Product Sales Analysis

AUBIT – Trichy

Phase 2 Project

Agenda

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Introduction

In the dynamic realm of business, understanding and accurately anticipating future sales trends and customer behaviors are paramount for success. As we embark on the "Product Sales Analysis" project, we recognize the transformative potential of machine learning algorithms in this pursuit.

This project aims to harness the capabilities of machine learning to not only unravel the complexities of past sales data but also to forecast future trends with precision. Through the fusion of data science and business intelligence, we intend to empower organizations to make informed decisions, optimize their strategies, and unlock new avenues for growth in an ever-evolving market landscape.

Primary goals

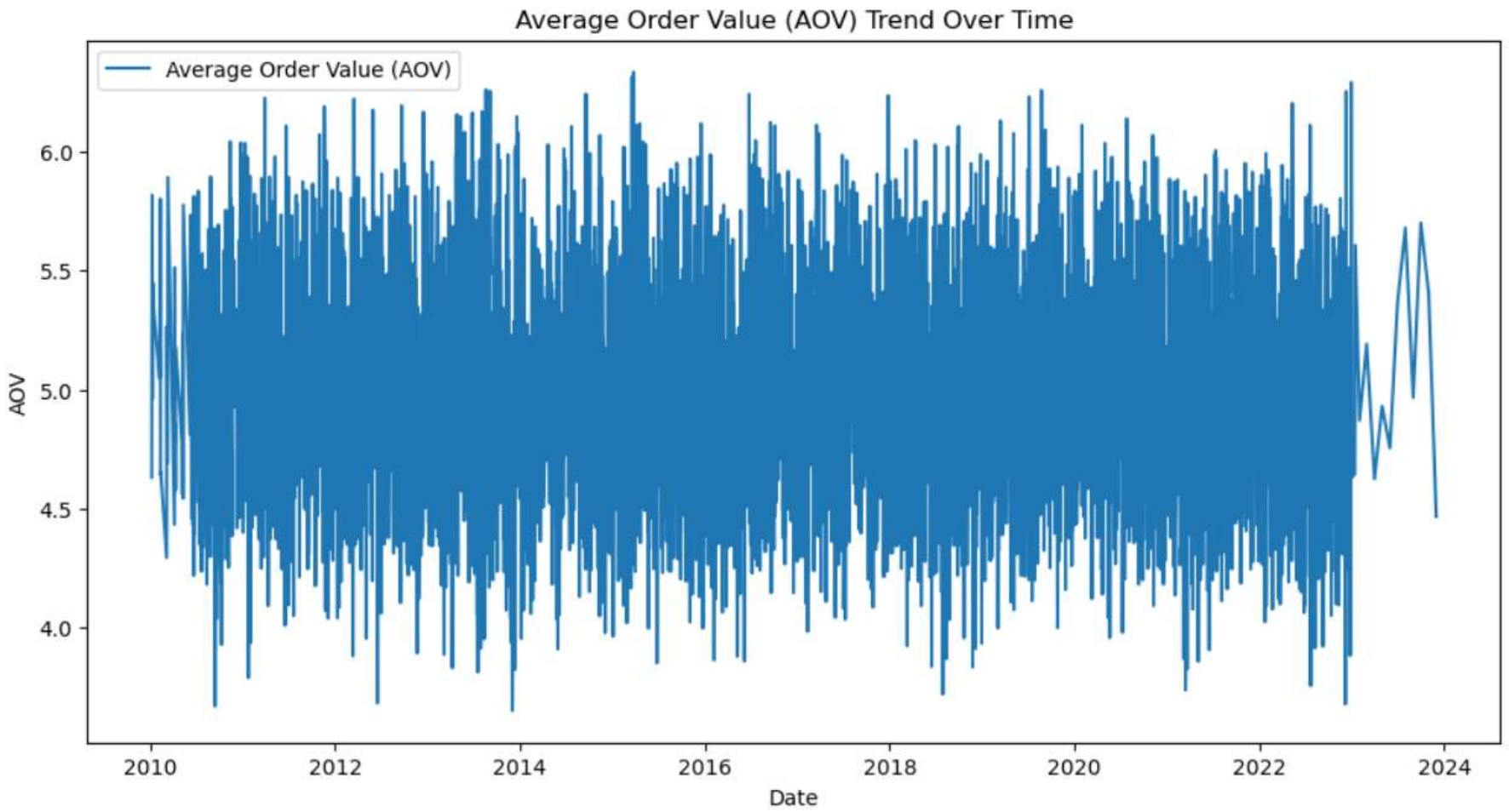
The primary goals for the "Product Sales Analysis" project are

- 1. Sales Forecasting : Develop accurate predictive models to forecast future sales of products, enabling better inventory management and resource allocation.
- 2. Customer Segmentation : Identify distinct customer segments based on their purchasing behavior, demographics, and preferences to tailor marketing and sales strategies.
- 3. Market Basket Analysis : Analyze which products are often purchased together, enabling cross-selling and bundling opportunities to increase revenue.
- 4. Churn Prediction : Predict and prevent customer churn by identifying at-risk customers and implementing retention strategies.
- 5. Product Performance Analysis : Evaluate the performance of individual products in terms of sales, profitability, and customer satisfaction to inform product development and marketing efforts.
- 6. Price Optimization : Determine optimal pricing strategies for products to maximize revenue and profitability while remaining competitive in the market.
- 7. Inventory Management : Optimize inventory levels to meet demand while minimizing carrying costs and stockouts.

Code:

```
import pandas as pd
import matplotlib.pyplot as plt

# Load the CSV file
data = pd.read_csv('Dataset.csv')

# Convert the 'date' column to datetime
data['Date'] = pd.to_datetime(data['Date'])

# Sort the data by date
data = data.sort_values(by='Date')

# Calculate total sales per customer
data['Total_Sales'] = data['S-P1'] + data['S-P2'] + data['S-P3'] + data['S-P4']

# Calculate the average order value (AOV) per customer
data['AOV'] = data['Total_Sales'] / (data['Q-P1'] + data['Q-P2'] + data['Q-P3'] + data['Q-P4'])

# You can plot and analyze customer behavior here
# For example, you can plot the AOV trend over time
plt.figure(figsize=(12, 6))
plt.plot(data['Date'], data['AOV'], label='Average Order Value (AOV)')
plt.xlabel('Date')
plt.ylabel('AOV')
plt.title('Average Order Value (AOV) Trend Over Time')
plt.legend()
plt.show()
```

Output:


Average Order Value (AOV) Trend Over Time
Average Order Value (AOV)
AOV
6.0
5.5
5.0
4.5
4.0
2010
2012
2014
2016
2018
2020
2022
2024
Date

“Business opportunities are like buses. There's always another one coming.”

Richard Branson

Plan for product launch

Planning	Marketing	Design	Strategy	Launch
Synergize scalable e-commerce	Disseminate standardized metrics	Coordinate e-business applications	Foster holistically superior methodologies	Deploy strategic networks with compelling e-business needs

Summary

Incorporating machine learning algorithms to predict future sales trends or customer behaviors is a strategic initiative that harnesses the power of data and AI to inform critical business decisions.

By analyzing historical data and patterns, these algorithms enable organizations to forecast sales, understand customer preferences, and tailor strategies for growth.

This proactive approach not only enhances resource allocation and inventory management but also empowers businesses to engage customers more effectively and stay ahead in a competitive market landscape.

Overall, the integration of machine learning in sales analysis promises to drive efficiency, profitability, and sustainable business growth.

Thank you