

Capstone Project Submission

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Githublink: <https://github.com/Mehfooz-1806/Unsupervised-ML---Myntra-Online-Retail-Customer-Segmentation>

Project Overview

This project analyzes the online retail operations of Myntra Gifts Ltd., a UK-based division of Myntra, focusing on purchasing trends, product performance, customer behavior, pricing strategies, and inventory management. The study aims to provide actionable insights for sales growth and operational efficiency.

Data Cleaning:

- Handled missing values in 'CustomerID' and 'Description' fields.
- Standardized 'InvoiceDate' format and converted product descriptions to lowercase.

Exploratory Data Analysis:

- Identified peak sales periods, with the highest volume in November 2011.
- Analyzed purchasing behavior, showing the highest sales on Thursdays and peak hours from 11 AM to 1 PM.
- Evaluated best-selling and least-selling products to understand demand trends.
- Determined top revenue-generating products, with "Regency Cakestand 3 Tier" leading.

Data Pre-processing & Feature Engineering:

- Created new features like total revenue, purchase frequency, total quantity, and recency.
- Standardized numerical values using StandardScaler for clustering analysis.

Model Implementation:

- Applied K-Means clustering with an optimal K value (3 or 4) to segment customers.
- Conducted Hierarchical Clustering to confirm segmentation patterns.

Modelling:

- Cluster 0: Low-spending customers needing engagement strategies.
- Cluster 1: VIP customers benefiting from personalized promotions.
- Cluster 2: Moderate buyers who can be targeted for frequent purchases.

Data Visualization:

- Used graphs to illustrate sales trends, customer distribution, and segmentation insights.
- Correlated unit price with revenue to optimize pricing strategies.
- Identified fast-moving and slow-moving products to enhance inventory management.

Model performance:

- K-Means and Hierarchical Clustering effectively segmented customers.

- Identified actionable strategies to boost retention and optimize stock levels.

Conclusion:-

- Customer segmentation enables tailored marketing, inventory planning, and pricing optimization.
- Identified high-value customers for retention strategies and lost customers for re-engagement.
- Insights aid marketing, inventory, and finance teams in data-driven decision-making.

This analysis provides a strong foundation for enhancing sales performance, optimizing inventory, and improving customer engagement at Myntra Gifts Ltd.

Problem statement:

Myntra Gifts Ltd. operates in the online retail sector, where understanding consumer behavior, optimizing product offerings, and managing inventory efficiently are crucial for profitability. The company seeks insights into purchasing trends, product demand, and pricing impacts to improve marketing efforts, streamline inventory planning, and enhance customer segmentation. The key challenge is to analyze the dataset effectively to extract meaningful patterns that can inform business decisions and drive sales growth.

Conclusions:

Successfully segmented customers into meaningful groups: Customers were grouped based on their purchasing patterns using clustering techniques (e.g., K-Means and Hierarchical Clustering). This segmentation allows the business to tailor its marketing and sales strategies to different customer groups.

Identified high-value customers to increase retention: High-spending customers (VIPs) were recognized as an important segment. Strategies like exclusive promotions, loyalty programs, and priority customer support can be used to retain these customers and encourage repeat purchases.

Found lost customers to reactivate them: Some customers showed infrequent purchases or had stopped engaging with the platform. By identifying them, businesses can use email campaigns, discounts, or personalized offers to re-engage and bring them back.

Created insights to optimize marketing and inventory strategies: Understanding customer behavior helps in targeted marketing, ensuring that promotions reach the right audience. It also aids in inventory management, ensuring that popular products are well-stocked while reducing surplus inventory for low-demand items.

Overall, these insights help the company improve customer satisfaction, boost revenue, and streamline operations.