Data science

Mini Project – 1

The Project Report On

Customer Behaviour Analysis

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

Name: Kavya P P

1

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

Dear Jane Doe,

Thank you for reaching out. I have completed the analysis of customer engagement, conversion patterns, and marketing performance for ShopEasy. Below are the key insights and findings:

- Customer Engagement Factors: Identified major drivers and barriers affecting user interactions.
- Drop-off Analysis: Pinpointed critical stages where customers tend to exit the journey, helping refine marketing strategies.
- Impact of Reviews on Purchasing Behavior: Established correlations between review sentiment and conversion rates, highlighting areas for improvement.
- Performance Analysis: Assessed top-performing products, locations, and customer segments to guide targeted marketing efforts.

Based on these insights, I have provided actionable recommendations to enhance engagement, optimize conversion rates, and improve overall marketing effectiveness. The detailed report is attached for your review.

Please let me know if you need any further analysis or clarification. Looking forward to discussing the next steps.

Best regards, Kavya Data Analyst, ShopEasy



Subject: Re: Request for Customer Feedback Analysis

Dear John Smith,

Thank you for reaching out. I have completed the analysis of customer reviews, ratings, and purchase history to uncover key insights into customer sentiment and engagement. Below are the primary findings:

- Sentiment Analysis: Identified prevalent negative sentiments and recurring themes in customer reviews.
- Key Complaints & Improvement Areas: Highlighted major concerns regarding product quality, delivery, and customer service.
- Pattern Identification: Found strong correlations between negative reviews and lower product performance.
- Recommendations: Provided targeted strategies to enhance customer satisfaction, increase repeat purchases, and improve overall engagement.

The detailed report is attached with actionable insights to enhance the customer experience. Let me know if you need further analysis or clarifications. Looking forward to your feedback.

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.

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.

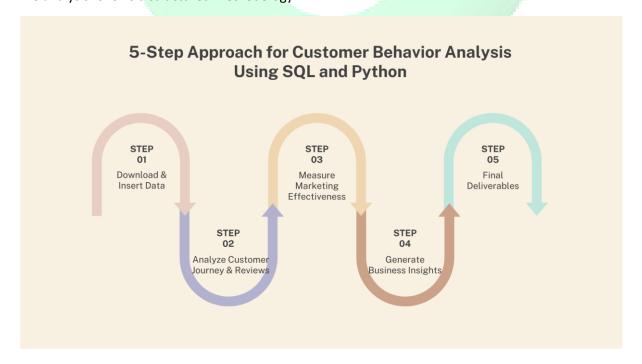
3. Objectives

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.

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

5. Requirements Used

5.1 Software & Tools

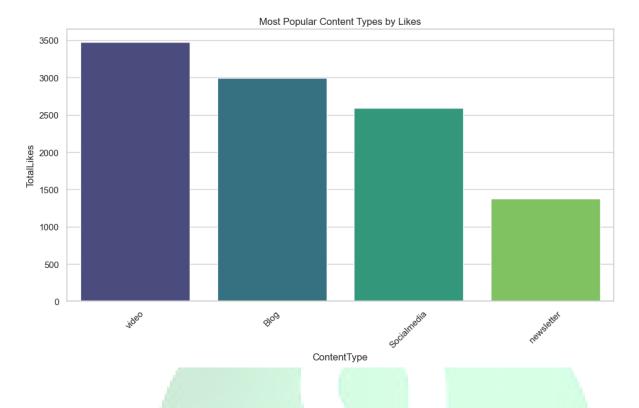
- SQL Database Data storage & retrieval
- Python (Pandas, NumPy, Matplotlib, Seaborn) Data processing & visualization
- NLTK/TextBlob Sentiment analysis
- Jupyter Notebook Development & reporting

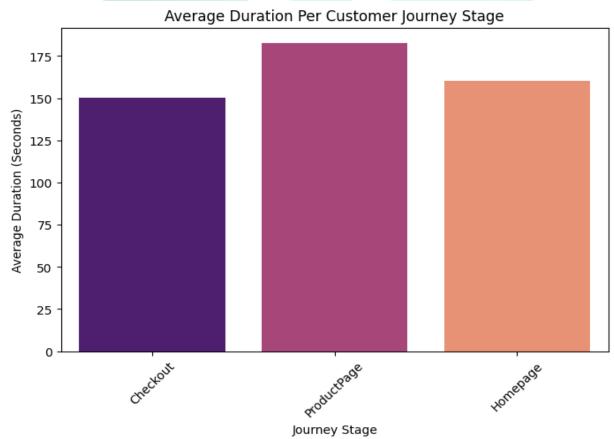
6. Results and Insights

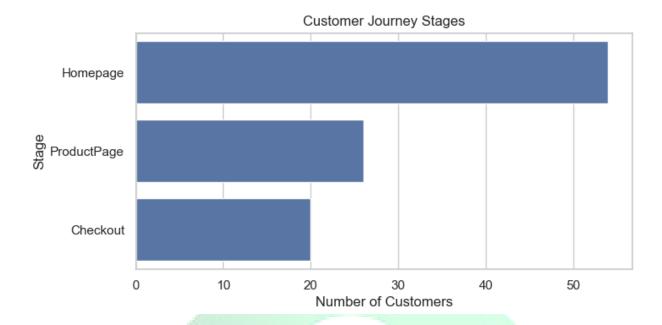
6.1 Customer Journey Analysis

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.







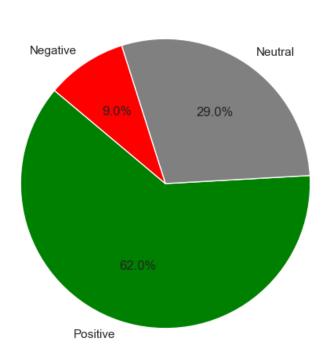
6.2 Sentiment Analysis

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

- Positive Sentiment: Indicated satisfied customers and successful products.
- Neutral Sentiment: Identified mixed feedback where customers were neither highly satisfied nor
 dissatisfied, indicating areas with potential for improvement

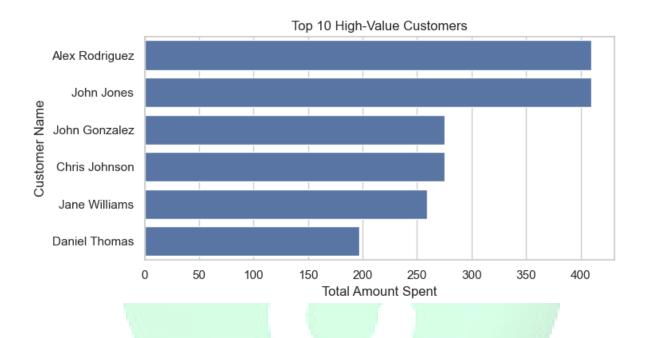
Customer Sentiment Distribution

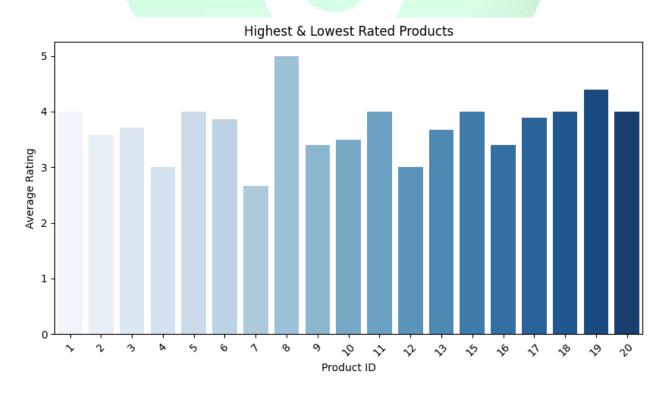
• Negative Sentiment: Highlighted areas for product improvement.



6.3 Customer Reviews Analysis

- High-Value Customer Identification
 - High-value customers were identified based on:
 - ✓ Total purchase value
 - ✓ Purchase frequency
- Highest-rated and lowest-rated products





6.4 Marketing Effectiveness Analysis

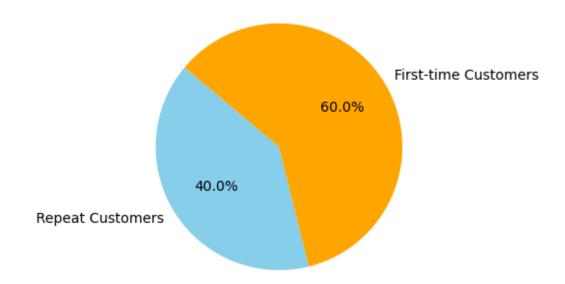
Marketing effectiveness was measured by:

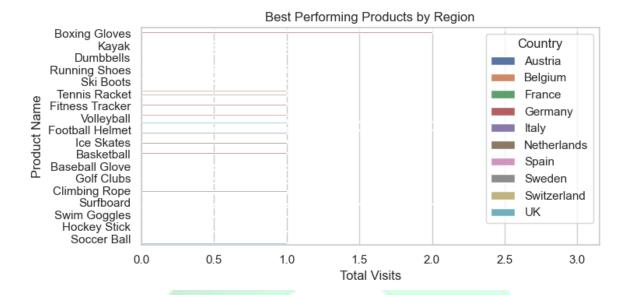
- Click-through rates (CTR)
- Repeat vs first time buyers
- Best-performing products per region.

Customer Retention:

Customer ID	Customer Name	JourneyCount
1	Emma Anderson	2
2	Sarah Brown	2
9	Emily Thomas	3
12	James Lopez	2

Customer Retention: Repeat vs. First-Time Buyers





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.