Flipkart Sales Analysis & Forecasting

Project Overview

This project involves a comprehensive analysis of Flipkart sales data to derive actionable insights and forecast key business metrics. It aims to understand customer behavior, product performance, revenue patterns, delivery efficiency, and returns. Forecasting models are applied to predict future trends and support business planning.

Scope: - Analyze customer, product, and order data. - Evaluate revenue performance and losses (returns, cancellations). - Forecast future sales and customer trends using time-series models. - Visualize insights in an interactive Power BI dashboard.

Objectives: - Identify top-performing products and categories. - Understand customer demographics and buying patterns. - Monitor delivery and return efficiency. - Forecast revenue, orders, and customer growth. - Provide data-driven recommendations for operational improvement.

Data Layer

Datasets Used: 1. Customers: Customer demographics, registration details, gender, location. 2. Orders: Order IDs, order dates, customer IDs, payment info. 3. Order Items: Product IDs, quantity, price, discounts. 4. Products: Product categories, pricing, ratings. 5. Delivery: Shipment dates, delivery status, logistics info. 6. Returns: Return reason, date, refund amount.

SQL & Python Analytics

Key Metrics Computed: - Revenue Metrics: Gross vs Net revenue, total sales per month/year. - Customer Metrics: New vs returning customers, gender-wise distribution. - Product Metrics: Top-selling products, category performance, return rates. - Delivery Metrics: On-time delivery percentage, average delivery time. - Return & Leakage Metrics: Revenue lost due to returns/cancellations.

Techniques Used: - SQL joins (INNER, LEFT) to combine datasets. - Aggregations, window functions, and subqueries. - Python (Pandas) for data cleaning, manipulation, and metric computation. - Analysis of gross vs net revenue to identify revenue leakage.

Forecasting Layer

Model Used: - Prophet (Python) for time-series forecasting.

Forecasted Metrics: - Customer growth (monthly/yearly). - Product demand and sales. - Number of orders and revenue trends.

Insights: - Seasonal trends identified for sales and orders. - Expected peak months for revenue and high-demand products. - Forecast helps in inventory and marketing planning.

Power BI Dashboard & Insights

Key Components: - KPI Cards: Total revenue, total orders, average order value, total returns. - Revenue Analysis: Year-wise and month-wise trends. - Category Analysis: Product category performance and return percentages. - Customer Segmentation: Gender-wise and location-wise revenue contribution. - Order & Delivery Trends: Month-wise orders, average delivery time.

Sample Insights: - Certain categories (e.g., electronics) show higher return rates. - Peak sales months identified (e.g., festive season). - Gender-wise buying patterns suggest targeted marketing opportunities. - Delayed deliveries correlate with higher return rates in certain regions.

Insert your Power BI screenshots here

Insights & Recommendations

- Optimize inventory for peak-demand months.
- Implement targeted marketing for high-value customer segments.
- Address delivery delays in regions with high return rates.
- Monitor product categories with high return ratios to reduce revenue leakage.
- Use forecasts to plan stock, promotions, and staffing.

Technical Stack & Skills

- SQL: Joins, aggregations, window functions, subqueries.
- Python: Pandas for data manipulation, Prophet for forecasting.
- Power BI: Dashboard design, KPI cards, slicers, interactive visualizations.
- Soft Skills: Analytical thinking, data storytelling, actionable insights.