



Group Assignment 2: Challenge -Data Analysis

Team details

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Project description & Overview

The goal for this project was to compare two datasets based on **the tax revenue** collected from different countries against one that has factors that have affected the revenue collection in these countries.

The first dataset. This is a dataset on tax revenue for Sub-Saharan Africa from 1980 to 2010, which highlights the different sources of tax revenue for different countries.

The second dataset. This is a dataset on financial information and factors that have affected the economies of different countries in the African continent.

The analysis done on the tax revenue dataset primarily focused on determining the sources of tax revenue and the variations in contribution to the total tax.

We used the financial dataset to compare our findings with factors that might have affected the collection of tax across tax collection sectors in the countries sampled.

Environment Needed

The environment needed to set up the data analysis space comprises a bunch of technology tools which are:

- 1) The latest **python** version
- 2) **Anaconda**, an open distribution for python as the base setup for our data science environment.
- 3) **Jupyter Notebooks** is the canvas needed to build solutions for the analysis

Libraries for analysis

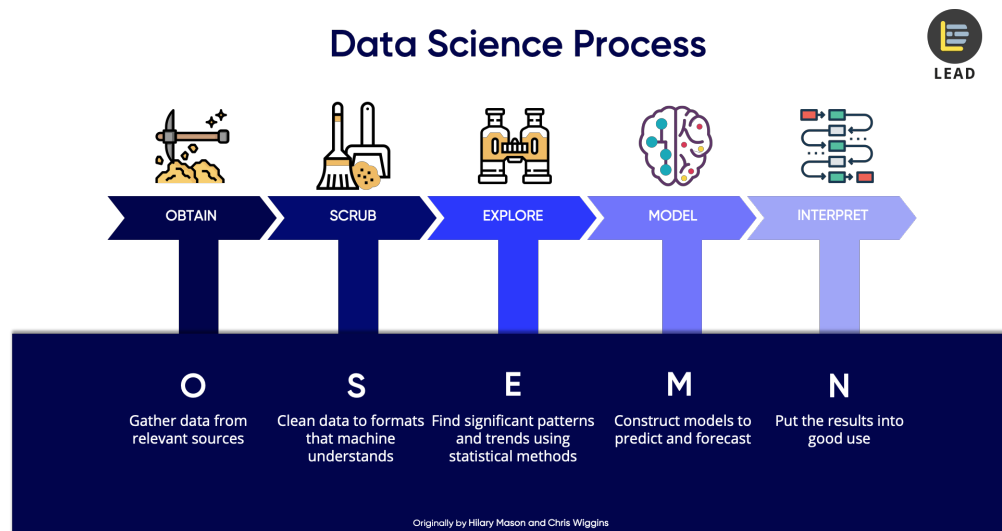
- 1) **Matplotlib** for visualization
- 2) **Pandas** for interacting with the dataset and importing functions for analysis

Budget

Our pricing is entirely on **individual service charges** for the **freelancers** that make up the team. On average they charge an hourly fee of **between \$ 30 - \$ 40 dollars per hour**. Working for three weeks, at a total of **30 hours a week**, totaling **90 hours** will require an approximate **budget of \$ 10800**.

Implementation Timeline

The implementation time is **about 3 weeks** to allow us to go through the entire data science process which is highlighted below.



- For gathering information given it's readily available, getting it ready for analysis by **cleaning** will be taking the bulk of our initial time.
- Next will be trying to **find patterns and trends** in the dataset and also relationships in both linear and non-linear forms.
- After having a basis of a pattern, we will need to **construct a model** that we will then test the dataset on to be used to verify whether it can be efficient in making predictions on future tax collection.
- We will then kick off the phase with **phase one of the prototype** that will run over 3 months and thereafter analysis on the findings.
- After accessing what's working and not working, necessary changes can be made and a final product can be set up for the market.

Recommendation

Comparing the largest tax revenue-generating economy, which is South Africa, we recommend the following:

- 1) **Increasing individual tax collection.** In comparison to South Africa, which is the highest performing country in tax collection, South Africa got its biggest tax revenue from **Individual tax at 98.50%**, we recommend the Rwandan Government boost its tax collection in this sector. [1]

Maximum taxes	
Direct Taxes	89.44
Corporate Tax	87.66
Individual Tax	98.50
Indirect Taxes	95.91
Trade Taxes	9.62
Resource Taxes	7.72
Non-Resource Taxes	93.04
dtype: float64	

- 1 **Averaging the tax collection channels.** Based on the dataset, there are extreme highs and lows, averaging the tax generation to about 75 to 95% would greatly boost the collection

Maximum taxes	
Direct Taxes	85.81
Corporate Tax	7.40
Individual Tax	9.00
Indirect Taxes	95.54
Trade Taxes	9.30
Resource Taxes	NaN
Non-Resource Taxes	94.60
dtype: float64	

- 1 **Inflation**, factors that lead to high levels of inflation like when the demand for goods and services in an economy rises more rapidly than an economy's productive capacity can be mitigated, as based on South Africa's tax revenue, their low level of inflation has resulted in a higher value of the South African Rand, which promotes an overall healthy economy, boosting money circulation and revenue collection more secondary this mentoring the recommendation of Increasing individual tax, there are some disadvantages to this, as highlighted below.

Risk

When taxation is **increased**, consumer spending **decreases** simply because tax takes money from consumers making them **have less disposable income**.

With lesser disposable income, business revenue is decreased, which affects a ton of areas, including hiring investment, which **increases the rate of unemployment** and overall, the **lesser profits businesses make**, the **lesser tax** they will pay, which overall inhibits economic growth.

Reference:

[1]"Disadvantages of Taxes", Pocketsense, 2021. [Online]. Available: <https://pocketsense.com/disadvantages-of-taxes-1283.html>.

[Accessed: 07- Mar- 2021].

[2]"Home: Welcome to RRA - Rwanda Revenue Authority", Rra.gov.rw, 2021. [Online]. Available: <https://www.rra.gov.rw/>. [Accessed: 07- Mar- 2021].

Conclusion

The analysis has proven facts based on the data given which has informed the making of data driven decisions. The pros outweigh the cons in which we do recommend that The Rwanda Government adapt to our recommendations.

This bid was developed by **Group 3C1** with input from Heather, Imali, Lavina, and Ian. By my signature below, I hereby certify that this bid Proposal reflects our best estimate of the true and necessary costs for the RRA Project, and the information provided herein is accurate, complete, and current as of the date.

Name: Group 3C1 DATE:07 March 2021