Analysis of Online Retail Dataset for Expansion Strategy

Insights and Recommendations for Growth

TATA Insights and Quant
Data Visualisation

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Objective:

- Analyze the Online Retail dataset effectively.
- Address the CEO and CMO's questions using meaningful visuals and graphs.
- Identify key trends and actionable insights.
- Conclude findings to propose a well-informed expansion strategy to the company's leadership.

Dataset Overview

Marketing and Customer Strategy Management

SOURCE OF ONLINE RETAILS STORE DATA

DEC 2010

START

DEC 2011

END

.Country
.Quantity
.Unit Price
.Customer ID
.Invoice Date

IMPORTANT COLUMNS

REVENUE
= Unit price x Quantity

NEW ATTRIBUTE

DATA CLEANUP USING POWER BI

Using Power BI, the following cleanup was done:

- Ensured **quantity** values are **≥ 1** unit.
- Verified **unit price** is **> $0**.
- Split purchase date and time into separate columns.
- Converted Customer ID to string data type.

Negative Quantity value

5391	22556	PLASTERS IN TIN CI	-12	01-12-2010
5391	21984	PACK OF 12 PINK P	-24	01-12-2010
5391	21983	PACK OF 12 BLUE P	-24	01-12-2010
5391	21980	PACK OF 12 RED RE	-24	01-12-2010
5391	21484	CHICK GREY HOT W	-12	01-12-2010
5391	22557	PLASTERS IN TIN VI	-12	01-12-2010
5391	22553	PLASTERS IN TIN SI	-24	01-12-2010

Unit price 0 and below

|			
01-09-2011 09:03	0		United Kingdom
01-09-2011 09:15	12.75	13305	United Kingdom
01-09-2011 09:15	3.75	13305	United Kingdom
01-09-2011 09:15	4.95	13305	United Kingdom
01-09-2011 09:19	0.19	16187	United Kingdom
01-09-2011 09:19	0.85	16187	United Kingdom
01-09-2011 09:19	3.29	16187	United Kingdom
01-09-2011 09:19	2.1	16187	United Kingdom

Split date and time into separate columns

InvoiceDate	InvoiceTime
30 August 2011	10:29:00
30 August 2011	10:29:00
30 August 2011	10:29:00
30 August 2011	10:29:00
30 August 2011	10:29:00

Data Cleanup

Addressing Key Questions with Data-Driven Insights

Question 1:
Time Series Revenue
Analysis for 2011

Patterns and Reasons
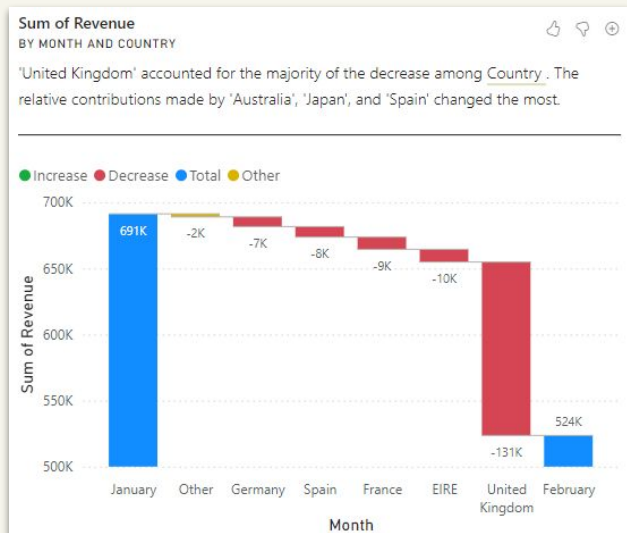
Low in February, the winter season

Time Series Revenue Analysis for 2011

Patterns noticed:

- **Hike** : July to November - **$0.72 M to $1.51 M**
- **Drop** : November to December - **$ 1.51 M to $ 0.64 M**
- **Constant Fluctuation** : January to May
- **~ Constant** : May to July

Sum of Revenue
BY MONTH AND DESCRIPTION

'RABBIT NIGHT LIGHT', 'PAPER CHAI...CHRISTMAS' , and 'DOTCOM POSTAGE' had the largest increase among Description . The relative contributions made by 'Manual', 'RABBIT NIGHT LIGHT', and 'PAPER CHAI...CHRISTMAS' changed the most.

● Increase ● Decrease ● Total ● Other

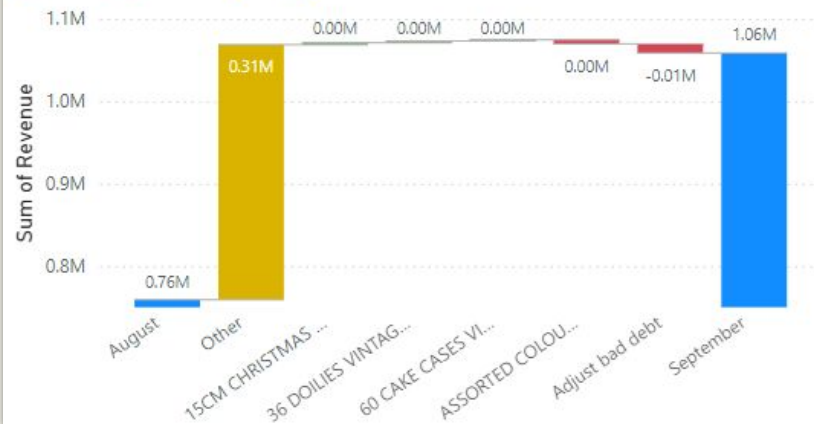Highest in November due to holidays as the products sold specify decoration and celebration items

Sum of Revenue
BY MONTH AND DESCRIPTION

'SET OF TEA...NS PANTRY' , 'HOT WATER BOTTLE KEEP CALM', and 'PLEASE ONE PERSON METAL SIGN' had the largest increase among Description . The relative contribution made by 'Adjust bad debt' changed the most.

● Increase ● Decrease ● Total ● Other
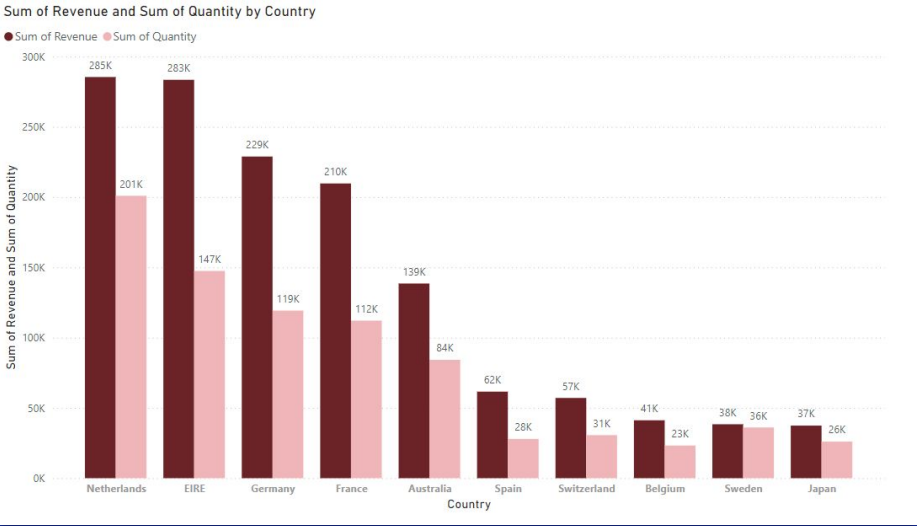
Hike from September, the fall season

Insight and Recommendation

Insight : Sales peak in November, dip in winter, and recover in spring/summer.

Recommendation : Boost holiday sales with targeted campaigns and offset winter dips with promotions.

Question 2:
Analysis of Top 10
Revenue-Generating Countries

TATA

Top 10 Countries

Sum of Revenue and Sum of Quantity by Country
● Sum of Revenue ● Sum of Quantity

		Netherlands	EIRE	Germany	France	Australia	Spain	Switzerland	Belgium	Sweden	Japan
Revenue	285K	283K	229K	210K	139K	62K	57K	41K	38K	37K
Quantity	201K	147K	119K	112K	84K	28K	31K	23K	36K	26K

Top 10 Revenue-Generating Countries excluding United Kingdom

	Country	Revenue ($ K)	Quantity (K)
1.	Netherlands	285	201
2.	EIRE	283	147
3.	Germany	229	119
4.	France	210	112
5.	Australia	139	84
6.	Spain	62	28
7.	Switzerland	57	31
8.	Belgium	47	23
9.	Sweden	38	36
10.	Japan	37	26
Total:		$ 1,387K	807K

Grouping

Major Qty Buying Countries

	Country	Revenue ($ K)	Quantity (K)
1.	Netherlands	285	201
2.	EIRE	283	147
3.	Germany	229	119
4.	France	210	112
5.	Australia	139	84
Total:		$ 1,146K	663K

High Growth Potential Countries

	Country	Revenue ($ K)	Quantity (K)
6.	Spain	62	28
7.	Switzerland	57	31
8.	Belgium	47	23
9.	Sweden	38	36
10.	Japan	37	26
Total:		$ 241K	144K

Rev %   (Rev/Tota Rev)*100 :   Qty %   (Qty/Total Qty)*100 :

~82.62 %	~82.15 %
~17.38 %	~17.85 %

Insight and Recommendation

Insight

Major buyers drive demand, while high-growth markets offer expansion potential.

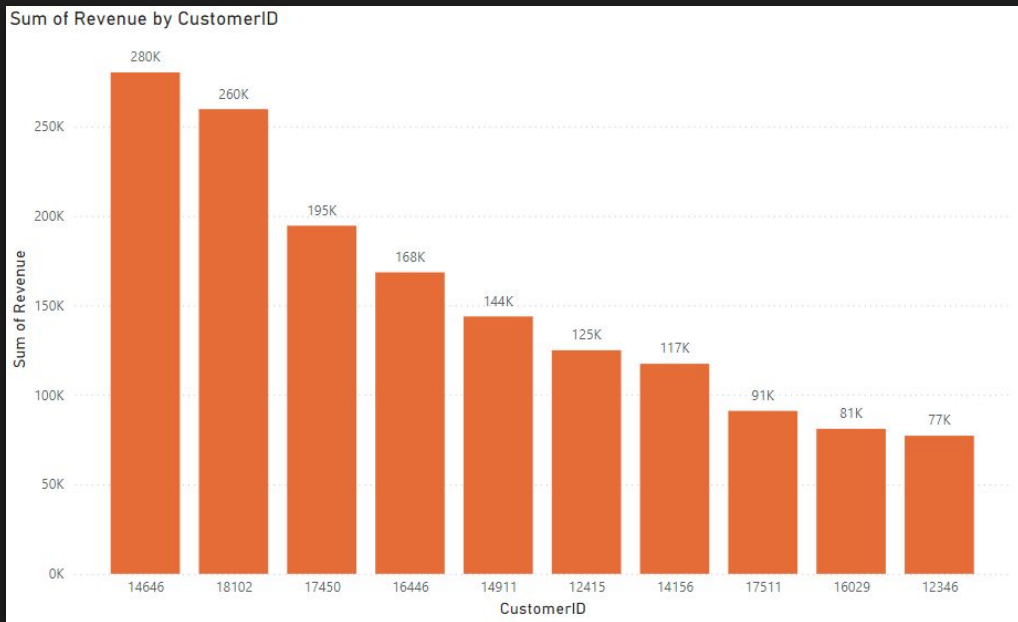## Recommendation

Strengthen loyalty with key buyers and invest in emerging markets.

Question 3: Analysing top 10 Revenue Generating Customers

Customer ID	Order Frequency	Revenue ($)
1. 14646	2010	272K
2. 18102	413	232K
3. 17450	334	193K
4. 16446	3	168K
5. 14911	5385	136K
6. 12415	716	125K
7. 14156	1397	117K
8. 17511	875	84K
9. 12346	1	77K
10. 16029	210	68K

Sum of Revenue and Count of Invoice Date by Customer ID horizontal bar graph

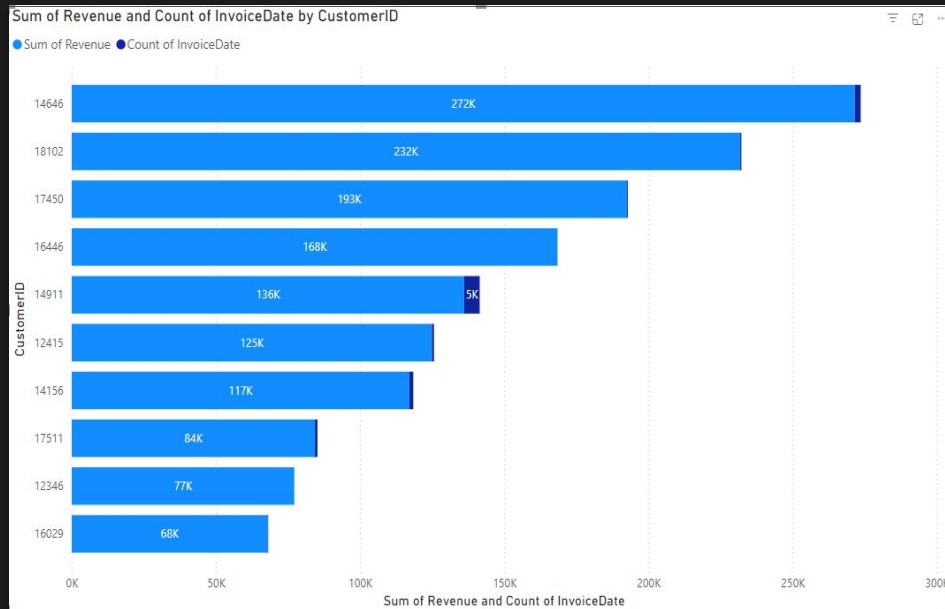- 🔴 Highest revenue high purchase frequency
- 🟢 Moderate revenue highest purchase frequency
- 🟡 High to moderate revenue lowest purchase frequency
- 🔵 Moderate revenue high to moderate purchase frequency

Insight and Recommendation

Recommendation :

Incentivize frequent high spenders

Upsell moderate

Re-engage low-frequency, high-revenue customers.

Insight : Top 10 customers revealed key revenue and frequency segments.

Question 4:
Demand of Products Worldwide

World Map View of revenue generating countries

	Country	Quantity
1.	Netherlands	200937
2.	ERIE	147447
3.	Germany	119263
4.	France	112104
5.	Australia	84209
6.	Sweden	36083
7.	Switzerland	30630
8.	Spain	27951
9.	Japan	26016
10.	Belgium	23237
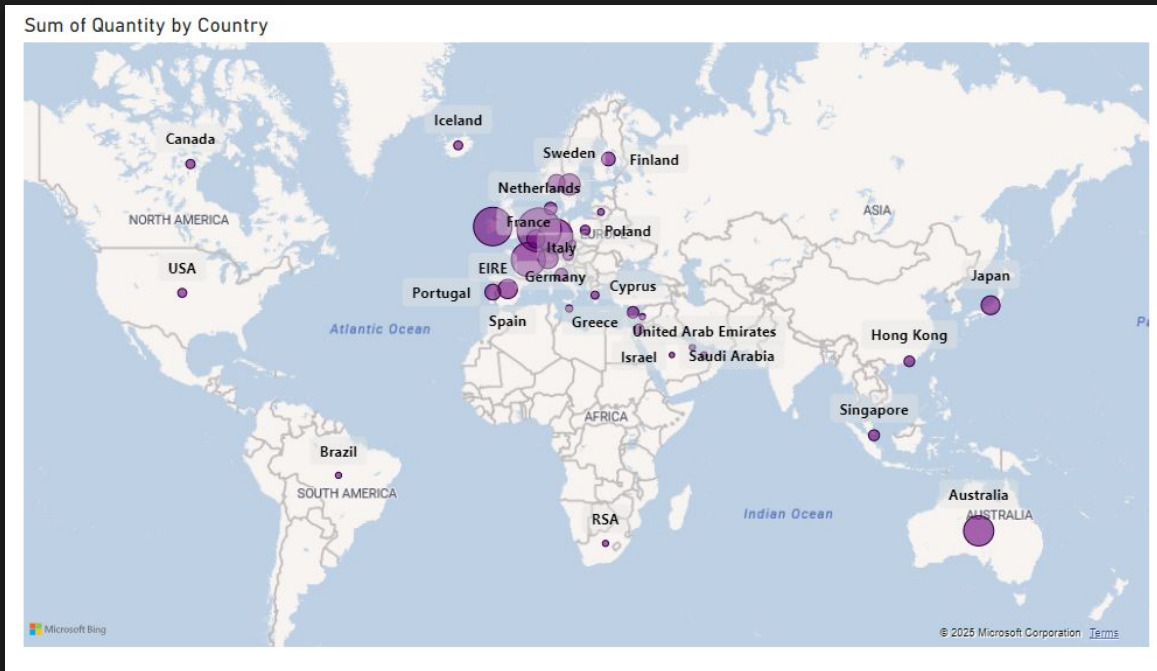
Sum of quantity by country

Insight and Recommendation

Insight : The Netherlands leads in customer base, with Europe, Australia, and Japan showing strong growth potential.

Recommendation : Focus growth on key European markets and high-potential regions like Australia and Japan.

Conclusion

In conclusion, the analysis of revenue trends, customer segments, and regional demand has provided valuable insights. By focusing on key growth areas, incentivizing loyal customers, and boosting holiday sales, the company can expand its reach and improve overall revenue.

Review

- How to Clean Data
- Time Series Revenue Analysis for 2011 and patterns
- We Analyzed
- Top 10 Revenue-Generating Countries
- Top 10 Revenue Generating Customers and their purchase frequency
- Demand of Products Worldwide
- Conclusion

Thank you, TATA Insights and Quant for Data Visualisation: Empowering Business with Effective Insights internship.