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Export Competitiveness of Selected Agricultural Products in Kenya

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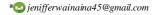*Corresponding author

ARTICLE INFO	ABSTRACT
	This study used reports from various bodies to determine the competitiveness of some selected agricultural products between Kenya and other East African Community countries. Agriculture is an important sector in Kenya and the greater East African Community organization as it earns the country foreign exchange through exports. The sector possess considerable potential, and carrying out a competitive study would greatly inform the country's efforts and policy making processes. The methods used were Market Share Index, Vollrath's Relative Trade Advantage Indices, and Balassa's Revealed Comparative Advantage Index. The various countries were compared using calculated indices and ranked accordingly based on their scores and market share percentages. Consequently, Kenya had a competitive advantage and dominated the international markets in tea and crude materials, whereas most East Africa Community member states had a strong comparative advantage in coffee. Generally, to stimulate the agricultural sector and diversify agricultural exports, the Kenyan government and private sector must increase high-level investments in agribusiness and transition from exporting raw materials to value-added products. Developing standard agricultural trade policies would benefit all East African Community member states, which is consistent with their goals.

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Introduction

Agriculture has remained Kenya's and East African Community's primary economic activity. Kenyan agricultural land was estimated at 48.55% of the total land area in 2018, with arable land accounting for 10.19% and irrigated land accounting for less than 1% of the total agricultural land. Agriculture provides a source of livelihood for about 70% of the rural population (USAID, 2022). The sector employed about 54.34% of total employment directly and indirectly as of 2019, and this has steadily declined since 2000 as the economy moves to a more service-driven economy (World Bank, 2019). The agriculture sector accounts for an estimated 33% of Kenya's GDP (USAID, 2022). However, the percentage has fallen over the years because of unclear policies (Dorosh and Schmidt, 2010). Several East African Community nations have also suffered a fall in agricultural produce as a percentage of GDP within the same period.

Kenya's heavy rainfall zones account for approximately 10% of the arable land and contribute about 70% of commercial agricultural production, and dry regions generate 10%, while semi-arid zones produce about 20% of total output (US International Trade Administration, 2022). Underdeveloped supporting infrastructure and insufficient incentives have led to low productivity in most regions. However, Kenya has been reforming the agriculture sector over the last two decades to help boost growth in the industry. Despite Kenya's vast potential in manufactured exports and agriculture value addition, it largely exports raw materials. The agricultural growth rate has also experienced a significant decline over the last two decades due to global commodity price reductions, as the raw materials exported are highly exposed to price shocks. The decline in the gross value added or productivity was attributed mainly to weather-related shocks (drought and unreliable rainfall), and the prevalence of crop diseases and pests. Farmers face challenges of inadequate soil fertility management, land degradation, and continuous cropping.

Agriculture is a core priority policy area among the East Africa Community economic bloc members. Over half of the bloc's agricultural exports originate from Kenya, Uganda, and Tanzania. Kenya led the bloc regarding the value of agricultural exports, while Uganda and Burundi lead on the proportion of agricultural products exports compared to all other exports (The Exchange, 2018). These developments present whether the bloc members need to consider specialization in different export products due to comparative advantage to increase their competitiveness in the global market.

Productive structure's vulnerability continues because of excessive reliance on consumer goods imports and capital, which has led to significant trade deficits. However, intra-EAC trade indicates that manufactured goods comprise over half of the exports, demonstrating the potential for industrial development and the prominence of intra-regional trade. Countries that invest in these industries can tap into enormous opportunities. Importantly, the proportion of manufactured products in intra-EAC exports has continued to rise steadily. The EAC is performing well concerning regional integration, where it scores particularly high in trade integration. One important EAC policy is ensuring regional trade integration where partner member states benefit from increased production efficiency and augmented trade flows.

Based on this context, it is important to establish the competitiveness of agricultural products exported from Kenya. In order to increase export competitiveness for certain products, this will establish a structure and present opportunities for policy recommendations. This research examined the competitiveness of selected agricultural products for export in Kenya relative to other EAC member countries. The findings will help determine the agricultural products with a competitive advantage while providing an opportunity to propose solutions for developing of low competitive products. Importantly, this research seeks to identify comparative advantages and disadvantages of selected agricultural export products for the country, compared with peers in the EAC bloc.

Materials and Methods

Materials

The research used existing information on agricultural exports for identified products. The targeted sources include the East Africa Community trade reports, the Food and Agriculture Organization (FAO), International Trade Administration and the World Bank. Journals and books were used to complement data from the organizations. The study period covered was from 2000 to 2019, and the product analysis definitions were based on the UN's FAO report under Annex 1. The research area was the East Africa Community, consisting of Kenya, Uganda, Tanzania, Rwanda, Djibouti, South Sudan and the recently joined Democratic Republic of Congo. Ethiopia was also included in the study area as it is not only part of eastern Africa but also possesses the same agricultural potential as the East African Community countries and is one of Kenya's main competitors in the global market.

Selected Products

East Africa Community exports agricultural products that mainly comprise of cash crops, food crops, and horticultural crops. The selected products for this study are given in Table 1.

Methods

The methods used in this study were the Market Share Index, three Vollrath's Relative Trade Advantage Indices, and Balassa's RCA Index. These methods are refined, easy to compare, simple to use, and widely used in determining comparative advantage despite some limitations such as no consideration of trade policies, subsidies, costs, and trade barriers.

Revealed Comparative Advantage Index (RCA)

It analyzes various sectors in agriculture to compute the relative benefit or drawback of a country in goods or services. RCA was used to weight exports for various product groups, which are examined relative to the economies of export destinations. The RCA index provides the share ratio of certain products relative to the total world exports, and this is matched with the share of total exports of the economy to determine the comparative advantage. The formula for the RCA model is (Balassa, 1965; Khadan and Hosein, 2015; Leishman et al., 1999):

$$RCA = (Xij / Xit) / (Xnj / Xnt) \tag{1}$$

Where: "i" denotes export origin, "j" denotes specific export product, and "n" represents the group where the export source belongs. "X" represents the export value at a given point in time. An RCAj index of higher than 1 would mean that particular country can be said to enjoy a comparative advantage in a particular product. An RCAj index of less than one indicates that the country does not have a comparative advantage in a specific product or industry.

Vollrath's Trade Indices

Comprises of three specifications namely Relative Trade Advantage (RTA), Logarithm of Revealed Export Advantage Index (LnRXA), Relative Competitiveness (RC). This method addresses shortcomings of RCA in terms of consideration for import and its implications (Vollrath, 1991).

- The RTA index is the difference between Relative Import Advantage Index and Relative Export Advantage. A RTA > 0 indicates a relative comparative advantage and vice versa.
- The logarithm of the Revealed Export Advantage Index is calculated using the formula;

$$LnRXA \text{ or } LnB-index = \ln(Xij/Xit) / (Xnj/Xnt) \tag{2}$$

- The Relative Competitiveness is denoted by the formula

$$RC = \ln RXA - \ln RMA \tag{3}$$

Table 1. Selected export products

Crop	Comments
Tea	• A major foreign exchange earner • Kenya is a leading exporter
Coffee	• Consumption and demand continue to increase • Uganda and Ethiopia are among the top producers and exporters
Maize	• It is a primary food crop in East Africa
Crude materials	• Include those of cut flowers, vegetable origin, and flower buds • Kenya leads in cut flower exporter to global markets
Palm oil	• Palm oil exportation is a strategic and upcoming industry
Others	• This includes Oil seeds, Cereals, Tobacco, and Pulses

The RC is calculated using the logarithm of Relative Import Advantage and Relative Export Advantage.

The study divided RC and lnRXA into three levels to have easy and well interpreted outcome of the analysis.

Level 1, lnRXA/RC < 0 (weak advantage position for product);

Level 2, 1 < lnRXA/RC ≥ 0 (moderate advantage position for product);

Level 3, lnRXA/RC > 1 (strong advantage position for product)

Market Share Index (MSI)

It measures the ability of an exporter nation to boost its market share in targeted market relative to other countries that export the product to specified targeted market. This index shows the competitive position and competitiveness of a product in the market. The measurement for this index is;

$$MSI = Xik / Mk \times 100 \qquad (4)$$

Where;

MSI = is a country's market share for a specified product in a targeted market;

Xik = a country's total export for specified product in a targeted market;

Mk = total export of a specified product by region or area that constitutes the targeted market.

The main benefit of Market Share Index is the ease to perceive and calculate. While changes in the market share may not be wholly linked to modifications in competitiveness, the MSI is an acceptable indication of a country's exporting competitiveness relative to the export market.

Results and Discussion

Table 2 shows the market share indices of selected products. As for tea, only the Democratic Republic of Congo (DRC) revealed a disadvantaged comparative export, making it a highly competitive trade product. Kenya's position in revealed comparative advantage is strongly echoed in the export market share, with a dominance of over 80% of the global market share despite the steady loss of its market share throughout this study. Rwanda and Uganda appear to have attained good performance, as reflected in a rise in their market shares as Tanzania and Ethiopia failed to uphold their market share for export. In the EAC, coffee export report nearly the same competitiveness as tea in the DRC. All the other countries indicate a strong revealed competitive advantage. Ethiopia enjoyed the most advantage concerning market share and was followed closely by Uganda, which has increased its share over the period. Kenya experienced a decrease, and this made it loses its competitiveness. Regarding palm oil, Kenya and Uganda are in an advantageous position where they show a strong revealed export while Tanzania has a moderate revealed export edge. Kenya has an advantage in the export market compared to its peers although Uganda reveals a significant improvement where it raised its market share over the entire period of the study, making it the 2nd most advantageous in market share consideration.

Kenya, Ethiopia, and Uganda are the most advantageous in Crude Materials, while Tanzania and Rwanda at a moderate export advantage. Kenya enjoyed the most advantageous position in the export market share with the highest acquisition of shares in 2015-2019. The DRC, Ethiopia, and Tanzania maintained their strongly advantageous position in Oil seeds with Uganda recording a moderate advantage. Ethiopia took the most advantageous position in the international export market share (Table 3).

Tanzania and Uganda enjoyed a strong export advantage, in maize crop, while the rest of the countries had a trade disadvantage. Uganda took the most advantage in the export market share. Regarding cereals, Uganda and Tanzania had a strong export trade advantage with Rwanda attaining a moderate advantage, while Burundi and Ethiopia posted a weak trade advantage. Tanzania attained the highest market share in the export market to emerge as the most advantageous among its peers.

Table 2. Market Share Indices of selected products

Country	Tea	Coffee	Crude materials	Palm oil	Tobacco	Maize	Cereals	Oil seeds	Pulses
Rwanda	4.76	3.93	0.35	2.53	0.03	0.8	5.63	0.01	0.6
Uganda	5.88	22.98	6.56	24.5	19.2	46.38	32.26	4.17	9.68
Ethiopia	0.17	43.88	19.07	0.02	0.03	3.87	8.3	75.58	49.45
Kenya	83.61	15.15	67.68	49.39	30.68	11.02	7.98	1.53	7.06
Burundi	0.91	3.75	0.05	0.08	0.71	0.11	0.75	0	0
DRC	0.01	1.08	1.88	0.77	2.37	6.11	3.56	0	0
Tanzania	4.65	9.23	4.39	22.71	46.98	31.7	41.51	18.59	33.22

Source: Own computation (2022) based on FAOSTAT data (FAO, 2019).

Table 3. Summary and findings using InRXA and B-Index of the selected agricultural products.

Country	Tea	Coffee	Crude materials	Palm oil	Tobacco	Maize	Cereals	Oil seeds	Pulses
Rwanda	^***	^***	^**	x	x	x	^**	x	x
Uganda	^***	^***	^***	^***	^***	^***	^***	^**	^***
Ethiopia	^***	^***	^***	x	x	x	^*	^***	^***
Kenya	^***	^***	^***	^***	^***	x	x	x	^***
Burundi	^***	^***	^*	x	^***	x	^*	x	x
DRC	x	^*	x	x	x	x	x	^***	x

Source: Own computation (2022); Where ^= advantage; x = disadvantage; *=weak;** = moderate; *** = strong

Table 4. Summary of Findings for Selected Agricultural Products in RTA and RC

Country	Tea	Coffee	Crude materials	Palm oil	Tobacco	Maize	Cereals	Oil seeds	Pulses
Rwanda	^***	^***	^**	x	x	x	x	x	x
Uganda	^***	^***	^***	x	^***	^***	x	^**	^***
Ethiopia	^***	^***	^***	x	x	x	x	^***	^***
Kenya	^***	^***	^***	x	^***	x	x	x	x
Burundi	^***	^***	^*	x	^***	x	x	x	x
DRC	x	^*	x	x	x	x	x	^***	x
Tanzania	^***	^***	^**	x	^***	^*	x	^***	^***

Source: Own computation (2022); Where ^= advantage; x = disadvantage; *=weak;** = moderate; *** = strong

Regarding tobacco, Kenya, Burundi, Uganda, and Tanzania achieved a strong export trade advantage compared to EAC peers, but Tanzania attained the strongest advantage with export market share. Tanzania, Ethiopia, Kenya, and Uganda attained a strong export advantage in pulses though Ethiopia took the most advantageous position in the export market share compared to its peers.

In Tea production, the positions remained the same as attained using earlier methods where all the countries with an advantageous position remained. However, in coffee, the DRC posted a weak comparative advantage. In cereals and Palm, all economies that had attained an advantageous trade position lost it, and therefore no economy attained a revealed trade advantage. Uganda, Tanzania, Burundi, and Kenya enjoy a strong advantage position in Tobacco product compared to its peers. Uganda retained a strongly advantageous in Maize as Tanzania deteriorated to a weak position in trade advantage. Ethiopia, Tanzania, and the DRC sustained their strong trade advantage in oil seeds with Uganda attaining a moderate trade advantage (Table 4).

Conclusions and Recommendations

Conclusions

Overall, Kenya has a strong revealed comparative trade advantage position compared to its peer in the EAC for the assorted agricultural products apart from a few such as maize, Oil seeds, and cereals. Trade indices (lnRXA, RC, B-index, and RTA) have shown that Kenya enjoyed a strong revealed comparative trade advantage position in the Tea crop. Uganda, Tanzania, and Rwanda are the strongest rivals for the Tea export product. For Coffee product, the value of the Market Share Index and the Revealed Comparative Trade Indices showed that Uganda and Ethiopia have the strongest revealed comparative trade advantage position compared to their EAC peers in the global trade market. Further, Kenya had a dominant market position for crude materials and was the most competitive though there are strong potential contestants for the products from Uganda and Ethiopia. Kenya exhibited a weak revealed comparative trade advantage position for palm oil when imports were considered but still attained the largest market share among its EAC colleagues, making the country the most competitive. Kenya had a trade disadvantage for maize compared to other EAC member countries. Uganda and Tanzania have a strong revealed comparative trade advantage in maize product. Kenya had a solid comparative trade advantage for Tobacco, and the main rivals were Uganda and Tanzania. In Oil seeds, Ethiopia had the highest comparative

advantage position and dominated the global market with Kenya posting a weak comparative position. Kenya has a weak position in cereals, whereas Uganda and Tanzania dominate with the strongest revealed comparative advantage. Kenya enjoys a strong comparative advantage position for Pulses compared to its peers, but including imports changes this to a trade disadvantage. The market for Pulses is dominated by Tanzania and Ethiopia, which have larger market shares.

Despite the success of this study, some limitations encountered. The features of the method applied in this study present some limitations. The various perspectives and approaches to economic development were highlighted to address this difficulty and support the theories used. Despite these limitations, the research objectives have been largely attained with support of relevant literature and theories.

Recommendations

The study findings show that Kenya enjoys strong agricultural trade competitiveness compared to its peers in the EAC bloc in some of the selected products discussed. The competitive advantage theory proposes that countries vary in patterns of their trade competitiveness due to variations in resources. The findings show that Kenya can be competitive in individual products or industries.

Kenya can specialize and concentrate on a certain product to achieve higher efficiency and focus more efforts, resources and investment to attain higher productivity and competitiveness among peers in the EAC. Stakeholders need to determine if Kenya has achieved a comparative advantage in crude materials and tea because attaining an advantageous position and accruing benefits are different concepts. Some countries benefit by re-exporting products they do not produce. Kenya should also address potential threats in tea product due to the increase in competitors, and therefore it should focus on increasing productivity to enhance its competitiveness. Proposed strategies would include forecasting and planning to mitigate the effects of weather phenomena such as drought and the prevalence of pests and diseases on tea production.

The higher volume of imports in maize, pulses, and palm oil need to be addressed by policies and programs that can help lessen the gap between local supply and demand. This requires careful planning and strategies that strengthen production and processing capacities. Policymakers and other stakeholders in Kenya must formulate policies that strengthen the sector and appeal to private sector investment. They can implement policies that promote value chains to respond to regional and international market opportunities by establishing product

development incubators that harness inventions and innovations geared toward producing value-added products, establishing free Economic Zones to boost production for the export market, and building the farmers' export capacity. The country would benefit from transitioning from exporting raw materials to exporting products with added value, which would fetch a higher price on the international market.

The government should support trade outreach programs to educate the agribusiness community, particularly micro, small, and medium-sized businesses, regarding regional and international trade opportunities and build capacity. There is also a need to streamline the information system so farmers can effectively implement valuable information through extension services. Public-private partnerships must be established to successfully offer all farmers agricultural extension services that are affordable and readily accessible.

Acknowledgement

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