

Final Project Customer Segmentation

Study Case : E-commerce Retail UK

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Background

Customer segmentation is the process of dividing customers into groups based on common characteristics so companies can market to each group effectively and appropriately.

RFM is a method used for analyzing customer value.

Frequency – How often do they purchase?



Monetary Value – How much do they spend?

Recency – How recently did the customer purchase?

K-Means Clustering falls under the category of centroid-based clustering. Centroid-based clustering is an iterative algorithm in which the notion of similarity is derived by how close a data point is to the centroid of the cluster.

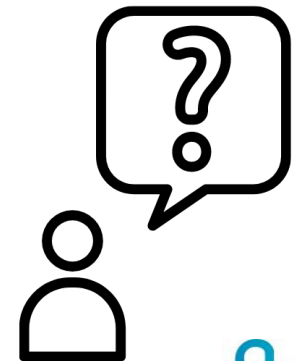
Executive Summary

Online retail UK has transnational dataset containing all transactions that occurred between 01/12/2010 and 09/12/2011. The company mainly sells unique gifts for all occasions. Many of the company's customers are wholesalers.

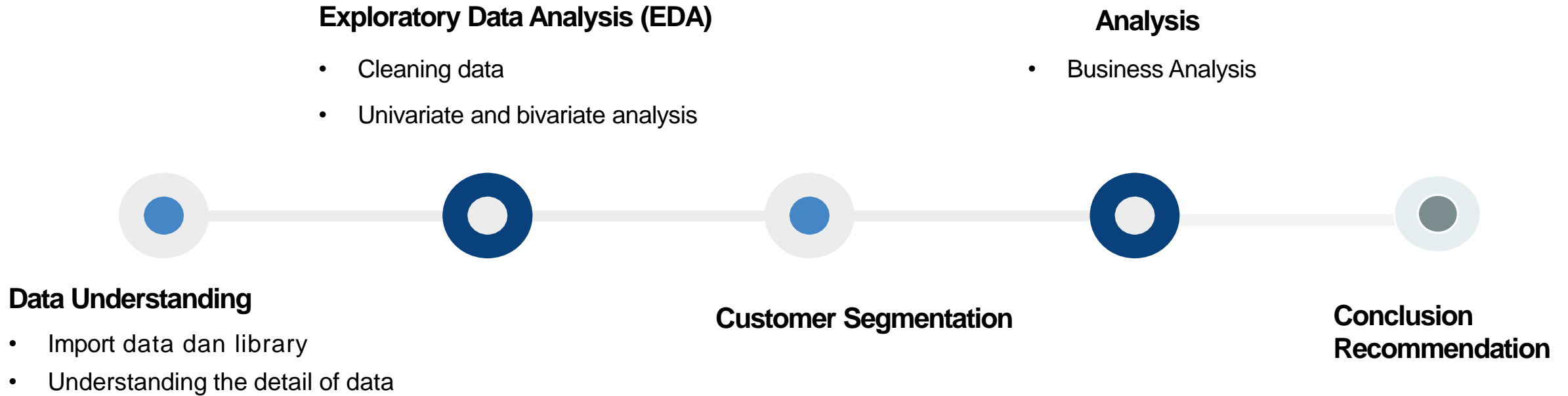
Customer segmentation needs to be done to see which customers are more profitable in sales. In addition, customer segmentation can be done to determine a more appropriate and effective strategy for the future

What are the results obtained from this case study?

1. What are the top 10 selling products?
2. How is the distribution of customers by country?
3. How many products are sold each month?
4. How is the segmentation of UK online retail customers? And define more loyal customers !
5. Give recommendations to increase sales based on what has been done before!



Analysis Plan



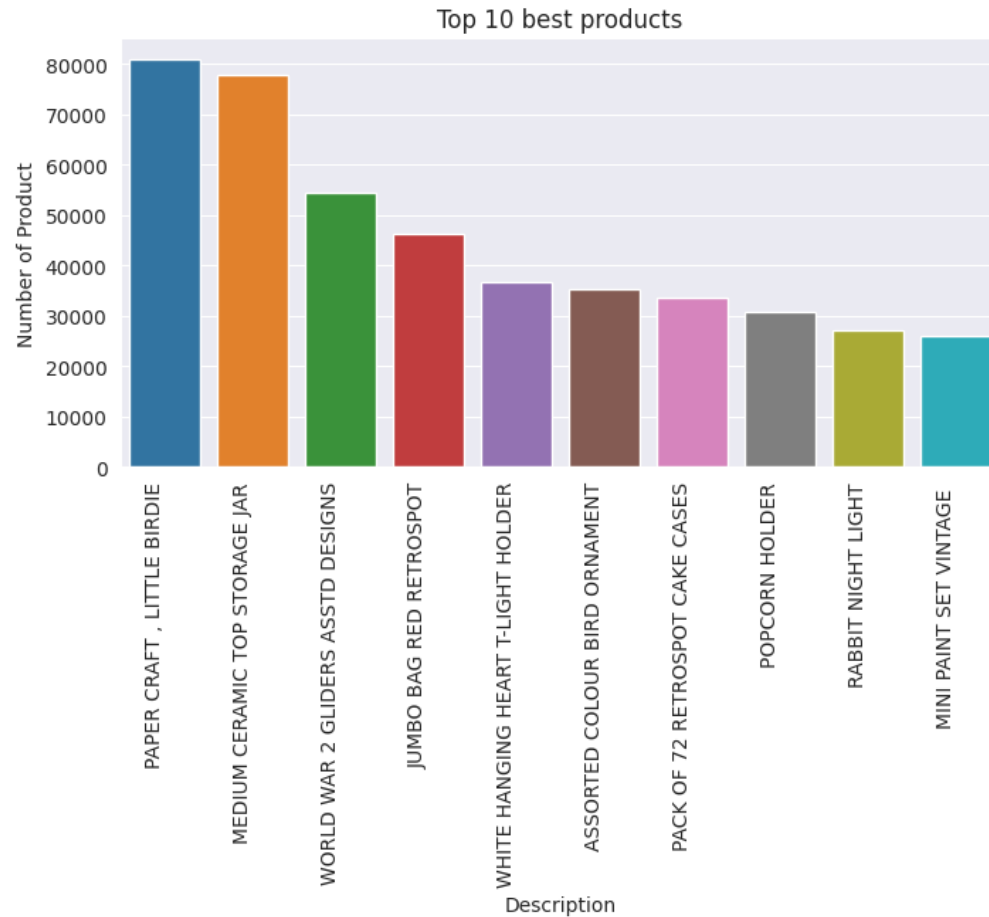
Dataset Understanding

- Source Dataset : **Online Retail Data Set from UCI ML repo** from **Kaggle** [\(link\)](#)
- A transnational data set which contains all the transactions occurring between 01/12/2010 and 09/12/2011 for a UK-based and registered non-store online retail.

Column	Description
InvoiceNo	Invoice number with 6-digit integral number uniquely assigned to each transaction. If this code starts with letter 'c', it indicates a cancellation.
StockCode	Product (item) code which 5-digit integral number uniquely assigned to each distinct product.
Description	Product (item) name.
Quantity	The quantities of each product (item) per transaction.
InvoiceDate	Invoice Date and time or the day and time when each transaction was generated.
UnitPrice	Product price per unit in sterling.
CustomerID	Customer number with 5-digit integral number uniquely assigned to each customer.
Country	The name of the country where each customer resides.

Exploratory Data Analysis (EDA)

Top 10 selling products

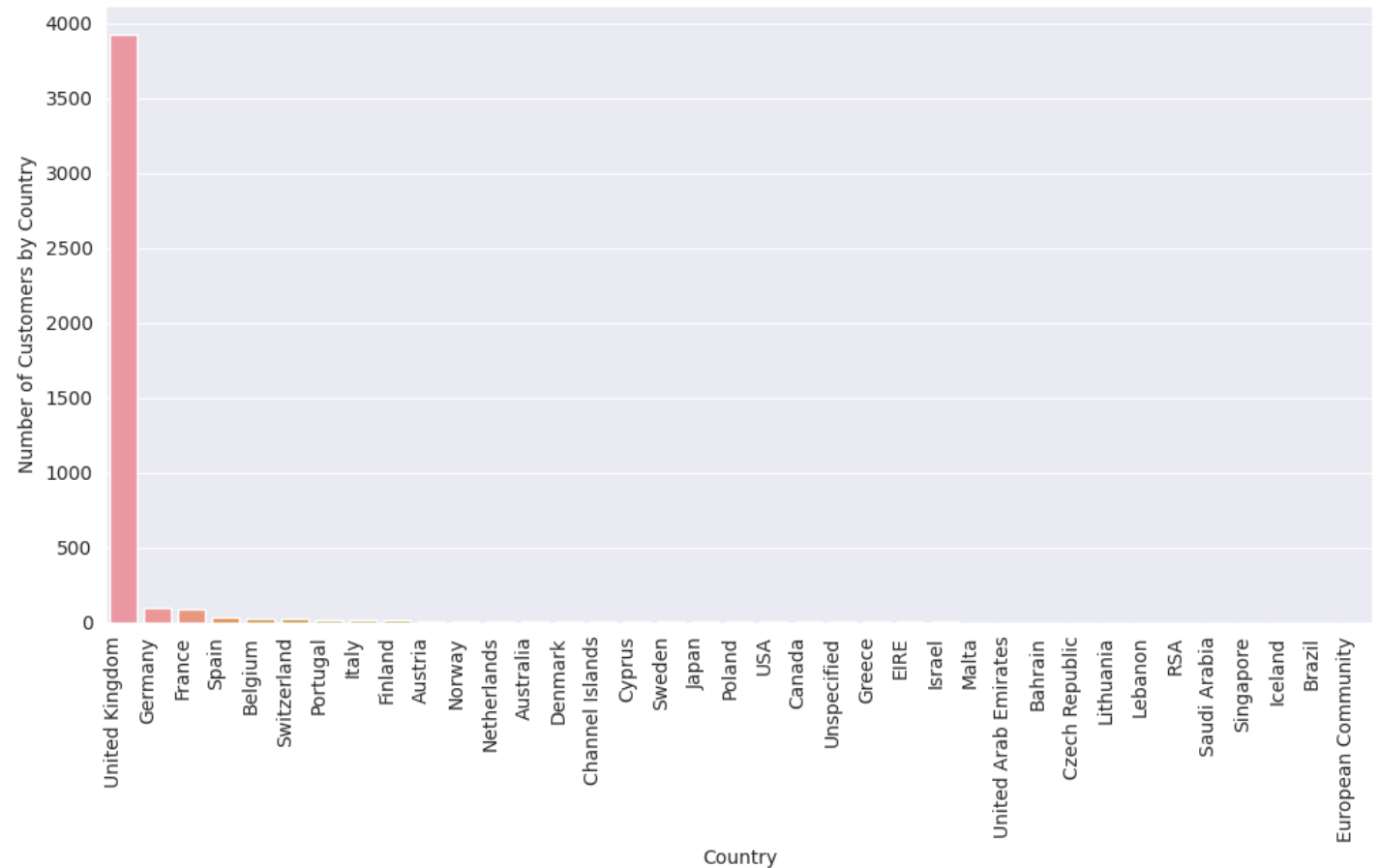


- The most purchased product is ' Paper Craft, Little Bride ' whose purchases exceed 80.000 items.
- Products ' Paper Craft, Little Bride ' and 'Medium Ceramic Top Storage Jar' have a much higher sales rate than the other 8 products
- These 10 products can be the attention of the marketing team to increase sales

Exploratory Data Analysis (EDA)

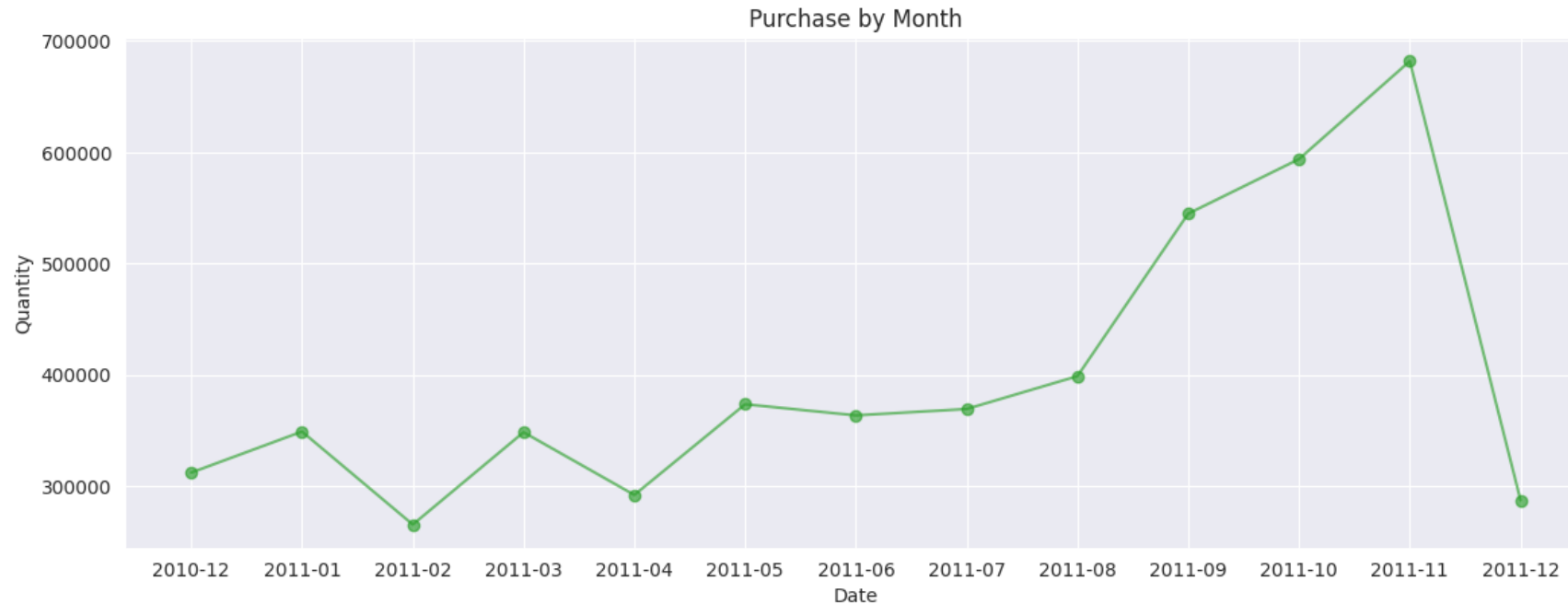
Distribution of customers by country

- Based on the picture, it can be seen that most of the customers are from United Kingdom which reached 3.800 customers.
- The very dominant customer in the UK region occurs because the data collection is indeed focused on retail product sales in the UK
- The fewest customers are from European Community



Exploratory Data Analysis (EDA)

Distribution of products sold every month

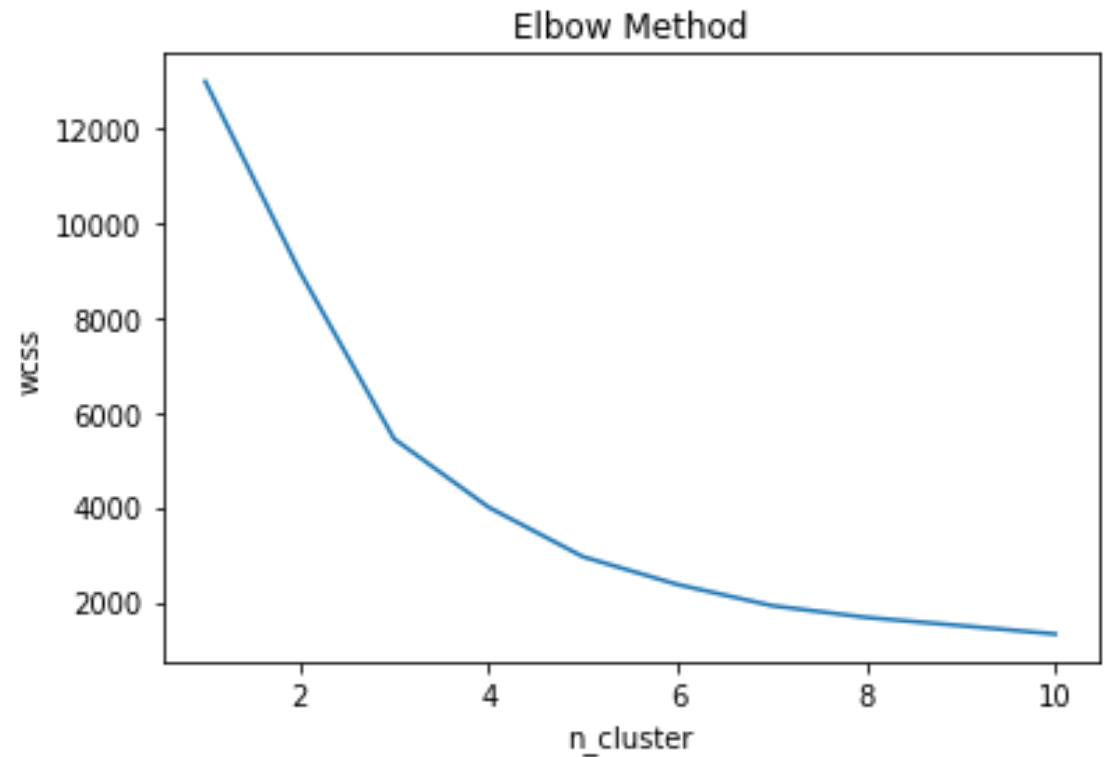


- ❑ The highest sales increase occurred in month August 2011 to Sept 2011. Sales in Sept increased almost 75% of sales in August 2011.
- ❑ The marketing team can use the sales strategy from August 2011 to November 2011 as a reference for the next sales strategy.

Customer Segmentation - Elbow Method

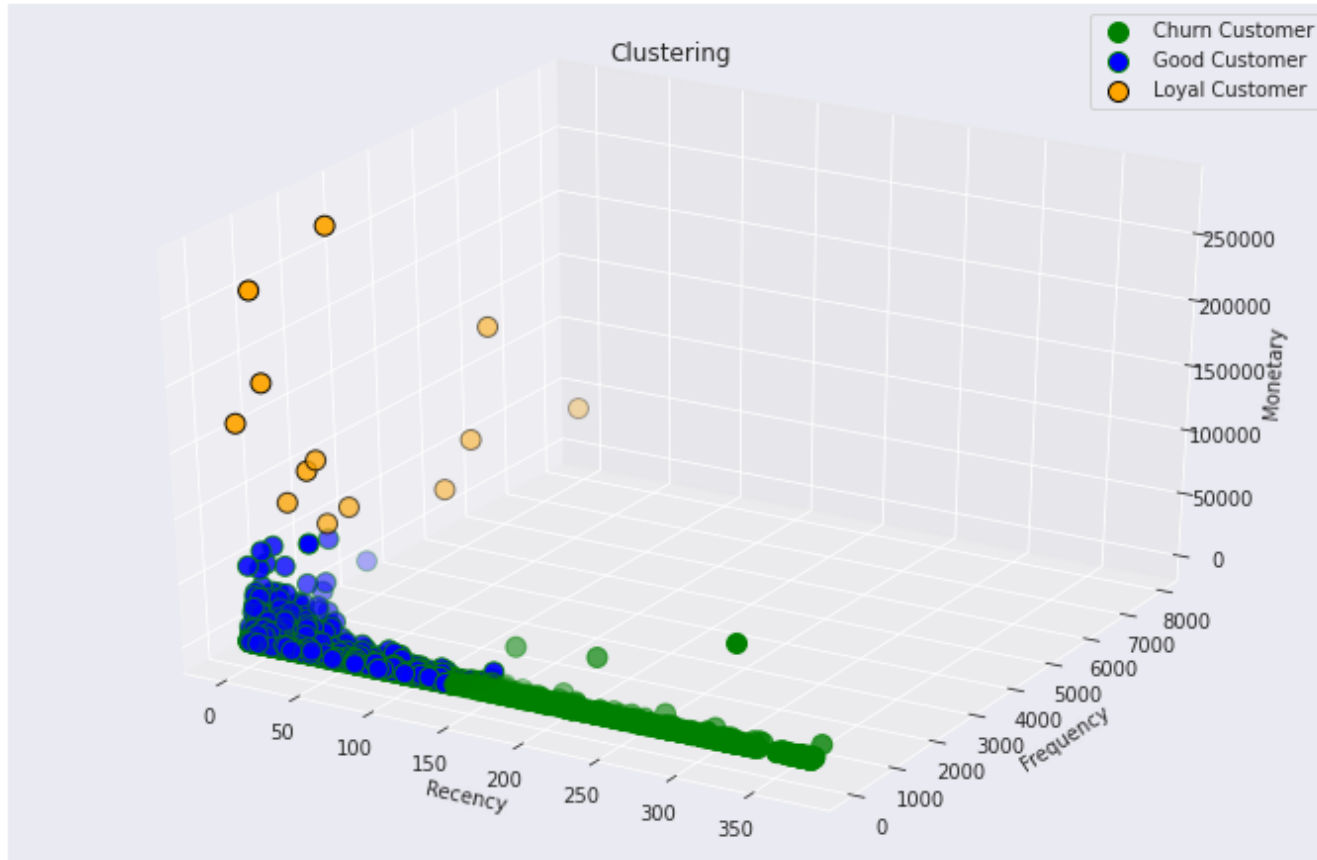
	Recency	Frequency	Monetary
CustomerID			
12346.0	325	1	77183.60
12347.0	2	182	4310.00
12348.0	75	31	1797.24
12349.0	18	73	1757.55
12350.0	310	17	334.40
...
18280.0	277	10	180.60
18281.0	180	7	80.82
18282.0	7	12	178.05
18283.0	3	756	2094.88
18287.0	42	70	1837.28

4338 rows x 3 columns



The cluster used is k= 3

Customer Segmentation



Category	Number of Customers
Churn Customer	1080
Good Customer	3245
Loyal Customer	13

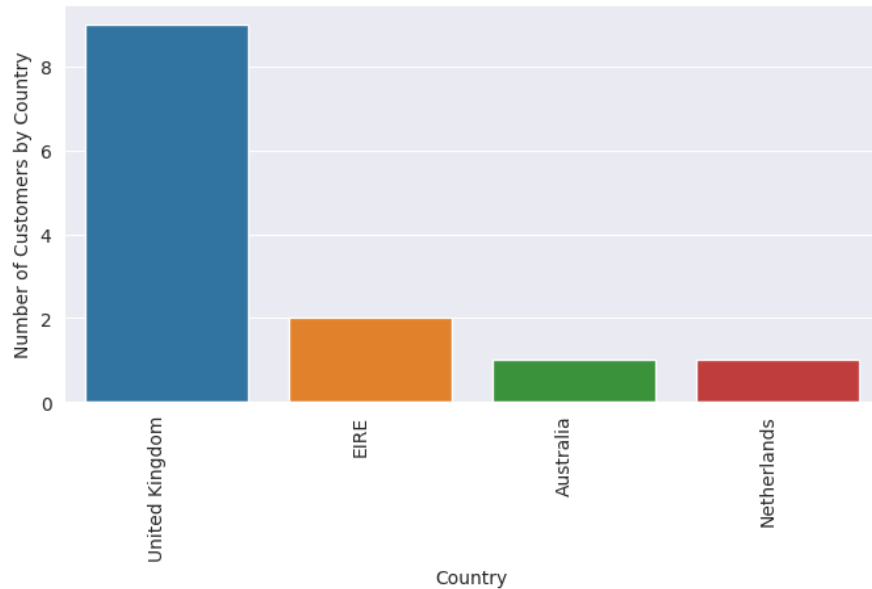
churn customers are customers who make purchases that have existed for a long time with the lowest frequency and number of purchases

Good customer purchase is between churn and loyal customer

Loyal customers have the latest purchase time with frequent intensity and high purchase amount

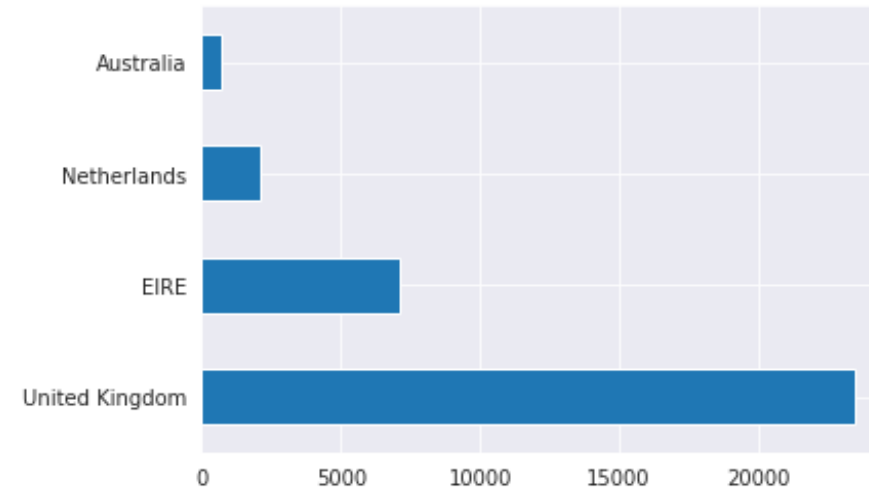
Customer Segmentation – Loyal Customer

Loyal Customer Based On Country



Country	Percentage
Australia	60.42 %
EIRE	97.77%
Nertherlands	88.02%
United Kingdom	6.62%

Loyal Customer Based On The Number Of Purchases

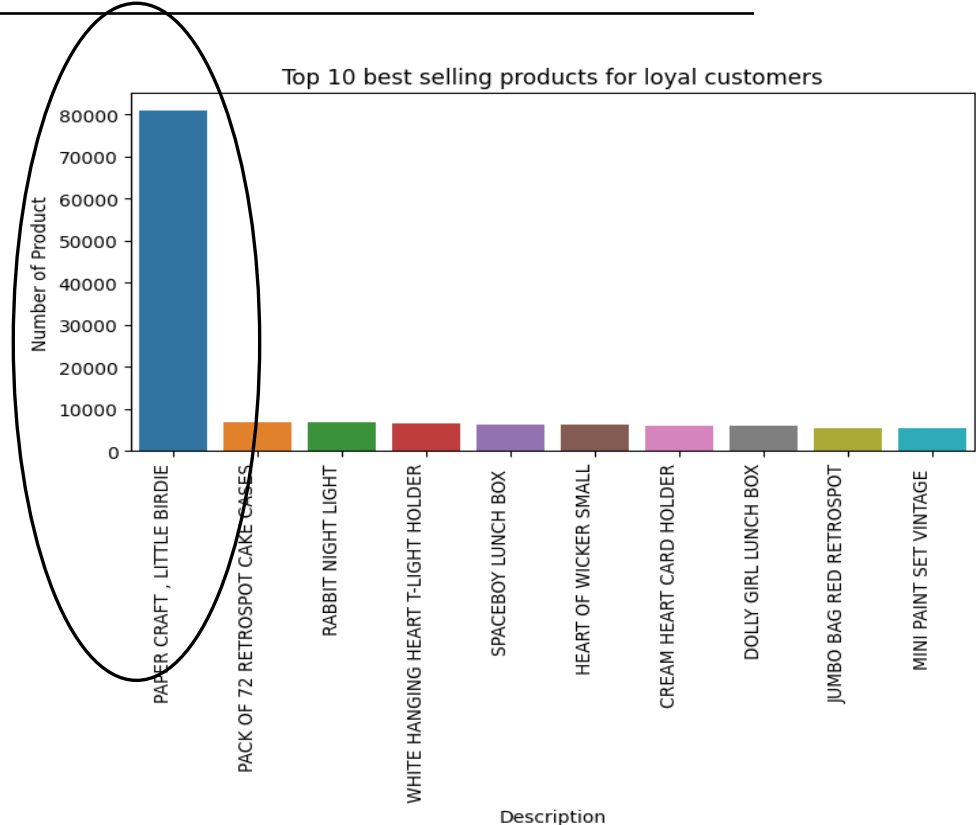
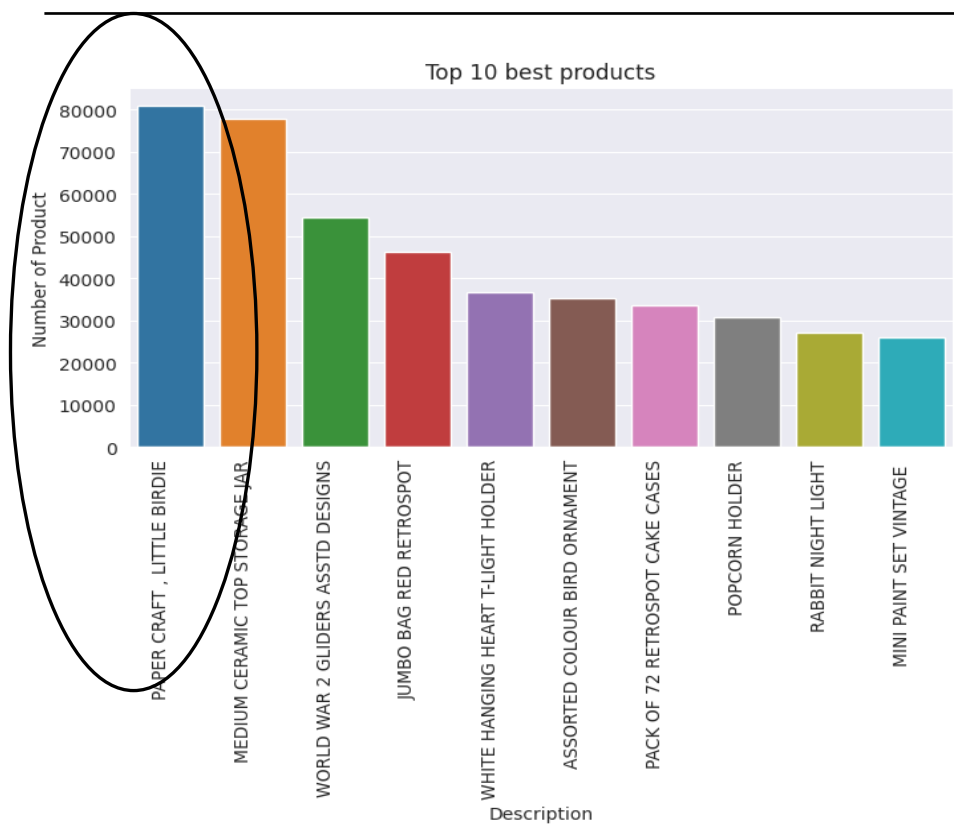


- Countries with loyal customers are: **UK, EIRE, Australia and Netherlands.**
- EIRE countries, Australia and the Netherlands have a very high percentage of loyal customers, this shows that although there are few customers from these countries, almost all of them are loyal customers.

Therefore, the marketing team can carry out special promotions in countries that have loyal customers



Customer Segmentation – Loyal Customer



- Product 'Papercraft, Little Bride' is the product most purchased by customers in general and loyal customers

InvoiceNo	StockCode	Description	Quantity	InvoiceDate	UnitPrice	CustomerID	Country	Total_Cost	Date
540421	581483	23843 PAPER CRAFT, LITTLE BIRDIE	80995	2011-12-09 09:15:00	2.08	16446.0	United Kingdom	168469.6	2011-12

Conclusions and Recommendations



1. The most purchased product was 'Papercraft, Little Bride' but only 1 customer bought it. The marketing team can pay attention to customers with buyers of 'Paper Crafts, Little Brides' and 9 other best-selling products by providing attractive promos.
2. Sales in August 2011 to November 2011 had a high rate of increase in sales. The marketing team can use the sales strategy as a reference for the next sales strategy.
3. There are 3 countries that are loyal customers, namely the UK, Australia, EIRE, and Netherlands. It is better to do a special strategy for countries that have loyal customers because it can increase sales.
4. For churn customers, the marketing team can provide attractive offers so they can transact again

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Thank You !