**DATA VISUALIZATION**

**PROJECT REPORT**

**By**

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**Introduction:**

Stock markets are one of the important indicators for the financial health of a country. So, analyzing the market growth gives us an insight into the financial well-being of a country and its citizens. The growth of the markets has been staggering all over the world in the 21st century. One indicator to assess this growth is the total market capitalization value which is the sum of the market values of all the companies listed on the stock market.

Analyzing this data along with the GDP of a country helps us further understand the factors that influence this growth. Gross Domestic Product (GDP) of a country is the total market value of all the goods produced within the country. In this analysis, median age and urban population percentage are the 2 factors that have been used to understand the effect they have on the GDP of a country.

The research questions that are answered in this project are:

1. What is the difference between the growth in developed and developing countries?
2. What is the relation between the stock market capitalization and GDP of a country?
3. What is the effect of recession on the markets in different countries?
4. Do long established markets have advantage over the recently established ones?

**Methodology:**

3 different data sources have been sourced from different websites (mentioned at the end of the report) to analyze the patterns in the stock market growth. The data sources have been cleaned using the Tableau Prep Builder tool and it is loaded into Tableau and appropriate connections have been made between the data sources.

The following values are used from the “Stock Market Cap” dataset:

|  |  |
| --- | --- |
| **Variable Name** | **Description** |
| Country Name | Name of the countries |
| Year | Year |
| Market Capitalization Value | Market capitalization value of countries for every year |

The following values are used from the “Stock Market Cap to GDP” dataset:

|  |  |
| --- | --- |
| **Variable Name** | **Description** |
| Country Name | Name of the countries |
| Year | Year |
| Market Capitalization Value to GDP | Market capitalization value to GDP of countries for every year |

The following values are used from the “pop\_worldometer\_data” dataset:

|  |  |
| --- | --- |
| **Variable Name** | **Description** |
| Country | Name of the countries |
| Med. Age | Median age of the countries |
| Population | Population of the country |
| Urban Pop % | Percentage of urban population in a country |

The following values are used from the “GDP” dataset:

|  |  |
| --- | --- |
| **Variable Name** | **Description** |
| Country Name | Name of the countries |
| Year | Year |
| GDP | GDP of countries for every year |

**Analysis:**

1. **Total Stock Market Value of Countries in the year 2020:**

**Chart, bubble chart

Description automatically generated**

The above packed bubbles chart shows that the stock markets of the United States, China, Hong Kong, Saudi Arabia, Japan, India, Germany, Brazil, Canada, Switzerland, and Australia are some of the largest in the world. With a capitalization value of over 40 trillion dollars in the year 2020, the stock market of the United States is the largest in the world.

1. **Stock Market Value to GDP for various countries in the year 2020:**

The stock market capitalization to GDP ratio of a country is an indicator of an over-valued or under-valued market. Commonly called the Buffet Indicator, it is calculated by dividing the total market value with the GDP.

If the value of this indicator is above 100, it suggests an over-valued market while a value of below 75 suggests an under-valued market. From the above graph, markets of Hong Kong, Iran, Saudi Arabia and South Africa are said to be over-valued.

**Graphical user interface, application

Description automatically generated**

1. **Growth in GDP Value of top 10 countries from 1960-2021:**

**Chart, line chart

Description automatically generated**

From the above animated line chart, the United States has the highest GDP of all countries with a value of over 23 trillion dollars. It is closely followed by China with 17.7 trillion dollars GDP as of 2021. The growth has staggered for countries like Japan and Germany while it is on the rise for developing countries such as India and Brazil.

From the above graphs, it can also be observed that the countries with highest GDP also have the largest stock markets in the world.

1. **Market value compared to Population for the 10 most populated countries:**

**Chart, bar chart

Description automatically generated**

Comparing the total stock market value with the population of a country gives us a better understanding of the financial well-being of the citizens in that country. From the above graph, it can be observed that the developed nations of United States and Japan have higher market values compared to their population while the developing nations of Pakistan, Nigeria and Bangladesh have the lowest values compared with their population.

1. **GDP per capita compared to median age for top 10 countries:**

Comparing the GDP per capita with the median age of a country can also be used to predict the future growth or decline of the financial condition of countries. Countries like India, Brazil with low median age have a huge potential for growth while Japan, Italy with a much older population is looking at a decline in the future.

The GDP per capita for this chart is a calculated field created by dividing the GDP value of a country with its population for the year 2020.

**Chart, line chart, histogram

Description automatically generated**

1. **Growth in stock market value of top 10 countries in the past 20 years:**

The above area chart shows the comparative growth of stock market values of the top 10 countries over the past 20 years. Overall trend suggests an increase in the market values for all countries.

Effects of recession in the year 2008 can also be clearly viewed from the above chart. The rebound after the recession is quite similar for all the listed countries and the growth has been exponential since then.

**Chart, histogram

Description automatically generated**

1. **Urban population vs GDP for various countries:**

**Map

Description automatically generated with medium confidence**

Percentage of urban population also has an impact on the GDP and market values of different countries. The above map shows countries with high urbanization marked in blue also have higher GDP while the countries with low urbanization in South Asia and Africa shown in red have lower GDP values.

1. **GDP of countries compared with median age, urban population percentage:**

**Graphical user interface, application

Description automatically generated**

The above dashboard shows the trends in GDP across different countries in the world and the factors that influence it. Median age and Urban Population are 2 of the factors that are shown in these visualizations to have an impact on the GDP.

1. **Comparison of growth in stock market value for different countries:**

**Chart

Description automatically generated**

The above dashboard shows the growth in stock market values of different countries. Developed and developing countries alike have been growing at a faster pace in the recent years.

**Conclusion:**

To conclude, the above visualizations and dashboards show a clear picture of growing market capitalizations and GDPs across all countries in the world. There has been a tremendous growth in the markets of both developed and developing countries in the recent years and it is also clear that recessions only have a short-term impact on the growth of the markets.

The graphs show that the market value and GDP of USA completely eclipses that of the other countries and countries like Iran, Saudi Arabia and South Africa have a market value to GDP ratio well over 100 suggesting over-valued markets. Based on the trends shown in the above visualizations, one would only bet on further growth of stock markets across the world.

**Sources:**

1. The population worldometer data table has been sourced from: <https://www.kaggle.com/> and
2. The other data has been sourced from: <https://data.worldbank.org/>