RETAIL SALES ANALYTICS

From raw data to actionable insights

GROUP MEMBERS

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Project Overview & Objectives

Title: Retail Sales Analytics

Problem: The business struggled with disconnected, messy data across sales channels making it difficult to measure performance, identify top products and understand customer which led to inconsistent reporting and missed opportunities.

Goal: To build an interactive, data-driven Power BI solution by cleaning and modeling raw data, creating key performance indicators (KPIs) with DAX and visualizing the results in a comprehensive dashboard.

Data Cleaning & Transformation (Power Query)

We used power query to clean the data which contained some missing values, typos and inconsistent formats

Customer Table

- ❖ First_name: Fixed typos using a lookup table
- ❖ Email,phone, address:Replaced email and phone with not provided and address with unknown
- ❖ Phone: Letter removed, special character stripped and digits grouped
- ❖ City:Standardized capitalization by applying 'capitalize Each Word'
- ❖ Duplicates removed

Sales Table

- ❖ store_id: Empty values removed
- ❖ quantity: recalculated using total_amount/unit_price where applicable
- ❖ unit_price:Imputed missing unit_price by calculating total_amount / quantity where applicable
- ❖ total_amount: Negative values were retained as-is to preserve return information. Null values were calculated using
- ❖ discount_percent:Replaced missing with 0 which was 15%

Product Table

- ❖ Product name:Replaced missing value with generic
- ❖ Cost:Imputated the values to the average cost

Store Table

- ❖ Manager: Replaced with unknown
- ❖ City:Standardized capitalization by applying 'capitalize Each Word'
- ❖ Phone : Null replaced with not provided, letters replaced removed, special characters stripped digits grouped

Date Table

- ❖ is_weekend, is_holiday: Replaced the boolean with Yes and No
- ❖ -full_date:Change data type to date

Data Modeling & DAX Measures

We created 31 dax measures over 5 different categories for visualization, time intelligence and business insights

Return and Sales

- ❖ Net Sales:Calculates total sales revenue
- ❖ Returns:Calculates the total negative returns values
- ❖ Average Order Value:The average revenue per sale

Time Intelligence

- ❖ MTD Sales:Net sales of the current month to the current date
- ❖ QTD sales:Net sales of the current quarter to the current date

Product Insights

- ❖ Product Category Sales:Total sales for each product
- ❖ Product Return Rate:Indicates the proportion of sales returned
- ❖ Top Product Sold: Identifies the product with the highest net sales

Channel Performance

- ❖ In store sales:Net Sales for transactions made in the stores
- ❖ Online sales:Net Sales for transactions made online

Store Insights

- ❖ Top Store Sales:Identifies the store with the highest net sales
- ❖ Store Sales Rank:Rank each store based on the net sales
- ❖ Sales Per Store:Average net sales per store

Dashboard Design & Visualization

Key Actions:

❖ Created a multi-page dashboard to provide a holistic view of the business.
❖ Designed pages for Sales Overview, Product Insights, Customer Insights and Store Performance.
❖ Used a variety of visuals (bar charts, pie charts, KPI cards) to present complex data clearly.
❖ Ensured the dashboards were interactive and easy to navigate.

Here's a summary for each of the dashboards:

1. Sales Overview Dashboard

Provides a high-level summary of total sales performance across different dimensions.

Key Highlights:

- ❖ Total Sales: 26.54M
- ❖ QTD Sales: 6.75M
- ❖ Average Sales on Holidays: 76.30K
- ❖ Weekend Sales Revenue: 7.54M
- ❖ Total Quantity Sold: 26K

Visuals Included:

- ❖ Monthly Revenue Trend - Shows monthly revenue vs quarterly trends to monitor performance over time.
- ❖ Sales by Shopping Channel - Compares sales across Mobile App, Phone Order, In-Store and Online.
- ❖ Sales by Category - Highlights categories like Cameras, Accessories and Tablets as top performers.
- ❖ Top 50 Sales Table - Lists individual top sales transactions with details like discount percent and revenue.

2. Product Insights Dashboard

Breaks down product sales and performance to identify top-performing categories, brands and products.

Key Highlights:

- ❖ Total Product Category Sales: 27.00M
- ❖ Total Products Sold: 50
- ❖ Total Revenue by Product: 42.43M

Visuals Included:

- ❖ Top 5 Revenue Generating Products - Pie chart of top products like Samsung, Lenovo, Google.
- ❖ Quantity Sold by Product Category - Cameras and Tablets lead in quantity sold.
- ❖ Revenue by Brand - Samsung, Apple and Lenovo are top earners.
- ❖ Product Performance Summary Table - Lists specific products with sales breakdown by quantity, online and in-store sales.

3. Customer Insights Dashboard

Analyzes customer demographics, spending behavior and geographical distribution to inform targeted marketing strategies and improve customer retention.

Key Highlights:

- ❖ Total Customers: 1000
- ❖ Total Revenue from Customers: 20.69M
- ❖ State with most customers: TX
- ❖ Average revenue per customer: 20.69K
- ❖ Repeat Customer Rate: 0.98

Visuals Included:

- ❖ Quantity Sold by Age Group - A bar chart showing the Youth age group purchases the highest quantity of products.
- ❖ Top 5 Most Selling Cities - A donut chart highlighting New York and Jacksonville as the top-selling cities.
- ❖ Revenue by Age Group - A bar chart confirming the Youth age group generates the most revenue.
- ❖ Top 50 Customers - A table listing the top customers by sales, showing a total of over $3M in sales from this group.
- ❖ Customer Distribution by State - A pie chart where TX, CA and NY have the largest share of customers.

4. Store Performance Dashboard

Analyzes how stores perform across regions and sales channels, helping identify top locations and areas for improvement.

Key Highlights:

- ❖ In-Store Sales: 6.71M
- ❖ Online Sales: 20.29M
- ❖ Top Store by Sales: TechMart Downtown
- ❖ Total Number of Stores: 200

Visuals Included:

- ❖ Sales Completion Breakdown - 98.45% of transactions completed successfully, 1.55% returns.
- ❖ Revenue by Store State - Texas, California and Florida generate the most revenue.
- ❖ Revenue by Store City (Map) - Visual map to highlight city-wise sales performance.
- ❖ Store Details Table - Lists stores, their managers, sales data and total revenue.

Conclusion and Strategic Recommendations

Unified Reporting: The project successfully created a single source of truth for the data.

Actionable Insights: We've identified key opportunities for growth by understanding our top channels, products and customer segments.

Future Recommendations:

- ❖ Invest further in the Mobile App to capitalize on its high performance.
- ❖ Implement targeted marketing campaigns for the Youth demographic.
- ❖ Optimize inventory management based on the top-performing product categories and brands.