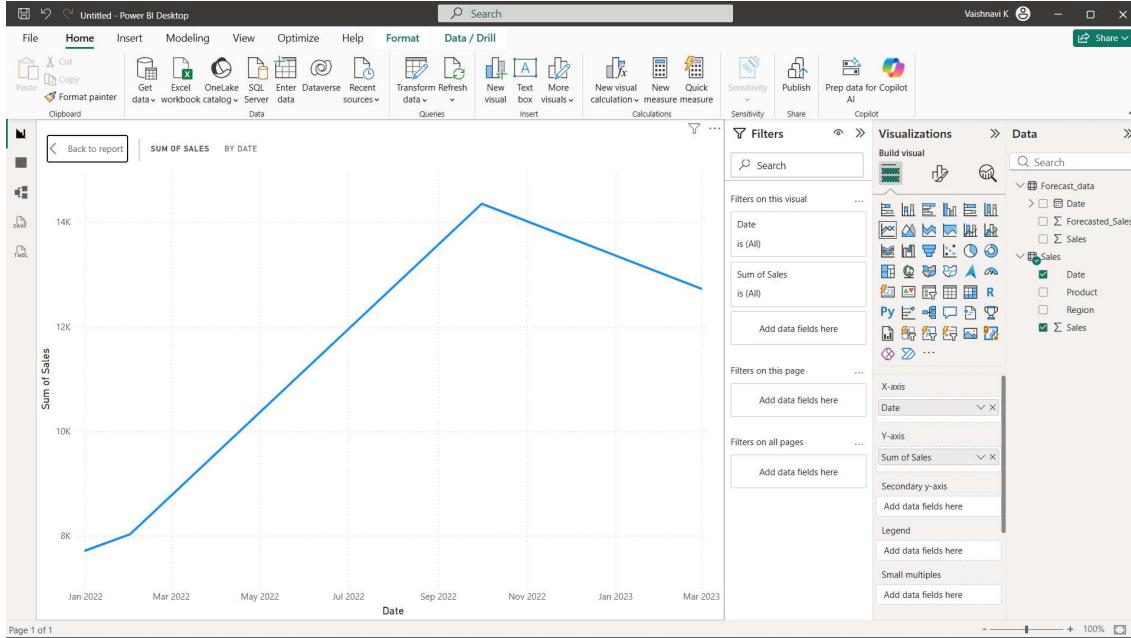


Sales Forecasting & Anomaly Detection

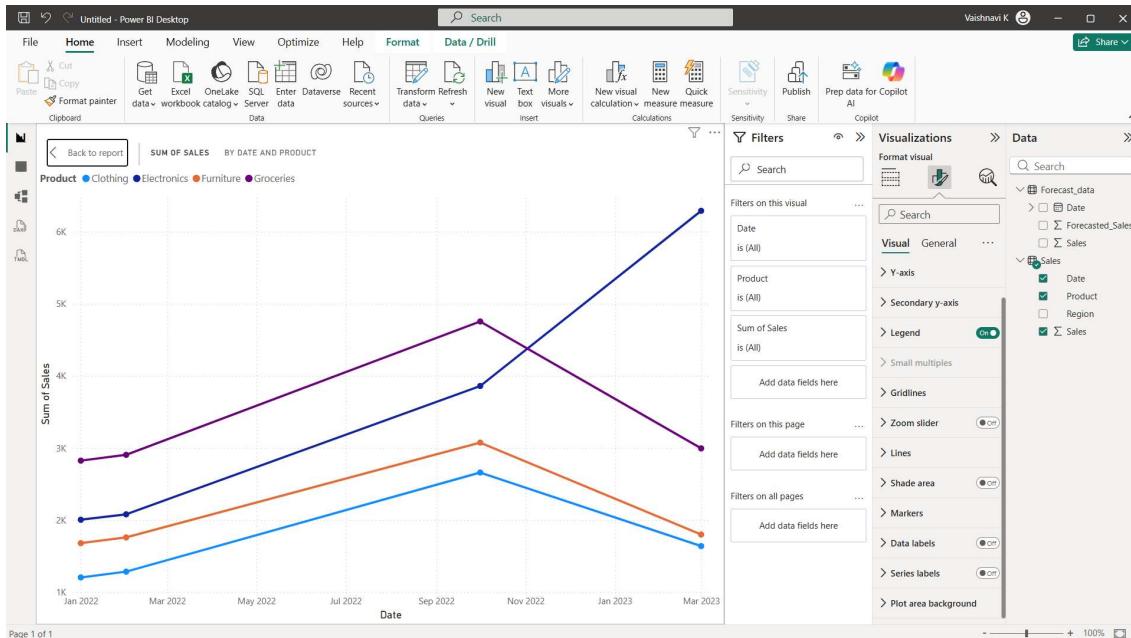
- Vaishnavi K (727823TUIT244)

Q! : Analyze historical sales trends using line charts



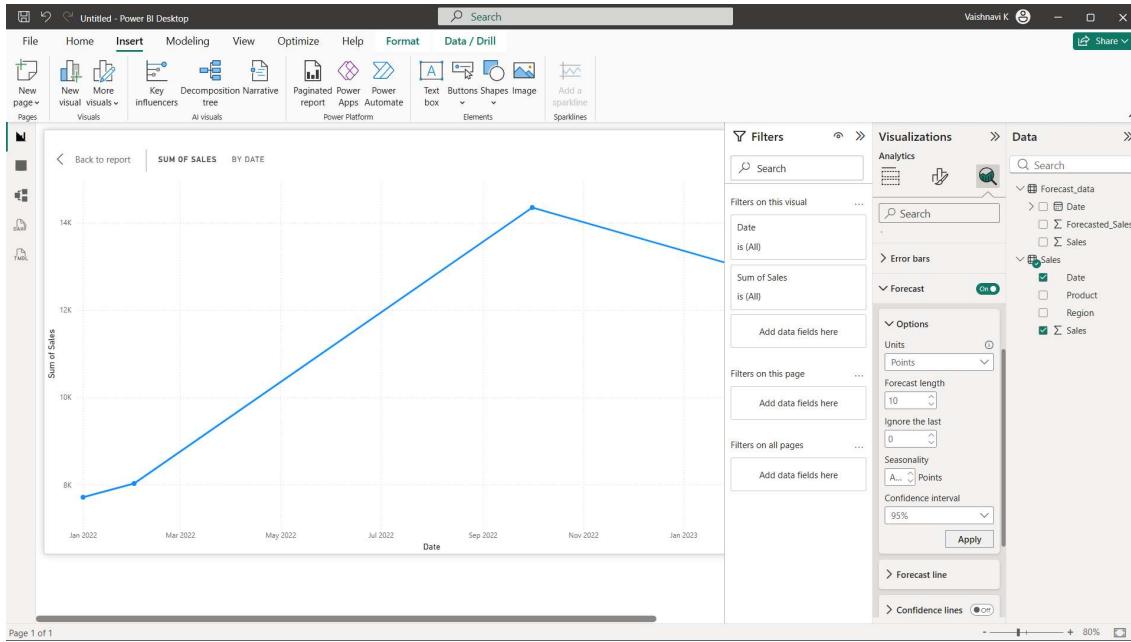
The line chart shows historical sales trends over time, indicating fluctuations and an overall increasing pattern.

Q2: Identify seasonality patterns in sales data



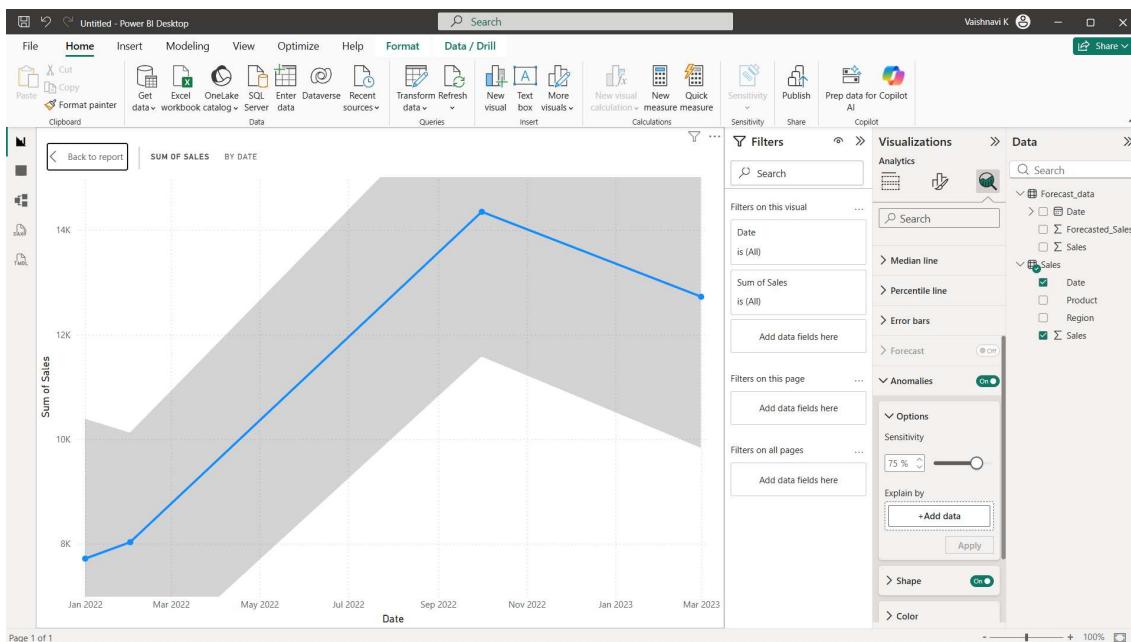
Sales show seasonal patterns across products, with higher demand during specific periods.

Q3 : Use forecasting to predict future sales



Forecasting predicts future sales based on historical trends and seasonality.

Q4 : Detect anomalies in sales data using AI visuals



Anomalies highlight unusual sales spikes and deviations from expected trends.

Q5 : Explain reasons for anomalies

1 Promotional Campaigns

Sales anomalies may occur due to promotional activities such as discounts, festive offers, or limited-time deals. These promotions temporarily increase customer purchases, resulting in sudden spikes in sales.

2 Seasonal Sales Events

Certain periods like festivals, year-end sales, or special shopping seasons can cause unusually high sales. These seasonal events lead to deviations from normal sales patterns, creating anomalies in the data.

3 Bulk or Corporate Orders

Large bulk purchases from corporate clients or distributors can significantly increase sales on a particular date. Such one-time large orders appear as anomalies when compared to regular daily sales.

4 Sudden Changes in Customer Demand

Unexpected changes in customer preferences, trends, or market demand can cause abnormal increases or decreases in sales. For example, a sudden rise in demand for a product may lead to a sales spike.

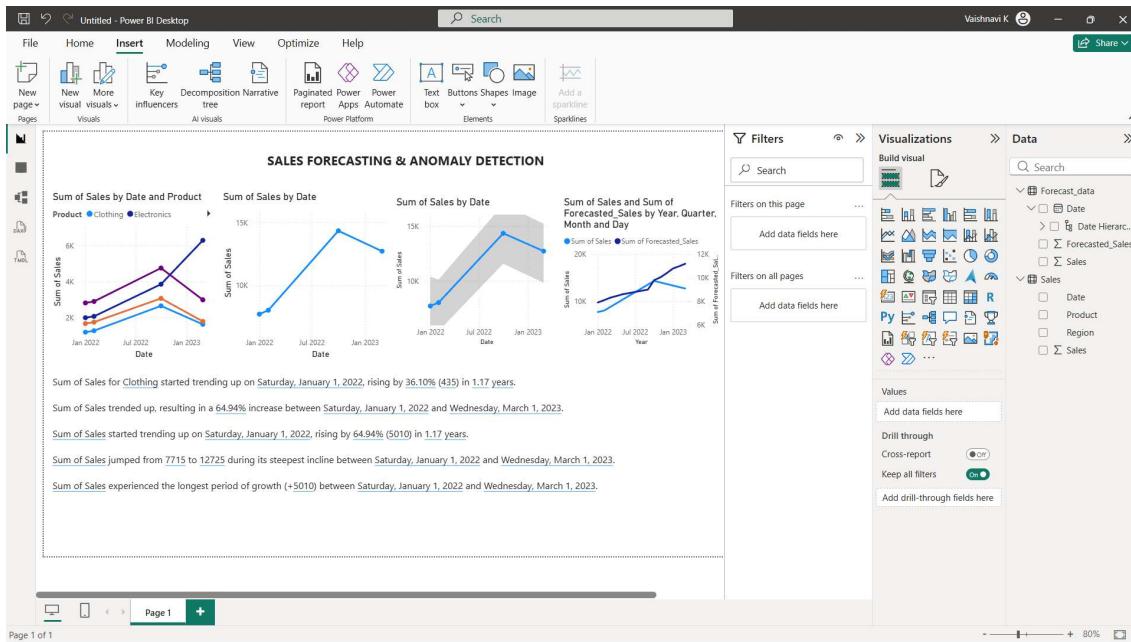
5 Supply Chain or Stock Issues

Sales anomalies can also occur due to stock shortages or supply chain disruptions. Limited product availability may cause sudden drops in sales during certain periods.

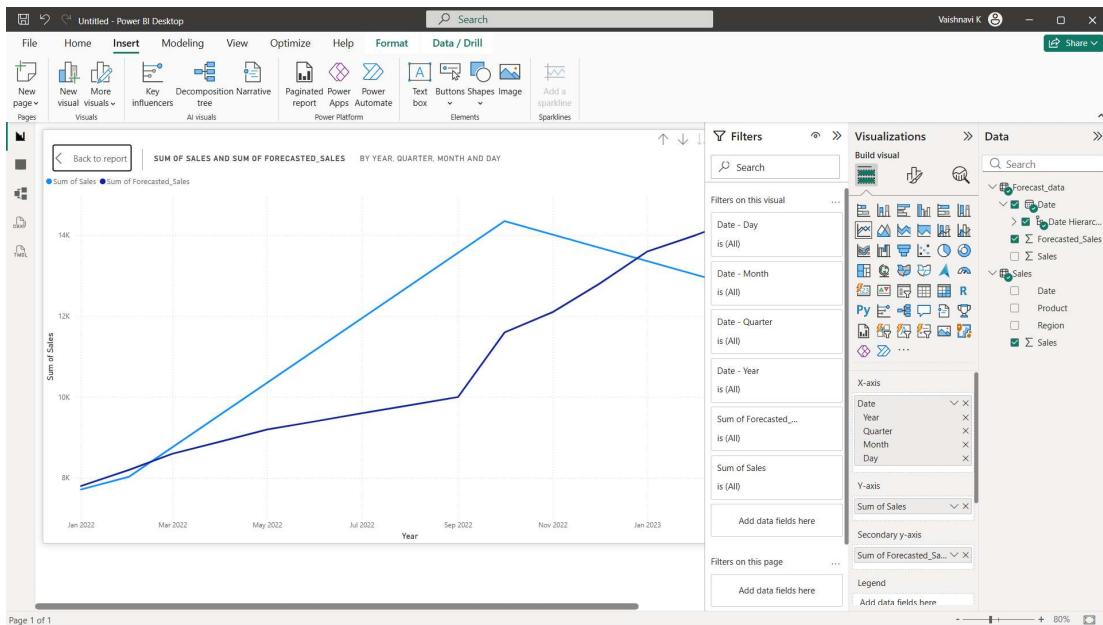
6 Data Entry or Reporting Irregularities

Occasionally, anomalies may be caused by data recording issues such as delayed updates, duplicate entries, or reporting errors, leading to unusual values in the dataset.

Q6 : Use Smart Narratives to summarize insights



Q7 : Compare actual sales with forecasted values



- ❑ A line chart was used to compare actual sales with forecasted sales over time.
- ❑ The forecasted sales closely follow the historical sales trend.
- ❑ Minor deviations between actual and forecasted values are observed during specific periods.
- ❑ These differences may be due to anomalies or unexpected market conditions.
- ❑ Overall, the forecast provides a reasonable estimate of future sales performance.

Q8 : How reliable is the forecast model?

1 Alignment with Historical Trends

The forecasted sales values closely follow the historical sales trend. This alignment indicates that the model has correctly learned past sales behavior.

2 Captures Overall Growth Pattern

The forecast reflects the overall upward movement in sales over time, showing that long-term growth patterns are well captured by the model.

3 Minor Deviations Are Acceptable

Small differences between actual and forecasted values are visible during certain periods. These deviations are normal and usually occur due to unexpected events or anomalies.

4 Confidence Interval Support

The presence of a confidence interval around the forecasted line indicates the expected range of future values, increasing trust in the prediction results.

5 Suitable for Business Decision-Making

Since the forecast closely matches real sales trends and deviations are limited, the model is reliable enough for planning inventory, sales targets, and resource allocation.

Q9 : What actions should management take based on AI insights?

Management Actions Based on AI Insights

1 Improve Inventory Planning

Using forecasted sales and seasonal patterns, management should ensure sufficient inventory during high-demand periods to avoid stock-outs and lost sales.

2 Focus on High-Performing Products

Products showing consistent growth should be prioritized for marketing, production, and expansion to maximize revenue.

3 Investigate Sales Anomalies

Periods identified as anomalies should be closely analyzed to understand causes such as promotions, demand surges, or operational issues, helping prevent future risks.

4 Optimize Marketing Strategies

Marketing campaigns can be aligned with peak sales periods identified through seasonality analysis to improve campaign effectiveness and return on investment.

5 Strengthen Demand Forecasting

Regularly updating the forecasting model with new data will improve prediction accuracy and support better decision-making.

6 Data-Driven Decision Making

Management should rely on AI-powered insights instead of manual analysis to respond quickly to changes in sales trends and market conditions.