Research article

Product and Market Diversification Trends: The Case of Horticulture Exports in Kenya

JANE GITHIGA*
Graduate School of Sustainability Science, Tottori University, Tottori City, Japan
Email: githigajane@gmail.com

ASRES ELIAS
Faculty of Agriculture, Tottori University, Tottori City, Japan

KUMI YASUNOBU
Faculty of Agriculture, Tottori University, Tottori City, Japan

Received 31 January 2022 Accepted 22 April 2022 (*Corresponding Author)

Abstract One of the major successes of trade liberalization in Kenya was promotion of horticultural exports. This was aimed at reducing export earnings instability that resulted from declining commodity prices of tea and coffee. The export promotion programs put in place in the 90s paid off and horticultural exports was able to record its strongest period of growth in the 2000s. In this period the major horticulture export product was French beans in which the EU was the primarily market. However, the global markets have been changing posing new challenges of increased competition and regulatory standards which could threaten the survival and sustained participation of Kenyan horticultural exports. At the same time creating opportunities to increase export products and expand market access through transfer of knowledge, skills, and technology. For many developing countries diversification into new products and markets has been encouraged by development platforms to deal with trade related shocks that emanates from reliance of one market and a narrow range of products. Therefore, the objective of this study was to analyze the trends of product and market diversification of horticulture exports in the periods 2002 to 2019 in Kenya using UNComtrade data. We employed the Hirschman-Herfindahl index to measure product and market diversification. The study finds that the horticultural products are less diversified while the index for the market diversification showed are more diversified markets access. This shows that horticultural products have not increased instead concentrated into the same products while widening market access to other regions despite the EU markets controlling the largest share of exports. The results highlight the need to increase the export products and take advantage of untapped potential markets.

Keywords diversification, horticulture, exports, Hirschman-Herfindahl index

INTRODUCTION

Dependence on the EU market has been a striking feature for Kenyan horticultural exports sector since the 1990's when it became a major supplier of French beans and other Asian vegetables (Jaffee, 2003). Despite the stiff competition, the exports have continued to grow both in volume and value. In 2019 the sector gained over 1.07 billion USD by exporting over 328.3 thousand metric tonnes of cut flowers, vegetables, and fruits. It is the second largest foreign exchange earner after tea contributing 19% of total exports in 2019, and a major employer providing 350,000 jobs directly and supporting over 6 million livelihoods (KNBS, 2020). Horticulture exports are critical for rural development because of the commercialization of small-scale farming opportunities it provides through contract farming. (Jaffee, 2003) found that 50% of the vegetables and 85% of fruits total exports were supplied by small scale farmers while Kazimierczuk (2018) found that 5% of cut flowers were from small-scale farmers.

From trade-led development perspective, participation in global export markets over a period often initiate innovation and expansion in terms of market access and products exported. This can happen in two ways; first, from market related challenges resulting from competition, changes in consumer needs, instability in the partner markets among others. This manifested in the rapid transformations of the EU markets in the last two decades resulting to changes in governance of the supply chain and the way of doing business (Jaffee, 2003). It started with the evolution of Sanitary and Phyto sanitary (SPS) standards that aimed at enhancing product safety and food quality (Jaffee and Henson, 2004). This was extensively debated by researchers who raised concern on the market entry barriers and threatened participation of exporters particularly from developing countries who lack infrastructure, technology and other trade related costs required to meet these standards (Jaffe and Masakure, 2005). Consequently, in response to changing regulatory environment, the EU market supply chain changed from previously wholesale markets to tightly integrated buyer-driven supermarkets. (Jaffee, 2003). These supermarkets enforced their own standards too, posing further challenges especially for small-scale farmers.

Secondly, there is opportunity by developing countries in participating in high value global markets. Studies have found that through knowledge and skills transfer farmers develop capacity to produce and export different varieties and use this knowledge to produce for different markets therefore increasing market access (Jaffe and Masakure, 2005). Nevertheless, literature tend to agree that participants of horticultural exports must reorient towards meeting the changing global markets and embracing opportunities through product and market diversification (Shepherd and Wilson, 2013). Samen (2010) defines diversification as increasing the number of export products and partner markets. Through diversifications commodity exporters can navigate through changing market environments and market externalities resulting from dependence on a single market. The welfare of millions the sector support depends on its ability to adapt to a highly dynamic market and seek ways of spreading risks through diversification.

Two decades later, Kenyan horticultural exports have been increasing both in volume and value in a highly dynamic global market. We therefore seek to determine to what extent has the Kenyan horticultural exports diversification trends changed over time in terms of product exported and market access.

METHODOLOGY

The data use in the study was obtained from UNComtrade Data, aggregated in World Trade organisation (WTO) harmonised system (HS). The horticulture products in this study will be defined as cut flowers, vegetables and fruits categorised by WTO HS codes. HS 06, HS 07, and HS 08 respectively. There are different methods used different studies to measure export diversification. These methods include the Hirschman- Herfindahl index, entropy index, concentration ratio and the ogive index (Samen, 2010). For our study based on available data we use the Herfindahl-Hirschman Index (HHI), a commonly used measure by policy makers to give summary of diversification. The HHI is the sum of squared export product or markets shares of country *i* at a given time t. HHI index ranges from 0 to 1 and the closer the index to 0 (=diversified) while the closer the index to 1 (= less diversified). If the HHI index is 1, it means either a country *i* is exporting only one product or it is the only exporter in that market.

The HHI index for product diversification was calculated by following equation.

$$HHI = \sqrt{\frac{\sum_{x-1}^{n}\left(\frac{x_i}{X}\right) - \sqrt{\frac{1}{n}}}{1 - \sqrt{\frac{1}{n}}}} \quad (1)$$

While market diversification HHI was calculated by Eq. (2).

$$H = \sum_{i-1}^{N} s_i^2 \quad (2)$$

Where is the S_i is the Share of the country *i* in the market, and N is the number of countries.

$$X = \sum_{i-1}^{n} x_1 \quad (3)$$

RESULTS AND DISCUSSION

General Trends of Horticultural Exports Growth

Farmers are likely to venture into new products and market when there's growth in income which is evident of increasing growth in value of horticultural exports over the period as shown in Fig. 1.

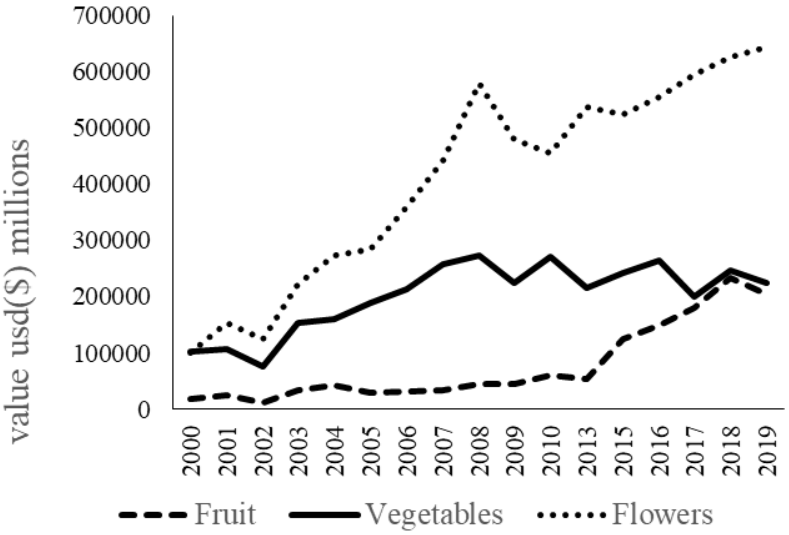

Fig. 1 Trends in value for horticulture exports
Source: Own calculations using UNComtrade

The highest growth being experienced between 2002 and 2007, a period of strong macroeconomic stability owing to President Kibaki acceded to power in 2002. The growth however slows down after 2008 which can be attributed to both domestic and market factors. Domestically, the major horticulture producing areas were affected by 2007 post-election violence followed by a widespread drought in 2009 which affected production (Tyce, 2020). As for market factors, the global economic crisis in 2008 affected major export markets (Heher and Steenberg, 2021). Further, delays and cancellation of flights to Europe due to Icelandic ash in April 2010 and heavy snow in December the same year. The exchange rate volatility especially in 2016 when the Euro/USD exchange rate dropped from 120 to 100, or delays in the signing of EPA agreement between East African community and EU in 2015. Vegetables exports have shown more erratic in growth compared to fruits and cut flowers. Moran (2018) found that vegetables are losing popularity due to a stringent market and some exporters are moving to cut flowers which contributes to the highest share of horticulture exports.

Market Access General Trends

The EU market still controls the largest share of total horticulture exports although other markets have showed potential as shown in Fig. 2. The EU controlled over 90% of total exports in 2000 which has reduced to 71% by 2019. The market with the highest potential is the Middle East which can be attributed to the proximity it is from Nairobi as found by Irandu (2019), the closer the partner market the higher the likelihood of trade. Although the EU controls the larger share of the exports, other markets have experienced higher average growth (Table 1).

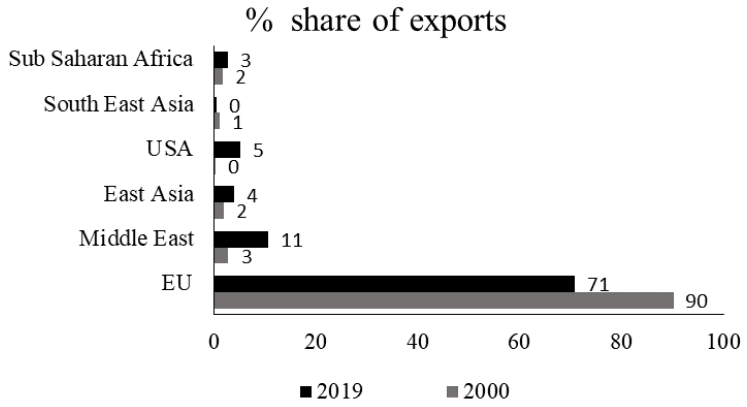

Fig. 2 Share of total horticulture exports according to markets
Source: Own calculations using UNComtrade data

Table 1 Average growth in % of major horticulture markets

Market	Average growth 2001-2010	Average growth 2010-2019
EU	15%	3%
Middle East	29%	28%
USA	37%	4%
East Asia	21%	155%
Southeast Asia	175%	79%
Sub-Saharan Africa	61%	26%

Source: author calculation based on UNComtrade data.
Average growth was calculated using the average yearly change in percentage of total exports value. The markets were defined used the United Nations defined regions. The United Kingdom is still included in the EU in this analysis.

Product Diversification Trends

The objective of the study is to determine to what extent have horticultural products have diversified. This was achieved by the change in the HHI index between 2002 to 2018, if the trend tends towards 1 (=less diversified) and if the trend tends towards 0 (= more diversified).

The study found that in all three categories of horticulture exports, the index is less than 1, meaning that the farmers are already exporting a number of products. As shown in Fig. 3, HHI index for combined horticulture products were 0.28 in 2002 has since rose to 0.31 meaning that the horticultural products are less diversified and there's no evidence of increase in additional products in the specified period. However, if we consider the different products individually, we observed a change of pattern in vegetable category after 2012. At first the Index rises from 0.34 in 2002 to 0.38 in 2012. Then falls to 0.21 in 2018. The HHI index in the flowers category was 0.71 in 2002 and rose to 0.81 in 2018. The high index in indicates that there were only a few products exported in this category which have continued to intensify over time while fruits HHI index rise from 0.31 in 2002 and 0.39 in 2018.

The evolution of SPS standards had a higher impact on vegetable exports compared to fruits and flowers. This came as a challenge and opportunity, with Global GAP (formally EUREPGAP) being rolled out in 2007, many farmers were in the process of compliance. However, there was a widespread product interception and banning of some vegetable products by the EU for failure to meet maximum residue limits (MRL) in 2012. Farmers took this opportunity to add value to the previously bulk unprocessed vegetable exports and diversified into semi-processed vegetables prepack Asian vegetables (karella, chillies, aubergines and okra) (Herher and Steenbergen, 2021). Which could explain the HHI index for vegetable categories started falling after 2012 as an indication of additional products in the export baskets.

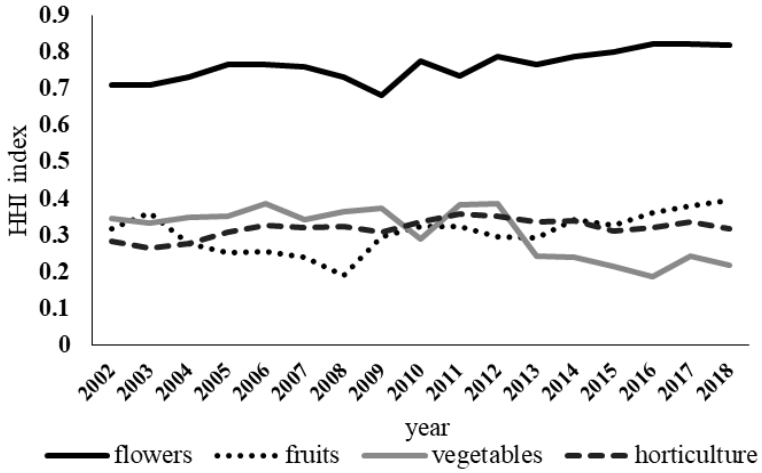

Fig. 3 Product diversification trends

Source: Own calculations using UNComtrade data

The role of governance of the horticultural supply chain as a possible explanation of less diversified products. The "buyer -driven" supply chain where supermarkets in the EU dictate what products to produce, the packaging characteristics and quality of products (Jaffe, 2003) is likely to affect innovation and addition of new products. Similarly, small scale farmers on contract can only produce what is provided the contractors. This unbalanced power dynamic observed in the export business could hinder diversification. The same phenomenon is observed in cut flowers which has the highest HHI index, where breeders and propagators determine what, when and how the planting materials are distributed (Kazimierczuk et al., 2018; Tyce, 2020).

Finally, an increasing HHI index could be explained by difficulty in access to approved planting materials especially in cut flowers exports which is associated with high cost of investment that is why 95% of the farms are owned by large scale farmers and multinational companies. High cost of royalty's payments for the planting materials, propagating, research, and development of new varieties often locks out resource poor farmers who only produce low value summer flowers (Kazimierczuk et al., 2018).

Market Diversification Trends

HHI index for market diversification in horticulture dropped (Fig. 4) from 0.27 in 2002 to 0.18 in 2019, with vegetables showing higher market diversification where the index dropped from 0.49 in 2002 to 0.18 in 2019. Fruits HHI index dropped from 0.18 in 2002 to 0.13 in 2019 while flowers index dropped from 0.37 in 2002 to 0.27 in 2019. The index has a slight increase between 2008 and 2012, which can be explained by market factors discussed in Fig. 1 above i.e the global economic crisis in 2008, the flight cancellations in EU markets due to weather.

The EU markets still controls the largest share of exports (Fig. 2) as discussed above which can be explained. First, the evolution of SPS standards did not deter exporters from the EU markets, instead most farmers embraced the compliance (Jaffee and Henson 2004). Second, the presence the foreign direct investment (FDI) coming from the EU along the supply chain such as exporters, breeders & propagators and cool chain management and inputs (Irandu, 2019). Third, the established ties in the EU supermarkets could hinder further market diversification, highly perishable products rely on trusted relationships and cost of diversion of products from one market to another is high (Dennis and Shepherd, 2007). Fourth, availability of flights to EU that can deliver the highly perishable products in short time. Fifth, growth and advancement in Kenyan airfreight and tourism has also aided delivery of highly perishable products in multiple destination within a limited time. Finally Kenyan export's ability to meet year-round demand that can supplement their production in winter.

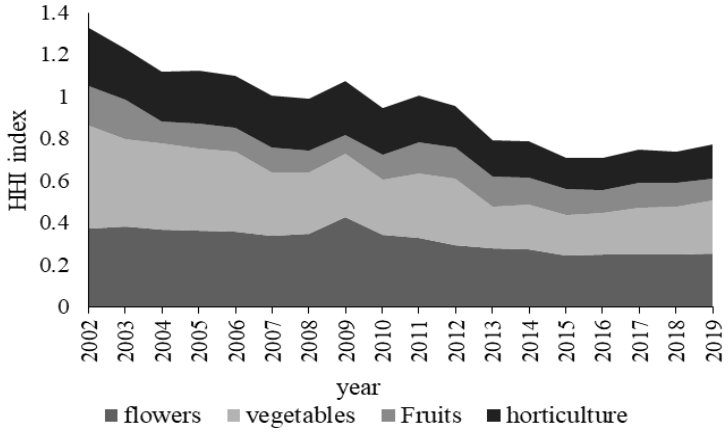

Fig. 4 Market diversification trends

Source: Own calculations using UNComtrade data

There is opportunity in participation in the EU market, Kenyan horticultural exports have widened their market access as indicated by falling HHI index both regionally and beyond (Fig. 3). Krishna (2018) found that emergence of regional value chains has provided exporters a venue to channel excess spillovers that don't make it to the main markets. The experience gained from the EU markets has equipped farmers in supplying horticultural products in multiple markets governed by different regimes. However, there is still potential in untapped markets.

CONCLUSION

The aim of the study was to determine the diversification trends of Kenyan horticultural exports this was based on the hypothesis that continued participation of farmers in a highly dynamic global markets is likely to initiate diversification. Our results confirmed that horticultural exports are more diversified in terms of markets access as evidenced by a falling HHI index. On the other hand, we found that the products to be less diversified meaning there is no evidence of any significant change in number of products exported over time as evidenced by an increasing HHI index. We further found that the EU still controls the largest share of horticulture exports. Finally, we found that other markets have shown great potential in terms of growth despite controlling a small share of exports. Trade facilitation by the government could help farmers tap into those markets and increase new products.

REFERENCES

Dennis, A. and Shepherd, B. 2007. Trade costs, barriers to entry, and export diversification in developing Countries. Policy Research Working Paper 4368, Retrieved from https://openknowledge.worldbank.org /bitstream/handle/10986/7385/WPS4368.pdf?sequence=1&isAllowed=y

Hausmann, R., Hwang, J. and Rodrik, D. 2007. What you export matters. Journal of Economic Growth, 12 (1), 1-25, Retrieved from DOI https://doi.org/10.1007/s10887-006-9009-4

Heher, U. and Steenbergen, V. 2021. Chapter 6, Kenya: Supplying to multinationals exposed local firms to international horticulture markets. An Investment Perspective on Global Value Chains World Bank, ISBN:978-1-4648-1683-3, USA.

Henson, S. and Jaffee, S. 2004. Standards and agro-food exports from developing countries: Rebalancing the debate. World Bank Policy Research Working Paper 3348, Retrieved from DOI https://doi.org/10.1596 /1813-9450-3348

Irandu, M.E. 2019. Factors influencing growth of horticultural exports in Kenya: A gravity model analysis. GeoJournal, 84, 877-887, Retrieved from DOI https://doi.org/10.1007/s10708-018-9888-x

Jaffee, S. 2003. From challenge to opportunity transforming Kenya's fresh vegetable trade in the context of emerging food safety and other standards in Europe. Agriculture and Rural Development Discussion, Paper 2, The nternational Bank for Reconstruction and Development Agriculture and Rural Development Department, USA.

Jaffee, S. and Masakure, O. 2005. Strategic use of private standards to enhance international competitiveness: Vegetableexports from Kenya and elsewhere. Food Policy, 30 (1), 316-333, Retrieved from DOI https://doi.org/10.1016/j.foodpol.2005.05.009

Kazimierczuk, A.H., Kamau, P., Kinuthia, B.K. and Mukoko, C. 2018. Never a rose without a prick: multinational companies and productive employment in the Kenyan flower sector. ASC working paper, 142 (in Dutch), Retrieved from http://hdl.handle.net/1887/64705

Kenya National Bureau of Statistics (KNBS). 2020. Economic survey 2020. Retrieved from https://www.knbs.or.ke/economic-survey-2020/

Krishnan, A. 2018. The origin and expansion of regional value chains: The case of Kenyan horticulture. Global Networks, 18 (2), 238-263, Retrieved from DOI https://doi.org/10.1111/glob.12162

Moran, T. 2018. FDI and supply chains in horticulture (vegetables, fruits, and flowers, raw, packaged, cut, and processed): Diversifying exports and reducing poverty in Africa, Latin America, and other developing economies. Center for Global Development, Working Paper, 475, Retrieved from DOI http://dx.doi.org 10.2139/ssrn.3125085

Samen, S. 2010. A primer on export diversification: Key concepts, theoretical underpinnings, and empirical evidence. Growth and Crisis Unit, World Bank, USA.

Shepherd, B. and Wilson, W.L.N. 2013. Product standards and developing country agricultural exports: The case of the European union. Food Policy, 42, 1-10, Retrieved from DOI https://doi.org/10.1016/j.foodpol.2013.06.003

Tyce, M. 2020. A 'private-sector success story'? Uncovering the role of politics and the state in Kenya's horticultural export sector. Journal of Development Studies, 56 (10), 1877-1893, Retrieved from DOI https://doi.org/10.1080/00220388.2020.1715944