1. Background and problem Description

Agriculture is one of the key sectors that has made significant contributions to African daily life, with agriculture serving as the principal source of income for a significant majority of Africans according to FAO[1]. As a result, our analysis concentrated on agricultural and food production throughout Africa, with a specific emphasis on East Africa. The investigation was carried out using UN agricultural data[2]. The following five questions were addressed in order to conduct this analysis:

1. The first question is, how has the East African region performed in agricultural and food production throughout the years in comparison to other African regions?
2. How has been the agriculture and food production in African regions over the years (1975-2016)?
    a. In which year does East Africa perform well and bad in Agriculture?
    b. In which year does East Africa perform well and bad in Food production?
3. What is the best and last EAC country in Agricultural and food production in 2016?

4. Does agricultural performance contribute to food production performance in East Africa?
5. Because we are Rwandans, we may be curious about how Rwanda compares to other countries in the area. Is it good or bad? Its position in the most recent centennial years in terms of both agricultural and food production ?

2. Methods

This analysis was conducted using the python programming language as one of the most powerful tools in data analysis to structure the data and visualize it . Scatter plot was used to analyse and plot time series data. Bar graph also was used for some comparison. Finally , the correlation matrix and regression plot was used for correlation analysis.

3. Results and discussion

We shall adhere to the questions raised in the background and problem statement description sections while presenting the findings of this research.

According to figure 1 and figure 2 Easter African region is in the best position in the recent years from (2010 to 2016) in both agriculture and food production. The reason behind this great performance in recent years is probably due to good climatic conditions[3] and fertile soil and technology that has been invested in agriculture.

Figures 3 and 4 show time series graphs of agricultural and food output in East Africa from 1995 to 2016. These graphs clearly show that progress has been made over time. **East Africa did poorly in 1995, whereas it performed well in 2015, indicating a significant contrast between the two years**. This good performance might be attributed to agricultural technology adoption,

which resulted in the best results, and as the graph shows, it could be anticipated to be much better in the next few years.

Figure 5 a bar graph that depicts the comparison of East African agricultural and food production from 1995 to 2016. **Uganda in 2016 , is the region's weakest performer. Rwanda, on the other hand, is the finest country in 2016**. The great performance of Rwanda might be due to the rise of GDP [4], which can add to the amount of money invested in agriculture.

Prior to the investigation, we anticipated that East African food agricultural output would contribute significantly to food production. Figure 7.1's correlation matrix and Figure 7.2's regulation plot illustrate that there is virtually a perfect connection between two variables. As a consequence, our prediction has come true. **Food production rises in tandem with agricultural output**. This is due to the fact that in order to produce more food, a country must harvest more locally.

Figures 8.1 and 8.2 provide a comparison of East African countries' food and agricultural productivity. **Rwanda took top place in 2016, as it had done in 2010, 2014, and 2015**. And this situation might continue because it keeps making a huge difference .

4. Conclusion

To summarize, agriculture in East Africa has made great progress from 1995 to 2016, and it has surpassed other regions in recent years. Rwanda, in particular, is outperforming other countries, and it is presently the top performing country in the area during the previous several years. Finally, the potential of an East African country to generate more food may be measured by its agricultural output.

5. Reference

[1]Fao.org. 2021. *Rwanda at a glance | FAO in Rwanda | Food and Agriculture Organization of the United Nations*. [online] Available at: <https://www.fao.org/rwanda/our-office-in-rwanda/rwanda-at-a-glance/en/> [Accessed 7 November 2021].

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[3]19january2017snapshot.epa.gov. 2021. *Climate Impacts on Agriculture and Food Supply | Climate Change Impacts | US EPA*. [online] Available at: <https://19january2017snapshot.epa.gov/climate-impacts/climate-impacts-agriculture-and-food-supply_.html> [Accessed 7 November 2021].

[4]*World Bank*, 2021. [Online]. Available: https://www.worldbank.org/en/country/rwanda/overview. [Accessed: 07- Nov- 2021].