Do regional economic disparities promote regional value chains? A case study of East Africa Community member states.

Erastus Chokera Kainga and Samuel Muthoga[1]

[1] Kenyatta University, Nairobi, Kenya

E-mail: kainga72.ec@gmail.com

Abstract

Regional economic disparities in developing countries impact growth of regional value chains to compete in the global markets. Regional economic disparities are the difference in economic capabilities between states in a region. The objective of this paper is to explore the impact of regional economic disparities (RED) on growth of food and beverage regional value chains (RVCs) in the East Africa Community (EAC) manufacturing sector. The paper employs the New Economic Geography (NEG) model in investigating the dynamics of promotion of regional value chains in EAC's manufacturing sector. By making use of secondary data from five member states, the author surveys labour in the manufacturing sector, total income of labourers and executives, taxes, intra-regional and extra-regional trade in foods and beverages, and gross value added as the regional value chain determinant. To answer the research questions, regression analysis was used to shed light on (i) the effect of regional economic disparities on promotion of regional value chains in EAC and (ii) the effect of prices on regional value chains. The findings show disparities having a positive and significant effect on promotion of RVCs; price, intra and extra-regional trade, and executive salaries while labourers' salaries and taxation have a negative and significant effect on the promotion of RVCs. Whenever EAC states imported from one another, it was noted that the GVA changed positively, similarly when trading with nations outside EAC. When employees in executive positions were well appreciated there was a positive effect on the GVA and a negative effect was observed whenever casual employees were paid more than average in their states as well as when taxes were increased. Future research work may look into Climate Changes, Export Controls and Politics as promoters of regional value chains as well as infrastructure, and technology. The results show need for labourers to acquire more skills necessary to remain relevant in the transforming manufacturing sector. Further, that technology absorption is crucial among producers and regional tax agreements are necessary in industry location decisions. Finally, wages were noted to determine production as the nations paying their workers more seemed to trade regionally more. The author therefore concludes that EAC member states need to increase intra-regional trade, apply some protectionist policies as well encourage increased budgets for education and building of institutions while also attracting foreign direct investments with tax reliefs.

Introduction

Regional value chains enable producers and service providers to experience the benefit of access to raw materials, economies of scale in production, expanded market opportunities, and technological and skills transfer. They connect lead firms and suppliers within a single world region (Pasquali, Godfrey, & Nadvi, 2020). Therefore, they are an essential step towards greater integration into the global economy (Daly, Abdulsam, & Gereffi, 2016). African countries need help sustaining exports for more prolonged periods; only one in every ten-export relationship survive beyond the third year (Kowalski, Gonzalez, Ragoussis, & Ugarte, 2015).

In the East Africa Community (EAC), as in other RECs, trade is crucial for economic development, and REC member states participation in global value chains. However, the effects of COVID-19, supply-side challenges, and the prevalence of non-tariff barriers (NTBs) cause a decline in intra-regional exports. In 2020 intra-regional trade in the region, including EAC declined by 11%, dropping from US$ 10.9 billion in 2019 to US$ 9.7 billion (Mwangi, 2021). Some of the regional value chain challenges identified included increased costs throughout the supply chain, differences in levels of industrialization, and the emergence of newer markets.

Researchers found that economic disparities continue to affect intra-African trade, and of the top 15 countries that require to prioritize intra-African trade and logistics to realize growth is EAC countries (United Nations Economic Commission for Africa, 2022). By using data from World Bank, the United Nations Industrial Development Organization (UNIDO), COMTRADE database kept by the United Nations Statistics Division (UNSD), and the international trade centre (ITC), National Bureau of Statistics for each state and United Nations Conference on Trade and Development (UNCTAD) the study will identify regional economic disparities effects on the promotion of regional value chains.

The Promotion of Regional Value Chain

Regional value chains can be described as trade in intermediate goods between firms in a single region. The East African region, whose countries share the same geographical location is such an example. According to (Grover & Lall, 2021) trade in parts represents global value chains. Slim et al., (2018) described all activities involved in the production chain of a commodity from design to market entry as a final product makes for the value chain. In essence, a regional value chain involves the trade of intermediate inputs of goods or services from inception to production. In this paper it will in addition cover trade between suppliers and lead firms while excluding final product consumers.

By 2025 revenue from agro-processing in Africa will increase by 122 billion dollars, and therefore, there is a great potential for job creation and manufacturing within African nations (Signe' & Johnson, 2018). Key to fully taking advantage of global value chain competitiveness is intra-regional trade in intermediate inputs, promoting integration and using comparative advantages that can result in increased competitiveness in order for African states to achieve this goal by 2025. According to Slim et.al., (2018), if two economies experience rapid growth, their mutual trade also experiences notable expansion. This underscores the importance of country-specific knowledge in their comparative advantages.

Slim et.al., (2018) identified that integrating production processes for developing countries, allows them to leverage their comparative advantages. In this context, East Africa Community (EAC) member states must identify their specializations and enhance their comparative advantages, by promoting regional trade in intermediate inputs which will later lead to competition in global value chains . This approach not only extends export relationships beyond the third year but also creates potential for job creation and manufacturing. According to the Regional Enterprise Competitiveness and Access to Markets Programme (RECAMP) fact sheet (2022), there are three specific competitive advantages for COMESA member states which also cover the five countries in our research, agro-processing, horticulture, and leather and leather products. Therefore, the author will primarily focus on agro-processing, specifically within the food and beverages sector. This targeted approach aims to increase intra-regional trade and economic development, by showing the importance of specialization in regional and global value chains competitiveness.

Regional economic disparities: Food and Beverages Trade in the EAC

The study will make use of data collected from the International Trade Centre (ITC) and come up with food and beverage totals as calculated by the author below.

From the above data, intra-regional trade in food and beverage sector showed that since 2002, there was a steady upward trajectory in trade. However, an interruption was experienced between 2012 and 2016, marked by fluctuating trade volumes as a result of external shocks and political issues experienced during these period. After this uncertainty, trade resumed to an upward trend. Uganda emerged as a leading exporter, followed by Kenya, Tanzania, Rwanda, and Burundi. In 2020, Tanzania's food and beverage exports to EAC increased significantly, showing a dynamic shift in intra-regional trade patterns.

Following, the study will compare intra-regional trade to world imports by EAC states to find out which between EAC and the world, do EAC states trade with most. The study will

look at the nations among the five of interest importing most from outside EAC states and which ones' trade more within. By this the study will be able to predict how promotion of regional value chains can be affected by prices and other economic disparities. It is according to the maximum utility theory, that the author assumes a country would trade with another because it gets value for money. This theory states that consumers, the manufacturers, want to achieve the highest level of satisfaction from their economic decisions (Team, 2022).

From the below data, EAC's imports from the world increased consistently up to 2012 when they slightly dropped and continued dropping until 2016. In those four years, there was no generalized system of preferences claim to European states for example. After 2016's decrease in imports, there was a significant increase in imports which was followed by a drop in the year 2017-2018. From then onward, imports were increasing from the world; Kenya importing more from the world far above the other states followed by Tanzania, Uganda then Rwanda and Burundi respectively.

To assess further why there seems to be trade diversion in the region, the researcher will collect food and beverage data on exports from EAC to the world. From which the author seeks to find out why most EAC states divert trade.

From the above data, among EAC states Kenya exports to the global market more, with export volumes significantly surpassing those of all other EAC states. Following Kenya, Tanzania and Uganda are the next leading exporters, followed Rwanda and Burundi. A more comprehensive examination of this data reveals a striking trend. Kenya's exports of food and beverage exceeded the combined totals of Uganda, Tanzania and Burundi between 2001 and 2021. The difference is proof of trade diversion within the EAC because the volumes of exports to the world are greater than within. This emphasizes a more in-depth analysis of the reasons behind these changes, is it prices? Or economic disparities?

Value Addition in East Africa Community's Food and Beverages Sector

Below the study will identify country-specific performance in value addition of agricultural produce over 2002-2020, shown in thousand United States Dollars.

Tanzania's performance in value addition is higher than all the states in EAC as observed above. The data for Uganda's performance in value addition of food and beverages would be gotten from the Uganda National Bureau of Statistics because it was unavailable at UNIDO. According to Nicita & Olarreaga (2007), production-related data is limited for most developing countries and therefore, researchers have to use numerous sources while searching for data.

Tanzania's units in value added for food and beverages increased slightly from 2003 to 2007 when the increase became significant between 2008 and 2012, followed by a sudden sharp increase in the value of food and beverages added until 2014, when the country experienced a decrease. From 2015 the country experienced increases until 2017 which continued to 2020. Though Tanzania's agricultural sector contributes a large share of export earnings, it suffered significant declines in world primary products export prices.

Its manufacturing sector is heavily import-dependent but internationally uncompetitive (Karagu, 2012).

In Kenya, the increase in value added of food and beverage products showed consistent growth. It was significantly low from 2002 to 2008, followed by then between 2008 and 2010 increased. This trend continued until 2020. The same also happened in Burundi and Rwanda, with their food and beverage value added experiencing notable increases during the periods of 2008-2010 and 2007-2015, and 2014-2020, respectively. This consistency in growth proves the necessity of growth in manufacturing in agro-processing.

Below, Kenya is seen to have more people working in the food and beverage value addition industry followed by Tanzania, Rwanda and Burundi respectively. Between 2002 and 2007 Kenya's employees in the industry increased then decreased between 2008 and 2010 when they began increasing until 2014. They then decreased slightly between 2016 and 2017 and slightly increasing in 2018 and then another decrease that was followed by an increase in 2020. Kenya's dominance in overall trade according to Karagu (2012) could be highly attributed to its comparatively wider range of highly developed manufacturing industries. That is shown in figure 6 below the frontier technology index covering Information Communication Technology (ICT) skills, Research and Development (R&D), Industry Activity, and access to finance. In Tanzania the number of employees decreased between 2003 and 2004 when the country began experiencing an increase in the number of employees in the industry between 2005 and 2008 which was followed by a decrease in 2009 and a rise between 2010 and 2012. After 2012 there was a decrease that was then followed by a continuous increase up until 2020. In Rwanda, the number of employees increased between 2014 and 2020 while in Burundi the increase was between 2007 up until 2015. Rwanda is recognized for its significant achievements in revitalizing its economy, as it now has comfortable international reserves and substantially reduced external debts (Karagu, 2012).

Below is the data on technological innovation within EAC. As stated it shows how much a country has invested in ICT skills, research and development, industry activity and access to finance for each state collected from UNCTAD.

The overall index above combines all five drivers of technology and innovation; access to finance, ICT skills, industry activity, and research and development. They all cover national capacities to use, adopt and adapt technologies (UNCTAD, 2019) which play an important role in manufacturing and value addition of value chains. Daly, Abdulsam, & Gereffi (2016) identified access to finance, scale, and human capital as strategic drivers for participation in global and regional value chains. He stated that they facilitate product upgrades. In the study, human capital, shown by the employees' functions in manufacturing sector such as casual labour and decision making functions of executives. It will assume executives to have competencies in sectoral skills, information, and communications technology (ICT), while scale will include industry activities and research and development denoted by trade in value added foods and beverages.

From 2008-2019 Kenya's overall index was the highest, experiencing significant growth between 2014 and 2015; Uganda, Rwanda, Tanzania, and Burundi, respectively, followed it. In two instances, between 2010 and 2011 and 2014 and 2015, Rwanda experienced significant growth in the overall index while Burundi underwent the least change over the period 2008-2019. On the other side, Tanzania has been experiencing years of ups and downs except between 2012 and 2014, when the growth rates were low.

Regional Economic Communities and Integration

For supranational integration schemes to realize their potential for success, many prerequisite conditions must be fulfilled by the member states and among them is the minimization of regional economic disparities (Villaverde & Maza, 2009). Nonetheless, these regional economic disparities have not been clearly defined due to the multifaceted nature of the term 'disparity'. In the context of this paper, regional economic disparities will be defined as the variations in economic capabilities among economies within EAC. This classification is important in setting a clear starting point for providing solutions to economic disparities in regional economic communities, especially EAC.

To represent the promotion of regional value chains, causes for gross value added (GVA) data will be the indicator because they cover trade among firms and suppliers excluding final product consumers. Gross Value Added gives a picture of the state of the economic activity from the producer's or suppliers' side (Strategy, n.d.). GVA data may be more accurate as it includes government transfers to individuals or organizations or between governments and indirect taxation, in this case, those involved in agro-processing, and distribution to suppliers.

Above is GVA data for EAC states over the period 2001 to 2021 gotten from the World Bank indicators in current United States dollars. The acronym KEN, and TZA represents Kenya and Tanzania. Uganda as UGA, Rwanda as RWA, and lastly Burundi as BDI. Kenya's GVA grew consistently from 2000 to 2001 shooting significantly between 2005 and 2006, between 2011 and 2012, 2017 and 2018 and between 2020 and 2021. Tanzania's GVA dropped between 2000 and 2001 and increased from 2002 through to 2016 when it dropped again from the previous year. Between 2007 and 2008 the increase was significantly high as well as between 2020 and 2021.

In Rwanda between 2000 and 2002 the GVA dropped then rose in 2003 and continued increasing until 2020 when it dropped slightly from the previous year 2019 and then rose again in 2021. Uganda's dropped between 2000 and 2001 then rose in 2002 continually. Between 2008 and 2009 the GVA shot up significantly and continued rising until 2012 when it dropped slightly then rose again up until 2016 when the nation experienced significant decline but then rose again in the following year until our final year 2021.

Burundi experienced an increase in the GVA between 2000 and 2001 followed by a decrease in the GVA in two consecutive years 2002 and 2003. After the year the nations GVA increased significantly between 2004 and 2005 then continued increasing until 2015 when a significant decline followed the country's GVA in gross value added continually

declining until 2019 when the following year the nation experienced an increase until 2021. Among the five countries, Kenya is the only state that has not experienced a decrease in gross value added since 2000. Burundi is the nation with the most consecutive declines reaching up to four years consecutively, followed by Rwanda which had two. Uganda and Tanzania did not have consecutive years of GVA dropping.

The Statement of the problem

East African Community's intra-regional trade has been disenchantingly low in agricultural value added products even after the failure of the states to reach a complete monetary union by 2015 which was dependent on trade between the states. Moreover, compared to other developing regional blocks like Asia and Latin America, intra-regional trade is still at a low of 9% while the other are 45% and 18%, respectively (Slany, 2017). With very little intra-regional trade in agricultural value added goods happening because African economies are too small to negotiate with powerful trading blocs, the need to attain full integration remains an essential goal for the region to compete globally in value added value chains.

Economists have tested and published that intra-regional trade could back-up employment and assist countries to grow their economies as well. However, in EAC, little intra-regional trade happening is faced with challenges in export prices. The price of imports from the world in comparison with export prices from EAC to other EAC states is cheaper and hence EAC states prefer buying from outside the region to among their states while sharing equal tariffs. There is high taxation of products being traded within the region in comparison to those coming from outside, while customs and border rules harmonization has not been achieved and transportation of products is easier from outside than from within. These among issues of inadequate political will slow down the formation of monetary unions and ultimately, a political federation in the region.

The high prices of goods from the region and little intra-regional trade affect traders, manufacturers, distributors, and the states by denying the enlargement of markets and opportunities to manufacturers to increase production and realize specialization too. Regional integration promises these benefits to businesses and consumers: relieving the constraints posed by small, segmented national markets, benefits of risk sharing, and regional comparative advantage (Makaka, 2018). Solving these problems by assessing the effect of regional economic disparities on the promotion of regional value chains remains an unexplored area with lots of uncertainty. It is against this background that the below research questions arise.

Research Questions

This study seeks to find out therefore:

What is the effect of regional economic disparities on promotion of regional value chains in EAC?

What is the effect of prices on regional value chains?

Objectives of the Study

The study aims at showing the effects of regional economic disparities on promotion of regional value chains in the EAC region.

The main objectives are:

To find out how regional economic disparities affect the promotion of regional value chains

To determine the effect of regional economic disparities on consumer prices within the East Africa Community

Significance of the Study

EAC treaty chapter four, recommends mobilization of resources and efficiently allocating them to the most productive sectors of the respective economies for the maximization of integration (Karagu, 2012). This study will reveal the effect of regional economic disparities on the promotion of regional value chains by proving their effect on trade creation and value chain pricing. This paper will provide other researchers data and an opportunity to critic the work as well as make improvements by identifying gaps in the work, help policy makers find areas of improvement and contribute to national and regional change in regional value chain promotion. It will act as a source of information for investors on risk and reward areas as well as traders and states in areas of comparative advantage.

Scope of the Study

This study will analyse the effect of regional economic disparities on the promotion of regional value chains, in the EAC region. It will assess data from five countries Kenya, Uganda, Rwanda, Burundi and Tanzania during the period 2002-2020. Data on GVA, export and imports in agro-processing, amount of trade in value added agricultural produce, technological innovation index and industrial employment will be assessed. It will assess if they have an impact on the promotion of regional value chains by looking at which countries are better in specific value chains and recommend what EAC countries could concentrate on as their comparative advantages to improve trade in the region and help with integration. This shall be assessed by looking at data in the period of 2002-2021. Countries like the DRC and South Sudan have been left out of the study because they recently joined the EAC.

Organization of the Study

The initial chapter serves as an introduction to the study, presenting its focal areas, elucidating the study's purpose, significance, and scope. Subsequently, the following chapter will delve into a comprehensive review of both theoretical and empirical literature, while chapter three will focus on elucidating the chosen methodology. In chapter four the researcher will then analyse data and make interpretations of the data. The last chapter, will make policy recommendations, conclude and summarize the whole study.

Literature Review

In this chapter the study reviews the theoretical and empirical literature on price volatility, value chain promotion, regional integration, and trade creation and trade diversion. The researcher further looks into the relationship between regional economic disparities and promotion of regional value chains in this respect. The section will be divided into three; firstly, the theoretical literature which covers the theories relevant to the study, second the empirical literature and third the overview of both theoretical and empirical literature.

Theoretical Literature

This study is based on New Economic Geography theory, although the neoclassical Solow's growth model and functionalism and neo-functionalism theories will also be used. The theorist's views will be foundational in analysing our secondary data and improving interpretation. They will be used to explain how regional economic disparities promote the regional value chains further into the paper.

New Economic Geography

Paul Krugman in the monocentric spatial economy and the industrial agglomeration theory, respectively combined the two theories in 1991 to become the typical general location model of New Economic Geography (NEG) (Masahisa, 2011). The theory's concept proposes to explain formations and evolution of spatial economic structures in agriculture and manufacturing (agro-processing). It is used to measure regional economic disparities by considering human economic activities in production, consumption between producers and producers, and trade. The theory further emphasizes resource endowments, international trade, population growth, and regional supply and demand (Juillion, 2023).

Like other new trade theories, the new economic geography theory assumes full employment and flexible domestic and international product and resource prices which adjust instantaneously to conditions of supply and demand (Rekiso, 2019). It assumes that labour moves to where there are higher wages and capital to where product prices are affordable. The theory's states as follows:

$$W_r = C_1 \left[\sum_{s=1}^{R} \llbracket T_{sr}^{(1-\sigma)} \; G_s^{(\sigma-1)} \; (w_s L_s^M + L_s^A) \rrbracket \right]^{(1/\sigma)} \dots \dots \dots (2.2.2)$$

Where $C1 = \mu^{(1/\sigma)} (c/(\sigma-1)) \llbracket C_2^{((1-\sigma)/\sigma)} \rrbracket$ ^C2 $= c/(\sigma-1) \; (\sigma^\sigma \; F)^{(1/(\sigma-1))}$, $T_{sr} \; [=T(D_{sr},\tau)>1]$ is the distance for transporting manufactured goods from region 's' to 'r', τ the unit-distance transport costs. L^M signifying the total number of manufacturing workers, μ denoting the expenditure share allocated to the manufacturing good $(1-\mu)$ representing the share allocated to the agricultural good, and 'c' and 'F', representing the marginal and fixed costs associated with producing a single unit of a manufacturing variety. $\llbracket Y_s = w \rrbracket _s L_s^M + L_s^A$ which determines the nominal income.

The Neoclassical Theory

The Heckscher-Ohlin-Samuelson, neoclassical model assumes that rational behaviours and goals of sellers and consumers in the marketplace drive the flow of resources, goods, services and money (Keen & Mazzone, 2023). By using the theory this study will explain why growth is different in the regions with better labour and capital although the theory is not our main anchor because the study is unable to

measure technological spill overs fully. This theory is given by

$$Y=(AL)^{(1-\propto)},K^{\propto}\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (2.2.3)$$

Where Y is the total production A the productivity, K- the amount of capital and L labour force while ∝- the constant $0<\propto<1$.

2.2.3 Functionalism and Neo-functionalism Theory

According to David Mitrany and Ernst Hass (1940), regional integration can be achieved through a bottom-up approach in which members of an economic community can begin by cooperating in specific areas with little politics and grow integration by spilling over to other areas. By identifying effects of regional economic disparities on promotion of regional value chains, the study will show where EAC states can begin integrating from to avoid trade diversion. This theory could be used although its limited by being qualitative because integration is pegged on the quality of institutions formed by coming together of states and the sovereignty of these states which cannot be measured using quantitative methods.

Empirical Literature

In the research 'Regional Economic Integration and economic upgrading in global value chains', (Obasaju et.al., 2021) found that regional economic community member states should penetrate one another's market at a relatively low cost and be able to obtain necessary inputs, inter alia, for their production process. And using the gravity model and systems generalized methods of moments in analysis, the authors found that the level of development did not contribute significantly to economic upgrading and that for enhanced value addition, access to the location of demand and input supply of intermediate inputs are expedient. And while most economists agree that intra-regional trade could lead to more integration and increased participation in value chains competitiveness, the authors revealed the drivers of economic development, the author seeks to understand as well what can be done to increase bilateral trade and stabilize prices within the EAC.

In his research titled 'Global Value chains (GVCs) and Economic Growth', (Mao, 2021) unveiled that successful economies proliferate by following non-linear global value chain participation patterns. Using the input-output table to measure GVC participation, Mao recommended that emerging markets should decrease foreign-dominated global value chains and then raise the involvement of trade in global value chains. He said through participation in GVCs, emerging economies acquire foreign knowledge and production skills, that are necessary for states to achieve autonomy and independence from foreign-dominated GVCs. This in turn enable them to establish their regional value chains and attract foreign direct investments.

Furthermore, in 'Participation of Developing Countries in Global Value Chains' (Kowalski , Gonzalez, Ragoussis , & Ugarte , 2015), the study revealed that removal of tariffs in regions may be necessary albeit not sufficient condition for further integration. He said if policies are inadequate for covering border and customs procedures or indeed the ability to engage in regional issues, such as trade facilitation, competition policy, investment, intellectual property protection, and dispute resolution developing states may not participate in global value chains as expected. The removal of tariffs could cause establishment of foreign industries which can foster global participation.

Researchers Deardorff & Sharma (2019) in 'The simple analytics of trade creation and diversion' seemed to agree that poor economies might not gain from intra-regional trade owing to the poor correspondence of their exports to the imports of economically strong economies. The researcher thus seeks to encourage the formation of a strong regional economic community as it sets the stage for competing with strong economies as a REC instead of an individual state. This process will require RECs formulation harmonization of policies so that member states can work toward the same goals. They revealed that the quality of infrastructures, procedures at borders, and market size were the determinants of global value chain participation and that by pursuing a multilateral liberalization in competitive sourcing intermediates trade diversion and costs would be reduced. They further disagreed with the author by observing that exports can be negatively impacted by the combination of expansionary macroeconomic policies and restrictive trade policies. The author believes REC interventions in promoting protectionist policies on exports and the building of skilled labour force can create opportunities for production and hence trade in intermediate goods.

On the other hand, in their study titled 'Disaggregated Analysis of Product Price Integration in Southern Africa Development Community,' Balchin, Edwards, & Sundaram (2014), found that geographic proximity and shared membership in regional trade and monetary agreements reduce absolute price deviations between bilateral country pairs. They noted that adjacent countries tended to exhibit smaller averages absolute price deviations. Therefore, when countries within a regional economic community divert trade, there is more to intra-regional trade than just price variations. Factors such as institutional functionalism may play a big role in enhancing trade within RECs in addition to price deviations. (Minot, Nicholas ;, 2013)in studying 'How volatile are African food prices?', discovered domestic factors contributed more to the volatility of African food market prices than international fluctuations. He found out that in the states where the government intervenes in setting market prices, volatility was relatively high. In his paper, access to information about prices and stock levels, safety nets, government interventions, and willingness to participate in international trade are some domestic factors affecting price volatility. They advised that nations should not strive to be food self-sufficient because local prices would be relative to national experiences and instead aim to participate in international trade. In that respect, the author will consider price volatility to be also affected by value addition in EAC, therefore, determining production levels GVC competitiveness. After all, that way, the countries could achieve price stabilization.

(AAMP Policy Briefing , 2008) in researching 'trade in food staples: promoting food security and food security through intra-regional trade' found out that African states are affected by international prices differently. Stressing the fact that African states must first integrate and trade between each other to begin competing internationally. They realized that the states signed in as members of a regional economic community could benefit from price stability if they participated in intra-regional trade. The policy brief revealed that trade barriers hindered opportunities to moderate price spikes through intra-regional trade and discouraged government interventions in food staple pricing. This proved that the price is a contributor to trade diversion.

(Wang , et.al., 2017) showed that labour and specialization enable firms to exploit niches consistent with their comparative advantages. They found that the association between global value chain participation and economic growth was more pronounced in advanced economies than emerging economies because they were involved more in complex global value chains, unlike their counterparts who participated in simple value chains like agro-processing while already developed states were value adding in electrical equipment manufacturing. They revealed that a larger share of domestic production activities has a negative association with economic growth and that for economies to grow into global competitors in value chains, they needed to be involved in trade by crossing value chains more than once across regional borders, which has a positive association with GVC participation and economic growth.

(Kummritz & Quast , 2016) In their research' Global Value Chains in Low and Middle-Income Countries' concluded that developing economies should upgrade their global value chain integration by increasing domestic export content in exports. By assessing high-income countries' participation in value chains, they found that these states were the starting points and end points of GVCs as they were providers of upstream inputs and the demand markets for final products. The developing states were mainly involved in assembling for finishing goods and hence advised that developing states should move from goods to tasks for better participation and competition. The authors, therefore, support that for developing economies to participate in regional value chains, they must narrow down niches that will allow them to move products more than once across borders; which is achievable by specialization.

In their study titled "Infrastructure, Value Chains, and Economic Upgrades' (Luo & Xu, 2018), the authors emphasize the critical importance of having an accessible, affordable, and reliable infrastructure network. Such infrastructure is seen as fundamental for facilitating business operations, reducing transport costs, and enhancing market access, as well as improving the overall efficiency of various productive factors. Consequently, infrastructure plays a critical role in influencing the transaction dynamics of individual firms and the marginal return on investment. Furthermore, the authors argue that participation in global value chains offers developing countries the opportunity to specialize niches without the need to create an entire value chains from scratch. They reference research by the World Economic Forum (2014), which suggests that well-developed infrastructures can effectively bridge geographical distance between regions, foster integration of national markets, and establish connections with other economies. In this paper other factor endowments, such as labour, technology adoption, and intra-regional trade are looked into for the purposes of showing how the affect promotion of regional value chains.

(Lin et.al., 2010) in the research 'Growth Identification and Facilitation' noted that one of the most prevalent factors contributing to the success of economies is the historical guidance provided by developed states, essentially acting as an economic 'compass'. According to their argument, government policies aimed at promoting industrial upgrading and diversification should be centred around industries that possess a latent comparative advantage. They found that a combination of industries, trade and technological policies played an important role in driving structural transformation. Additionally, they emphasized that infrastructure development is crucial for enhancing the competitiveness of domestic firms, as it directly impacts transaction costs and the potential rate of return on investment. The authors also highlighted a developmental pattern observed in successful economies in developing states. They began their economic journey with labour-intensive industries in the initial stages of development and then progressed up the industrial ladder, eventually transitioning into more capital-intensive industries as they advanced. This evolution in industry focus was seen as a key element in their success.

Overview of Literature

The theory of new economic geography will be used in analysing the variables and assist in determining values for use in the Solow's growth model and functionalism and neo-functionalism theory explanation of results. Most empirical studies used the GMM and systems method of analysis although the researcher feels that newer methods of analysing could probably be more accurate. The study therefore will employ the full Krugman model in measurement. The major limitation in the nonlinear new economic geography method by Paul Krugman, is that it does not inform either about changes in the shape of the distribution or about the fact that some regions may shift their relative positions during the study period (Bode & Mutl , 2013). This will be addressed by measuring data over a period of 20 years so that the researcher may be able to observe trends that can assist in making conclusions.

In reviewing the empirical studies, most researchers concentrated on structural differences, regulatory, infrastructural and economic growth as measures of participation in global value chains. This paper will employ the analysis of gross value added as the independent variable instead of gross domestic product over a period of time measuring wages, price volatility, value addition, intra and extra-regional trade as well as labour in food manufacturing sector. The findings from other researchers can be summarized into those encouraging specialization, value-addition and trade in intermediate inputs as well as those on price stabilization through infrastructural transformation and

institutional harmonization. In the next chapter, new economic geography model shall be applied for the purposes of data analysis and drawing conclusions.

Methodology

This chapter covers the research methodology, the theoretical framework used and presents the model specification for the study. The study will provide the definition and measurements of variables, data type and analysis techniques and finally, the data sources.

Research Design

The research design is the plan of investigation as conceived to obtain answers to research questions (Kumar, 2011). To find the effect of regional economic disparities, our independent variable on the promotion of regional value chains, dependent variables; value addition, technical innovation, employment in manufacturing, exports, and imports, the study will eliminate errors caused by the lack of data by introducing random errors in our measurements (Huntington-Klein, 2021). Through randomization, other extraneous variables, as identified from our empirical literature, including quality of institutions, border rules, and country regulations, will be eliminated by the control groups that will be introduced. The data on study variables will be collected over a period of time from five countries in EAC.

The study will adopt a causal or explanatory research design. The purpose of conducting a causal research design is to determine the degree and type of cause-and-effect connections. Causal research is performed to evaluate the effects of particular modifications on established standards, different procedures, and so on (Iacus, King & Porro, 2019). The main emphasis of causal studies is to scrutinize a particular circumstance or issue and clarify the correlations between different variables.

Theoretical Framework

The theoretical framework anchors on the new economic geography model described by (Bode & Mutl, 2013). Following 2.2.1 the model is expanded as follows:

$$\ln〖w_r=1/\sigma \ln〗\mu+ 1/\sigma \ln〖[\sum_{(s=1)}^R 〖T_{sr}^{(1-\sigma)} g_s^{(\sigma-1)} (w_s L_s^M+L_s^A)〗]〗$$

.... (3.3.1)

Where u_rt is the annual deviation of the logged wage rate in region r at time t, w_rx is that bilateral spatial. $\tilde{w}$ is the equilibrium wage rates, $(\tilde{L^M})$ represents the equilibrium manufacturing employment and L^A the exogenous agricultural employment while T represents the bilateral interregional transport costs, σ is the substitution elasticity, μ the expenditure share for the manufacturing good.

Empirical Model Specification

The study shall estimate data for five EAC countries for the period 2000-2022. Annual data according to Ohtake (2022) implies evaluating NEG model by means of short-term responses to local wage shocks. Bode (2013) asserts that a sample period of 16 years is long enough to limit the effect of outliers therefore, data for a period of 22 years will be enough. The empirical model on the effect of regional economic

disparities and price on promotion of regional value chains is specified as follows:

$$\ln〖〖GVA〗_r=□(1/\sigma)〗 \quad \ln〖□〗Trade+□(1/\sigma)$$
$$\ln〖□〗\sum_{(s=1)}^R 〖〖Infr \quad Dvp〗_{sr}^{(1-\sigma)}+〖 \quad lnTax〗_s^{(\sigma-1)}+ \ln(Nom.Income)〗 +\varepsilon_t$$

Where GVA captures the EAC region gross value added, Trade is the value of intra and extra-regional trade with EAC and world, InfrDvp captures value addition, factory activities such as labour both of executives and non-executives. Tax is the average tax rates for food and beverages while the Nom.Income is the total income of workers in manufacturing and agriculture.

3.4 Data Type and Source

The data is going to be studied over a period of 22 years and be collected from the International Trade Centre, World Bank Indicators and transportation estimated.

3.5 Data Analysis

The data will be regressed to establish first openness for trade in the region then test performance of intra-regional trade and determine export diversification then measure wages to determine the difference in prices of goods. After determination of the three tests, this study will be able to determine how regional economic disparities affect the promotion of regional value chains by observing how trading in regional value chains has been affected over a period of time then make conclusions on the drivers of trade in value chains in EAC.

Estimation Procedure

Time series Properties

To ensure the reliability of the data and the accuracy of the results after analysis, the study will follow a two-step process. First, it will test for the stationarity of the data collected over the period from 2000 to 2022. Stationarity tests are essential to assess whether the data's statistical properties remain constant over time, a crucial assumption for many statistical analyses. Subsequently, the study will proceed to test for cointegration. Cointegration tests are vital for exploring long-term relationships between variables and identifying whether there is stable, common trend among them. By conducting both stationarity and cointegration tests, the study aims to ensure the robustness and credibility of the results, providing a strong foundation for the subsequent data analysis and interpretation.

Stationarity Test

The Unit root test will be conducted on dependent and independent variables to determine stationarity of the data. The Levin-lin-chu unit root test will be employed and whenever data is found as not stationary, meaning the mean and variance are not constant, the results will be differentiated until they became stationary. By doing this, the study could ensure that there were no spurious results obtained.

Co-integration Test

To determine the long-run relationship between the dependent and independent variables, the pedroni test will be conducted. This will show a long-run relationship if the results will be stationary.

Unit root Test

To determine stability of our variable the unit root test will be conducted and stationarity tested. Differentiation may be done when variable is not stationary to achieve stationarity.

Hausman Test

This study will employ the Hausman Test to determine which model, whether fixed effects or random effects, is the most suitable for examining the relationship between regional economic disparities and the promotion of regional value chains. This test is essential for selecting the appropriate econometric model that aligns with the nature of the data and the research objectives, ensuring the robustness and accuracy of the analysis.

Testing for Granger Causality (GC)

The test will investigate the relationship between variables to determine whether the data has potential to drive changes in the dependent variable. Hoffman's perspective (2021) suggests that 'x' Granger causes 'y', signifying that alterations in 'x' should precede corresponding changes in 'y'. This Granger causality principle is fundamental tool for unveiling temporal sequences and establishing potential causal links between variables. By employing this approach, the research seeks to gain insights into the influence of regional value chain data on the dependent variable and to ascertain the direction of causality.

Findings, Interpretation and Discussion

This chapter gives the results of all econometric tests performed by the study as well as the fixed effect estimates. The estimation of the models

Summary of Data

A summary of the data is presented in the table below showing the variables employed in the achieving of the study's objective, their sources and overview. The data has been collected from different sources including the International Trade Centre, World Bank indicators, UNIDO and the East Africa Bureau of Statistics. Intra-regional and extra-regional trade is shown by amount of trade in dollars from countries within East Africa to represent intra and countries outside the EAC to represent extra-regional trade. Each state's GVA will represent the economic disparities in the regions while the promoters of regional value chains will be amount of extra and intra-regional trade, wage rates for executives, and the total income for workers in manufacturing sectors in East Africa, total number of workers in manufacturing and country-specific taxations for value added goods.

The East African Community has few employees in food manufacturing industry averaging 5.75% among the countries reviewed and the maximum and minimum being 11.57% and 2.26% respectively. Over the study period, taxation percentages for value added goods was 11.8% while the highest tax rate was 16.69% and minimum at 7%. The EAC member states also trade more with states outside the regional economic community as the average value of exports in USD from EAC to the world was USD 34,609.5 while the maximum value over the study period was USD 403,000 while the minimum was USD 1. The states further import more than

they export to the World as the value of imports averaged USD 205068.88 and the minimum and maximum value of imports was USD 1300 and USD 1,111,324 whereas trade between EAC states averaged USD 17,590.83 and the maximum value traded within was USD 240,000 which is slightly above the average value imported from the world. The percentage of value added goods as share of GDP averaged 19.62% while the maximum was 29.4% and 10.6% was the minimum. Executive salaries in the manufacturing sector average pay was USD 1422.556 while the maximum pay was USD 3926.1. Labourers in manufacturing workers on the other hand earned an average of USD 648.469 and the minimum and maximum pays for the workers were USD 120.035 and USD 1690.5 respectively.

It is clear from the average of means below that Kenya trades with EAC states more than all the other countries' in EAC while Burundi trades least. Looking at EAC countries' average means for imports from EAC, Kenya seemed to import more from the world followed by Tanzania. In finding out which state exported more to World from EAC, Tanzania emerged as the highest exporter followed by Uganda which had an average of 7.37% of labourers working in industries which was highest followed by Kenya then Rwanda. Value added as share of GDP showed that Uganda was highest followed by Tanzania then Kenya. Executives in the manufacturing industry were paid highest in Kenya followed by Uganda similarly labourers in manufacturing are paid higher in Kenya then Uganda and Rwanda. The states with high taxes on average were Kenya followed by Burundi, Rwanda had the highest gross value added followed by Kenya on average. See below average means.

Stationarity Test Results

Data analysis that contains non-stationary series may lead to spurious results. To avoid this econometric challenge, the study adopted the Levin-Lin-Chu unit-root test and the results are presented in Table 4.2

The p-value of the natural log of imports from EAC to EAC countries is greater than 0.05 therefore, the variable is not stationary differentiation. After the first differentiation the p-value becomes <0.05 therefore, the panel is stationary at first differentiation. The p-value for imports from world to EAC was also greater than 0.05 hence not stationary. After first differentiation, the panel was stationary at 0.0000. The p-value for the variable on exports from EAC to world was also greater than 0.05% and after the first differentiation the panel becomes stationary. The natural logs of the other variables; percentage of employees in manufacturing, value added as percentage share of GDP, salaries for both executives and labourers, and taxation were stationary as shown above because the p-values were less than 0.05 hence stationary. The p-value for the natural log for gross value added was above 0.05 hence not stationary but after the first differentiation the data is stationary.

Cointegration Test

The pedroni test for cointegration was applied to determine the long-run relationship between variables due to the variables that were found to be stationary at fist difference. The study

sought to find out if there existed a co-integration relationship between gross value added and the variables intra-regional trade, extra-regional trade, infrastructural development shown by percent of value addition share, wages in manufacturing, amount of labour and taxation in the five EAC states. The p-values for all the variables were less than 0.05 showing cointegration and therefore, a long-run relationship.

Hausman Test

Hausman test was run to determine if random effects or fixed effects model is the most appropriate for testing the relationship between dependent and independent variables. From the test, random effects were found to be consistent and efficient hence random effect was more appropriate.

Granger Causality

In order to answer the first research question on the effect of regional economic disparities on promotion of regional value chains, a granger causality test was carried out.

Intra-regional trade can predict growth of GVA, this is because the p-value is less than 0.05 hence the alternative hypothesis is adopted. Trade with countries outside EAC evidenced the p-values to be greater than 0.05 hence the null hypothesis is adopted. Looking at exports from EAC to the world, the p-value was less than 0.05 hence the null hypothesis is rejected and the alternative adopted, therefore, exports to the world granger-causes GVA. On the other side, the number of employees in manufacturing, salaries for executives and taxes do not granger cause promotion of regional value chains because their p-values were greater 0.05. The salaries paid to other employees not executives had their p-value less than 0.05 hence the alternative hypothesis is adopted and the null rejected.

Fixed Effects Versus Random Effects

To answer to the second objective, the effect of consumer prices on regional value chains promotion, results for random effects analysis were used. The results showed that natural logs for intra-regional trade has a positive and significant coefficient at 90% level (β=0.062, p=0.004). This implies that a one-unit increase in imports within EAC member states will translate to 0.062 increase in GVA. For imports from the world into EAC, the analysis evidenced that the variable has a positive and significant coefficient at 90% confidence (β=0.241, p=0). This means that an increase in imports from countries outside EAC will cause a 0.241 growth in the gross value added. Further the natural log for exports from EAC into the world showed a positive and significant correlation with growth of gross value added because the variable had a coefficient of 0.112 and a p-value of 0 which was significant meaning that an increase in exports by 0.112 would cause an increase in the gross value added by the same unit.

The number of employees working in the manufacturing sector was not significant although it had a positive coefficient of 0.091, though the p-value was greater than 0.05 hence insignificant. The pays executives receive has a positive and significant coefficient at 90% confidence level (β=1.572, p=0). This implies that an increase in salary for executives by one unit will cause a 1.572 increase in GVA. The coefficient for lnworkersincome was negative and significant at 95% confidence level (β=-0.413, p=0.013). This means that a one unit change in workers income will generate a 0.413 decrease in GVA. The coefficient for lnTaxation was negative and significant at 95% confidence level (β=-0.552, p=0.026). This implies a unit change in taxing will generate a 0.552 decrease in GVA.

Summary, Conclusions and Policy Implications

This chapter presents the study summary, conclusion and policy implications from the study and the area of further research.

Summary

The study aimed at finding out whether regional economic disparities, herein represented by different kinds of explanatory variables affect promotion of regional value chains. Most studies on intra and extra-regional trade assessed economies and gross domestic product and few looked into specific produces and value added products. Therefore, to cover the gap on EAC's major economic activity, agriculture, this study analysed data to find out whether there is trade in value added agricultural products in light of the need for reducing poverty and providing sustainable employment. The new economic geography model in the theoretical study showed that agriculture and manufacturing can be used for analysis to fulfil the study objectives. The study therefore, analysed the independent variables to find out how regional economic disparities affect the promotion of regional value chains and determine the effect of consumer prices on regional value chains promotion within EAC.

The first objective of the study was to show how economic disparities affect regional value chains. To determine this, the study employed the random effects test on regression and it was found that trade both intra-regional and international had significant and positive contribution to regional value chains, similar to executive salaries. The number of employees working in a sector was not significant while the salaries they receive and taxes had negative and significant effects on regional value chains.

The second objective on determining how consumer prices affected promotion of regional value chains was determined by assessing the countries' exporting more than the others and had more employees. According to Krugman (1991), wage rate will tend to be higher in the larger markets, and the regions with larger populations will face a lower price for manufactured goods. This was consistent with our study because the gross value added was affected negatively by wages while the number of employees was not significant.

Conclusion

Regional economic disparities can play an important role in promoting regional value chains. the study has established that indeed economic disparities have an effect on regional value chains promotion. Intra-regional trade, extra-regional trade, executive salaries in manufacturing sector has positive and significant effects on promotion of regional value chains. The study concludes that labourer salaries, and taxation have negative and significant effect on promotion of regional value chains.

On the first objective therefore, the study found that regional economic disparities have a relationship with the promotion of regional value chains. EAC member states have a significant relationship with intra-regional trade in agricultural and manufactured cereal products. In regard to extra-regional trade was observed to produce more outputs than intra-regional trade for EAC which was also consistent with other studies. This may be due to inefficient production caused by inadequate technology and skills. This was also observed by looking at countries' salaries pay to the executives. Their salaries had a positive relationship and also a significant one with regional value chains. This is more likely due to the skills they have acquired and the motivation received from their salary. Their competence gives them expert influence therefore, making it easy for their employees to produce more. Other employees pay had a negative and significant relationship with promotion of regional value chains. This could be because, the industries may be diverting equipment and maintenance money to increasing salaries. The number of employees had no significant relationship with promotion of regional value chains probably because some work can be performed by equipment. Taxation had a negative and significant effect on regional value chains promotion because manufacturing firms are taxed from when they acquire raw materials from farmers to the time they produce and even at selling.

In the second objective, price has a positive and significant relationship with promotion of regional value chains. This is observed by the states EAC countries traded more with and where workers received more pay. The countries in EAC that traded more with the world had paid their employees more salaries on average and this could mean they prefer trading with outside EAC states nations because they acquire products at cheaper prices than EAC and also the consumers who are workers, can buy less.

Policy Implications

According to this study it is prudent if EAC countries will start focusing on increasing intra-regional trade as well as extra-regional trade for agricultural produces and value added products. Because of their different soils, and weather patterns, EAC states can produce according to their soil abilities for sustainable food security. Competitive advantage will be achieved and also because of this, these countries can determine to trade between themselves in intermediary inputs and with countries outside EAC with finished products.

EAC states can also instead of trade with outside EAC states in agricultural produce, improve infrastructures, harmonise border laws and customs by setting up committees of state representatives with experts in regional integration, law and economics then trade within EAC in the raw materials. To improve farming in these produces, because it was evident in the study employee numbers was not significant, can trade with states outside EAC in the necessary technologies for manufacturing and farming.

It is important to also improve employee skills according to the needs of the countries. For example, by social education, communities can be trained on the needed skills within the nation and young people offered scholarships by in-need

organizations for them to study in vocational training colleges those technical skills they need and offer them employment after completion. This will drive production through elimination because unnecessary skills will be reduced to as low as practicable.

Other sustainable energies like solar can also be used in manufacturing as well as electricity prices reduced through introduction of competitors by encouraging foreign direct investments (FDIs) in these sector within EAC. Lastly, the nations within EAC should begin taxing manufacturing firms at production and not from the point of acquiring inputs, by this the study showed that if producers are taxed for example, the farmers while acquiring farm inputs and not consumers when buying from farmers. Then manufacturers should be taxed at sale and given subsidies at the production level.

Areas of Further Studies

This study investigated the relationship between regional economic disparities and regional value chains in EAC. Further research can be conducted in the area of employees' contribution in manufacturing with the aim of finding out how employees relate to production since they appeared to negatively affect promotion of regional value chains. Other studies can also look at infrastructure, technology and the laws governing regional value chains because in EAC, intra-regional trade was lower than extra-regional trade. These could be contributors to trade diversion in the region. Research can also be done to find out the relationship between regional value chains and the competitive advantages in each EAC states. By that, researchers can understand intermediate inputs from each country and advise nations to trade in what value chains to become more competitive global.

REFERENCES

[1] AAMP Policy Briefing . (2008). Trade in Food staples: Promoting Price Stability and Food security through intra-regional trade. Lusaka: COMESA (Common Markets for Eastern and Southern Africa).

[2] Balchin, N., Edwards, L., & Sundaram, E. (2014). A Disaggregated analyss of product price integration in the Southern African Development Community . Economic Research Southern Africa .

[3] Bode, E., & Mutl , J. (2013). Testing Nonlinear New Economic Geography Models .

[4] Bode, E., & Mutl, J. (2013). Testing Nonlinear New Economic Geography Models .

[5] COMESA. (2022). Increasing private sector participation in regional and global value chains . Lusaka: Regional Enterprise Competitiveness and Access to Markets Programme FACT SHEET.

[6] COMESA. (2022). Regional Enterprise Competitiveness and Access to Markets Programme FACT SHEET. Lusaka: COMESA.

[7] Daly, J., Abdulsam, A., & Gereffi, G. (2016). Regional value chains in East Africa. International Growth Centre.

[8] Deardorff , A. V., & Sharma, R. R. (2019). The simple analytics of trade creation and diversion . Research seminar in international economics .

[9] Economics, A. (2021). YouTube . Retrieved from https://www.youtube.com/@academiceconomics1289.

[10] Elizabeth Price. (n.d.). Regional Integration. Retrieved from The World Bank: https://www.worldbank.org/en/topic/regional-integration/overview

[11] Giri, Rahul ; Quayyum , Saad Noor; Yin , Rujun Joy;. (2019). Understanding Export Diversification: Key Drivers and Policy Implications . International Monetary Fund .

[12] Grover, A., & Lall, S. V. (2021). Does participation in Global Value Chains reduce spatial inequalities within countries? Policy Research Working Paper.

[13] Hisali, Erick;. (2016). Quantitative Trade Policy Analysis. In E. Hisali, Common Markets for Eastern and Southern Africa and The School of Economics. Kenyatta University Press .

[14] Juillion, P. (2023, January 11). What is new economic geography literature? . Retrieved from Studybuff: https://studybuff.com/what-is-new-economic-geography-literature/#:~:text=Krugman%20defined%20the%20New%20Economic%20Geography%20as%20the,Who%20is%20the%20father%20of%20new%20economic%20geography%3F

[15] Karagu, M. S. (2012). Effects of regional financial integration on economic growth and intra-regional trade of East African Community member countries. Kenyatta University Thesis, 163.

[16] Keen , S., & Mazzone, A. (2023). Market Business News . Retrieved from What is neo-classical economics? : https://marketbusinessnews.com/financial-glossary/neo-classical-economics/

[17] Kowalski , P., Gonzalez, J. L., Ragoussis , A., & Ugarte , C. (2015). Participation of Developing Countries in Global Value Chains . OECD Publishing .

[18] Kowalski, P., Gonzalez, J. L., Ragoussis, A., & Ugarte, C. (2015). Participation of Developing Countries in Global Value Chains . OECD publishing .

[19] Krugman (1991) Increasing Returns and Economic Geography (2020). [Motion Picture].

[20] Kumar, R. (2011). Research Methodology . London : SAGE Publications Ltd .

[21] Kummritz , V., & Quast , B. (2016). Global Value Chains in Low and Middle Income Countries . Centre for Trade and Economic Integration .

[22] Luo, X., & Xu , X. (2018). Infrastructure, Value Chains and Economic Upgrades . World Bank Group Policy Research Working Paper .

[23] Makaka, L. V. (2018). Regional Integration in Africa-a False Promise? The Case Study of the East African Community. University of Nairobi.

[24] Mao, Z. (2021). Global Value Chains and Economic Growth: A Non-linear Analysis . Singapore Economic Review .

[25] Masahisa, F. (2011). Thunen and the New Economic Geography . The Research Institute of Economy, Trade and Industry .

[26] Minot, Nicholas ;. (2013). How volatile are African Food prices? . International Food Policy Research Institute .

[27] Mwangi. (n.d.).

[28] Mwangi. (2021). https://www.comesa.int/. Retrieved from https://www.comesa.int/.

[29] Mwangi. (2021). Overview of COMESA. Retrieved from Common Markets for Eastern and Southern Africa: https://www.comesa.int/

[30] Nicita, A., & Olarreaga , M. (2007). Trade, Production, and Protection Database. Research Gate.

[31] Obasaju, B. O., Olayiwola, W. K., Okudua, H., Adediran, O. S., & Lawal, A. I. (2021). Regional economic integration and economic upgrading in global value chains: selected cases in Africa . Cell Press .

[32] Pasquali, G., Godfrey , S., & Nadvi, K. (2020). Understanding regional value chains through the interaction of public and private governance: Insight from Southern Africa's apparel sector. Journal of International Business Policy .

[33] Popa, F. (2014). ELEMENTS OF THE NEOCLASSICAL GROWTH THEORY. Academia Romana– Institutul de Economie Naţională.

[34] RECAMP. (2022). Increasing private sector participation in regional and global value chains. Lusaka: Common Markets for Eastern and Southern Africa.

[35] Rekiso , Z. S. (2019). Rethinking Regional Economic Integration in Africa as if Industrialization Mattered .

[36] Signe', L., & Johnson, C. (2018). The potential of manufacturing and industrialization in Africa: trends, opportunities and strategies . Africa Growth Initiative.

[37] Slany, A. (2017). The role of trade policies in building regional value chains - some preliminary

evidence from Africa. UNCTAD Research Paper No. 11.

[38] Slim, Driss; Jedlane , Nabil; Jaid, Aziz;. (2018). The Potential for the creation of regional value chains in North Africa: a sector-based mapping. United Nations Economic Commission for Africa.

[39] Strategy, U. P. (n.d.). BYJU'S EXAM PREP. Retrieved from UPSC Syllabus: https://byjus.com/free-ias-prep/gva/#:~:text=The%20difference%20between%20GVA%20and%20GDP%20is%20that,total%20amount%20of%20products%20produced%20in%20the%20country.

[40] Team, C. (2022, December 4). Utility Maximization . Retrieved from Corporate Finance Institute : https://corporatefinanceinstitute.com/resources/economics/utility-maximization/

[41] Treasury, T. N. (2021). Financial Statements for Covid-19 Emergency Response Fund. Republic of Kenya: Office of the Auditor-General.

[42] UNCTAD. (2019). UNCTAD STAT. Retrieved from United Nations Conference on Trade and Development: https://unctadstat.unctad.org/wds/TableViewer/tableView.aspx

[43] United Nations Economic Commission for Africa . (2022). The African Continental Free Trade Area and Demand for Transport Infrastructure and Services. Addis Ababa: Economic Commission for Africa.

[44] Villaverde , J., & Maza, A. (2009). Measurement of Regional Economic Disparities . United Nations University .

[45] Villaverde, J., & Maza, A. (2009). Measurement of Regional Economic Disparities . United Nations University - Comparative Regional Integration Studies .

[46] Wang , Z., Wei , S.-J., Yu , X., & Zhu, K. (2017). Measures of Participation in global value chains and global business cycles . National Bureau of Economic Research .
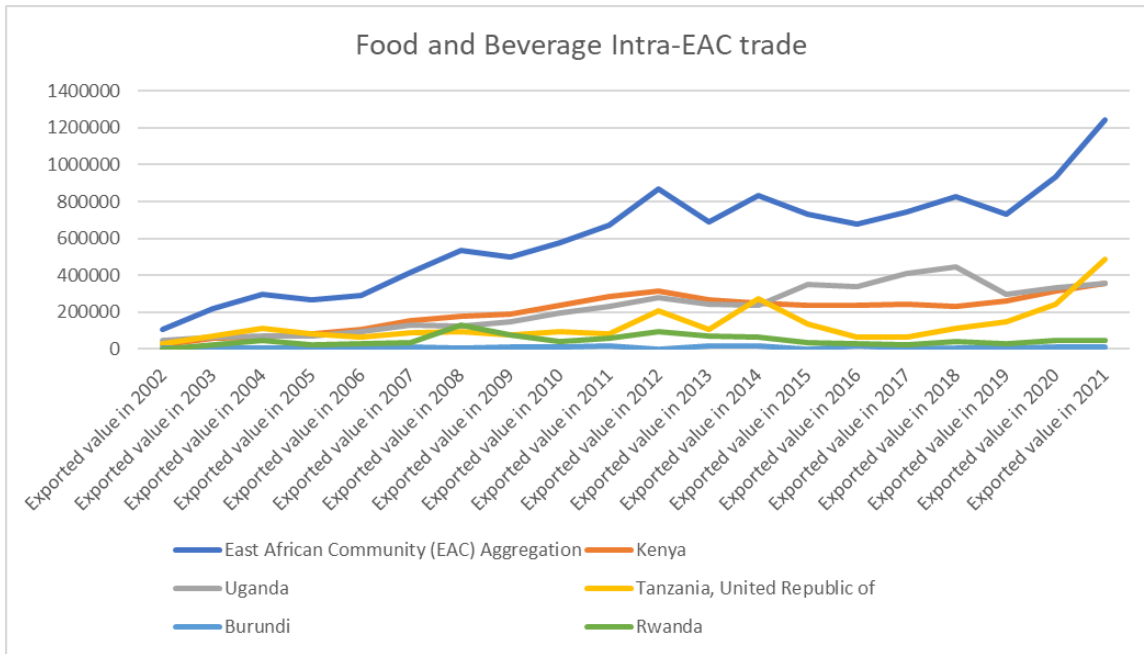
Product: Food and Beverages

Figure 1 Country-specific Imports for Food and Beverages sold by EAC states, source: author by calculations from International Trade Centre
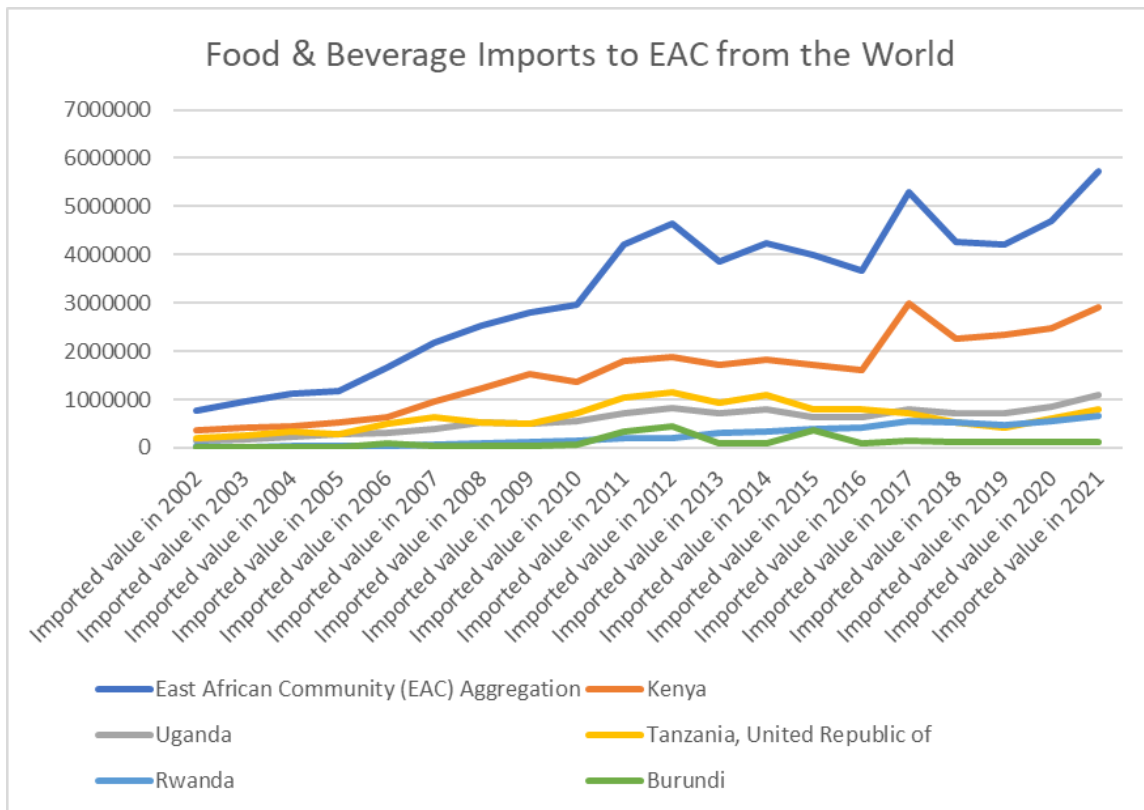
Figure 2 Food and Beverage imports from the World to EAC from the International Trade Centre database
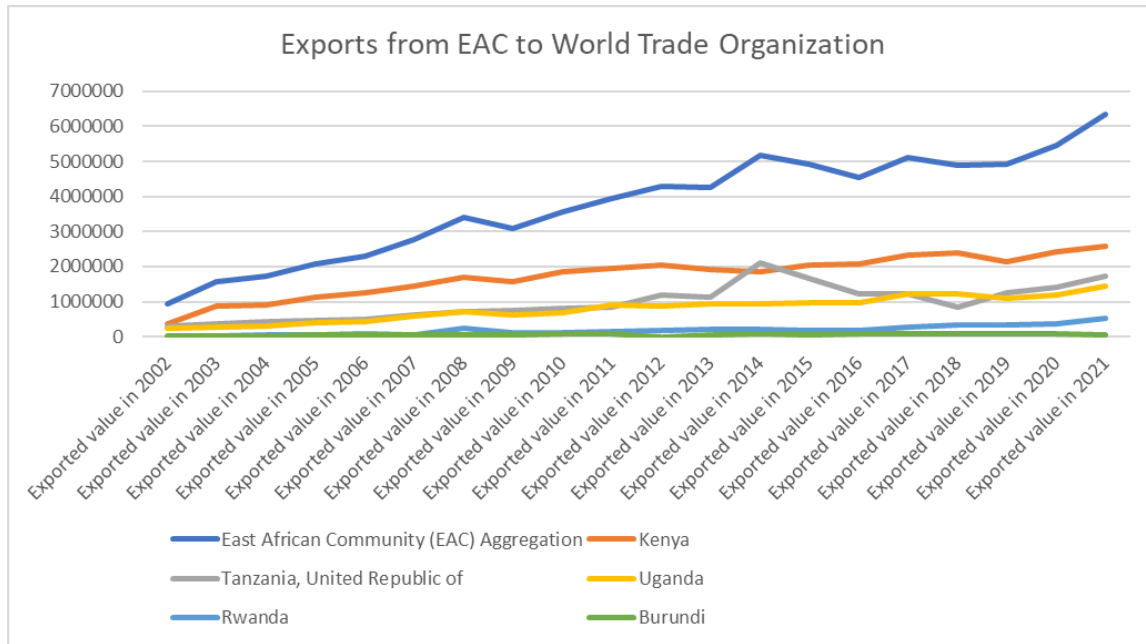

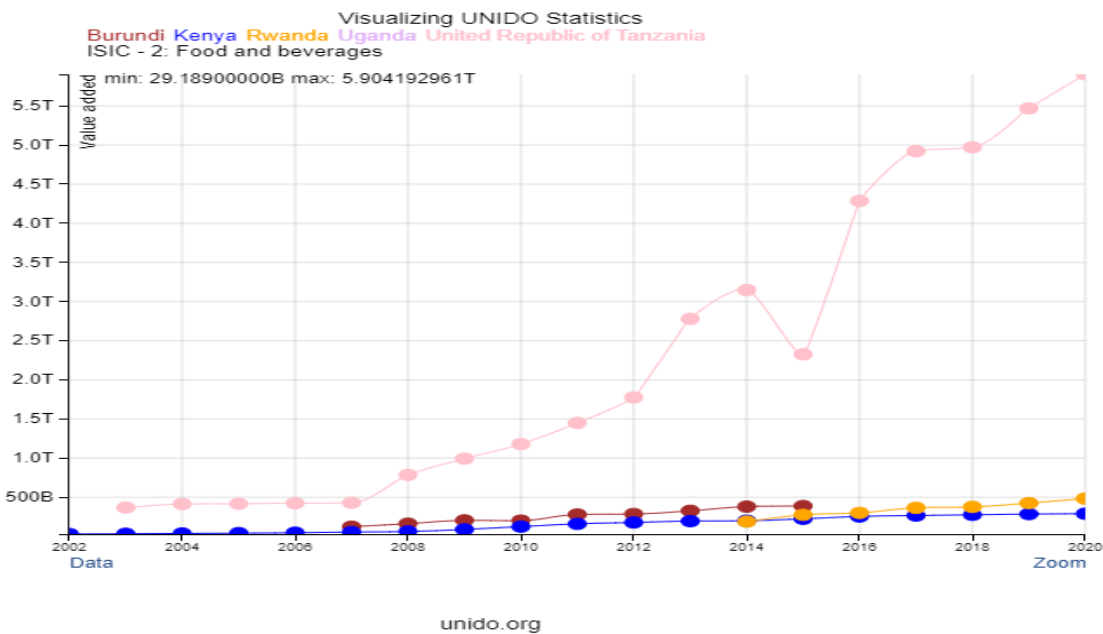**Figure 3 Value of Food and Beverage Exports from EAC countries, data from ITC**

Figure 4 Value Added data in Food and Beverages for EAC countries from UNIDO
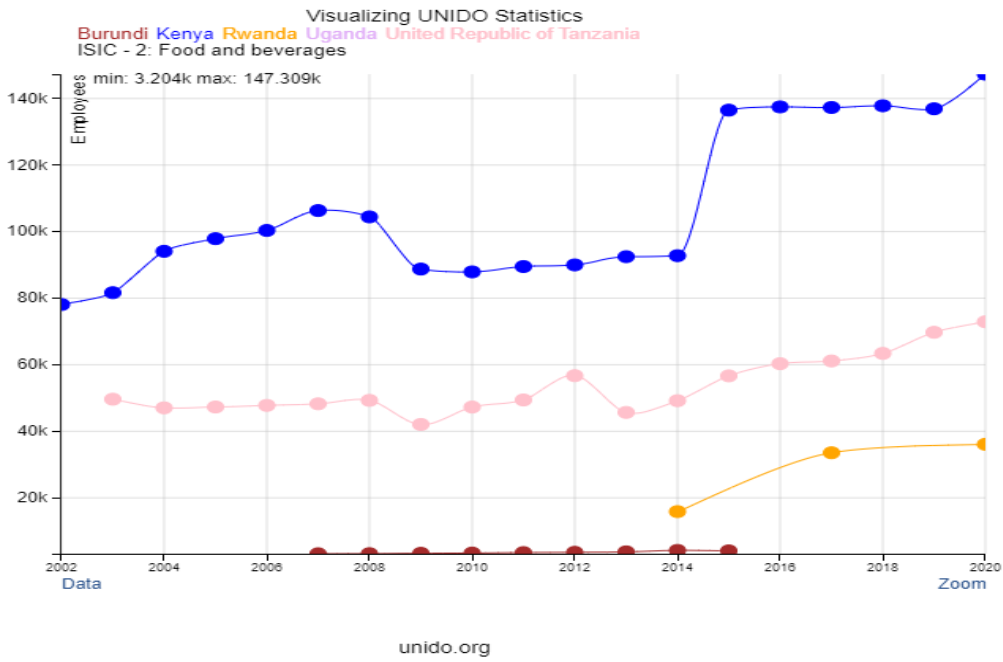
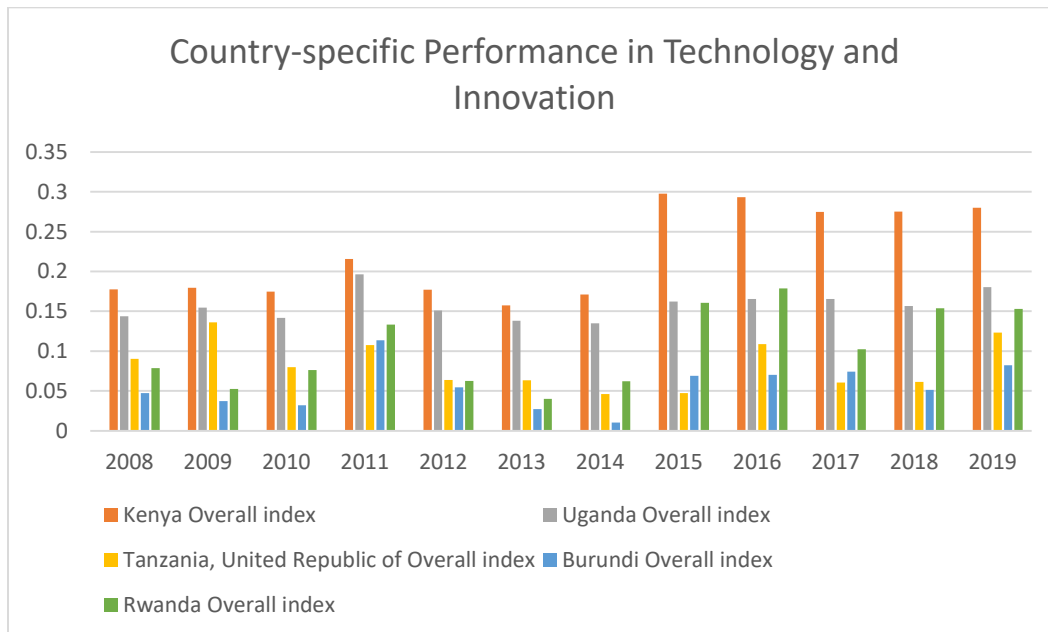**Figure 5 Employees in the Food and Beverage Industry, data from UNIDO**

Figure 6 Frontier technology index (ICT, Skills, Research and Development, Industry Activity, Access to Finance) from United Nations Conference on Trade and Development (UNCTAD) Database

3.4.1 Definition of Variables

Variable	Measurement	Definition
GVA	Values in USD	Gross value added
Intra and Extra-regional trade	Value in USD	Total number of cereal goods exported or imported from both the world and from EAC
Wage rate	Value in USD	Total income for executives in the manufacturing sector
Labourers	Total number of people in manufacturing and farming	Workers in agricultural and food and beverage industries
Income for Manufacturing Workers	Values in USD	Combination of wages of all workers involved in the food and beverage value chain
Taxation	Percentage	Average tax rate per year for value added goods
Value Added	Percentage	Value added as share of GDP. Proof for infrastructural development.

Table 4.1 Descriptive Statistics Results for East African Community

Variable	Observations	Mean	Std. Deviation	Minimum	Maximum
Import Values from EAC	115	17490.831	43099.177	0	240000
Import Values from World	115	205068.88	243028.41	1300	1111324
Export Value from EAC to World	115	34609.504	64050.398	1	403000
Employees in Manufacturing as % of Total	115	5.749	2.042	2.26	11.57
Value added as % of GDP	115	19.626	4.74	10.599	29.4
Executive Salaries in Manufacturing	115	1422.556	666.691	533.915	3926.1

Total income for workers in Manufacturing	115	648.469	373.713	120.035	1690.5
Country Specific Taxation	115	11.801	2.35	7	16.678
Gross Value Added	115	2.165e+10	2.288e+10	7.251e+08	1.013e+11

Table 14.1 Source; Authors computation from STATA 15 with data from ITC, WDI, and Bureau of Statistics

ValuesfromEAC	ImportValuefromWorld	ExportValuesfromEAC	EmployeeinIndustry	ValueAddedofGDP	GrossValueAdded	Executive salary	TotalIncomeforMa	Taxation
14.182177	30438.913	107.13043	3.0386957	14.208264	1.74E+09	920.76316	416.18055	13.534482
17.059063	64490.304	7779.6522	6.0286957	17.00689	5.65E+09	1161.6986	608.83603	11.896789
5280.087	216222.78	78181.565	5.4873913	24.546582	3.31E+10	1193.7071	419.56739	9.7901541
29572.478	183583.96	65709.478	7.3669566	24.698099	2.10E+10	1590.1416	790.94691	10.085449
52570.348	530608.43	21269.696	6.8256522	17.668186	4.69E+10	2246.4686	1006.812	13.698762

Table 4.2 Unit-root test

Variable	P-Value	P-Value (1st Difference)
Imports from EAC to EAC	0.1542	0.0000
Imports from World to EAC	0.2017	0.0000
Exports from EAC to World	0.5915	0.0000
Employees in manufacturing	0.0006	
Value added as share of GDP	0.0139	
Executive Salaries in Manufacturing	0.0000	
Workers in Manufacturing	0.0022	
Taxation	0.0002	
Gross Value Added	1.0000	0.0033

Pedroni Test	P-value
Modified Phillips-Perron t	0.0058
Phillips-Perron t	0.0089
Augmented Dickey-Fuller t	0.0065

Null Hypothesis	Dependent Variable	P-value	Test
Intra-regional trade does not promote GVA growth	Growth of GVA per capita	0.0000 0.0000	Z-bar Z-bar tilde
Extra-regional imports do not promote GVA growth	Growth of GVA per capita	0.3330 0.3459	Z-bar Z-bar tilde
Exports to the world do not promote GVA growth	Growth of GVA per capita	0.0000 0.0005	Z-bar Z-bar tilde
Number of employees in manufacturing do not promote GVA growth	Growth of GVA per capita	0.1398 0.2918	Z-bar Z-bar tilde
Salary paid to industry executives does not promote value addition	Growth of GVA per capita	0.3738 0.3797	Z-bar Z-bar tilde
Other employees in industry incomes do not promote value addition	Growth of GVA per capita	0.0046 0.0306	Z-bar Z-bar tilde
Country taxes do not promote production in industries	Growth of GVA per capita	0.4601 0.4501	Z-bar Z-bar tilde

Key

The null hypothesis is rejected when the p-value is less than 0.05 and the alternative is adopted and the opposite is true.

Descriptive Statistics

Hausman (1978) specification test

	Coef.
Chi-square test value	3.221
P-value	.864

After conducting the Hausman test the p-value was greater than 0.05 hence random effects model was the most appropriate.

Random effects Regression results

lnGVA	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
lnIEAC	.062	.022	2.84	.004	.019	.105	***
lnIWorld	.241	.051	4.70	0	.141	.341	***
lnEEAC	.112	.023	4.87	0	.067	.157	***
lnemployees	.091	.156	0.58	.561	-.216	.397	
lnExecsalary	1.572	.327	4.81	0	.932	2.212	***
lnworkerincome	-.413	.166	-2.48	.013	-.738	-.087	**
lnTaxation	-.552	.248	-2.23	.026	-1.039	-.066	**
Constant	11.569	1.105	10.47	0	9.402	13.735	***

Mean dependent var	23.099	SD dependent var	1.337	
Overall r-squared	0.915	Number of obs	115	
Chi-square	1146.961	Prob > chi2	0.000	
R-squared within	0.750	R-squared between	0.963	

*** $p<.01$, ** $p<.05$, * $p<.1$