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| THE WEALTH OF NATIONS |
| Data Analysis and Visualization |

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| Mamatha G  2-18-2023 |

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# Objective:

The main objective of this document is to analyse ‘The Wealth of nations’ data set. This data set has three different sheets which contains – GDP, Life expectancy and smartphone users data. The complete analysis of the data by looking at the data structures, policies and procedures to follow, Excel analysis and Data visualization in Tableau is done in this document. This document is divided into four different sections –

1. Policies and Procedures
2. Data and Data Structure
3. Development of Data sets using Excel
4. Data Visualization in Tableau

# Policies and Procedures –

We are provided with ‘The Wealth of nations data’ for analysis. The Wealth of nations data provides estimates of each country’s external financial assets and liabilities. This data is very useful and critical for businesses.

1. This data and report need to be accessed by authorized persons only.
2. There should be a team which governs this data and report. So that, un-authorized people cannot access this data.
3. If anyone need access to this data or report, they need to request it through their manager.
4. No report should display any personal information of any person.

We need to follow above procedure as this data is critical. Based on this data businesses make critical decisions. If data is accessed by un-authorized people, the businesses may get losses. Also, if this data is not handled properly, it may be accessed by hackers. This will mean companies may be fined for not handling the data properly. We must also make sure the GDPR regulations for data protections are followed.

# Data and Data Structure

Data can be many things.​ It can be words in a book, article or blog. It can be contents of a spreadsheet or database or pictures or a video. It can also be stream of measurements we take from a device or any useful information.

Graphical user interface, timeline

Description automatically generated

In Wealth of nations, we are looking at three types of data to analyze-

1. GDP - It got Text and Numbers. (Rank, Country, Amount and Currency, Year)
2. Life Expectancy – It got Text and Numbers. (Country, Rank, Age, Year)
3. Smartphone users – It got Text and Numbers. (Rank, Country, Population, Year)

* All three data sets are quantitative data sets, as all of them got numbers. Though country seems qualitative data, but we got numbers against them making it whole as quantitative data set.
* All three data sets are structured data.
* All three data sets don’t have any duplicates when you compare all records. So, it is cleansed data at table or sheet level.

# Development of Data sets using Excel

## GDP Task

1. Set password to protect the workbook.

Graphical user interface, application, table, Excel

Description automatically generated

1. Highlight column C and change the data to display in British Pound symbol

Graphical user interface, application, table, Excel

Description automatically generated

1. Turn the GDP sheet into a table.

Graphical user interface, application, table, Excel

Description automatically generated

1. Filter the table to display only the information for 2019.

Graphical user interface, application, table, Excel

Description automatically generated

1. Next create a chart that will only display the following data ‘Rank, Country, and GDP - per capita (PPP). The chart can be anything as long as it is suitable.

Graphical user interface, application, table, Excel

Description automatically generated

1. Using your creative skills edit the chart
2. Add a title
3. b. Add X and Y axis labels
4. c. Make the chart visually pleasing
5. Move the chart to a new sheet tab and label with a suitable name

***( Below screen shot is for points 6 & 7)***

Graphical user interface, table

Description automatically generated

1. Create a sort for the top 20 highest ranking countries.

Graphical user interface

Description automatically generated

1. Next create a new Bar chart to display the 20 highest ranking countries from your sort and then move the chart to be underneath the table, as shown below.

Graphical user interface, application, table, Excel

Description automatically generated

1. Colour the background by highlighting the area underneath the table as shown below. Find the add a fill colour icon and select a colour.

Graphical user interface

Description automatically generated with medium confidence

1. The next task is to create 3 macro buttons, print the sheet, Save the file and copy the sheet

To copy the sheet in a macro you highlight the area to be copied then right click copy then stop the macro. Next assign the macro to the copy button.

Graphical user interface, application, table

Description automatically generated

**Macro(save):**

Graphical user interface, application

Description automatically generated

1. Using the copy macro, copy the sheet and then paste it into a new word document keeping the formatting. Give the page a title ‘GDP (Gross domestic product)’.
2. Save your document as ‘Word Gross domestic product report 1’.

***(Below screenshot is for both points 12 and 13)***

Table

Description automatically generated

1. Before we finish with our excel table ‘Gross domestic product’ sheet, we will add a header and footer to our table. Select the ‘View’ tab from the top and find the ‘workbook views’ area.
2. Select the ‘Page Layout’ icon. This will then display the screen with a header and footer as seen below. Note that there are three boxes for you to enter information in to.
3. In the header enter your name and GLA DATA 1 in the three boxes
4. In the footer add todays date then Assignment 1 and lastly Data Visualisation.
5. Save your table as ‘Excel Gross domestic product report 1’

***(Below screenshot is for points 14,15,16,17 and 18)***

Graphical user interface, table

Description automatically generated

1. Close your word document only.

# Data analysis in Tableau

## Tableau:

### Tableau Definition: ​

Tableau is a visual analytics platform that ​focuses on creating beautiful and effective visuals. It does so by giving the user powerful but easy-to-use tools to build dashboards.

I am using Tableau Public for this assignment. Tableau Public is a free Download from the Tableau Website. It is constrained by the Data sources to which it can connect. Only the following Data sources are supported. With Tableau Public, anyone can find your Visualization. It does not support saving workbooks locally. Tableau Public can Visualize Data sets containing up to 1 million rows of Data.

Connect:

To a File: Microsoft Excel, Text file, JSON file, Microsoft Access, PDF file, Spatial file, Statistical file.

To Server: OData, Installed Connectors, Google Drive, Web Data Connector

### Tableau using excel ‘The Wealth of nations.

Tableau Workflow:

Timeline

Description automatically generated

1. Open Tableau workbook, Read the Data from ‘The Wealth of nations’ into Tableau.
2. In Tableau data Source page, I am keeping a sheet & creating Relationship between Tables .

Graphical user interface, application

Description automatically generated

1. Here I am checking Data Types of every Column of 3 Tables. Transforming the way

Graphical user interface, application

Description automatically generated

1. Drag the Dimension,Country from Dimension area under the Data pane and place it on Row shelf .
2. Drag the Measurer, GDP-Per Capita from Measure area under the Data pane and placec it on Column shelf.
3. Save the file as a .twb by going to File ➤ Save As... ➤ .twb
4. Here I am choosing colours related to ‘colour Blind palette’ is Orange-Blue Diverging.

(Below screenshot is for 4,5,6 and 7)

Graphical user interface, application

Description automatically generated

1. In Visuals, I am choosing Top 20 Countries. So I am using Top 20 Countries as a Parameter.

A screenshot of a computer

Description automatically generated with medium confidence

1. Here Creating a Country Set.

Graphical user interface, application

Description automatically generated

1. Creating a Country set by Top 20 Countries parameter.

Graphical user interface, application

Description automatically generated

1. Here the Top 20 GDP Counties visual is created.

Graphical user interface, chart

Description automatically generated

1. Like as above Top 20 Life expectancy countries Visual is created.

Graphical user interface, application

Description automatically generated

1. Like as above Top 20 Smartphones countries Visual is created.

Graphical user interface, text, application

Description automatically generated

1. Here I am created calculated field as Avg Life expectancy field. Graphical user interface, text, application

   Description automatically generated
2. Here I am using Calculated field as avg life expectancy Visual.

Graphical user interface, text, application, email

Description automatically generated

1. Here I am using Calculated field as Max phone sales.Graphical user interface, text, application, email

   Description automatically generated
2. Here I am using Calculated field as Max/Min Smartphone country sales Visual.

Graphical user interface, text, application, email

Description automatically generated

1. Here creating Top 20 Life expectancy countries Map Visual.

Map

Description automatically generated

1. Like as above I created Top 20 GDP Countries Map Visual.

Map

Description automatically generated

1. Like as above I created Top 20 Smartphone Countries Map Visual.

Map

Description automatically generated

1. Creating dashboard:

i) Here finally Creating a ‘Wealth of Nations DashBoard’ with Top 20 Countries & Top 20 Countries Ranking wise.

ii) Here we can see the Data of Top 20 Countries Ranking filtering & Top 20 Countries Filtering.

iii) Here all Visuals Interact with eachother.

iv) Here we can see Data of Top 20 countries or with in range of countries or particular countrie Data.

Graphical user interface, application

Description automatically generated

# Reflection

Data Visualisation is very important as it gives businesses insight of the company business. Data in raw format is very difficult to understand. So the raw data need to cleansed and transformed before it can be made available in report format. Not only developing a good report is important but also we have to make sure the data is handled properly. If the data is sensitive, it need to properly document. Also, it is important that we follow policies and procedures so that we don’t fail any government regulations.