Data science

Mini Project – 1

The Project Report On

Customer Behaviour Analysis

Batch code: DS-C-WD-E-B39

Name: Kavya P P

Replies to the mails

1

Subject: Re: Request for Data Analysis to Improve Marketing Strategy

Dear Jane Doe,

Thank you for reaching out. I appreciate the detailed overview of the challenges ShopEasy is facing, and I understand the urgency of implementing a data-driven approach to improve your marketing strategy.

Based on your concerns, I will conduct an in-depth analysis of customer journey data, product reviews, and conversion trends to address the key questions:

1. Identifying factors influencing customer engagement and site interactions.
2. Analyzing customer drop-off points in the journey.
3. Evaluating the impact of customer reviews on purchasing behavior.
4. Determining the best-performing products, locations, and customer segments.

I will begin by exploring the provided datasets to extract key insights and trends. Once I have preliminary findings, I will share an initial report outlining observations and potential recommendations for optimization.

Please let me know if there are any additional aspects you would like me to focus on. I will keep you updated on my progress and aim to provide actionable insights to enhance your marketing effectiveness.

Looking forward to collaborating on this analysis.

Best regards,
Kavya
Data Analyst, ShopEasy

2

Subject: Re: Request for Customer Feedback Analysis

Dear John Smith,

Thank you for reaching out. I understand the challenges ShopEasy is facing regarding customer satisfaction and engagement. A data-driven approach will be crucial in identifying key issues and improving customer retention.

To address your concerns, I will conduct an in-depth analysis of customer reviews, ratings, and purchase history, focusing on:

1. Sentiment analysis of customer reviews to gauge overall satisfaction.
2. Identification of key complaints and areas for improvement.
3. Detecting patterns between negative reviews and product performance.
4. Providing actionable recommendations to enhance customer experience.
5. Developing structured insights to help guide future strategies.

Using SQL and Python, I will extract meaningful insights to help improve customer retention and satisfaction. I will share an initial report with key findings and recommendations soon.

Please let me know if you have any specific priorities or additional areas you'd like me to focus on. Looking forward to collaborating on this analysis.

Best regards,
Kavya
Data Analyst, ShopEasy

1. Problem Statement

Understanding customer behavior is essential for optimizing business strategies and improving customer satisfaction. ShopEasy aims to analyze customer interactions, purchase patterns, sentiment trends, and marketing effectiveness to gain actionable insights. The objective is to enhance engagement, optimize marketing spend, and boost conversions by leveraging data-driven decisions.

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2. Introduction

Customer behavior analysis helps businesses tailor their offerings to customer needs, leading to increased sales and customer retention. This project explores customer journeys, sentiment trends, high-value customer segmentation, and marketing impact using SQL and Python-based analytics.

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3. Objectives

The key objectives of this analysis include:

- Tracking customer journey progress through different stages.
- Analyzing customer reviews to understand sentiment and satisfaction.
- Identifying high-value customers based on purchasing behavior.
- Measuring marketing effectiveness through engagement and conversions.
- Optimizing product offerings based on customer feedback.

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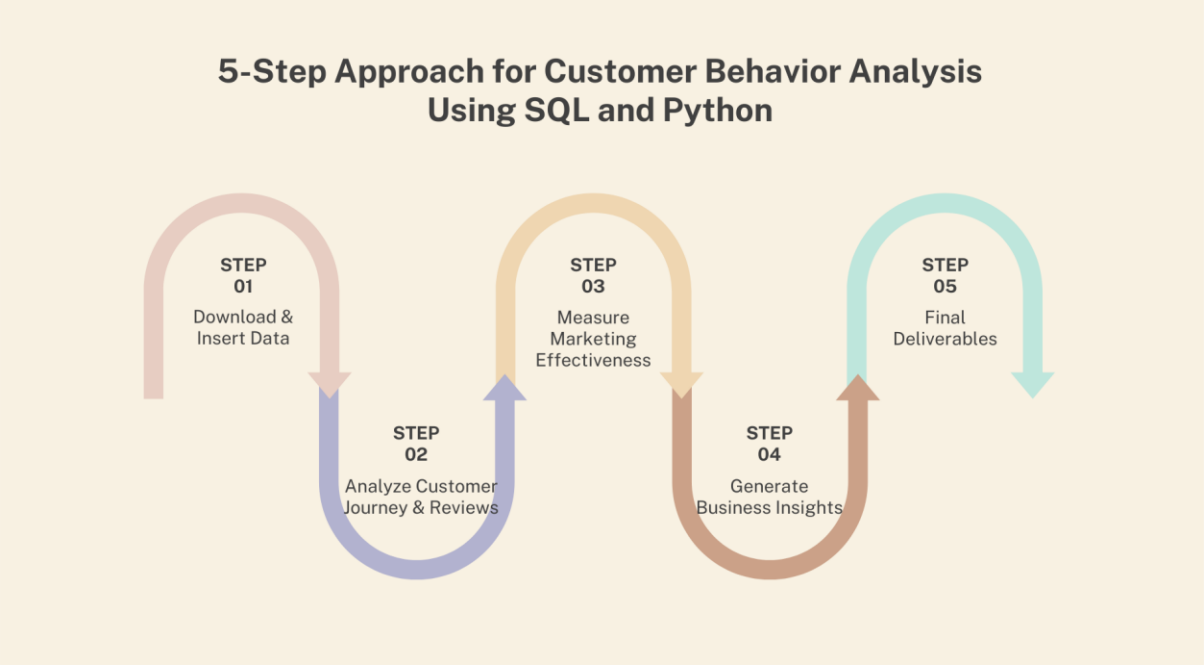
4. Methodology

The analysis follows a structured methodology:



4.1 Data Collection

- Customer transaction records
- Web interactions & clickstream data
- Customer reviews and sentiment data
- Marketing campaign performance metrics

4.2 Data Processing

- Cleaning and preprocessing data using Pandas & SQL
- Merging datasets for a holistic analysis
- Creating views for key metrics

4.3 Analysis Techniques

- SQL queries for data extraction and aggregation
- Sentiment analysis using NLP techniques
- Clustering for customer segmentation
- Trend analysis for seasonal variations
- Visualization of insights using Matplotlib & Seaborn

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5. Requirements Used

5.1 Software & Tools

- **SQL Database** – Data storage & retrieval
- **Python (Pandas, NumPy, Matplotlib, Seaborn)** – Data processing & visualization
- **NLTK/TextBlob** – Sentiment analysis
- **Jupyter Notebook** – Development & reporting

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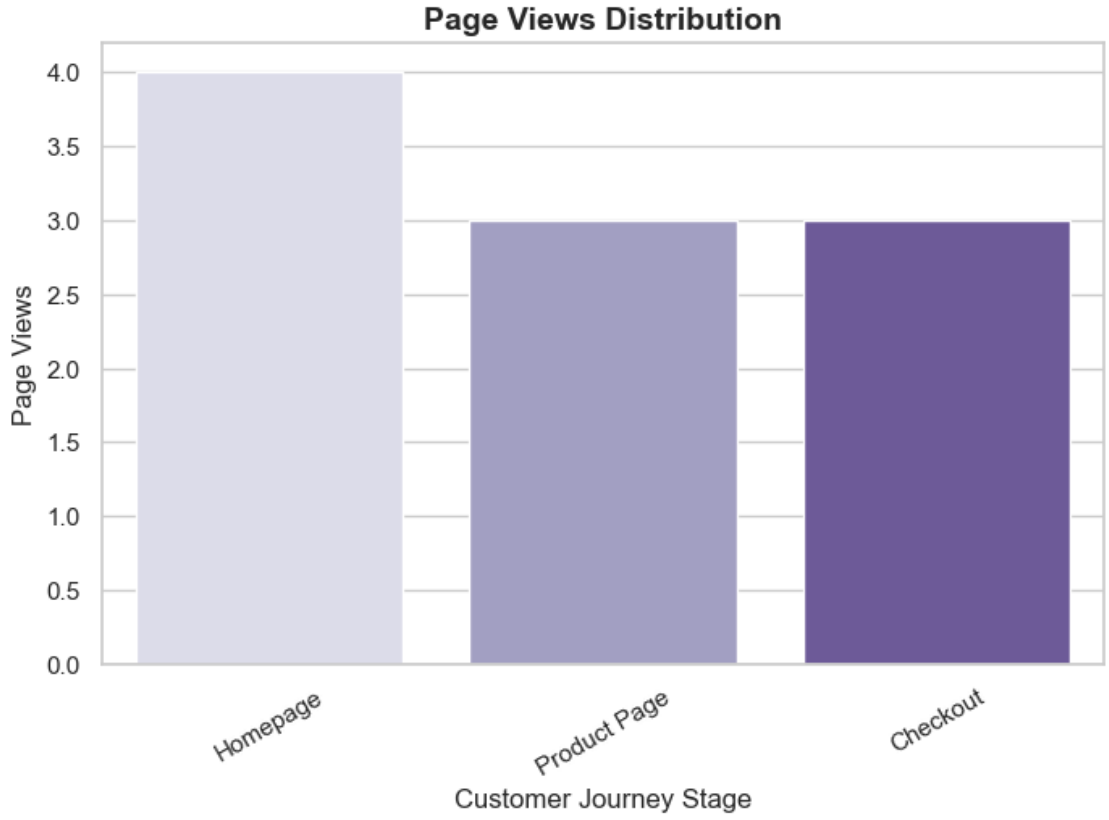
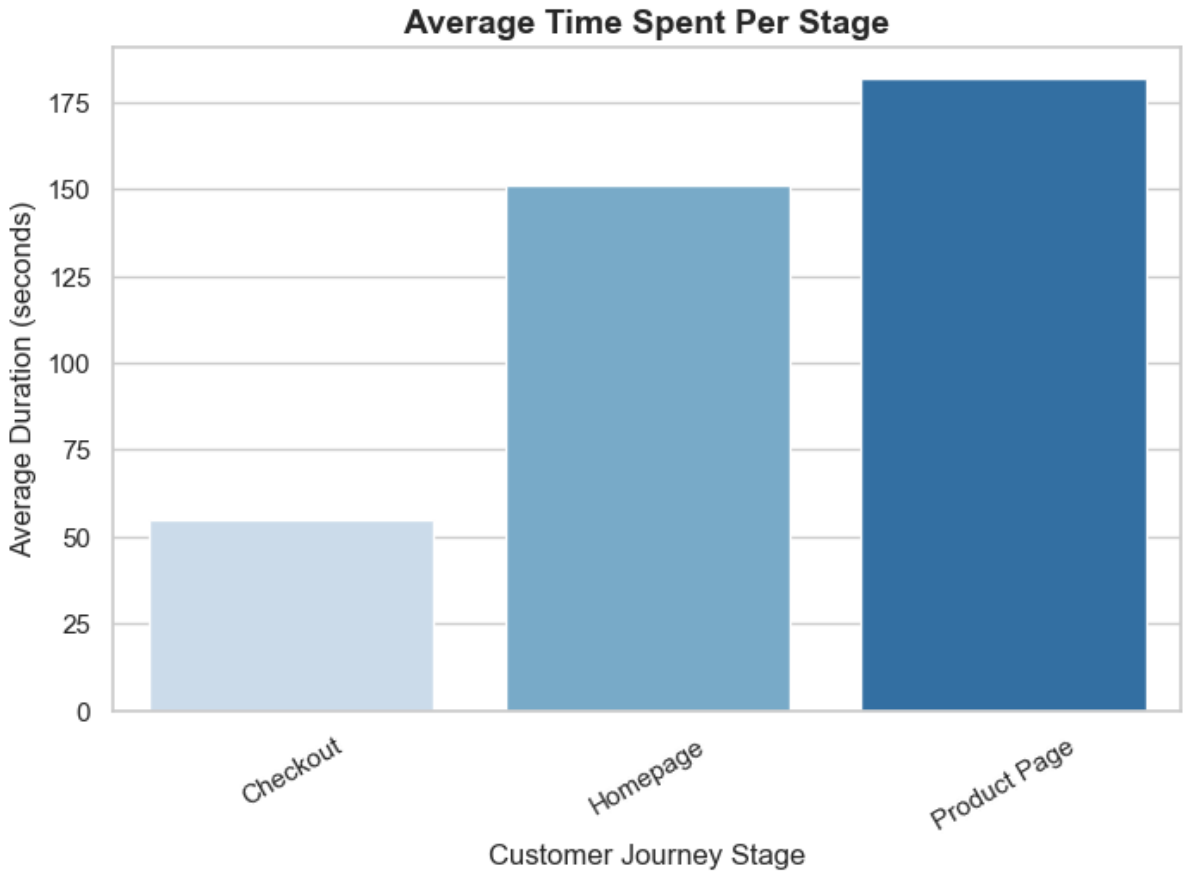
6. Results and Insights

6.1 Customer Journey Analysis

The customer journey was analyzed through different touchpoints, from initial engagement to final purchase.

- **Engagement Stage**: Analyzed how customers interact with marketing campaigns.
- **Consideration Stage**: Identified browsing behavior and product interests.
- **Purchase Stage**: Measured conversion rates and order frequency.

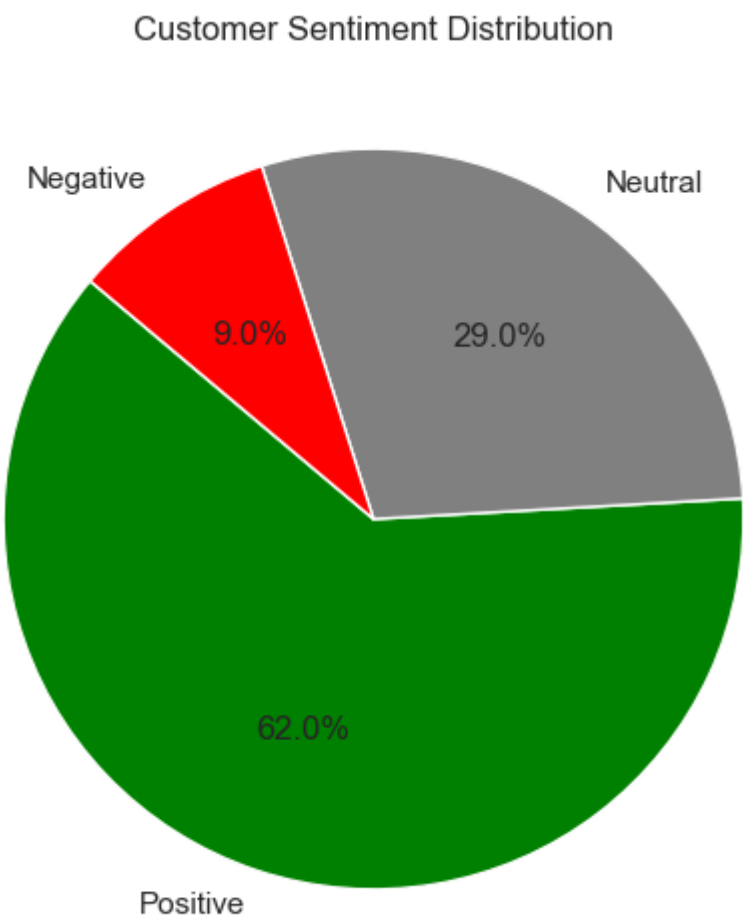

Page Views Distribution
Page Views
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Homepage
Product Page
Checkout
Customer Journey Stage


Average Time Spent Per Stage
Average Duration (seconds)
175
150
125
100
75
50
25
0
Checkout
Homepage
Product Page
Customer Journey Stage

6.2 Sentiment Analysis

Customer reviews were processed using NLP techniques to determine sentiment polarity.

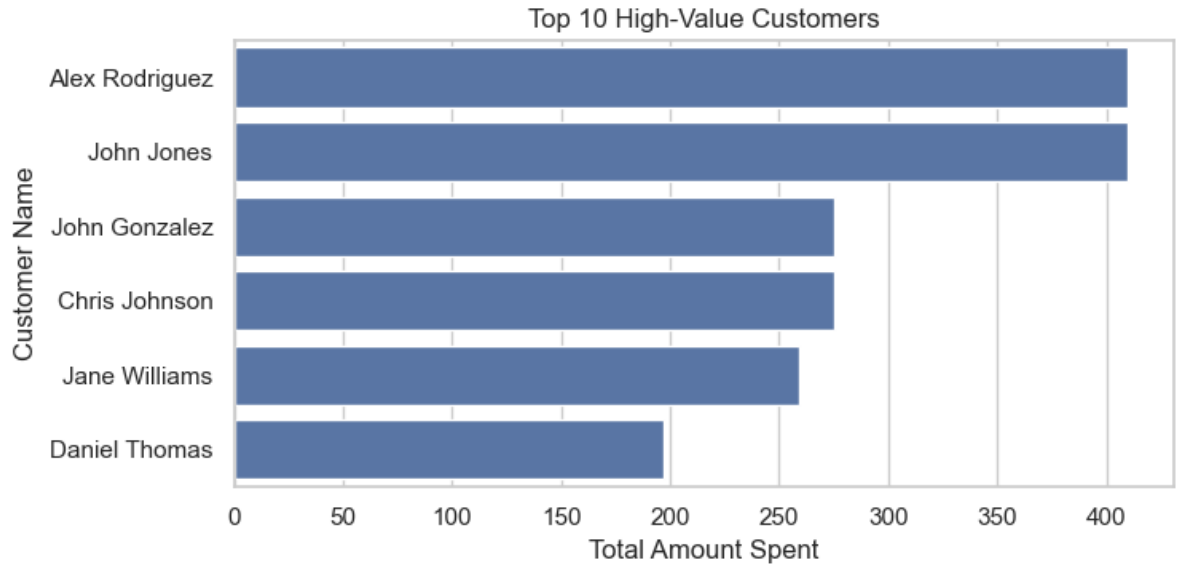
- **Positive Sentiment**: Indicated satisfied customers and successful products.
- **Negative Sentiment**: Highlighted areas for product improvement.



6.3 High-Value Customer Identification

High-value customers were identified based on:

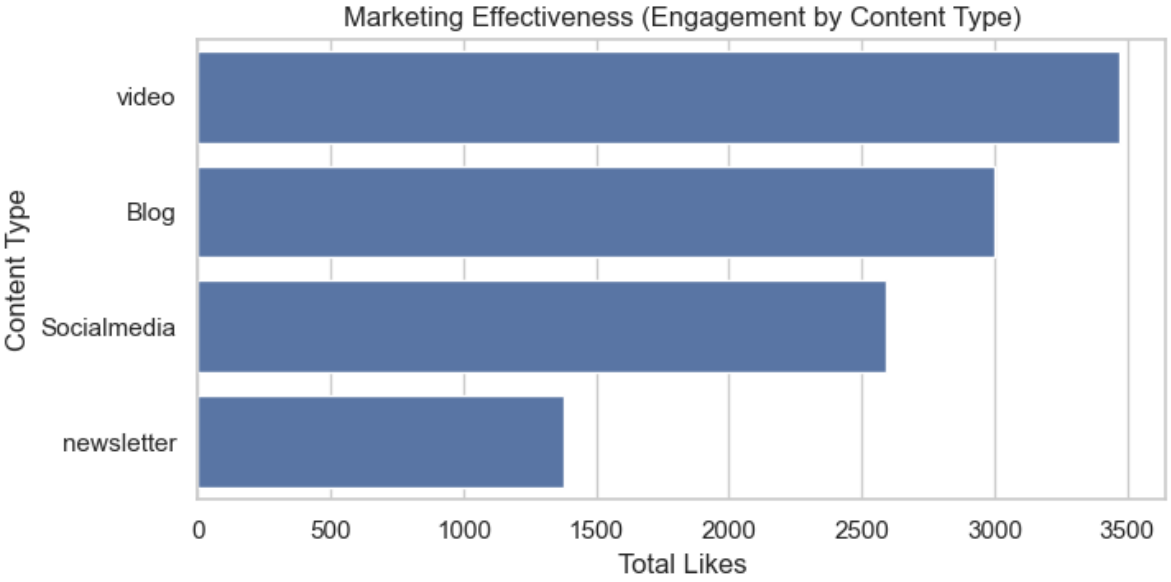
- **Total purchase value**
- **Purchase frequency**

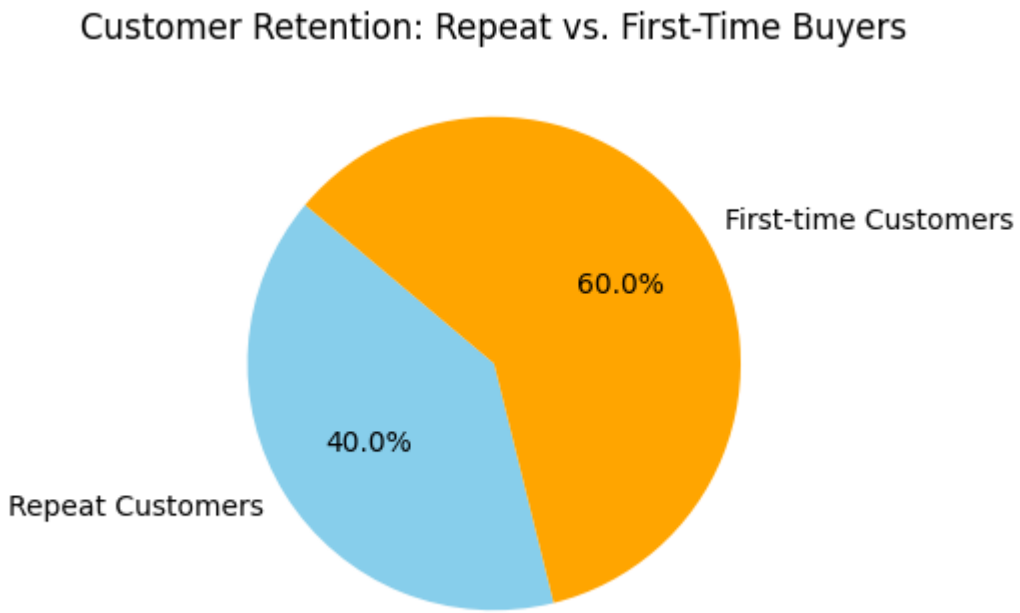


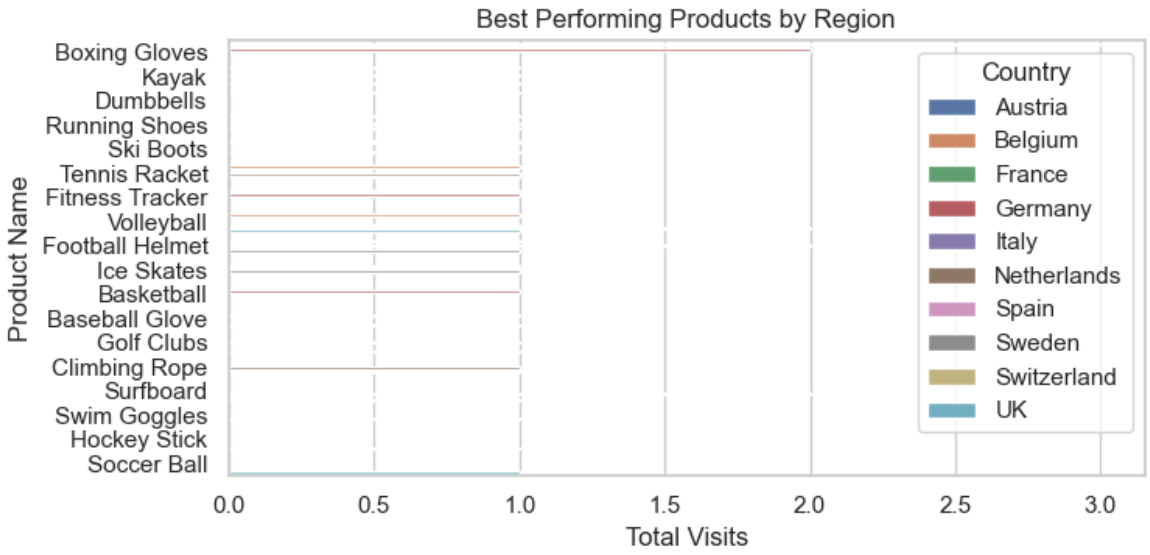
6.4 Marketing Effectiveness Analysis

Marketing effectiveness was measured by:

- **Click-through rates (CTR)**
- **Repeat vs first time buyers**
- **Best-performing products per region**.







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7. Recommendations

- **Improve Checkout Process:** Optimize payment gateway to reduce cart abandonment.
- **Enhance Customer Support:** Address key complaints from sentiment analysis.
- **Target High-Value Customers:** Implement exclusive loyalty programs.
- **Refine Marketing Strategy:** Focus on high-performing channels like social media.
- **Optimize Product Listings:** Feature high-demand products based on data insights.

Business Recommendations

- Personalize offers for top customers to boost loyalty and repeat purchases.
- Increase stock and marketing for top-performing products to maximize revenue.
- Offer loyalty programs or special promotions to keep customers engaged.
- Improve product quality and customer support to enhance user satisfaction.
- Actively respond to negative reviews and address customer concerns promptly.

8. Conclusion

This analysis provides valuable insights into customer behavior, purchase patterns, and marketing effectiveness. Implementing the recommendations can lead to better engagement, improved customer satisfaction, and increased revenue.