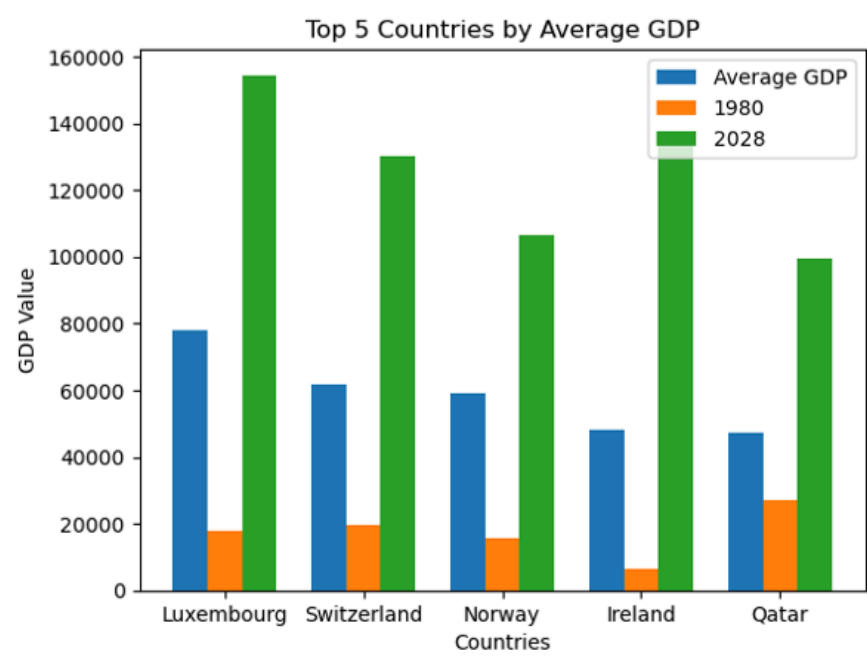


GDP Analysis Report

This report analyzes GDP data across various countries from 1980 to 2028. The aim is to explore trends in GDP over time and to compare GDP values among different countries, highlighting countries with the highest and lowest average GDPs during the given period. We clean the data by addressing missing values, handling duplicates, and calculating descriptive statistics to understand the central tendency and distribution of GDP values. Various visualizations are used to represent the trends, distributions, and comparisons effectively. The initial dataset was inspected for missing values and duplicates. Rows with missing GDP values were identified and handled by replacing missing values with the mean GDP value of the respective year. This ensured a complete dataset for analysis. Duplicate rows were also removed to prevent skewed results.

To understand the general distribution and characteristics of the GDP data, we calculated key statistical measures, including mean, median, standard deviation, skewness, and kurtosis. Additionally, we generated a correlation matrix to explore potential relationships between the GDP values over time.

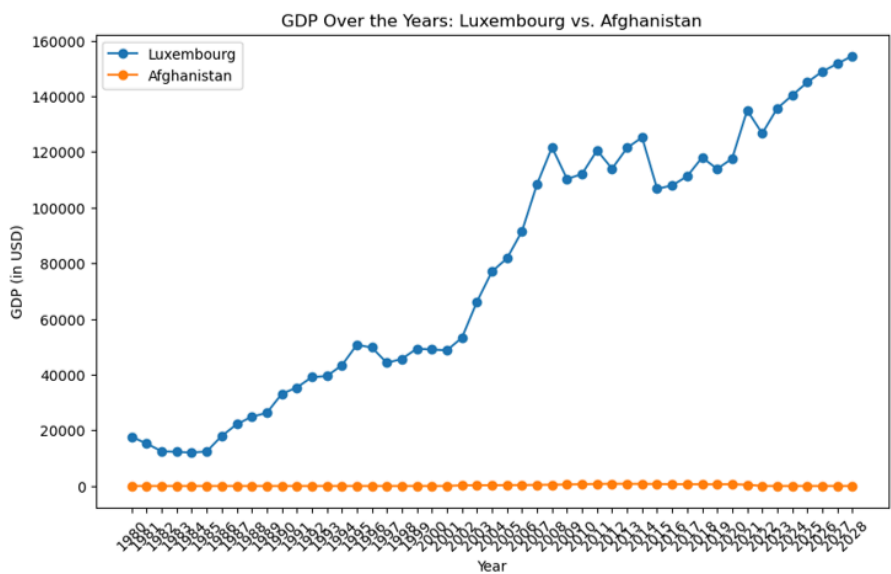
Categorical Graph: Bar Chart of Top 5 Countries by Average GDP



The bar chart below shows the top 5 countries based on average GDP from 1980 to 2028. Each country's GDP in the first year (1980) and last year (2028) is compared alongside its average GDP over the entire time span.

The bar chart clearly shows the economic growth of the top 5 countries with the highest average GDP values over the given time period. Luxembourg, for instance, has shown a consistent increase from 1980 to 2028, while other countries in the top 5 also display significant growth over the years.

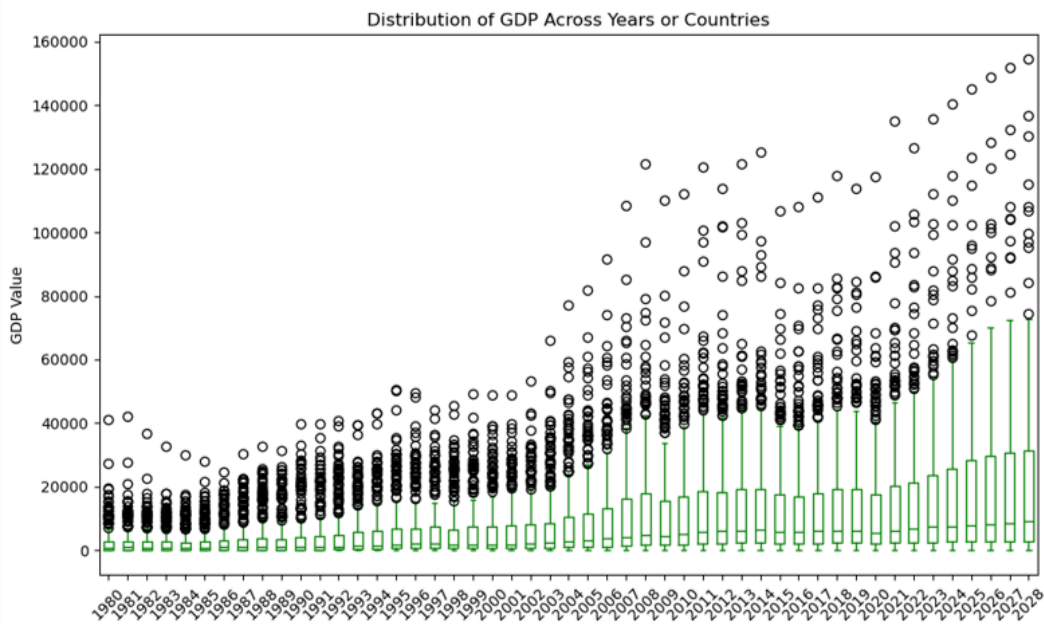
**Relational Graph: GDP Trends for Luxembourg and Afghanistan**



A line plot was created to show the trend in GDP over time for two countries with contrasting GDP values—Luxembourg and Afghanistan. This graph highlights the disparity between high-GDP and low-GDP countries over the analyzed time span.

Luxembourg’s GDP has grown steadily, with a sharp increase starting around the early 2000s, showcasing its economic stability and growth. Afghanistan, on the other hand, has maintained a relatively low GDP over the years, reflecting different economic circumstances.

**Statistical Graph: Box Plot of GDP Distribution Across Years**



The box plot below provides a visual summary of the distribution of GDP values for each year from 1980 to 2028. It shows the median GDP, interquartile range, and outliers, allowing us to see the spread and

variation in GDP values across countries each year. The box plot indicates that the median GDP has gradually increased over the years, with a noticeable increase in the spread of GDP values as well. Outliers represent countries with significantly higher or lower GDPs compared to others, highlighting economic disparities between countries.

The study intends to offer a wider view of world economic activities and GDP growth from 1980 to 2028. These differences between countries have been expressed quite aptly, in easy terms, through statistical analysis and charts, thereby providing a good idea regarding the global economic front during the period of observation.