

Enhancing Customer Engagement via RFM Segmentation: A Case Study of a UK Online Retail Store

About This Project

- This project focuses on **segmenting customers** based on 2010–2011 sales data from a UK-based store's online sales (Amazon).
- The dataset used is “**Online Retail**” from the [UCI Machine Learning Repository](#).
- The primary objective is to **analyze customer purchasing behavior** and segment customers to improve overall company performance.
- Insights from the analysis are used to advise the store on retaining its best customers and converting *At Risk* customers into higher-value segments, ultimately eliminating the *At Risk* category and boosting sales performance.
- A key strategic goal is to increase the proportion of *Champions* to **8%** by targeting *Big Spenders* and *Loyal Customers*, converting them into *Champions*, and then reorganizing the customer segments accordingly. (Some outliers are expected.)

Data Preparation & Cleaning

Data cleaning process was held with Python(Primarily Pandas library) due to relatively large size.

First, headers and rows were standardized with stripping and changing the text format as “CamelCase” format. Then the rows containing null cells were removed due to possible future calculating errors. Also time is separated from date column for preventing calculation errors.

Some columns which are unnecessary for analysis were removed.

Data types, shape of the data frame and part of data frame were routinely checked for being sure about the process.

For preparing the data for the segmentation and further analysis, new columns were added:

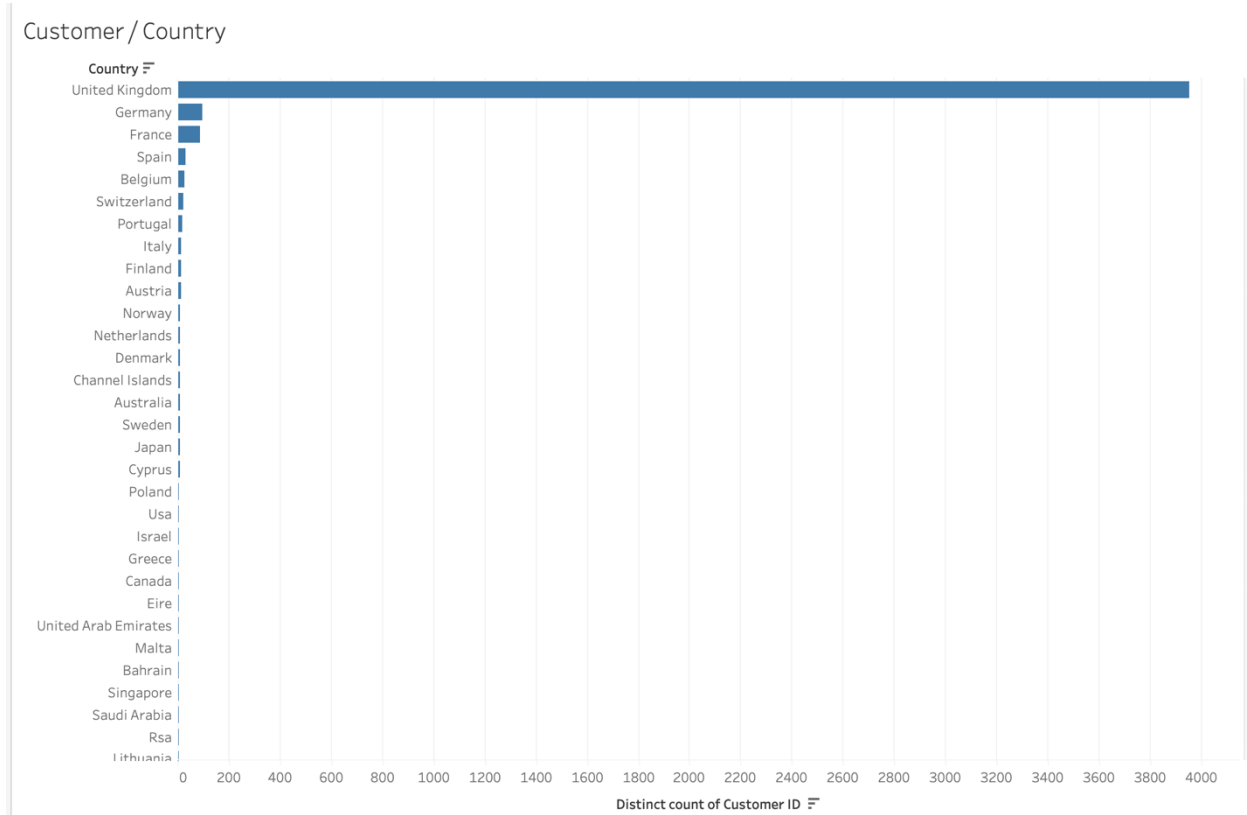
- “FirstPurchase” and “MostRecentPurchase”, “TimeSpan” columns are created for understanding each customers behaviour through time.
- “TotalOrders”, “TotalPrice” and “TotalSpending” columns were created for to be able for explaining monetary behaviour.
- “Frequency” column was created for stating number of total orders per time span (in date) for each customer
- “Recency” column was created for stating passed time since last purchase for each customer.
- Customers divided and segmented by “.qcut” method and a function including several if-else statements returning “Segment” row.

Then the data is checked for possible errors and then saved as csv.

Data Analysis and Visualization

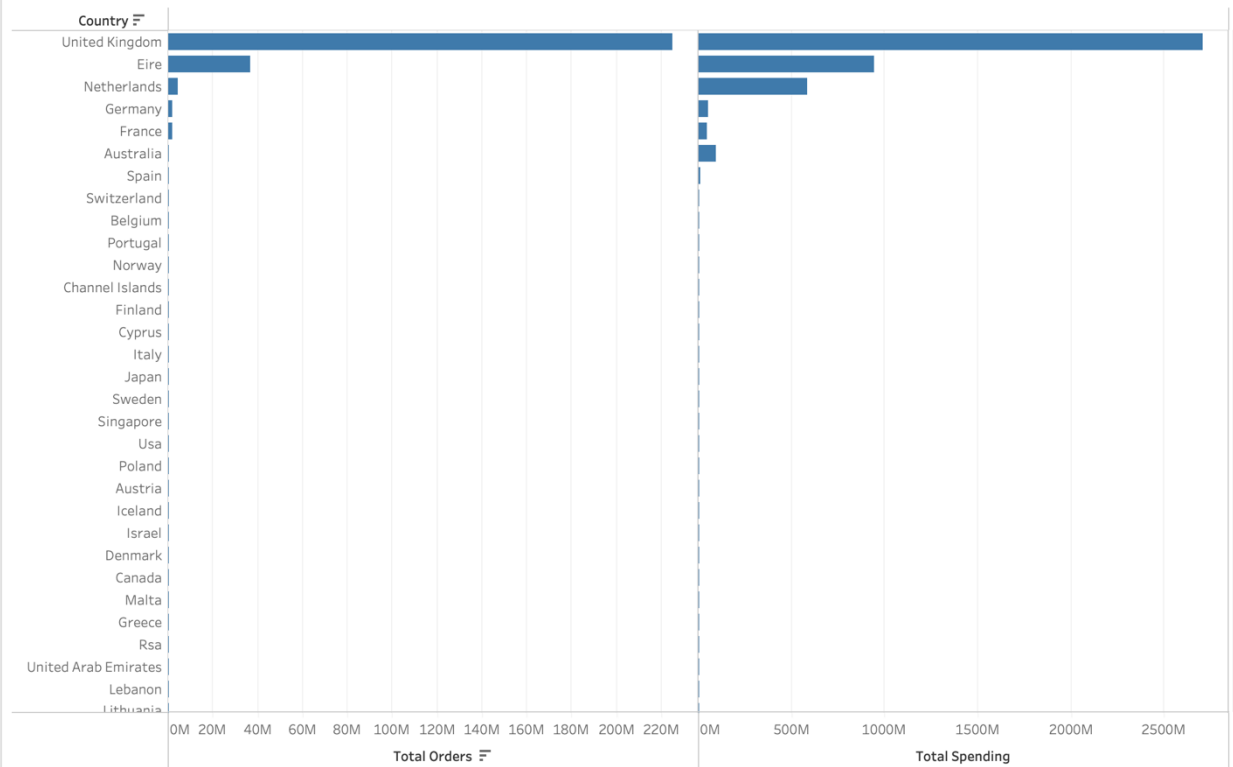
Multiple charts were created with Tableau from the Dataset:

1-General Information:

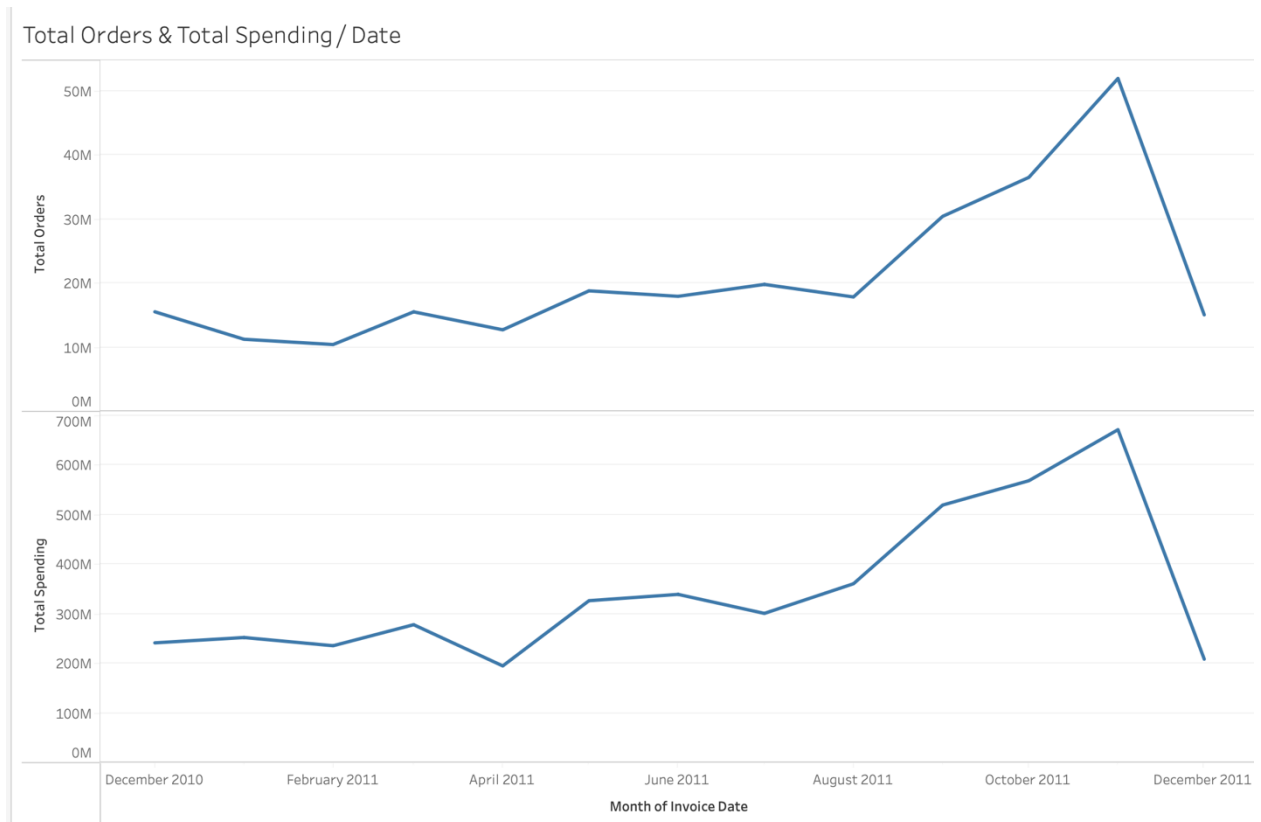


- Most of customers are from the UK by far; Germany, France, Spain and Belgium continues.

Total Orders & Total Spending / Country

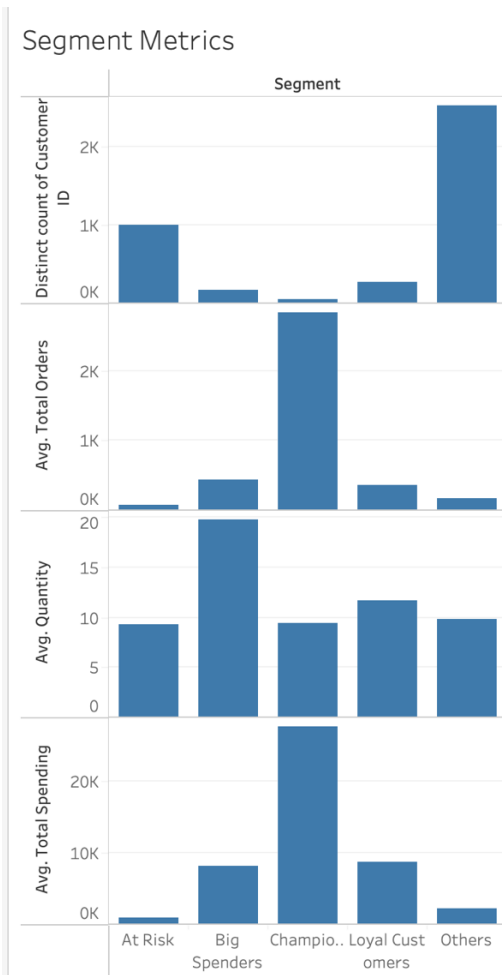


- Most of total orders and total spending came from the UK respectively; but unlike the customer size, Ireland-Netherlands are noticeable.



- Total orders and total spending had a small increase from 2010 to June 2011, through June 2011-November 2011 both had a decent increase but in December 2011 both numbers fell even beyond December-2010 levels.

2-Segment Metrics:



- During data preparation phase; customers were divided into 5 groups (Champions, Big Spenders, Loyal Customers, At Risk, Others)
- Champions; a group that only represents less than 2% of customers, makes nearly 70% of total orders and 50% of total spending. Big Spenders & Loyal Customers comes second and third respectively but not with impressive numbers.
- At Risk customers form nearly 20% of total customers. Although not having decent amounts of Total Orders or Total Spending; Other Customers makes nearly 60% of the customers.

3-Spending Analysis:

- Three multiple bar charts were created for analysis per customers filtered by segment and country.
- A density table was created including Customer ID, Product Description and filters as Country, Segment and Description for analyzing customer behavior through different segments and making tailored offers.

Targeted Strategies for British Customers

- Customers in **Champions** category, don't need further advertising or offers for now. Although generating impressive amount of money to the company regularly, the number of them is unhealthy regarding the customer size. For achieving healthier numbers; the company first assure that Champions don't go anywhere and make them notified, then make strategic offers to customers in the Big Spenders and Loyal Customers groups.
- Customers in **Big Spenders** category, tend to spend decent amount of money in a low frequency. This can be because of the lack of communication between the Company and customers. For this category company should approach them with more aggressive advertising. E-mails, web advertisements may work fine.
- Customers in **Loyal Customers** category, tend to spend less amount of money but in a higher frequency. For converting more Loyal Customers into Champions, the company should make strategic discounts on the top 20 products which customers in this category buy. These discounts also need to seen by customers, mentioning these discounts in E-mails or in landing page can be done.
- Customers in **At Risk** category, usually tend to spend low amounts of money in a low frequency. Our goal is converting these customers into top 3 categories. The customers with better RFM Score in this category needs both aggressive advertisement and benefits-discounts for transforming into Champions. Then Customers which have relatively higher frequency should transform into Big Spenders and Customers which have relatively higher monetary value should convert into Loyal Customers.
- The **Others** category contains the largest proportion of customers, characterized by diverse and inconsistent R-F-M values. For this group, outliers with high potential should be identified and nurtured into Champions. For the remaining customers in this category, individual R-F-M metrics and purchasing preferences should be evaluated, and targeted strategies should be implemented to transition them into the Loyal Customers or Big Spenders segments.
- After implementing the strategies, the At Risk and Other categories should be mostly eliminated. Customers who do not progress into higher-value segments can be placed into a new category labeled Low-Level Customers. While these customers may not generate high revenue, retaining them is still beneficial. The company should engage them with light-touch advertising and maintain exceptional customer service to encourage future purchases and sustain brand loyalty.

Targeted Strategies for International Customers

- Although the amount, total orders, and total spending from international markets are significantly lower compared to the UK, they should not be completely overlooked. To boost sales, efforts should focus on targeting high-value international customers. Maintaining light engagement with other international segments will suffice for the time being. Additional marketing initiatives in these markets can be considered once the primary objectives in the UK have been achieved.