



Online Retail Sales - Business Analysis

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Data Analytics - Bootcamp July-2024

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Online Retail Sales

Project overview:

- This project examined a dataset of online sales for a UK-based e-commerce company.
- It contains details such as client ID, unit price, invoice number, stock code, product description, quantity, invoice date, and country, covering the period from December 2010 to December 2011.

Objective

Use Tableau BI dashboards for data-driven insights into UK e-commerce sales, enhancing business strategies.

Business Analysis

- **Evaluate Company Performance**
 - Analyze KPIs like total revenue, total transactions, and average order value (AOV).
 - Analyze sales patterns to identify opportunities for growth.
- **Personalize Marketing**
 - Conduct RFM (Recency, Frequency, Monetary) analysis to segment customer.
- **Customer Churn**
 - Identify customers with high rate of churn.
- **Analyzing Customer Behavior and Enhancing Customer Lifetime Value (CLV)**
 - Calculate CLV based on historical transaction data and customer behavior.
- **Optimize Inventory and Product Offerings**
 - Use market basket analysis to improve product mix and cross-selling opportunities

Customer Segmentation

RFM (Recency, Frequency, Monetary) analysis

- Recency: How recently a customer purchased. Scores closer to 5 indicate very recent purchases; scores closer to 1 indicate less recent activity.
- Frequency: How often a customer purchases. Higher scores mean more frequent purchases.
- Monetary: How much money a customer has spent. Higher scores indicate higher spending.

Table 1 - RFM scores range from 5 (highest) to 1 (lowest), reflecting varying levels of recency, frequency, and monetary value.

	Champions	Loyal Customers	Potential Loyalists	Recent Customers	Promising	At Risk
Recency	5	≥ 4	≥ 3	5	≥ 2	3, 2, 1
Frequency	5	≥ 3	≥ 3	-	≤ 4	3, 2, 1
Monetary	5	≥ 3	≤ 5	-	≤ 5	-

Churn Rate

Churn rate refers to the percentage of customers who stop purchasing our products within a specified timeframe, typically indicating customer attrition or loss.

$$\text{Churn rate (\%)} = \frac{\text{Nº of customers who haven't bought any product for 90 days or more}}{\text{Nº of customers at the beginning of the period}} \times 100$$

Customer Lifetime Value

Customer lifetime value (CLV) in terms of sales refers to the total revenue a customer is expected to generate for a business throughout their relationship.

$$CLV = CV \times ACL$$

Customer Value (CV): Average revenue or profit from a customer during their relationship with your business.

Average Customer Lifetime (ACL): Average duration a customer remains engaged with your business.

CLV is crucial for businesses as it quantifies the long-term value of customers, guiding decisions in marketing, acquisition, retention, and resource allocation to maximize profitability.

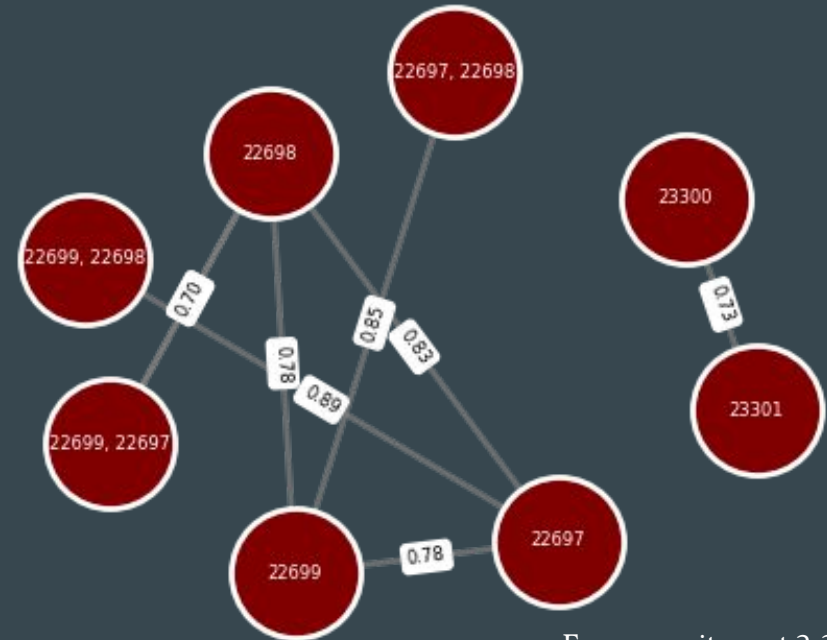
Dashboard

Basket Analysis

- **Association Rule Mining**
 - Probability of one or more items to be bought together.

Table 2 - The 5 most frequently purchased items across all transactions.

Stock code	Frequent item
85123a	10.7 %
22423	9.3%
85099b	8.6%
47566	7.5 %
84879	7.4 %



Frequency itemset 2-3%

Dashboard report and basket analysis

- **Evaluate Company Performance**
 - Throughout the year, the company saw increasing transactions and revenue, especially spiking from the third quarter onwards. The AOV remained consistently high, showing substantial customer spending.
 - The company operates in 37 countries, with 90% of customers in the UK, and 2% each in Germany and France.
- **Personalize Marketing**
 - “Champions”, who make up 7% of our customer base, generate 40% of total revenue. Additionally, “loyal customers” contribute 28% of overall revenue.
- **Analyzing Customer Churn**
 - Customer segments categorized as "promising" and "at risk," show churn rates of 41% and 100% respectively.
- **Analyzing Customer Behavior and Enhancing CLV**
 - Customers with higher CLVs are identified as “champions”.
- **Optimize Inventory and Product Offerings**
 - There is evidence of product associations (e.g., same product with different colors) suggesting potential sales increases by strategically displaying related items together.

Business Actions

- **Expand into New Markets**
 - Focus on entering Germany and France while maintaining strong UK operations, leveraging localized marketing strategies.
- **Leverage Sales Trends**
 - Capitalize on third-quarter sales momentum with targeted promotions and seasonal campaigns to sustain growth throughout the year.
- **Personalize Marketing**
 - Design targeted programs for high-value “champions” and “loyal customers” using data-driven insights to improve engagement and retention
- **Reduce Churn**
 - Implement targeted retention strategies for "promising" and "at risk" customer segments, such as personalized incentives and proactive customer support.

Business Actions

- **Maximize CLV**
 - Increase CLV by offering exclusive benefits and personalized experiences to “loyal customers” and “Champions”.
- **Optimize Inventory**
 - Use purchasing behavior insights to optimize stock levels and explore cross-selling opportunities to boost average order value.
- **Adapt and Monitor**
 - Continuously monitor KPIs and customer feedback to adapt strategies promptly, ensuring agility in responding to market dynamics and customer needs.

Thank you !