

E-COMMERCE SALES ANALYSIS FOR DATA-DRIVEN DECISION MAKING

E-Commerce Sales Analysis & Business Strategy

Internship : Data Analytics Internship

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INTRODUCTION & OBJECTIVE

Introduction & Project Objective

- E-commerce businesses generate large volumes of transactional data
- Analyzing this data helps identify sales trends and customer behavior
- The objective of this project is to transform raw data into actionable insights

Key Goals of the Analysis

- Understand sales performance across time, products, and regions
- Segment customers using RFM analysis for better targeting
- Forecast future sales to support business planning
- Identify business opportunities and strategic recommendations

DATASET OVERVIEW

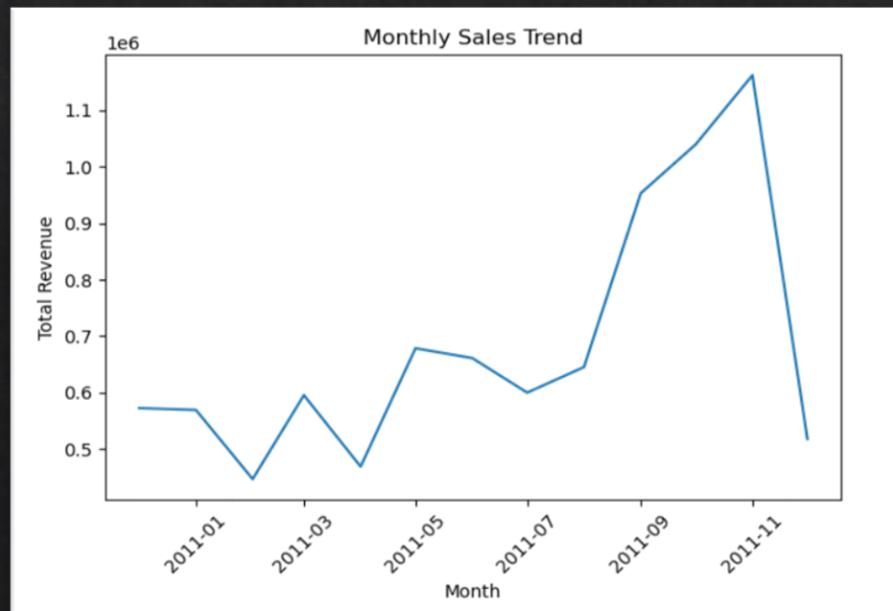
Dataset Summary

- ❖ Dataset contains real-world e-commerce transaction data
- ❖ Includes customer purchases across multiple products and regions
- ❖ Data spans multiple months, enabling trend and seasonality analysis
- ❖ Revenue calculated using quantity and unit price
- ❖ Dataset cleaned by removing duplicates, missing values, and invalid records

SALES PERFORMANCE ANALYSIS

Sales Trends Overview

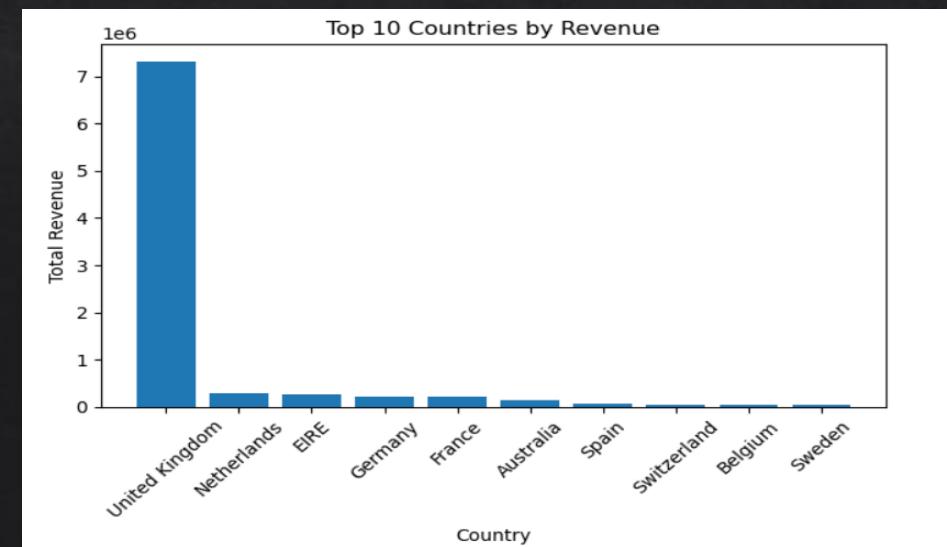
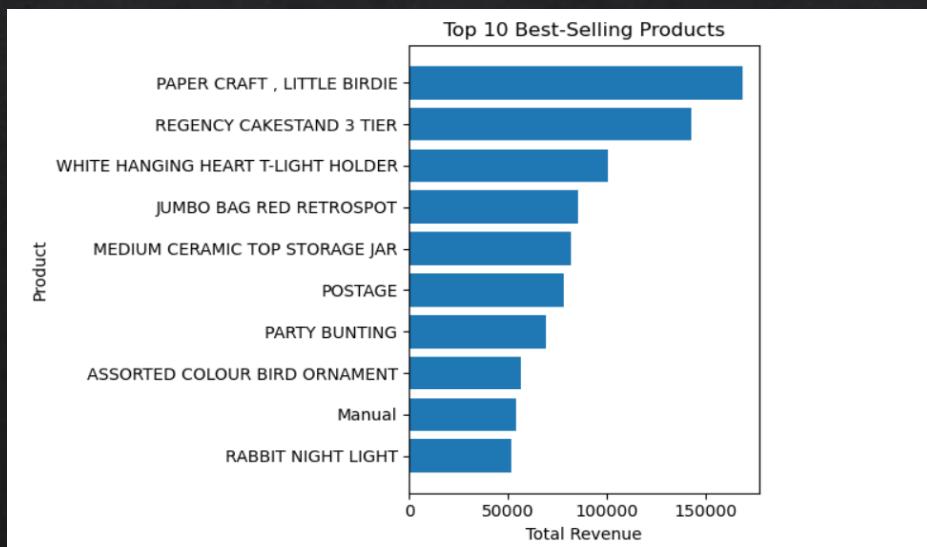
- Sales show a steady growth trend over time
- Clear seasonal patterns observed
- Certain months contribute significantly higher revenue



PRODUCT & GEOGRAPHIC INSIGHTS

Key Performance Insights

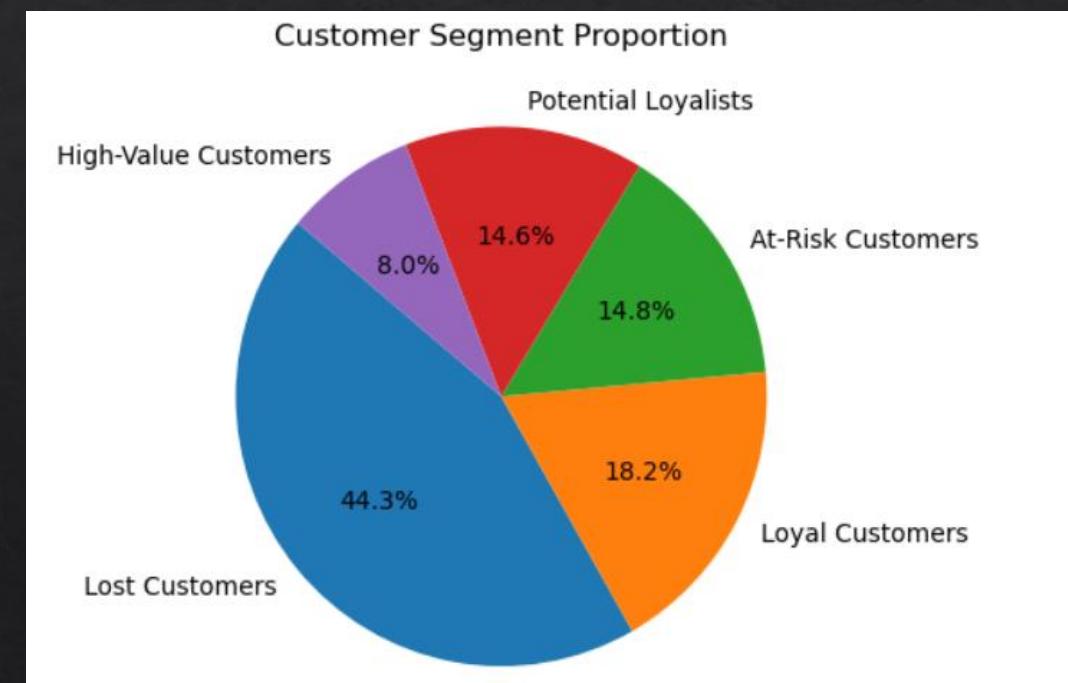
- Few products contribute the majority of revenue
- Best-selling categories drive overall sales growth
- Sales concentrated in key regions



CUSTOMER BEHAVIOR – RFM SEGMENTATION

Customer Segmentation Approach

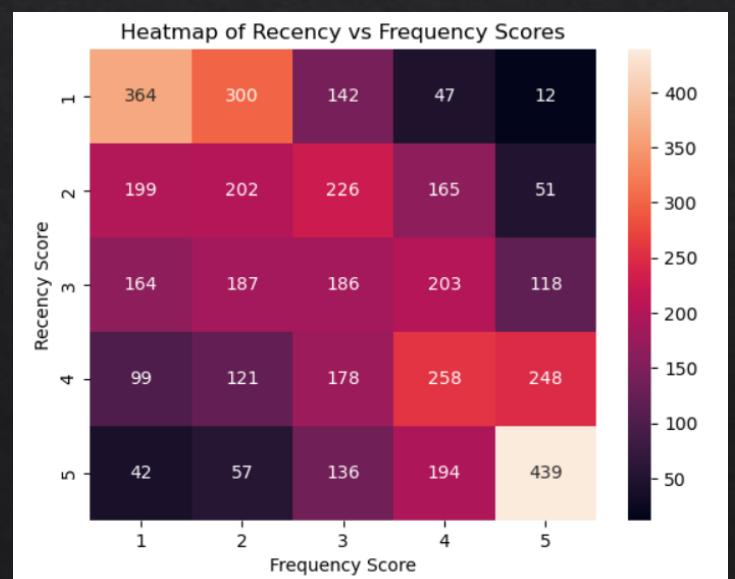
- ❖ Customers segmented using RFM (Recency, Frequency, Monetary) analysis
- ❖ Key segments identified:
 - High-Value Customers
 - Loyal Customers
 - At-Risk Customers
 - Lost Customers



CUSTOMER BEHAVIOR – RFM HEATMAP ANALYSIS

RFM Heatmap – Key Insights

- High Recency & Frequency customers are the **most valuable segment**
- Low Recency & Frequency indicates **high churn risk**
- High Frequency but low Recency customers are **at-risk loyal users**
- Recent, low-frequency customers are **potential loyalists**
- Heatmap supports **targeted retention strategies**



CUSTOMER INSIGHTS

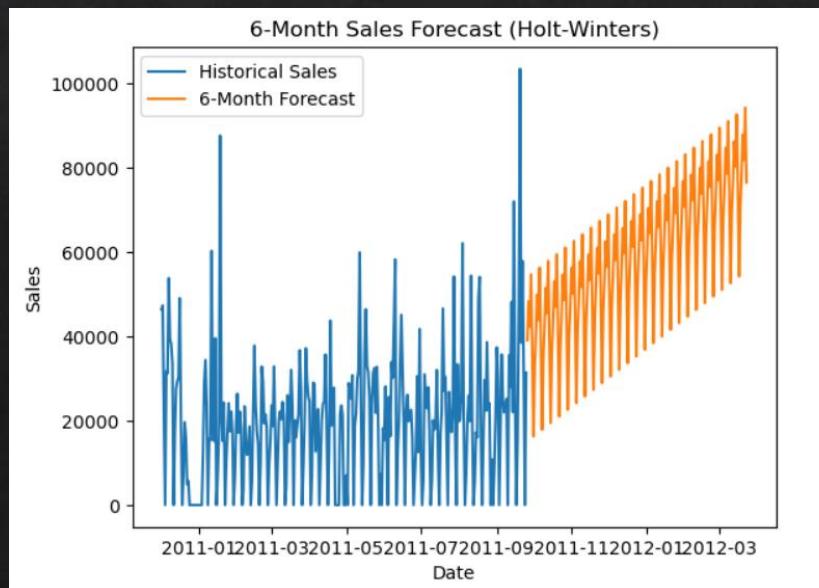
Key Customer Behavior Insights

- A small group of high-value customers contributes a large portion of total revenue
- Loyal customers show consistent repeat purchase behavior
- At-risk customers indicate declining engagement and potential churn
- Retention-focused strategies can significantly increase customer lifetime value

SALES FORECASTING INSIGHTS

Future Sales Predictions

- Holt-Winters Exponential Smoothing model used
- Sales forecasted for the next 6 months
- Forecast shows steady growth with seasonal demand patterns



IDENTIFIED BUSINESS OPPORTUNITIES

Key Business Opportunities Identified

- Expansion of high-performing product categories to meet growing demand
- Strengthening regional marketing strategies in top-performing locations
- Upselling premium products to high-value customers
- Cross-selling complementary products to increase average order value
- Re-engagement of at-risk customers through targeted campaigns

RECOMMENDATIONS & ACTION PLAN

Strategic Recommendations

- Optimize inventory planning using sales trends and demand forecasts
- Implement personalized marketing campaigns using RFM customer segments
- Introduce seasonal pricing and promotional strategies
- Develop loyalty programs to increase repeat purchases
- Launch win-back offers for inactive or at-risk customers

Action Plan

- Short-term: Target promotions and inventory adjustments
- Long-term: Customer retention and market expansion strategies

CONCLUSION & NEXT STEPS

Conclusion

- Data-driven analysis provides valuable insights into sales and customer behavior
- Forecasting enables proactive planning and risk reduction
- Customer-centric strategies are essential for long-term growth

Next Steps

- Implement recommended strategies across business functions
- Monitor performance metrics and customer response
- Continuously refine strategies using updated data