Data Analysis Project

Report On

“Customer Shopping Behavior Analysis”

Abstraction:

This project focuses on analyzing shopping sales data to identify key business insights that can help improve sales performance and customer satisfaction. Basic data cleaning and preprocessing were performed using Excel to handle missing values, correct data formats, and prepare the dataset for analysis. Exploratory Data Analysis (EDA) was conducted to understand sales patterns, product performance, customer preferences, and size-wise demand. Power BI was used to build interactive dashboards that visually highlight sales trends, best-selling categories, customer activity patterns, and payment behaviors.

The study provides clear insights into category-wise performance, customer demographics, and operational metrics, enabling data-driven recommendations for enhancing product strategies, inventory planning, and customer experience.

Introduction:

In today's rapidly evolving retail environment, businesses generate massive amounts of transactional and customer-related data. However, this data often remains underutilized due to the absence of structured analytical processes and meaningful visualization. To remain competitive, retail companies must transform raw sales data into actionable insights that support strategic decision-making, optimize inventory, enhance customer satisfaction, and drive overall business growth. In this context, data analytics plays a crucial role by enabling organizations to understand customer behavior, identify sales trends, and evaluate product performance.

This Shopping Sales Analysis project aims to uncover valuable insights from a retail dataset using a combination of Excel-based data cleaning techniques, Exploratory Data Analysis (EDA), and interactive Power BI visualizations. Excel was used for essential preprocessing activities such as handling missing values, removing inconsistencies, formatting data types, and preparing the dataset for deeper analysis. These steps ensured data accuracy and reliability, forming the foundation for generating meaningful insights.

Overall, this project demonstrates how the combination of Excel, EDA, and Power BI can turn raw data into valuable business intelligence. The insights and recommendations derived from the analysis can assist retail businesses in optimizing their sales strategies, enhancing customer experience, improving inventory planning, and ultimately increasing profitability. This study highlights the importance of data-driven approaches in modern retail operations and showcases how analytical tools can be effectively applied to real-world business problems.

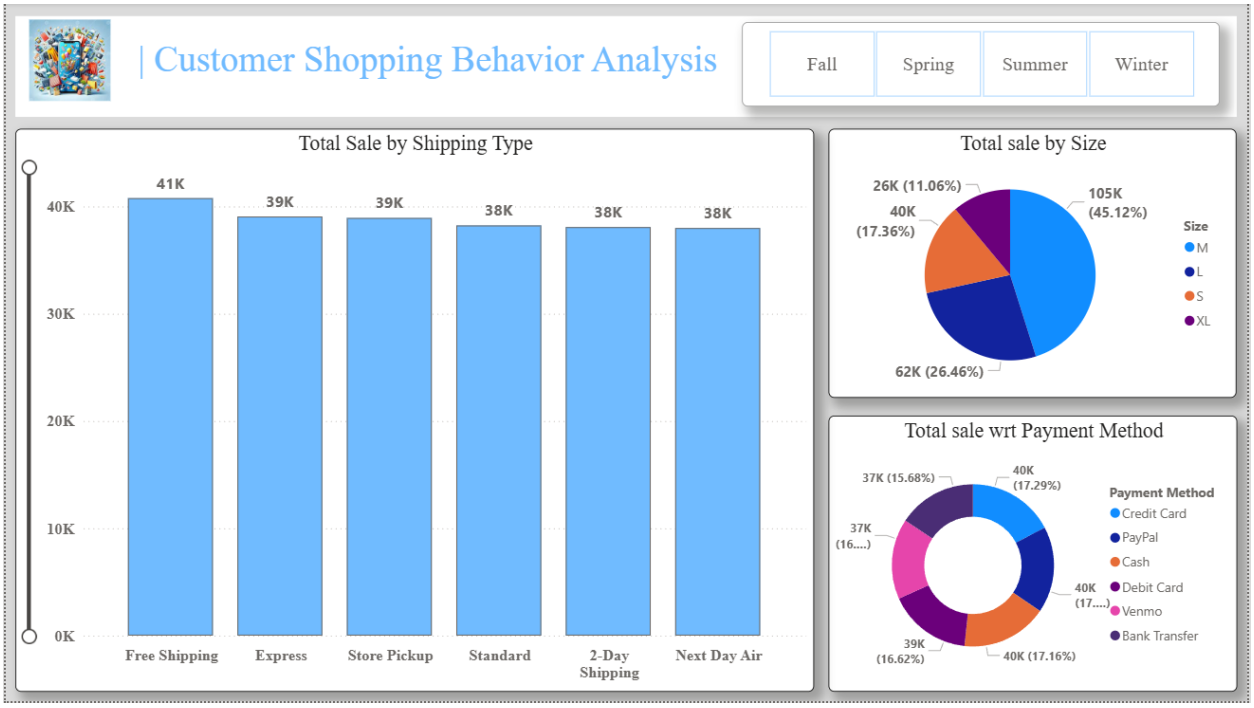
Problem Statement:

Despite having a high volume of daily sales, the business struggles to understand which products drive profit, how customer demographics affect sales, and what factors lead to sales fluctuations. This project aims to analyze shopping sales data to uncover actionable insights that can improve marketing strategies, inventory planning, and overall business performance.

Methodology:

- Reviewed the dataset structure, columns, and data types to identify missing values, inconsistencies, and analysis requirements.
- Removed duplicates, handled missing values, corrected formats, and standardized data types to ensure clean and accurate data.
- Performed category-wise, customer-wise, and size-wise analysis to identify trends, patterns, and key sales insights.
- Prepared cleaned data with proper formatting, calculated fields, and structured tables suitable for Power BI dashboards.
- Created interactive dashboards displaying sales KPIs, category performance, customer demographics, and shipping/payment behavior.
- Interpreted Power BI visuals and EDA outcomes to highlight major findings and business patterns.
- Developed data-driven suggestions to improve sales, optimize inventory, and enhance customer experience.
- Compiled all analysis, visuals, and findings into a structured project report for presentation.

Visual Insight:



Key Insight:

- Total Sale - **~233K**, Avg Rating – **3.7**.
- **Clothing - Most Sale Category.**
- Male are more Active in shopping as compare to Female.
- **Outwear is less Sale Category as compare to others.**
- **M is most Sale and S & XL are Less sale Size respectively.**
- **Free Shipping Mostly Preferred by Customers.**
- All Payment mode on an avg contribute **16.9%** in Total Sale.

Recommendations:

- **Promote high-selling clothing SKUs**: Increase stock and marketing for top performing clothing items to capture demand and avoid stockouts.

- **Target male customer segment**: Tailor promotions and email campaigns to the more active male shoppers, while creating specific strategies to increase female engagement.

- **Revise outerwear assortment**: Review pricing and styles for outerwear; consider discounts or bundling to boost demand.

- **Optimize size inventory**: Stock more of size M and reduce overstock of S and XL; use size-level demand forecasting to balance inventory.

- **Leverage free shipping**: Highlight free-shipping thresholds in marketing to increase average order value (AOV).

- **Monitor payment mix**: Since payment modes contribute similar shares, ensure frictionless checkout across all modes and monitor for fraud/anomaly.

Conclusion:

The Shopping Sales Analysis successfully transformed raw retail data into meaningful insights through Excel preprocessing, EDA, and Power BI visualizations. The findings reveal clear patterns in customer behavior, product performance, and category-wise sales trends that can help improve inventory planning and marketing strategies. Overall, the project provides data-driven recommendations that can enhance sales performance, customer satisfaction, and operational decision-making for the business.