23AD05- Data visualization

Assignment-1

Case Study 1: Social Media Engagement Analysis

Objective

Analyze social media posts to identify patterns in engagement across platforms, content types, and time.

Dataset

Social Media Engagement Dataset – Kaggle

Tasks

Students should import the dataset into R and create the following visualizations using **ggplot2**.

1. Create a **bar chart** showing the number of posts for each social media platform.
2. Create a **bar chart** showing average likes for each platform.
3. Create a **bar chart** showing average engagement rate for different content types.
4. Create a **histogram** showing the distribution of likes.
5. Create a **box plot** showing engagement rate across different platforms.
6. Create a **scatter plot** showing the relationship between followers and likes.
7. Create a **scatter plot** showing followers versus engagement rate.
8. Create a **line chart** showing engagement over time.
9. Create a **faceted plot** comparing engagement across platforms and content types.
10. Identify the platform and content type with the highest average engagement.

Questions to Answer

- Which platform performs best?
- Which content type generates the highest engagement?
- Are followers strongly related to likes?
- Are there any extreme engagement values?
- What recommendations can be made to improve social media performance?

Case Study 2: Online Retail Sales Analysis

Dataset

UCI Online Retail Dataset

Objective

Analyze customer transactions to understand sales trends, product performance and geographical sales distribution.

Tasks using R/ggplot2

1. Create a **line chart** showing monthly sales.
2. Create a **bar chart** showing the top 10 products based on quantity sold.
3. Create a **bar chart** showing sales by country.
4. Create a **histogram** showing transaction value.
5. Create a **box plot** showing unit price distribution.
6. Create a **scatter plot** between quantity and sales amount.
7. Create a **bar chart** comparing average transaction value across countries.
8. Create a **faceted visualization** of monthly sales for selected countries.
9. Identify the top 10 products by revenue.
10. Create an appropriate visualization showing the relationship between product quantity and revenue.

Questions

- Which month has the highest sales?
- Which products are most popular?
- Which country contributes the most sales?
- Are there unusually large transactions?
- Is quantity strongly related to revenue?