By: Madu C. Justin

DATA VISUALISATION: EMPOWERING BUSINESS WITH EFFECTIVE INSIGHTS

Online Retail Analysis   December 2022

Lagos Nigeria   +2347062579819   https://www.linkedin.com/in/madujustin

MY PROFILE

I am a systematic Data Analyst with significant experience in defining KPIs, data consolidation, transformation, modeling, creating reports, creating dashboards, and sharing insights.

I am proficient in the use of data analysis tools such as MS Excel, Power BI, Tableau, SQL, Azure, and Python. Successfully completed PwC Switzerland Power BI in Data Analytics Virtual Case Experience, Accenture Data Analytics and Visualization Virtual Experience and Tata Group Data Visualization: Empowering Business with Effective Insights - Internship.

I strives to answer questions, and solve business problems with quantitative-driven insights.

Through my work experiences, Internships, development of personal projects, and valuable training, I have learned the importance of having an iterative, hypothesis-oriented approach to analysis.

I am a graduate of Chemical Engineering and possesses demonstrated skills in Stakeholder Relationships, Soft Skills, Supply Chain & Logistics, Project Management, Engineering Safety, Digital marketing, Administration, etc.

TABLE OF
CONTENTS

ABOUT PROJECT

This Analysis is carried out during my Virtual Case Experience with TATA Group. During this experience, I framed business questions that I think will be important and relevant to the CEO and CMO of an Online Retail Store. I choose the right visuals which will effectively illustrate what the senior managers are looking for in each scenario and finally shared my insights to the Senior Managers.

CASE STUDY

Background Information

As a data analyst working in an online retail store, I have been tasked to frame business scenarios and present them to the CEO and the CMO.
The Senior Managers are interested in answering these business problems;

Question 1

The CEO of the retail store is interested to view the time series of the revenue data for the year 2011 only. He would like to view granular data by looking into revenue for each month. The CEO is interested in viewing the seasonal trends and wants to dig deeper into why these trends occur. This analysis will be helpful for the CEO to forecast for the next year.

Question 2

The CMO is interested in viewing the top 10 countries which are generating the highest revenue. Additionally, the CMO is also interested in viewing the quantity sold along with the revenue generated. The CMO does not want to have the United Kingdom in this visual.

Question 3

The CMO of the online retail store wants to view the information on the top 10 customers by revenue. He is interested in a visual that shows the greatest revenue-generating customer at the start and gradually declines to the lower revenue-generating customers. The CMO wants to target higher revenue generating customers and ensure that they remain satisfied with their products.

Question 4

The CEO is looking to gain insights on the demand for their products. He wants to look at all countries and see which regions have the greatest demand for their products. Once the CEO gets an idea of the regions that have high demand, he will initiate an expansion strategy which will allow the company to target these areas and generate more business from these regions. He wants to view the entire data on a single view without the need to scroll or hover over the data points to identify the demand. There is no need to show data for the United Kingdom as the CEO is more interested in viewing the countries that have expansion opportunities.

PROCESS

Data Cleaning

I noticed that the data contains some returns to the store which are provided in negative quantities and there are unit prices which were input in error. I performed the following steps to clean the data.

- Created a check that the quantity should not be below 1 unit
- Create a check that the Unit price should not be below $0

by using conditional formula.

Data Analysis

I calculated the measures and created each visual on a separate tab with the name of the tab displaying the question number.

Findings and Presentation

Data analysis provides heaps of information but its advisable to focus on the information that is most important to the leaders. I shared my findings relevant to the business questions.

Tools : Excel and Power BI

ANALYSIS

Question 1

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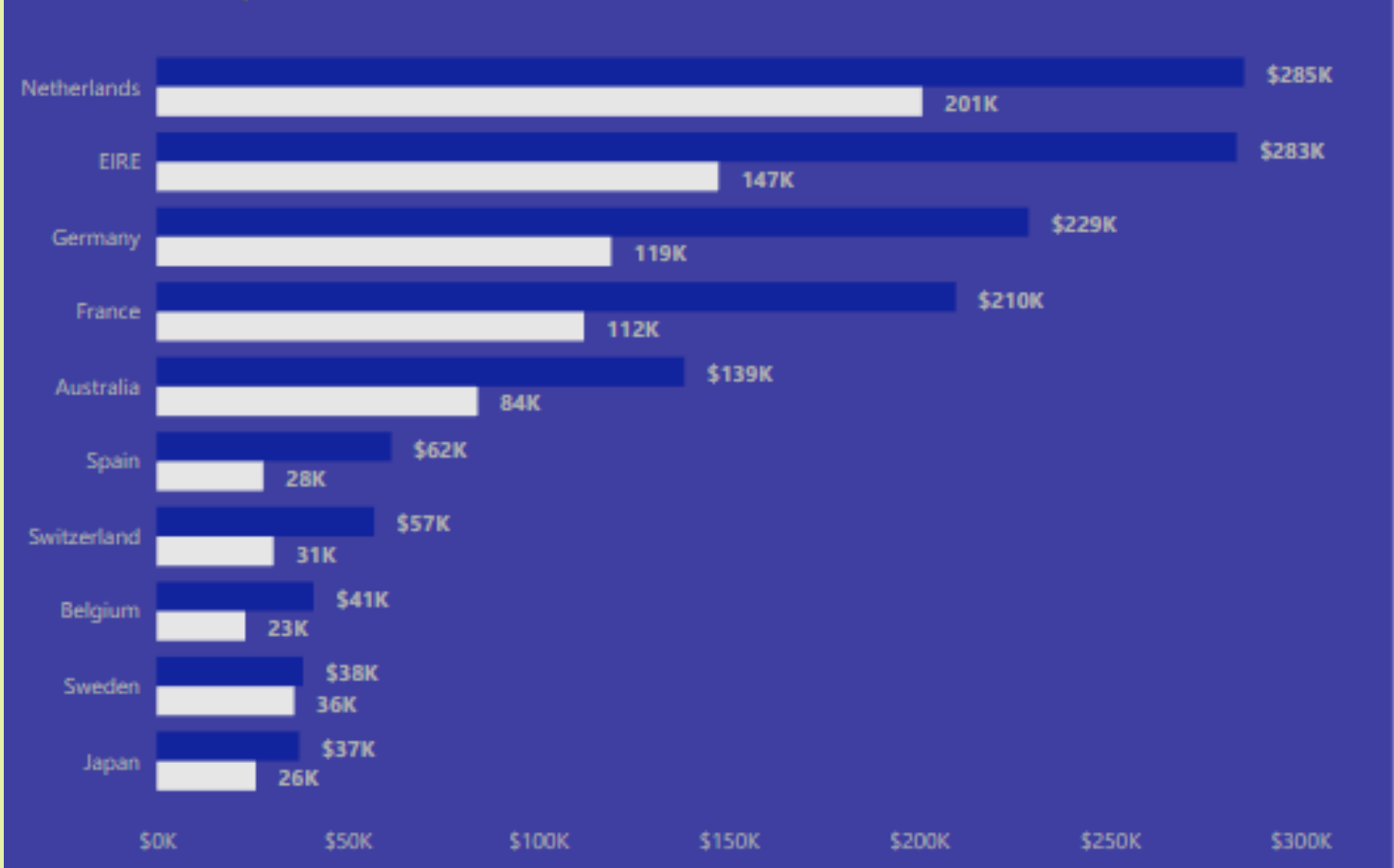
Revenue by Year and Month
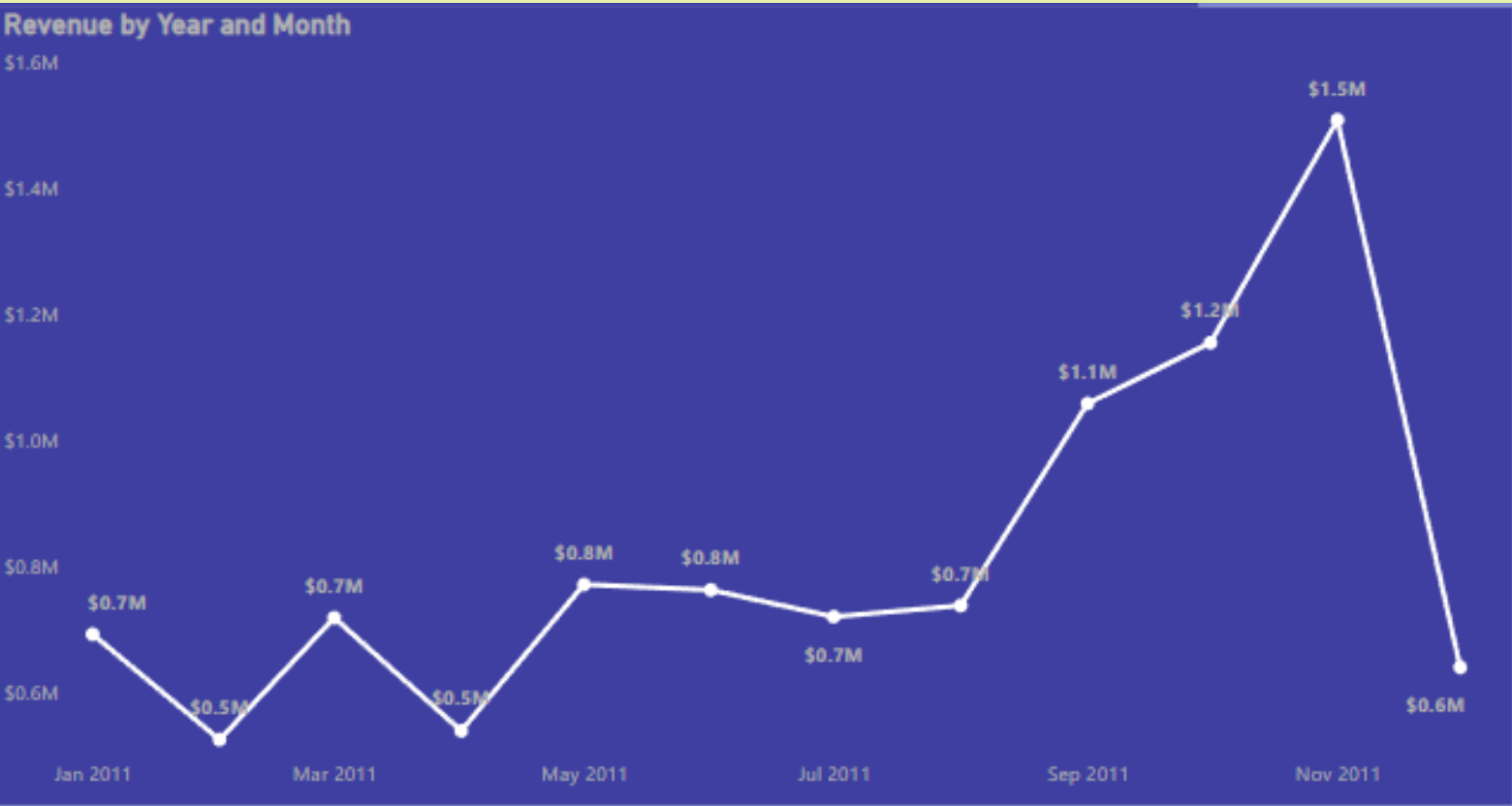
ANALYSIS

Question 2

The CMO is interested in viewing the top 10 countries which are generating the highest revenue. Additionally, the CMO is also interested in viewing the quantity sold along with the revenue generated. The CMO does not want to have the United Kingdom in this visual.

Revenue and Quantity Sold by Country

● Revenue ● Quantity Sold

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

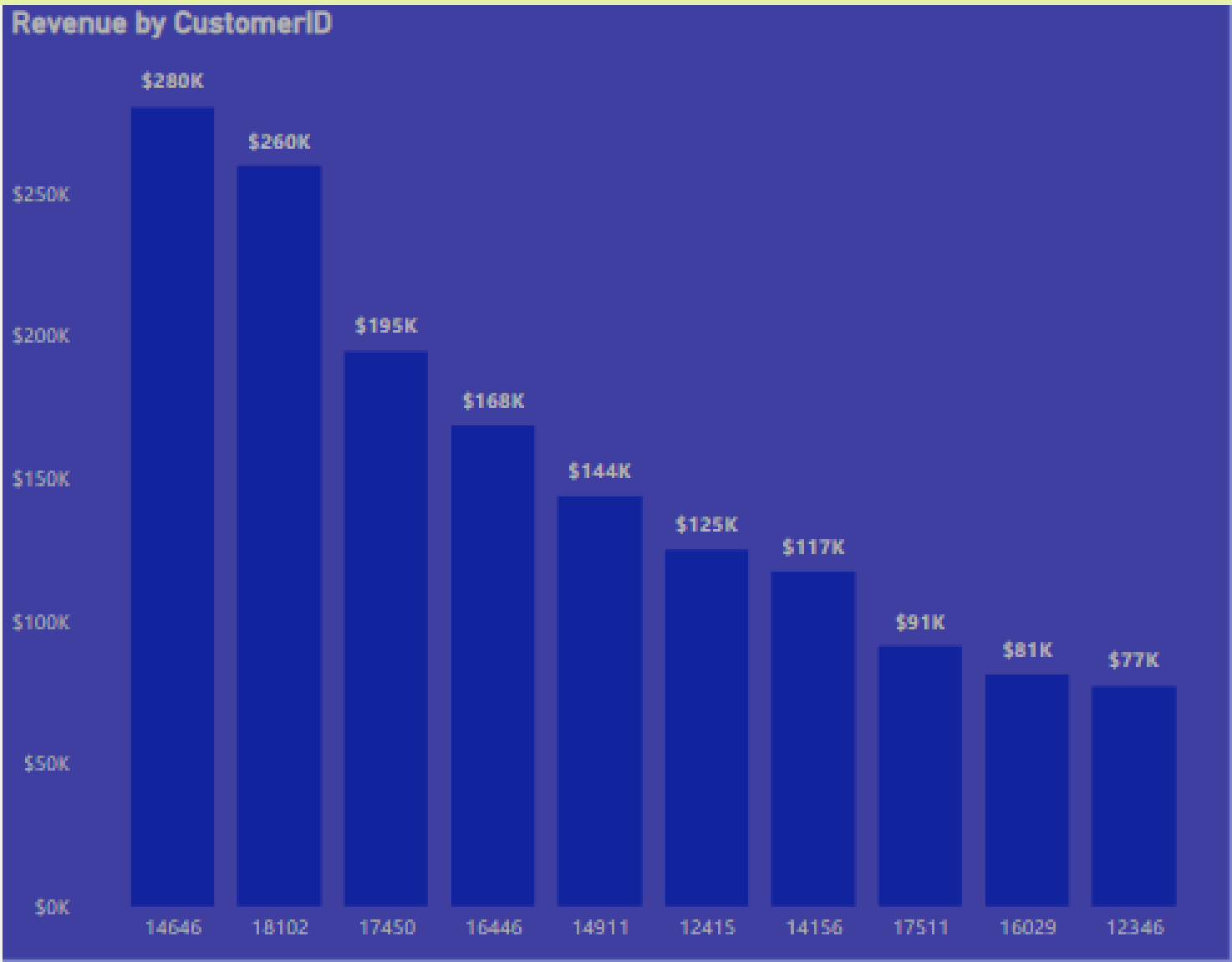$0K $50K $100K $150K $200K $250K $300K

ANALYSIS

Question 3

The CMO of the online retail store wants to view the information on the top 10 customers by revenue. He is interested in a visual that shows the greatest revenue-generating customer at the start and gradually declines to the lower revenue-generating customers. The CMO wants to target higher revenue generating customers and ensure that they remain satisfied with their products.

Revenue by CustomerID

CustomerID	Revenue
14646	$280K
18102	$260K
17450	$195K
16446	$168K
14911	$144K
12415	$125K
14156	$117K
17511	$91K
16029	$81K
12346	$77K

ANALYSIS

Question 4

The CEO is looking to gain insights on the demand for their products. He wants to look at all countries and see which regions have the greatest demand for their products. Once the CEO gets an idea of the regions that have high demand, he will initiate an expansion strategy which will allow the company to target these areas and generate more business from these regions. He wants to view the entire data on a single view without the need to scroll or hover over the data points to identify the demand. There is no need to show data for the United Kingdom as the CEO is more interested in viewing the countries that have expansion opportunities.

Sum of Quantity by Country

RESULTS AND DISCUSSION

For the first question, the CEO has requested a trend of the revenue to see if there is any seasonality in the store sales. My analysis shows that there are some months of the year when exceptional growth is witnessed. The data shows that the revenue in the first 8 months is fairly constant as the average revenue generated for these 8 months is around $685k. The revenue increase starts in September when the revenue increases by 40% over the previous month. This trend continues till the month of November when it reached 1.5 million USD, the highest during the entire year. The data is incomplete for the month of December, therefore, no conclusion can be drawn from it, unfortunately. This analysis shows that retail store sales are impacted by seasonality which usually occurs in the last 4 months of the year.

The second visual shows how the top 10 countries which have opportunities for growth are performing. This data does not include the UK as the country already has high demand and I've been told to be more focused on the countries where demand can be increased. The analysis shows that countries such as the Netherlands, Ireland, Germany, and France have high volumes of units bought and revenue generated. I would suggest that these countries should be focused on to ensure that measures are taken to capture these markets even more.

The third analysis has been performed on the top 10 customers who have purchased the most from the store. The data shows that there is not much of a difference between the purchases made by the top 10 customers. The highest revenue-generating customer only purchased 8% more than the 2nd highest which shows that the business is not relying only on a few customers to generate revenue. This shows that the bargaining power of customers is low and the business is in a good position.

Finally, the map chart shows the regions that have generated the most revenue compared with the regions that have not. It can be seen that apart from the UK, countries such as Netherlands, Ireland, Germany, France and Australia are generating high revenue and the company should invest more in these areas to increase demand for products. The map also shows that most of the sales are only in the European region with very few in the American region. Africa and Asia do not have any demand for the products, along with Russia. A new strategy targeting these areas has the potential to boost sales revenues and profitability.

APPENDIX

Online Retail Store Dataset >>> Here

Online Retail Store Power BI Desktop Report >>> Here