Online Retail Analysis

05.13.2023

_____

Fouad Farraj
SalesBoost Analytics

Project Overview

In this project, I will be acting as a retail analyst for an online retailer. The aim of this project is to analyze some of the key metrics related to the retail business, such as sales trends, customer behavior, product performance, customer segmentation and inventory management. The ultimate goals of this project is to refine the product offering, increase order size, and optimize e-commerce strategies.

Process

1. Sales Performance Analysis:

2. Profitability Analysis:

3. Customer Segmentation:

4. Geographic Analysis:

5. Time-Based Analysis:

6. Inventory Analysis:

7. Customer Retention Analysis:

8. Market Basket Analysis

Goals

1. Boost revenue through promotion of top-performing products.
2. Enhance profit margins with strategic price adjustments.
3. Increase sales volume by studying price-change impacts on customer behavior.
4. Foster customer loyalty and repeat business via segment-specific marketing strategies.
5. Improve service level and promotional plans by pinpointing peak shopping periods.
6. Streamline inventory management to decrease carrying costs and avoid stockouts, focusing on slow-moving or overstocked items.
7. Expand revenue by leveraging customer lifetime value through dedicated retention strategies.
8. Develop a strategy to increase basket size using a Market Basket Analysis.

1. Sales Performance Analysis:

I. Top 10 products by revenue

Revenue by Product (Top 10)
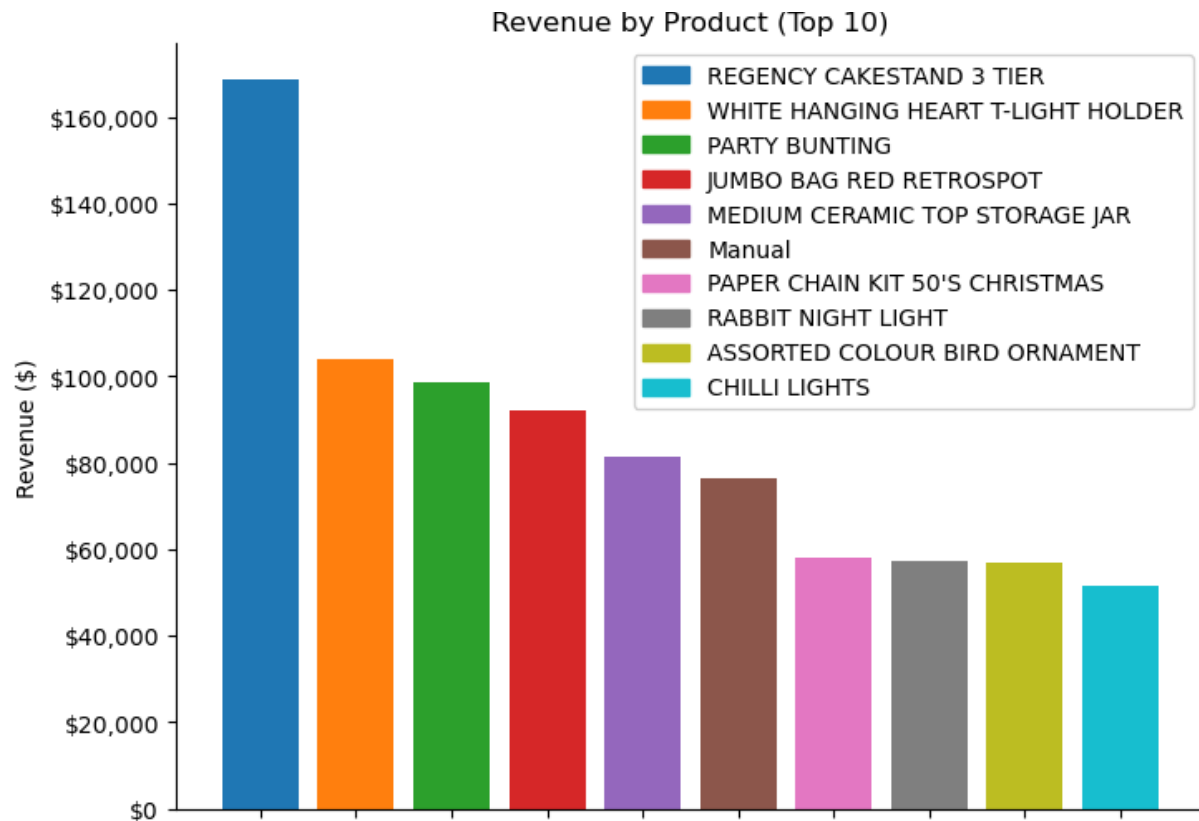
II. Recommendations and insights:

Now that we have our top products by revenue we can do a few things with this information:

Identify customer trends: Look for commonalities among the top 10 products. Are they all in a specific category or price range? What age group or demographic is buying them? Understanding customer trends will help you better target your marketing and product development efforts.

Focus on your best-sellers: Allocate more resources to your top-selling products. You can increase your margins by negotiating better prices from suppliers or streamlining your supply chain.

Upsell and cross-sell: Use your top-selling products to drive sales of related products. Categories should be set up for all products to help with segmentation and cross-selling.

Optimize product listings: Make sure your top-selling products are easy to find and purchase on your website. Optimize product listings with clear descriptions, high-quality images, and customer reviews.

Explore new markets: Consider expanding your sales channels to reach new markets. You could sell your top-selling products on Amazon or eBay to reach a wider audience.

Develop new products: Develop new products or product variations of these products. This can help you capture more market share and increase your revenue. Maybe there's room for a higher-end 'CHILLI LIGHTS', this can potentially drive higher revenue from this product demand and ultimately better margins.

Improve customer service: Make sure you are providing excellent customer service to retain existing customers and attract new ones. Respond promptly to inquiries and complaints, and offer special promotions or discounts to loyal customers.

III.   Log product Tail:

Our analysis revealed a lengthy product tail, where 2,314 products generate less than $1000 in annual revenue. This warrants further investigation. Generally, in situations with a pronounced product tail, we recommend:

Bundle or package them: Combine low-selling products into bundles or packages to create more appealing offerings. This can help increase their perceived value and attract customers who may be interested in multiple items.

Promotions and discounts: Offer special promotions, discounts, or limited-time offers specifically for the low-selling products. This can generate interest and encourage customers to give them a try.

Cross-selling and upselling: Promote the low-selling products as complementary items to more popular or higher-margin products. Cross-selling and upselling techniques can help increase the visibility and sales of these products.

Target niche markets: Identify niche markets or specific customer segments that may have a higher interest in the low-selling products. Tailor your marketing efforts to reach those audiences through targeted advertising or partnerships.

Enhance product descriptions and visuals: Improve the product descriptions, images, and other visuals to make the low-selling products more appealing and engaging. Highlight unique features, benefits, or potential use cases that might resonate with customers.

Collaborate with influencers or affiliates: Partner with influencers or affiliates in your industry who can promote the low-selling products to their audience. Their endorsement or recommendation can help generate awareness and boost sales.

Explore new sales channels: Consider expanding your sales channels to reach a broader customer base. Explore options such as online marketplaces, social media platforms, or niche-specific platforms where your low-selling products might find a more receptive audience.

Customer feedback and reviews: Encourage customers to provide feedback and reviews for the low-selling products. Positive reviews can increase credibility and attract new customers. Address any negative feedback constructively to improve the products and customer satisfaction.

Product positioning or rebranding: Evaluate the positioning and branding of the low-selling products. It might be necessary to reposition or rebrand them to better align with customer needs, trends, or preferences. This can help create a fresh perspective and increase their appeal.

Product improvements or variations: Assess if there are any improvements or variations you can make to the low-selling products based on customer feedback or market trends. This could involve tweaking features, introducing new sizes or colors, or enhancing functionality to better meet customer demands.

It's essential to track the results of any initiatives you implement and adjust your strategies accordingly. The goal is to find the most effective approaches for addressing low-selling products and maximizing their sales potential, or eliminate them altogether.

2. Profitability Analysis:

I.   Profitability Analysis

Our ability to perform a full profitability analysis was limited due to the unavailability of product cost data. A comprehensive profitability analysis would have provided additional insights such as:

Overall Profitability: This is the most direct insight. By comparing revenue to expenses, you can understand if your online store is currently profitable, and how profitability may have changed over time.

Product Profitability: Profitability analysis often includes a breakdown by product or product category. This can show which items are the most profitable and which are the least. You might find that a small subset of your products are responsible for a large portion of your profit. We can focus on driving sales by using those products for suggested addons.

Customer Profitability: Similar to product profitability, you can also analyze profitability by customer. This might involve segmenting customers by characteristics like location, purchase frequency, or average order size.

Marketing ROI: If you're spending money on marketing and advertising, profitability analysis can help determine the return on investment (ROI) for these activities. For example, you might find that certain marketing channels drive sales of more profitable products vs others.

Pricing Strategy: If your analysis shows low profitability despite high sales volumes, it might indicate a need to revisit your pricing strategy. Alternatively, if volumes are low but profitability is high, it could suggest that there's room to experiment with lower prices.

Growth Opportunities: Profitability analysis can also help identify opportunities for growth. For example, if certain products or customer segments are particularly profitable, you might look for ways to sell more of these products or attract more of these customers.

Cash Flow Management: Profitability doesn't necessarily equate to positive cash flow, but it drives positive cashflow. Understanding the timing of income and expenses can help manage cash flow, which is crucial for any business.

3. Customer Segmentation:

I.   Customer Segmentation using RFM (Recency, Frequency & Monetary)

Recency (R): This is how recent the customer's last purchase was. Customers who have purchased more recently are often more engaged and more likely to make future purchases.

Frequency (F): This is how often the customer makes a purchase. Customers

who purchase frequently are more engaged and valuable than those who purchase occasionally.

Monetary (M): This is how much the customer spends. Customers who spend more are, of course, more valuable to the business.
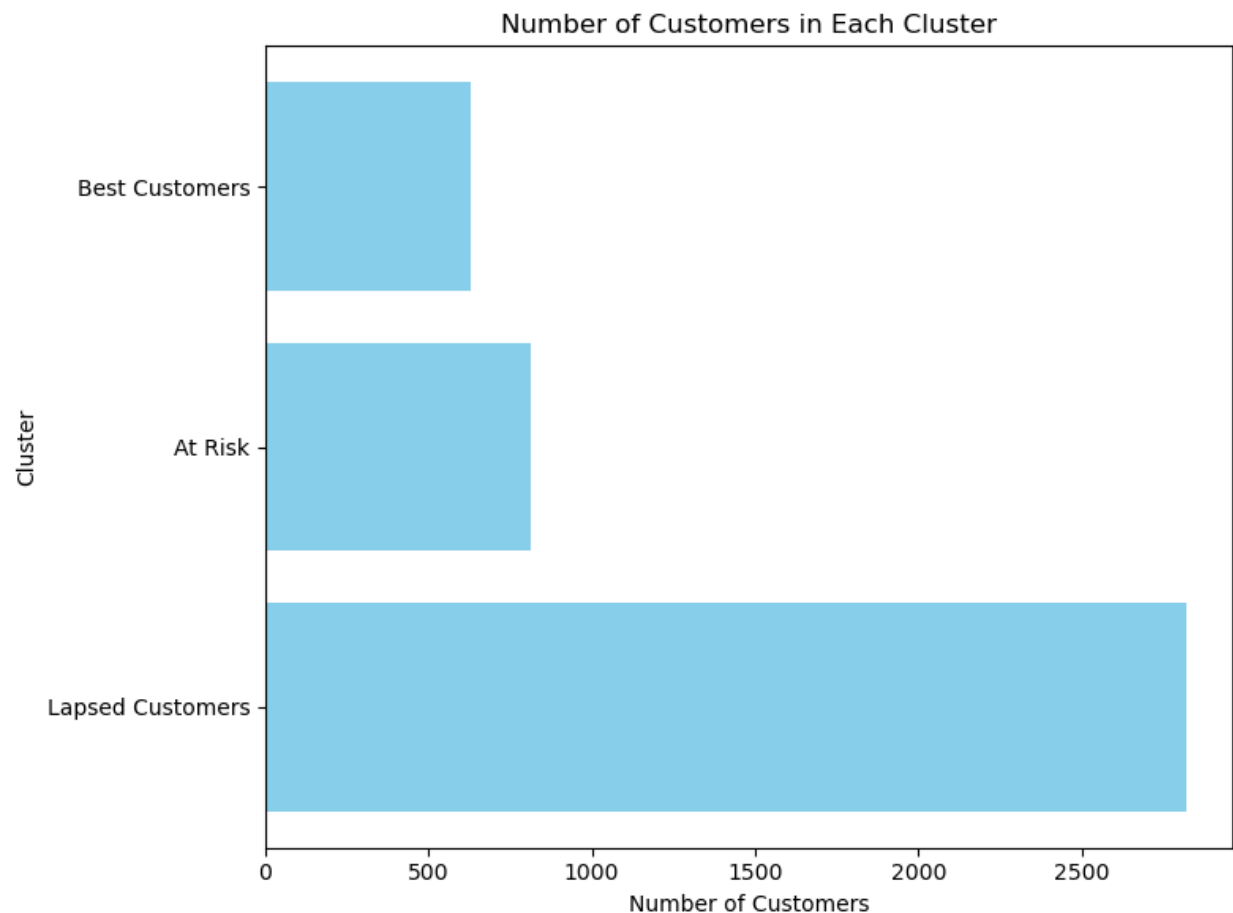
Best Customers (High Monetary, High Frequency, Low Recency):

These are your most valuable customers. They've made purchases recently, frequently, and they're high spenders.

Action: Aim to keep these customers satisfied and engaged. Send them personalized emails thanking them for their patronage. You could also offer them exclusive deals or access to new products before everyone else. Create a loyalty program to reward them for their continued support.

At Risk (Medium Monetary, Medium Frequency, Medium Recency):

These customers used to shop frequently and spend a decent amount but haven't made a purchase in a while. Or have a lower than average order size.

Action: You should aim to re-engage these customers as quickly as possible. Send them personalized offers based on their previous purchases, or reminders about items they may have left in their cart. Consider offering them a special discount to entice them to make a purchase. Apply MBA (Market Basket Analysis) to increase order size.

**Lapsed Customers (High Recency, Low Frequency, Low Monetary):**

These are customers who haven't purchased in a long time. They've made few purchases and those purchases were of lower value.

Action: Re-engaging lapsed customers can be difficult and costly. However, you can try sending them surveys to understand why they stopped buying. If they had a bad experience, you could try to rectify it. Offering them a re-engagement discount might also work. But remember, it's often more cost-effective to retain existing customers than to re-engage lapsed ones.

These 3 categories can be segmented further to tailor the marketing approach to different segments of these segments. For example, 'Best Customers' can be segmented to 'Whales', 'Future Whales' & 'Endangered Whales'. 'At Risk' can be segmented to 'my man', 'co'mon man' & 'bitches be slippin'.

4. Geographic Analysis:

I. Sales Performance by Country

Top 5 Countries by Sales
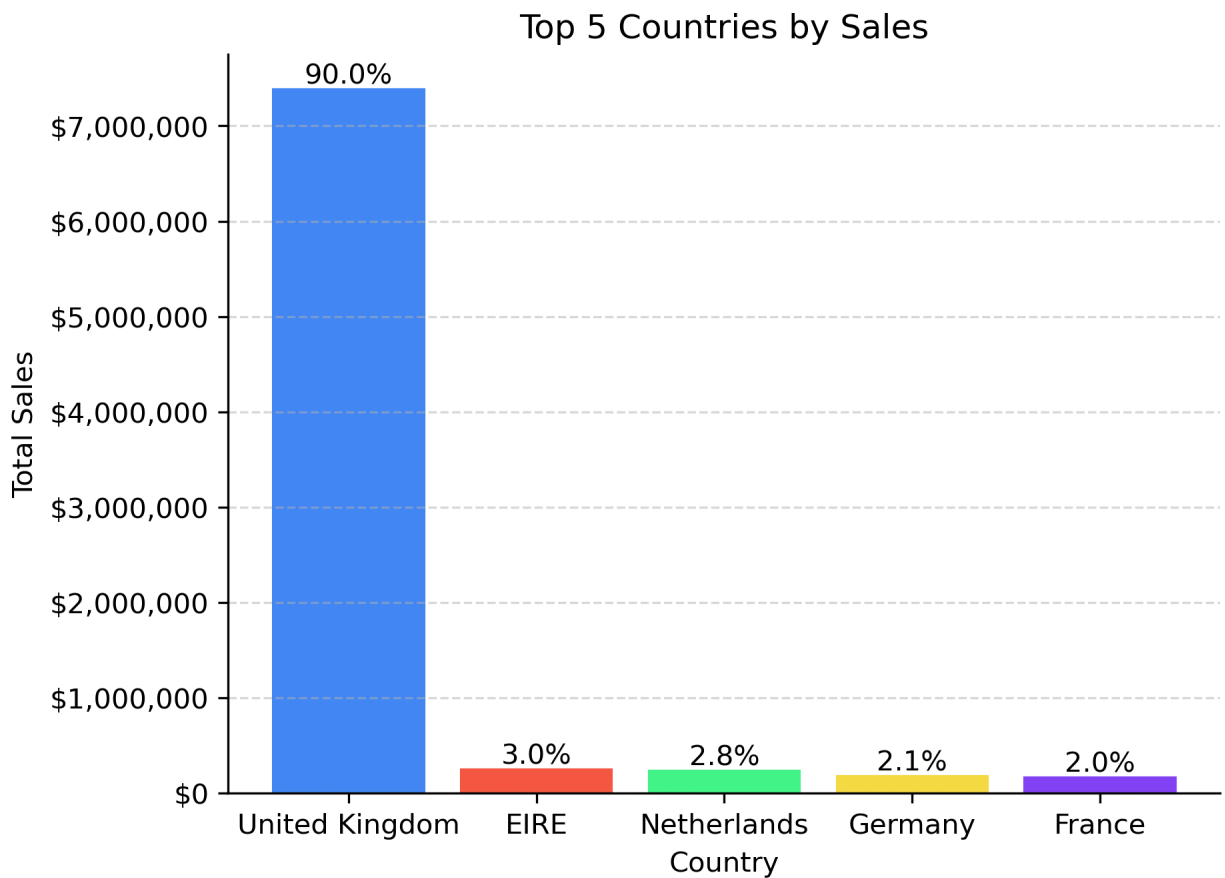
Geographical analysis of the sales data does not offer significant insights or opportunities due to a heavy skew towards the United Kingdom. Approximately 90% of the total sales are generated from the UK market. This concentration limits the diversity and variability of the data across different regions, making it challenging to draw meaningful conclusions or identify potential growth areas in other countries or regions. To gain more comprehensive insights and uncover new opportunities, it may be necessary to explore additional data sources or focus on specific segments within the UK market.

5. Time-Based Analysis:

I.   Determine Peak Shopping Hours and Days
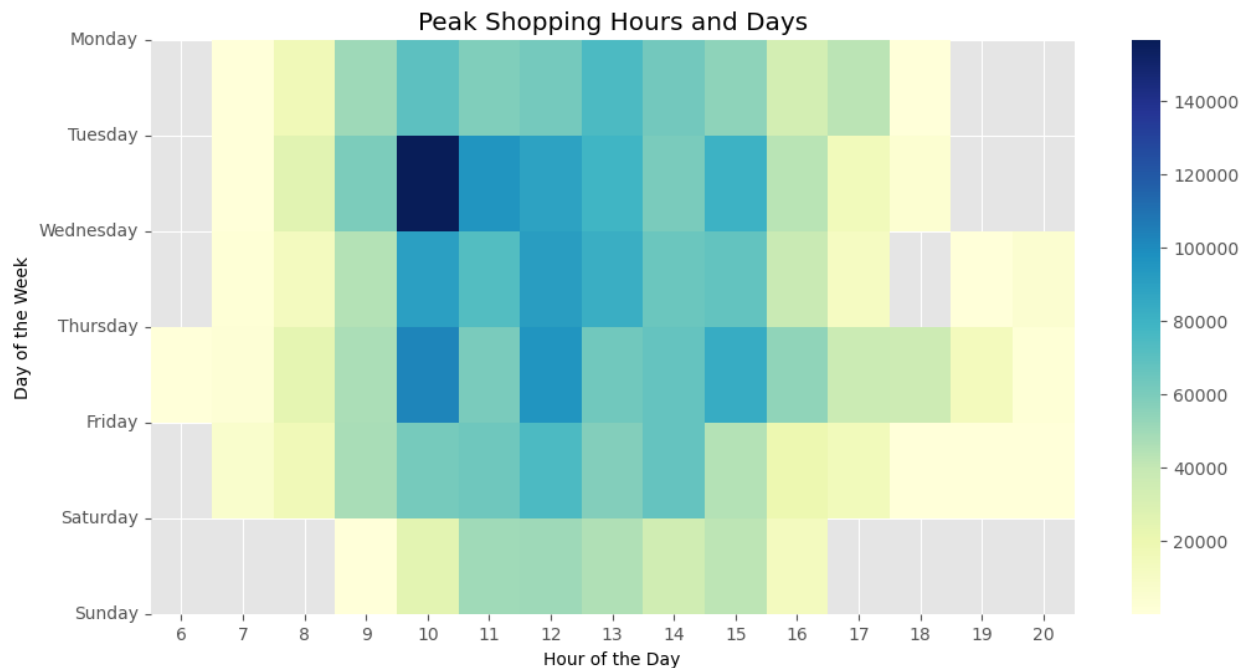
The heatmap from the peak shopping hours and days analysis can provide a wealth of insights that can guide business decisions. Here are some potential insights and actions you can consider:

Identify Peak Shopping Times: Your heatmap can clearly show when your customers are most active on your website.

Action: Use this information to ensure your website is prepared for heavy traffic during these hours. This can improve the online shopping experience and potentially increase conversions.

Identify Off-Peak Shopping Times: The heatmap will also show when your website has the least traffic.

Action: Schedule website maintenance or updates during these times to minimize the impact on customers. You might also consider time-specific promotions to encourage more activity during these quieter periods.

Promotional Activities and Marketing: Knowing when customers are most likely to be shopping can help inform your promotional activities and email marketing strategy.

Action: Schedule email campaigns, social media posts, or push notifications to go out just before or during these peak times to engage customers while they're most active.

Personalization: If you can tie the peak times to specific user demographics (like location), you can offer a personalized user experience.

Action: Personalize the shopping experience by featuring products during peak times that are popular in the customer's location or according to their previous browsing history.

Customer Support: If you provide live customer support, such as chat or phone support, peak shopping times can guide staffing decisions.

Action: Ensure that enough customer service representatives are available during peak shopping times to handle inquiries, assist with purchases, and resolve issues promptly.

Supply Chain Management: Peaks in online activity can impact your inventory and fulfillment operations.

Action: Coordinate with your supply chain to ensure that popular items remain in stock and that fulfillment operations are prepared to handle an increase in orders during peak times.

Sales Forecasting: Patterns of online shopping activity can help predict future sales and website traffic.

Action: Use these patterns to anticipate periods of high demand, allowing you to optimize inventory, staffing, and marketing efforts. You can also use this information to manage server resources and prevent website downtime during peak shopping times.

6. Inventory Analysis:

II.   Product Turnover Analysis using The ABC classification method
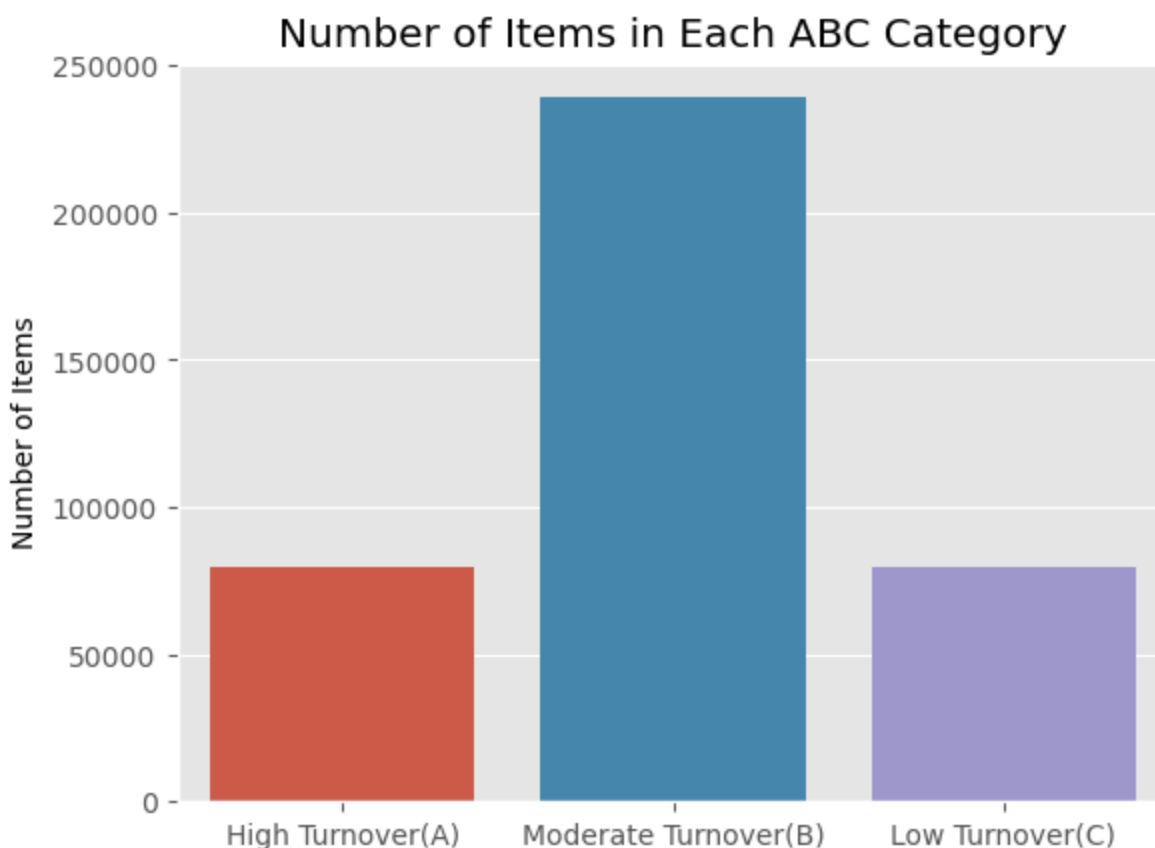
The insights derived from inventory analysis can be used to make important business decisions and optimizations.

Optimize Stock Levels: Identifying products with high turnover rates can help ensure that popular items remain in stock. At the same time, it can help identify slow-moving or overstocked items. This will help in maintaining an optimal inventory level, reducing carrying costs, and minimizing the risk of stockouts.

Action: Increase order quantities and frequency for high turnover items. For Low Turnover or overstocked items, consider decreasing order quantities, increasing promotion efforts, or even discontinuing the product if it's consistently not performing.

Improve Forecasting: The ABC classification can be used to improve sales forecasting. 'A' items are likely to contribute the most to future sales, while 'C' items will contribute the least.

Action: Prioritize 'A' items in sales forecasts. Consider the sales patterns of 'A' items when forecasting overall sales and when making purchasing and restocking decisions with suppliers.

Refine Marketing and Promotion: Understanding which items are most popular can also inform marketing and promotional strategies.

Action: Highlight 'A' items in marketing campaigns to attract customers. For 'C' items, consider targeted promotions to clear excess stock and improve turnover rates.

Negotiate with Suppliers: Having a clear understanding of your inventory turnover can also aid in negotiations with suppliers.

Action: For 'A' items, negotiate better prices or delivery times due to the high volume of orders. For 'C' items, negotiate smaller order sizes or longer payment terms to reduce carrying costs.

Inventory Management Policies: The ABC classification can guide inventory management policies. 'A' items may require tighter control and more frequent review than 'B' or 'C' items.

Action: Implement different inventory management policies for 'A', 'B', and 'C' items. For example, use a continuous review policy for 'A' items and a periodic review policy for 'B' and 'C' items.

7. Customer Retention Analysis:

I.   Customer Lifetime Value CLV

Customer Lifetime Value (CLV) is the total worth to a business of a customer over the whole period of their relationship. It's an important metric as it costs less to keep existing customers than it does to acquire new ones, so increasing the value of your existing customers is key.
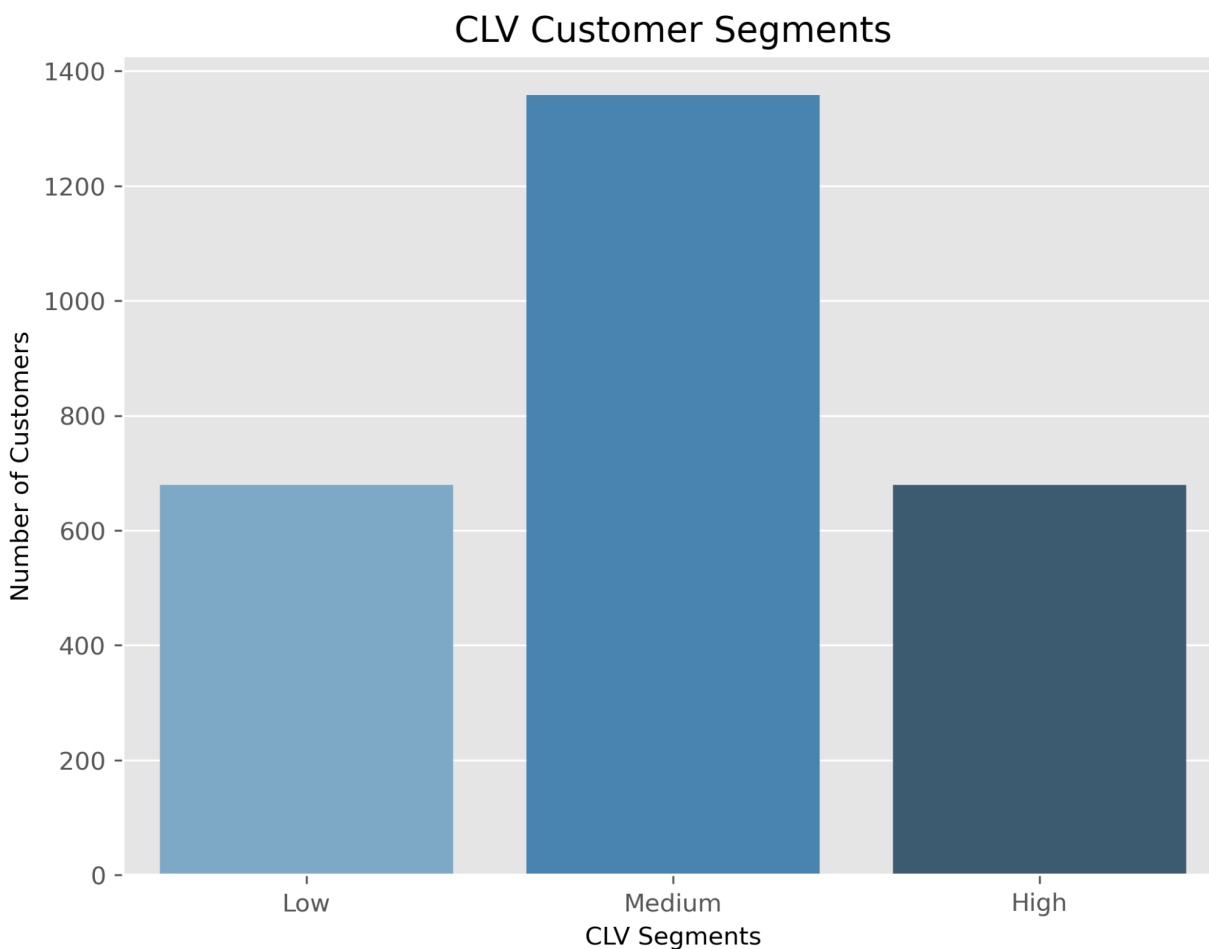
Our Customer Lifetime Value (CLV) analysis segmented our customer base into three groups: Low, Medium, and High CLV. The majority of our customers, totaling 1,358, fall into the Medium CLV category, regularly contributing to our revenue. However, we also have an equal distribution of Low and High CLV customers, each with 679 individuals.

Low CLV customers are those who provide less revenue, perhaps due to infrequent buying or lower spending. Conversely, High CLV customers significantly contribute to our business due to regular, high-value purchases.

This data gives us an opportunity to devise specific marketing strategies. For Medium CLV customers, we can focus on upselling and cross-selling. Retention efforts should be increased for High CLV customers to maintain their loyalty. For Low CLV customers, we need to explore strategies to enhance their purchase frequency or spend.

Average CLV by Segment
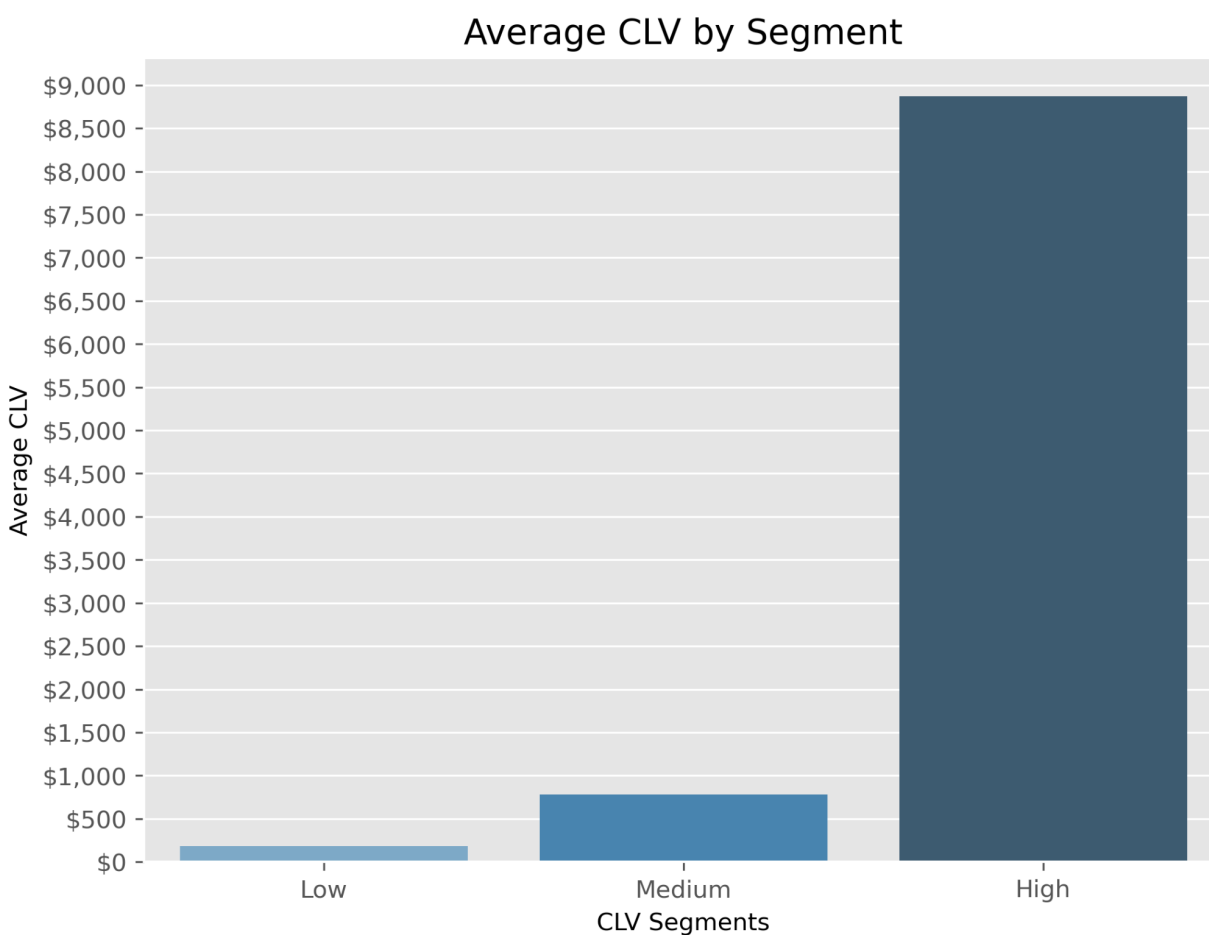
Customers in our Low CLV segment, contributing an average of roughly $180, provide growth opportunities through strategies to boost purchase frequency or transaction size.

Medium CLV customers, averaging around $782 in contributions, offer a stable revenue stream. Upselling and cross-selling could help increase their value.

High CLV customers, with an average value of about $8,869, are most valuable to us, making frequent, substantial purchases. Retention strategies such as loyalty programs can help maintain their engagement.

By understanding these segments, we can better tailor our marketing and engagement strategies to optimize Customer Lifetime Value.

It's important to note that our CLV calculation here is a simplified version. We're working with revenue data and haven't considered product costs. Thus, profit margins are not included in our analysis, which may lead to an overestimation of the true CLV. While this approach still offers valuable insights into customer behavior, a more comprehensive CLV calculation would also incorporate profit margins for a more accurate assessment of customer value.

8. Market Basket Analysis:

Market basket analysis is a type of analysis used to understand the purchase behavior of customers. It's based on the concept that if you buy a certain group of items, you are more (or less) likely to buy another group of items.

I exported the results to a CSV as this information can be very useful for the web development team, who can leverage these insights to implement features on a website that enhance cross-selling and upselling. Further explanation available in the technical report.

Additional work that can be done:

- Evaluating the impact of price changes on sales volume
- Dynamic Pricing Strategy

Conclusion:

This project successfully analyzed key retail metrics to drive online retail strategy. My insights identified top-selling products and high-value customers, enabling targeted

marketing and retention strategies. This, coupled with dynamic pricing and inventory management strategies, is expected to optimize profitability and revenue.

However, our Customer Lifetime Value analysis was a simplified version without profit margins; future work should include this for enhanced precision.

Geographic and time-based analyses informed logistics and promotional strategies, while our RFM and cost-volume-profit analysis further provided insights into customer behavior.

In summary, this project has laid a strong foundation for data-driven decision making, aiming to increase revenue, customer loyalty, and optimized inventory management. The derived insights will serve as a guide for refining the retail strategy and future growth.