

Optimizing eBay Sales with Predictive Analytics: Analysing Trends and Forecasting Future Performance

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Agenda



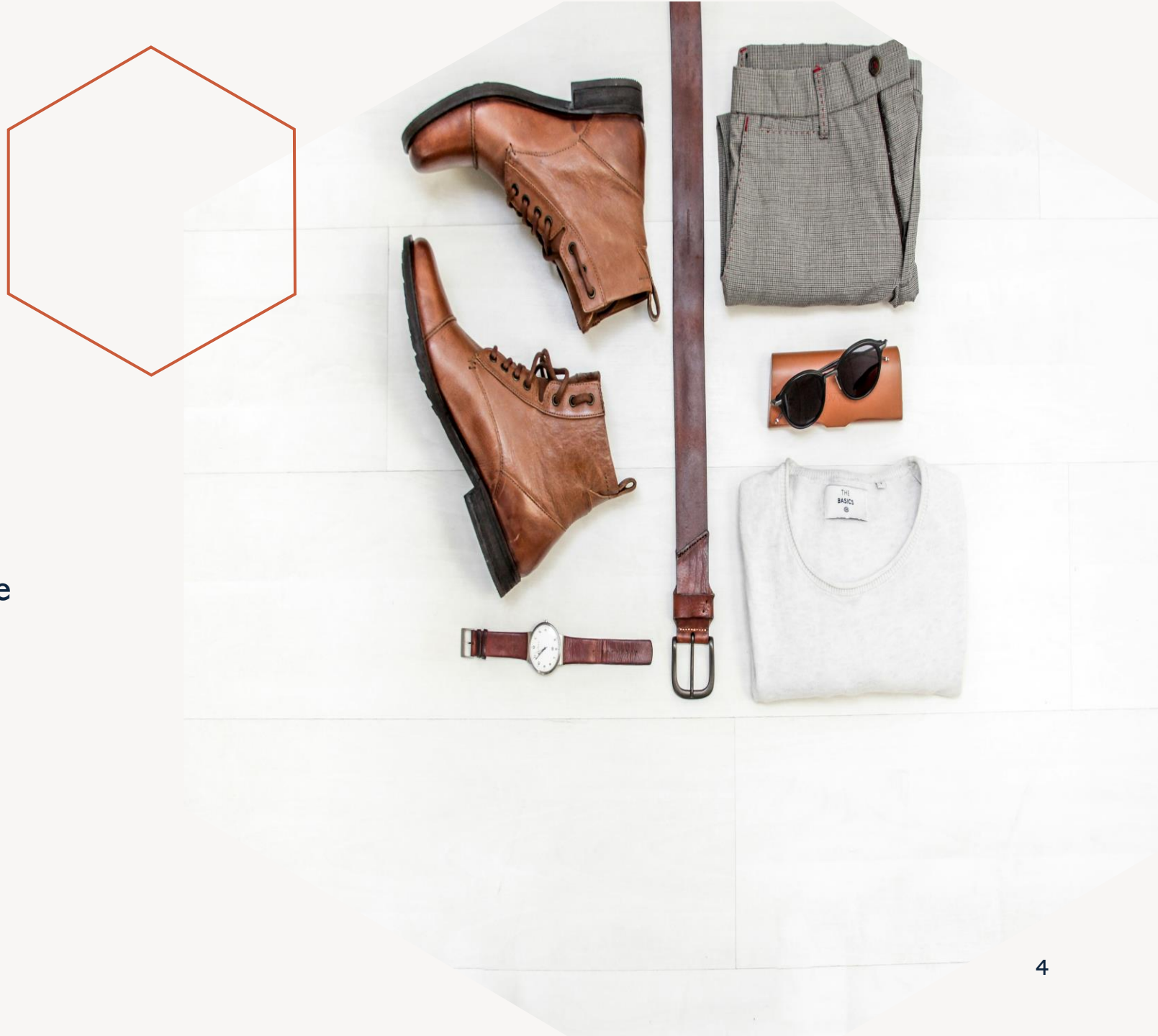


***“Amazing things will happen
when you listen to the
consumer.”***

Jonathan Midenhall, CMO at Airbnb

Overview

eBay is an eCommerce platform that operates as an online marketplace where individuals and businesses can buy and sell a wide variety of products, including electronics, fashion, collectibles, home goods, and more.





**OPTIMIZING
EBAY SALES
WITH
PREDICTIVE
ANALYTICS**

Business Understanding

Business Understanding

Problem statement

In the highly competitive eCommerce landscape, accurately predicting sales is crucial for optimizing inventory management, marketing strategies, and overall business performance. eBay, as a major online marketplace, experiences significant fluctuations in sales due to various factors including seasonal trends, promotional activities, market demand, and external economic conditions.

The challenge

fluctuations in sales due to various factors including seasonal trends, promotional activities, market demand, and external economic conditions. This leads to poor decision-making, Inefficient resource allocation, and poor financial planning.



Business Understanding



Main objective

- To create a model that predicts eBay sales accurately. This will help with better inventory management, marketing, and financial planning by using past sales data and other factors to make informed business decisions.

Specific objectives

- Develop a predictive model capable of forecasting eBay sales with a high degree of accuracy on a weekly or monthly basis.
- Demonstrate the practical application of the predictive model in optimizing inventory management by reducing stockouts and overstocks.
- Identify opportunities for targeted marketing campaigns based on predicted sales trends.

Business understanding



Success metrics

- Evaluate the performance of the predictive model using appropriate metrics such as Mean Absolute Error (MAE), Mean Squared Error (MSE), Root Mean Squared Error (RMSE), and Mean Absolute Percentage Error (MAPE).

Conclusion

- By developing and implementing a robust predictive model, eBay can significantly enhance its ability to forecast sales, optimize inventory management, and make data-driven marketing decisions.

Data Understanding



1. Data Collection

- Source: Yahoo Finance via yfinance API.

Data Components:

- Historical Stock Prices: Includes Open, High, Low, Close prices, and Volume of trades.
- Additional Features: Adjusted Close prices for accounting for corporate actions like stock splits and dividends.

Data Understanding



2. Data Exploration

- Descriptive Statistics:
- Stock Prices: Calculate basic statistics (mean, median, standard deviation) for Open, High, Low, Close prices.
- Volume: Analyze the trading volume, including its average and variability

3. Data Visualization:

- Time Series Plot: Plot the historical stock prices (Open, Close) over time to visualize trends and patterns.
- Volume Analysis: Create a time series plot for trading volume to observe trading activity and volatility.

Evaluation



Trend Analysis:

- Price Trends: Identify major trends in historical stock prices, including upward or downward trends.
- Volatility Patterns: Observe periods of high and low volatility in trading volume and price movements.

Pattern Recognition

- Seasonal Effects: Look for any recurring seasonal patterns or cyclic behaviors in stock prices and trading volumes.
- Market Events: Identify any significant market events or news that may have impacted stock prices.

Conclusion

The analysis and predictive modeling of eBay's eCommerce sales using historical stock price data from Yahoo Finance provide valuable insights into financial performance and market trends. By building accurate predictive models, we aim to achieve precise sales forecasts, identify key performance drivers, and offer actionable insights for strategic decisions. The project is expected to uncover significant trends and patterns, enhancing eBay's forecasting capabilities and supporting both operational efficiency and long-term planning.





Thank you!