Multiple Choice (5 marks per question)

1. What is data visualization?

a) It is the graphical representation of information and data
b) It is the numerical representation of information and data
c) It is the character representation of information and data
d) None of the above

Answer: a) It is the graphical representation of information and data

2. What is true about data visualization?

a) Data Visualization helps users in analyzing a large amount of data in a simpler way
b) Data Visualization makes complex data more accessible, understandable, and usable
c) Data Visualization is a graphical representation of data
d) All of the above

Answer: d) All of the above

3. Data visualization is also an element of the broader .....

a) data process architecture
b) data presentation architecture
c) deliver presentation architecture
d) None of the above

Answer: b) data presentation architecture

4. Data visualization tools provide an accessible way to see and understand ..... in data.

a) trends
b) outliers
c) patterns
d) All of the above

Answer: d) All of the above

5. Which method shows hierarchical data in a nested format?

a) Treemaps
b) Scatter plots
c) Area charts
d) Population pyramids

Answer: a) Treemaps

6. What are the common types of data visualization?

a) Charts
b) Tables
c) Infographics
d) All of the above

Answer: d) All of the above

7. What are specific examples of methods to visualize data?

a) Area Chart
b) Bubble Cloud
c) Dot Distribution Map
d) All of the above

Answer: d) All of the above

8. The importance of data visualization are .....

a) Leading the target audience to focus on business insights to discover areas that require attention
b) Revealing previously unnoticed key points about the data sources to help decision makers compose data analysis reports
c) Helping decision makers understand how the business data is being interpreted to determine business decisions
d) All of the above

Answer: d) All of the above

9. What are the benefits of data visualization?

a) Better analysis
b) Identifying patterns
c) Exploring business insights
d) All of the above

Answer: d) All of the above

10. The charts that are helpful in making comparisons between .....

a) Bar charts
b) column charts
c) Pie charts
d) Both Bar & Column Charts

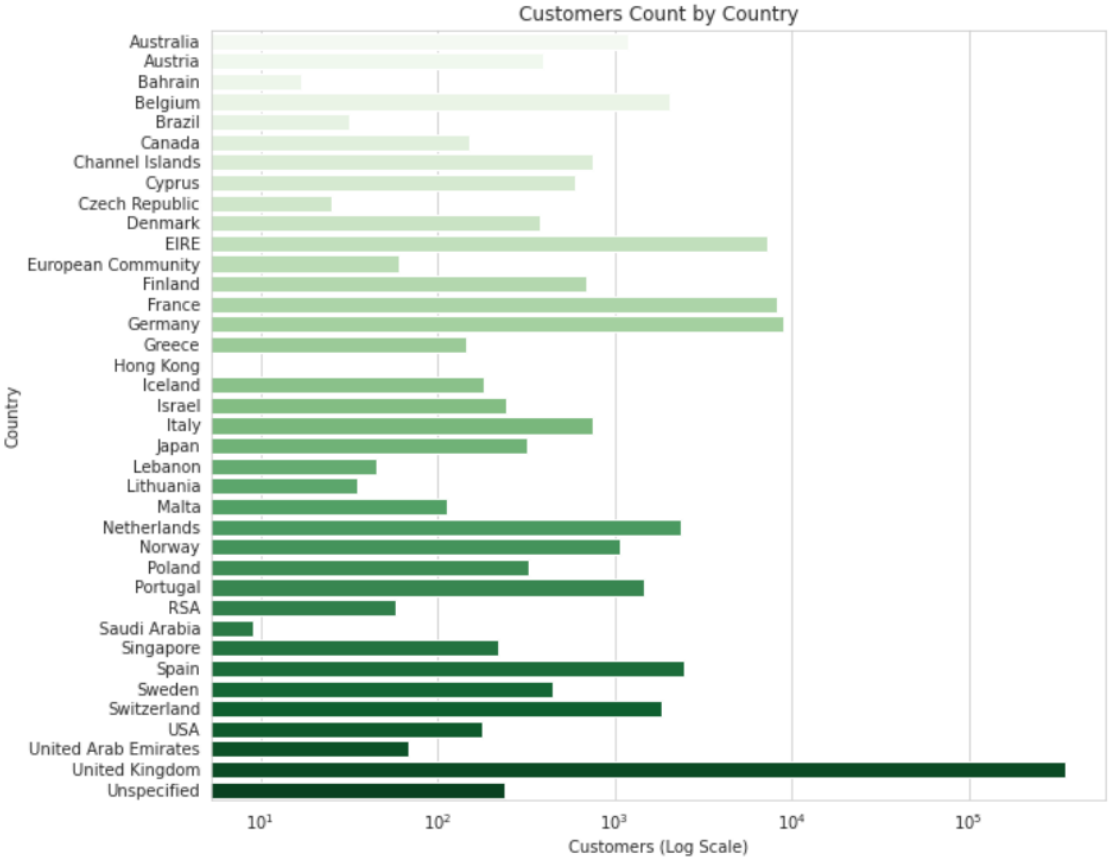
Answer: d) Both Bar & Column Charts

Case Study (25 marks per question)

Visualisation #1: The Head of Consumer Banking is interested in which region has had the highest growth in customers in last 12 months, and for that region, which centres have had the highest growth in customers. Please consider and mockup a simple visualisation to answer her query.

Answer:

The pillar of data visualization that is appropriate to use in this case is comparison. Why? Because with the pillar of comparison we can see the comparison of the growth of bank customers from each country directly. For this case, I suggest using data visualization in the form of a bar chart. data from each country is collected from the number of customers of the bank in the last 12 months. In the bar chart, x is defined as the number of customers and y is defined as the name of the region/country. The following is an example of the simple visualization. For comparison of each centre by region, visualization with the same concept can also be done as in the example below.



Visualisation #2: The Head of Operations is curious as to whether the number of visits is drive exclusively by number of customers, or whether instead there are some centres with many customers and few visits or vice versa. Please consider and mockup a simple visualisation that will make this answer clear.

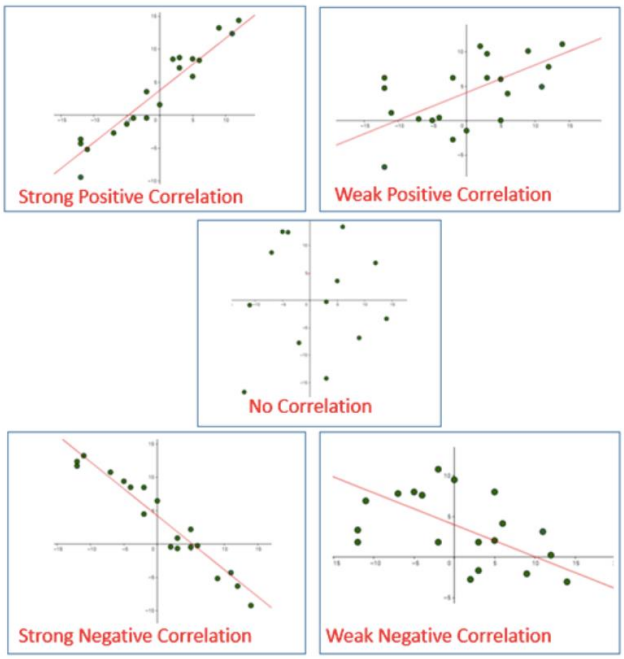
Answer:

The right pillar of data visualization to use in this case is relationship. Why? Because with the relationship pillar we can see the relationship and correlation between two or more variables in the data. In this case, the variables to be compared are the number of visits and the number of customers. We want to see if these two variables have positive correlation or negative correlation or maybe no correlation. In this case, I suggest using data visualization in the form of a scatter plot or heatmap. but it is not effective to use a scatter plot if the amount of data is large because we can't see the point of correlation clearly. In this example, I will use scatter plot.

Correlation is a statistical measure that expresses the strength of the relationship between two variables. The two main types of correlation are positive and negative. Positive correlation occurs when two variables move in the same direction; as one increases, so do the other. A negative correlation occurs when two variables move in opposite directions; as one increases, the other decreases Correlation can be used to test hypotheses about cause and effect relationships between variables. Correlation is often used in the real world to predict trends.

Correlation is often used to determine whether there is a cause-and-effect relationship between two variables. If we found that there was a strong positive correlation, it would suggest that there may be a causal relationship. However, correlation does not necessarily imply causation; other factors may be at play. However, it is important to remember that correlation does not imply causation. For example, there may be a strong correlation between number of visit and number of customer, but that doesn't mean that number of visit is caused by number of customer or vice versa.

Correlation between two variables can also be determined using a scatter plot between these two variables. Here is the diagram representing correlation as a scatterplot. The correlation of the diagram in the top-left will have correlation near to 1. The correlation of the diagram in the middle row will have a correlation near to 0. The correlation of the diagram in the bottom-right will have a correlation near -1.



Correlation between two random variables or bivariate data does not necessary imply causal relationship.