EXPT NO: 8	
	MINI PROJECT – E-Commerce Data Visualization Dashboard using Power BI

AIM

To visualize and analyze e-commerce performance data using Power BI for deriving actionable insights on sales trends, customer behavior, regional performance, and profitability. The goal is to provide a decision-support system that enhances business strategy through data-driven analytics.

Tools Used:

- Power BI Desktop for dashboard creation and data modeling.

- Power Query for data cleaning and transformation.

- DAX (Data Analysis Expressions) for calculated measures and KPIs.

- Python integration (optional) for forecasting and sentiment analysis.

- Excel / CSV datasets for e-commerce data storage.

Methodology:

1. **Data Collection:** Gathered data from e-commerce sources containing orders, customers, products, and regions.

2. **Data Cleaning:** Processed the dataset using Power Query to handle missing, duplicate, and in valid data.

3. **Data Modeling**: Created relationships and calculated fields such as Total Sales and Profit Margin using DAX.

4. **Visualization:** Designed interactive dashboards covering key performance areas.

5. **Insight Generation:** Derived patterns and business recommendations from dashboard analytics.

Dashboard Sections:

1. **Sales Trend** – Line chart showing monthly revenue trends with forecasting capabilities.

2. **Top Products & Categories** – Bar chart and Tree map for identifying best-selling products and category shares.

3. **Customer Analysis** – Pie and Funnel charts for new vs returning customers and conversion funnel visualization.

4. **Geographical Insights** – Filled maps and bubble maps representing sales by region, state, and city.

5. **Profitability Analysis** – Scatter plots and stacked charts comparing revenue and profit margins.

Innovation Features:

1. **Forecasting & Price Optimization:** Utilizes Power BI's built-in forecasting analytics to predict future sales. Simulates price change effects through dynamic slicers, allowing users to observe potential revenue variations and optimize pricing strategies.

2. **Customer Sentiment Analysis:** Integrates Python NLP or sentiment scoring in Power Query to evaluate customer reviews. Visual outputs include word clouds, sentiment trend graphs, and positive vs negative sentiment ratios to improve customer experience.

Dynamic Data & Interactivity:

The Power BI dashboard supports interactivity through slicers and cross-filters, enabling users to explore insights by date, region, product, or customer type. If connected to a live database or cloud service, the dashboard auto-refreshes to reflect updated data, providing real-time performance
tracking.

Design and Layout:

The dashboard design includes a professional layout with KPI cards for total sales, profit ,customers, and margin percentages. Colour themes and visuals are consistent, supported within icons and labels to improve readability and presentation
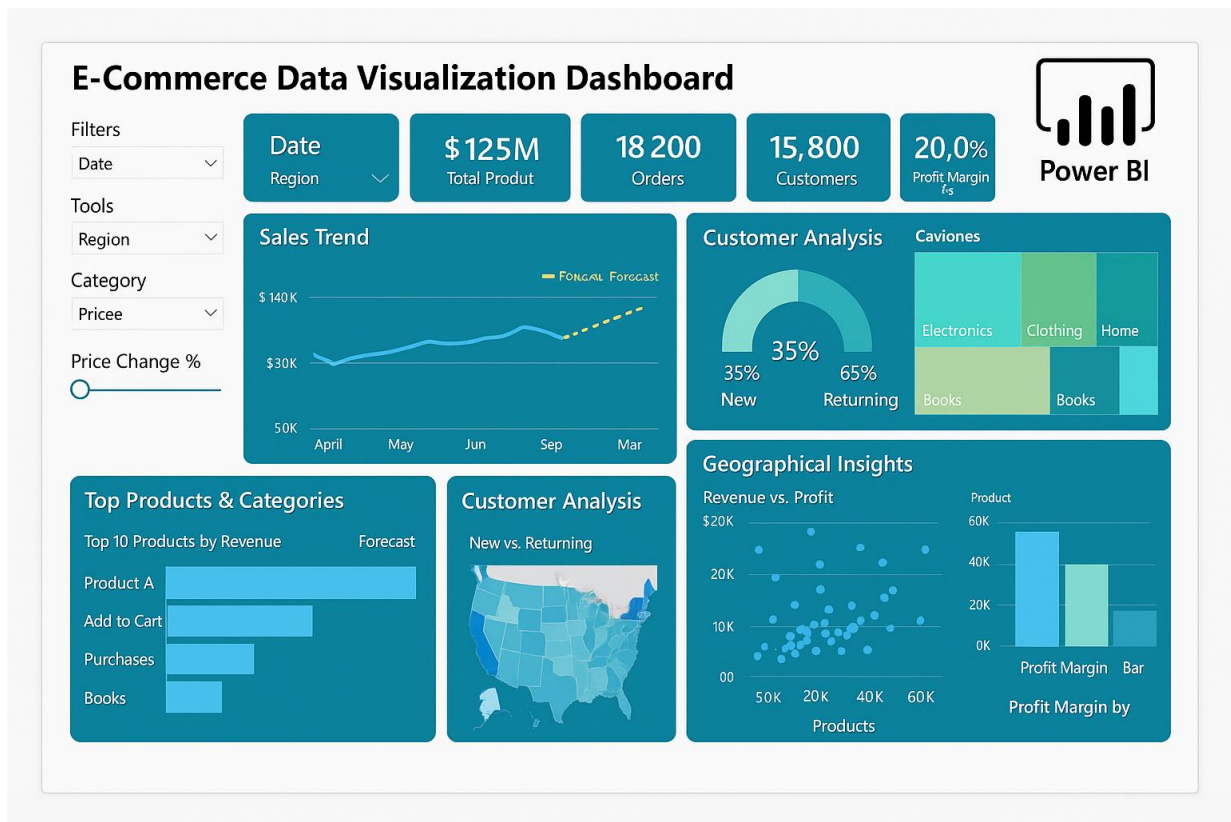
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Results and Insights:

The Power BI dashboard provides clear visibility into e-commerce operations, helping identify top-performing products, profitable regions, and loyal customers. The forecasting and sentiment analysis modules add predictive and qualitative insights, supporting proactive business strategies.

Conclusion:

This project demonstrates the effectiveness of Power BI as a business intelligence tool for e-commerce analysis. By combining visualization, forecasting, and sentiment analytics, it enables comprehensive understanding of data trends and facilitates data-driven decision-making.

OUTPUT

E-Commerce Data Visualization Dashboard

RESULT:

The project successfully discovered patterns in e-commerce sales data using data visualization and analytical techniques. It was observed that products with higher sales, strong profit margins, and positive customer sentiment, particularly in categories like electronics and fashion, tend to perform better.