

# Sales Forecasting & Anomaly Detection Dashboard Project

## Sales Forecasting Analysis

### Project Overview

Organizations need accurate sales forecasts to plan inventory, budgeting, staffing, and revenue targets. This project uses Microsoft Power BI to analyze historical sales data and build forecasting visuals to predict future sales trends. The dashboard helps decision-makers identify seasonal patterns, growth trends, and expected future performance using interactive visuals and time-series analysis.

### Key Business Insights

- Sales show seasonal patterns with peak performance in festive and year-end months.
- Quarterly growth trend indicates steady upward movement in revenue.
- Specific product categories drive most of the forecasted revenue.
- Forecast models predict next-quarter growth based on historical trends.
- Regional forecasts highlight high-growth future markets.

### Tools & Technologies

- Power BI Desktop – Forecast visuals and KPI dashboards
- Power Query – Data cleaning and time preparation
- DAX – Time intelligence measures
- Analytics Pane – Built-in forecasting
- Data Modeling – Date tables and hierarchies

### Recommendations

- Increase inventory for high-growth forecasted categories.
- Plan campaigns during predicted peak months.
- Allocate budget to high-forecast regions.
- Update rolling forecasts monthly.

## Anomaly Detection Analysis

### Project Overview

Unexpected spikes or drops in business data can indicate fraud, operational issues, or market shifts. This project uses Microsoft Power BI to detect anomalies in sales and operational metrics using statistical thresholds and anomaly detection visuals. The dashboard highlights unusual behavior and supports root cause analysis.

## **Key Business Insights**

- Abnormal spikes detected outside seasonal patterns.
- Sudden drops linked to operational disruptions.
- Certain regions show irregular transaction behavior.
- Extreme discount values correlate with margin loss.
- Time-window clustering of anomalies observed.

## **Tools & Technologies**

- Power BI Desktop – Anomaly detection visuals
- Power Query – Outlier cleanup
- DAX – Statistical measures
- Analytics Pane – Built-in anomaly detection
- Conditional formatting – Highlight abnormal values

## **Recommendations**

- Investigate flagged outlier transactions.
- Enable automated anomaly alerts.
- Define threshold-based monitoring rules.
- Review pricing and discount controls.