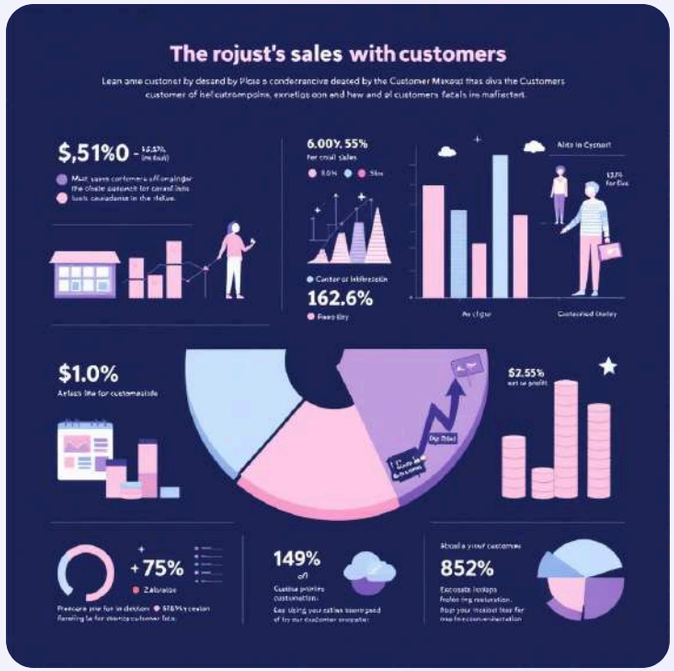
Average Order Value (AOV)

AOV is a key metric for understanding customer spending habits. Increasing AOV through upselling or cross-selling can significantly boost revenue without increasing customer acquisition costs.

```
SELECT ROUND(SUM(SALES) / COUNT(DISTINCT ORDER_ID), 2) AS AVG_ORDER_VALUE
FROM ORDERS;
```

Sales & Profit by Segment

Segmenting customers (e.g., Consumer, Corporate, Home Office) allows for tailored marketing strategies and product offerings, optimizing engagement and profitability for each group.




```
SELECT SEGMENT, ROUND(SUM(SALES), 2) AS TOTAL_SALES,
ROUND(SUM(PROFIT), 2) AS TOTAL_PROFIT
FROM ORDERS GROUP BY SEGMENT ORDER BY TOTAL_PROFIT DESC;
```

Top 10 Customers by Profit

Recognizing and rewarding the most profitable customers is essential for fostering loyalty and encouraging repeat business. These customers are invaluable assets to the company.

```
SELECT TOP 10 CUSTOMER_NAME, ROUND(SUM(PROFIT), 2) AS TOTAL_PROFIT
FROM ORDERS GROUP BY CUSTOMER_NAME ORDER BY TOTAL_PROFIT DESC;
```

Customer Insights: High Sales, Low Profit

Identifying customers who generate high sales but contribute negatively to profit is crucial for targeted customer relationship management. This could indicate issues with excessive returns, frequent use of high discounts, or purchasing unprofitable product lines.

```
SELECT
CUSTOMER_NAME,
ROUND(SUM(SALES), 2) AS TOTAL_SALES,
ROUND(SUM(PROFIT), 2) AS TOTAL_PROFIT
FROM ORDERS
GROUP BY CUSTOMER_NAME
HAVING SUM(SALES) > 3000
AND SUM(PROFIT) < 0;
```

Strategies such as personalized offers, re-evaluation of discount eligibility, or direct communication to understand their purchasing behavior can help convert these customers into profitable ones.

Order & Shipping Analysis: Efficiency & Profit

1

Average Shipping Time

Understanding the average time it takes to ship orders is critical for customer satisfaction and operational efficiency. Delays can lead to customer dissatisfaction and increased costs.

```
SELECT ROUND(AVG(DATEDIFF(DAY,
ORDER_DATE, SHIP_DATE)), 2) AS
AVG_SHIPPING_DAYS
FROM ORDERS;
```

2

Orders by Shipping Mode

Analyzing the distribution of orders across different shipping modes helps in optimizing logistics and understanding customer preferences for delivery speed versus cost.

```
SELECT SHIP_MODE, COUNT(DISTINCT
ORDER_ID) AS TOTAL_ORDERS
FROM ORDERS GROUP BY SHIP_MODE;
```

3

Profit by Shipping Mode

Evaluating the profitability of each shipping mode is essential. Some faster modes might be preferred by customers but could erode profit margins if not managed effectively.

```
SELECT SHIP_MODE,
ROUND(SUM(PROFIT), 2) AS
TOTAL_PROFIT
FROM ORDERS GROUP BY SHIP_MODE
ORDER BY TOTAL_PROFIT DESC;
```

Advanced Analytics: Window Functions

Rank Products by Profit Within Category

Window functions allow for more sophisticated analysis, such as ranking products within their respective categories based on profit. This provides a clearer picture of top performers and underperformers in a competitive context.

```
SELECT
CATEGORY, PRODUCT_NAME, ROUND(SUM(PROFIT), 2) AS TOTAL_PROFIT,
RANK() OVER (PARTITION BY CATEGORY ORDER BY SUM(PROFIT) DESC) AS RANK_IN_CATEGORY
FROM ORDERS GROUP BY CATEGORY, PRODUCT_NAME;
```

Month-Over-Month Sales Growth

Calculating month-over-month sales growth using window functions provides dynamic insights into recent performance trends, enabling quick responses to changes in market demand or operational effectiveness.


```
WITH MONTHLY_SALES AS (...)
SELECT
ORDER_YEAR, ORDER_MONTH, TOTAL_SALES,
TOTAL_SALES - LAG(TOTAL_SALES) OVER (ORDER BY ORDER_YEAR, ORDER_MONTH) AS
MOM_GROWTH
FROM MONTHLY_SALES ORDER BY ORDER_YEAR, ORDER_MONTH;
```

THANK YOU