Exploring the Influence of Export Environment on Market Standard Dimensions and Horticultural Market Growth in South Rift, Kenya

Cheruiyot Philip, Dr. Tom Mboya & Dr. Joshua Wafula

Exploring the Influence of Export Environment on Market Standard Dimensions and Horticultural Market Growth in South Rift, Kenya

[*1]Cheruiyot Philip

[1]Department of Business and Economics, Kisii University, P.O Box 408-40200, Kisii, Kenya

*Corresponding Author: E-mail: **Cherykim7@gmail.com**

[2]Dr. Tom Mboya

Lecturer Department of Business and Economics, Kisii University, P.O Box 408-40200, Kisii, Kenya

E-mail: tomboya@kisiiuniversity.ac.ke

[3]Dr. Joshua Wafula

Senior Lecturer Department of Accounting and Finance, Kisii University, P.O Box 408-40200, Kisii, Kenya

E-mail: jwafula@kisiiuniversity.ac.ke

Abstract

The inclusion of rural smallholder farmers in the export of horticultural products has two major implications: increased household income through a promising global market, which is a catalyst for productivity, cumulatively growing Gross Domestic Product (GDP) and foreign exchange. So far, there are an estimated 2500 smallholder farmers who participate in the export of horticulture in Kenya. As a result, the current study sought to establish the influence of export environment on the relationship between market standard dimensions and export market growth of the horticultural products from small scale farmers in south rift of Kenya. The study collected quantitative data using a structured questionnaire from a sample of 334 small-scale horticultural farmers who were randomly selected. Validity and reliability tests were performed before the main study. Then, descriptive and multiple regression was used to analyze the data. Export environment was measured through: government support and services for export, government regulations and certifications and trade agreements and market access. Findings indicated that there was a statistically significant influence relationship between market standard dimensions and the growth of horticultural export market, where export environment on each predictor variable had the highest influence on market dynamics, followed by quality control, traceability

and post-harvest handling practices being the least. This implies that the export environment plays a critical role in making the smallholder farmers' products more competitive in export market. The study concluded that, appropriate policies, regulations and trade agreements were critical in market standards compliance. The government should create a framework to effectively disseminate information on trade agreements so as to benefit farmers and in addition establish collaboration between farmers, the government and private sector in export intervention measures.

Keywords: *Export, Horticulture, quality, Post-harvest, Traceability, Market*

1.0 Introduction

The on boarding of rural smallholder farmers in the export of horticultural products has two major implications: increased household income through a promising global market, which is a catalyst for productivity, cumulatively growing Gross Domestic Product and foreign exchange. The inclusion of the farmers is done through contractual farmer groupings that ties the production of horticulture to exports standards (Gramzow & Sefa, 2018). The contract spells out the quantities and quality of products that meet the threshold for exports, and farmers are under obligation to comply with all aspects. Kenya has estimated 2500 smallholder farmers under this program who are mainly from the lower Eastern and South Rift parts of Kenya. The aggregated products are bounds to have quality variability or non-conformities as observed by Ulrich (2014). The non-conformities are generally termed as poor quality products which lower the attractiveness and indeed competitiveness of the Kenyan horticultural products.

Barkum (2021) emphasized the significance of export commerce and the need for supportive rules and regulations. As a result, customers in importing countries can obtain supplies in areas where there is a shortage, enhancing nutritional value, promoting a more varied diet, and ensuring consistent market access for food goods. These concessionary bilateral and multilateral agreements can be entered in regional trading blocks which Adenutsi and Afawubo (2020) stressed the significance of regional trade agreements in aligning market standards and allowing seamless trade flows. These agreements can assist African exporters in effectively navigating market conditions and taking advantage of evolving consumption trends.

Kenya has implemented laws and regulations that promote the export of its horticulture goods in order to increase its competitiveness on the international market. Nevertheless, adherence to market standards can occasionally impede growth. Otieno (2016) proposes that in order to preserve and expand Kenya's market dominance in global markets, it is imperative for private and governmental organizations responsible for overseeing horticulture production and marketing to provide assistance to farmers, especially those operating on a small scale. Wambui (2017) also highlights the importance of providing assistance to farmers in order to enable them to satisfy the requirements of the market.

Global Good Agricultural Practices (GAPs) influence the ability of Kenyan products from small-scale farmers to enter the market. However, these products face obstacles due to strict regulations regarding quality standards, particularly in relation to storage facilities, food transparency, accountability in the supply chain, traceability, and the slow implementation of modern market information technologies (Snel, Broeze, Kremer & Osena, 2021). According to Heher and Steenbergen (2020), global customers have a significant impact on the international food supply

chain, and the implementation of good agricultural practices (GAPs) and certification processes serve as catalysts in this chain. However, international purchasers often compel small-scale producers to adhere to quality and product conformity standards, leading to compliance issues. Nanjunja et al. (2016) observed that the presence of effective food supply chains and adherence to food safety and horticulture marketing standards had a significant influence on Kenya's export expansion, which was seen to work within support legal framework.

According to the Kenya Institute for Public Policy Research and Analysis (KIPPRA), Kenya has the potential to take advantage of global and regional markets, even in the face of a difficult business environment and difficulties in achieving market requirements (KIPPRA, 2017). The Kenya Crops (horticulture Crops) Regulations 2019 provide a set of rules and regulations that horticulture farmers must adhere to in order to comply with the export environment requirements. The key aspects encompassed in this category are the implementation of measures to ensure the safe manufacturing and handling of products, the ability to track and trace products along the supply chain, the proper transportation of goods, the use of suitable packing houses and equipment, compliance with phytosanitary regulations, the analysis of residues, the maintenance of accurate paperwork, and the observance of general hygiene practices.

1.1 Statement of the Problem

In an ideal scenario, small-scale horticultural farmers in South Rift, Kenya would thrive in the export market, benefiting from their ability to expand and meet stringent global market standards and supported by conducive local export environment. These standards encompass pre-harvest and post-harvest quality controls and responsiveness to consumer demands. Authors such as Bien & Soehn (2022) and Match Maker Associates (2017) highlight the potential for significant contributions to the Kenyan economy through the export of fruits and vegetables. However, challenges persist, as noted by Onwude et al. (2020), Fulano, Lengai and Muthoni (2021), and Matui et al. (2016), including pesticide residues, harmful organisms, and non-compliance with technical standards, leading to limited market access and high levels of loss within the supply chain. Thus, the research aimed at the factors influencing market standards and growth in horticultural products among small-scale farmers in South Rift, Kenya, focusing on how government policies, laws, bilateral and multilateral agreements moderates market standard dimensions and export market growth.

2.1 Literature Review

Oliveira and Batalha (2021) examined the export environment, focusing on factors influencing the marketing of fruits and vegetables within supply chains. Their study emphasized that producer and farm attributes, along with infrastructure that meets export requirements, are critical in shaping the marketing strategies for these products.Lencucha ET al. (2020) explored the link between the export environment and agricultural productivity by reviewing relevant literature on government policies and initiatives aimed at market growth in the agricultural sector. They identified key factors such as government support, crop diversification, quality inputs, technical support, and supply chain efficiency as major contributors to enhanced output quality, market access, and sales volume. The study also highlighted the importance of effective agricultural extension services and market connections.

Afesorgbor and Demena (2023) investigated the impact of regional trade agreements (RTAs) on agri-food trade, focusing on preferential trade agreements (PTAs). Their analysis revealed that RTAs generally have a positive impact on agricultural trade performance, with some agreements

either generating or redirecting agri-food trade. They stressed the importance of consistent market information exchange between trading partners to resolve trade issues effectively. Bandolkar et al. (2023) evaluated the effectiveness of India's trade agreements on agricultural products, using data from the World Bank Integrated Trade Solution (WITS). They analyzed RTAs between India and countries such as Sri Lanka, Singapore, Chile, South Korea, and Malaysia. The findings showed that while some RTAs had a positive impact on the export market for agricultural products, others negatively affected the trade of fruits and vegetables.

Coninx and Kileu (2020) studied the export environment at the county level in Kenya, focusing on promoting and marketing agricultural and food products. They found that county governments identified significant challenges, including poor quality inputs, inadequate storage facilities, and limited market access. The study recommended the implementation of supportive policies, effective regulatory institutions, and improved extension services to enhance production quality and marketability.SNV (2018) analyzed the potential of Kenya's fresh and dried mango exports to the European Union. The study found that compliance with food safety standards, pesticide usage, and environmental regulations significantly influenced the export market. It also noted a growing demand for Kenyan mangoes in the EU but identified frequent pest and disease outbreaks as major obstacles. The study recommended robust legislation and regulatory frameworks to address these production challenges and ensure market access.

2.2 Hypothesis Development

The export environment, particularly government regulations and trade agreements, plays a critical role in shaping the success of the horticultural sector, especially in the context of global markets. Effective regulatory frameworks and favorable trade agreements can significantly enhance market access and competitiveness for exporters. Conversely, restrictive regulations and unfavorable trade terms can hinder growth and limit the potential for market expansion.

Recent studies have emphasized the importance of aligning national regulations with international standards to facilitate smoother export processes. According to Tsakok and Gardner (2020), compliance with stringent international phytosanitary standards is essential for maintaining market access in key export destinations. Their study highlights the need for governments to support exporters through training and resources that help them meet these standards, thereby enhancing the competitiveness of horticultural products in global markets. Furthermore, trade agreements are crucial in determining the ease with which products can enter foreign markets. Research by Nguyen and Bui (2021) suggests that trade agreements, such as free trade agreements (FTAs) and regional trade agreements (RTAs), have a significant impact on the export performance of agricultural products. Their findings indicate that countries with well-negotiated trade agreements tend to experience higher export volumes and better market penetration, particularly in sectors like horticulture that are sensitive to tariff and non-tariff barriers. Additionally, Andrade and Fernandez-Stark (2019) explore the role of government support in navigating the complex regulatory environments of export markets. They argue that governments can enhance the export environment by offering subsidies, tax incentives, and streamlined customs procedures that reduce the cost and complexity of exporting. This support is especially vital for small and medium-sized enterprises (SMEs) in the horticultural sector, which often face greater challenges in meeting regulatory requirements and accessing international markets.

Despite the recognized importance of government regulations and trade agreements, there is limited research on their direct impact on the growth of horticultural export markets. Most studies have focused on broader economic factors or internal business practices, leaving a gap in understanding how the export environment influences market growth. Therefore, we hypothesize the following:

H02: There is no statistically significant relationship between the export environment and the growth of horticultural export markets.

3.0 Methodology

The study employed an explanatory research design and identified 1,891 small-scale farmers from Bomet and Narok Counties in Kenya's South Rift region as the target population. This area was chosen because of its important role in producing fruits and vegetables for export. Over the years, horticultural production in Kenya has steadily increased, with exports rising by an estimated 9% in 2023 alone. As horticulture is a key economic activity for the South Rift's residents, any research or interventions aimed at supporting this sector have the potential to significantly improve their livelihoods.

Population and Sampling

The study used Yamane's 1967 formula to calculate a sample size of 367 small-scale farmers from the total population of 1,891. The sample was stratified by county, and respondents were selected through a simple random sampling method.

Survey Instruments and Validation

The study variables were assessed using a multi-item scale to test the hypotheses. Data analysis constructs were measured with a 5-point Likert scale, ranging from "Strongly Disagree" (1) to "Strongly Agree" (5). The instrument underwent validation through a pilot study conducted with 37 small-scale farmers in Kericho County, where data was analyzed for validity and reliability. The standardized factor loadings, Cronbach's Alpha, average variance extracted (AVE), and composite reliability of the instruments were presented. Each indicator's loading had to exceed 0.50 at the t-value. All factor loadings in the study were above 0.50 and were retained for further analysis. Data analysis was conducted using means, standard deviation, and regression analysis.

Data Management

At the start of the data analysis, the researcher meticulously reviewed the data to confirm its completeness, consistency, and accuracy. Based on this review, a decision was made regarding the continuation of data processing. Once these preliminary checks were completed, the data was input into the Statistical Package for Social Sciences (SPSS V22) for analysis. The study then identified and corrected any missing values to avoid inaccuracies in the inferential analysis, resulting in the detection of 13 cases with missing data. Outliers were also identified and excluded to ensure the data was properly cleaned. Consequently, 334 units of inquiry were retained for the final analysis.

4.0 Findings and Discussion

Demographic variables, including the type of producer, age, gender, duration of export activities, education level, type of product, and land size under production, were analyzed.. The findings of these demographics are presented in Table 1.

Table 1: Demographic representation of horticultural producer in Kenya

Variable	Measures	Frequency	Percent
Nature of producer	Self-help group	40	12.0
	Cooperative society	294	88.0
	Total	**334**	**100.0**
Range of Age	30 years and below	24	7.2
	31-40 years	39	11.7
	41-50 years	109	32.6
	51 years and over	162	48.5
	Total	**334**	**100.0**
Gender	Male	236	70.7
	Female	98	29.3
	Total	**334**	**100**
Period in export business	Less than 1 year	59	17.7
	1-2 years	58	17.4
	3-5years	142	42.5
	6-10 years	71	21.2
	more than 10 years	4	1.2
	Total	**334**	**100.0**
Level of Education	Primary	88	26.3
	Secondary	116	34.7
	Tertiary	83	24.9
	University	47	14.1
	Total	**334**	**100.0**
Type of crop grown	Fruit	303	90.7
	Vegetable	31	9.3
	Total	**334**	**100.0**
Land size	Below 1 acre	238	71.3
	1-2 acres	81	24.3
	2-3 acres	13	3.9
	Over 3 acres	2	.6
	Total	**334**	**100.0**

Source: Survey, Data, 2023

Findings show that 88% of the respondents were members of cooperative societies, while 12% belonged to self-help groups. On land size under horticulture, it was observed that 71.3% of farmers owned below 1 acre of land, 24.3% owned between 1 and 2 acres, and 3.9% owned between 2 and 3 acres. Only 0.6% own over 3 acres. Thus, horticultural production was on small scale, to sustain the global demand, there was need for the farmers to undertake aggregation of their produce through cooperative and self help groups. On age, majority (48.5%) of the small-scale farmers was above 51 years; they were followed (32.6%) by those between 41-50 years. The number of farmers decreased with age as 11.7% were between 31-40 years and while 7.2% were 30 years and below. These findings show that farming was not attractive to the younger generations, and they pursue alternative forms of employment. On gender, male farmers comprised 70.7%, while 29.3% were female.

The small scale farmers were generally new in horticulture as majority (42.5%) of them had engaged themselves for a period between 3-5 years, whereas 21.2% had 6-10 years, 17.7% had < 1 year, 17.4 % of them had 1-2 years while 1.2% had >10 years of experience. On education, it was established that most farmers had basic education (i.e., 34.7% had Secondary level of education and 26.3% primary). Another sizable number had tertiary level of education (24.9% had college education with 14.1% University) indicating that they could comprehend the market dynamics and respond to the questions adequately. On the type of product, it was established that the majority (90.7%) of the farmers grew fruits while 9.3% grew vegetables.

4.1 Descriptive Statistics

To understand the perception of the moderating effect of export environment on the relationships between market standard dimensions and market growth of fruits and vegetable among scale farmers in South Rift of Kenya, the study used Means and Standard Deviation (SD) as presented in Table 2.

Table 2: Export Environment

Item	N	Mean	SD
Government Support and Services for Export			
There are adequate extension services from the government for quality production and export market of fruit and vegetable.	334	2.18	1.011
There are adequate government technical personnel that support export market of fruit and vegetable.	334	2.50	1.053
There is reliable market information from the government on export market requirements for fruit and vegetable from small scale farmers.	334	2.41	1.044
Government Regulations and Certification			
There are adequate government controls in fruit and vegetable export supply chain.	334	2.33	1.031
There are reliable government institutions that govern food safety and quality products for export market.	334	2.58	1.037
There is efficient issuance of fruit and vegetable products certification for export market.	334	2.48	0.954
Trade Agreements and Market Access			
There existing bilateral and multilateral trade agreements between Kenya government and importing countries that has enhanced our market access of fruit vegetable.	334	3.59	0.937
There are benefits on market standards on exportation of fruit and vegetable from negotiated trade agreements between the government of Kenya and importing countries.	334	3.89	0.727
There is adequate sharing of market information between producers of fruit and vegetable and importers through governments trade arrangements.	334	3.35	1.112

Source: Survey, Data, 2023

This part presents descriptive Statistics on government support and support for export, government regulations and certification and trade agreements and market access. On Government Support and Services for Export, the Adequate Extension Services, had a mean score is 2.18 with a standard deviation of 1.011, indicating a generally low perception of the adequacy of government extension services for quality production and export of fruits and vegetables. The relatively low mean suggests that respondents may find these services insufficient. On the item, of adequate government technical personnel, the mean score was 2.50 with a standard deviation of 1.053. This slightly higher mean compared to the extension services indicates that while there may be a perception of more adequate personnel, it still leans towards inadequacy, while reliable market information, the mean score was 2.41 with a standard deviation of 1.044, showing that respondents felt that the availability of reliable market information from the government was somewhat lacking, but not as severely as extension services. The overall response on this construct indicates that government support and services for export were perceived as insufficient, with means below the midpoint (3.00). The standard deviations close to 1.0 suggest a moderate level of agreement among respondents, indicating general dissatisfaction with the services provided.

Government Regulation and Certification, the item on adequate government Controls, had a mean score is 2.33 with a standard deviation of 1.031, reflecting a perception that government controls in the export supply chain are somewhat lacking. On the reliability of government institutions, the mean score was 2.58 with a standard deviation of 1.037, which, government institutions governing food safety and quality and on the efficiency issuance of certification: the mean score was 2.48 with a standard deviation of 0.954. This score indicates that respondents saw some efficiency in the certification process, but it still falls below the desired adequacy. Similar to the first construct, government regulation and certification were also perceived as inadequate. The mean scores are consistently below 3.00, pointing to a general dissatisfaction with the current systems in place. The standard deviations suggest that there is moderate agreement on these perceptions among respondents.

Finally on the construct, on Trade Agreements and Market Access, the item on bilateral and multilateral trade agreements, the mean score was 3.59 with a standard deviation of 0.937, indicating a positive perception of the existing trade agreements' impact on market access for fruits and vegetables, while item on benefits of market standards, the mean score was 3.89 with a standard deviation of 0.727. This high score suggests that respondents strongly believe that negotiated trade agreements have had beneficial effects on market standards for exportation and on adequate sharing of market information, the mean score was 3.35 with a standard deviation of 1.112. This score shows that while market information sharing was seen as adequate, it was perceived as less effective compared to the benefits of trade agreements Trade agreements and market access were perceived positively, with mean scores above 3.00. The respondents believed that these agreements have enhanced market access and improved market standards for exportation. The lower standard deviations indicate a higher level of agreement on these positive perceptions.

The analysis reveals a contrast between the three constructs. While government support and services, as well as regulation and certification, were viewed as inadequate (with mean scores consistently below 3.00), trade agreements and market access were perceived positively, with higher mean scores. This suggests that while there was confidence in the benefits of international trade agreements, there was a significant need for improvement in government support, services,

and regulatory frameworks to ensure better outcomes in the export market for fruits and vegetables.

4.2 Hypothesis Testing Results

A multiple linear regression analysis was used and results presented in tables 3-5 to determine the combined effect of market standard dimensions (quality control, post-harvest handling practices, traceability and market dynamics) on market growth of horticultural products among small scale farmers in South Rift, Kenya. In examining the impact of market standard dimensions and the export environment on market growth, a regression analysis was conducted, and the results are summarized in Table 3.

Table 3: Model Summary for Market Standard Dimensions, export environment on Market Growth

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
					Change Statistics				
1	.767[a]	.589	.584	.26358	.589	117.711	4	329	.000
2	.949[b]	.900	.898	.13078	.311	252.880	4	325	.000

a. Predictors: (Constant), Market dynamics, Traceability, Post-harvest handling practices, Quality Control

b. Predictors: (Constant), Market dynamics, Traceability, Post-harvest handling practices, Quality Control, X4Z, X3Z, X1Z, X2Z

The analysis involved two models, with Model 1 representing the initial set of variables without moderating variable and Model 2 encompassing moderating variable.

The correlation coefficient (R) for Model 1 was 0.767, indicating a strong positive relationship between the observed and predicted values of market growth. In contrast, Model 2 showed an even stronger correlation, with an R value of 0.949. The R Square (R^2) values, which indicate the proportion of variance in market growth explained by the independent variables, were 0.589 for Model 1 and 0.900 for Model 2. This suggests that while Model 1 explained 58.9% of the variance in market growth, Model 2 explained a much larger 90%, reflecting the enhanced explanatory power of the moderating effect.The Adjusted R Square values, which adjust for the number of predictors in the model, were 0.584 for Model 1 and 0.898 for Model 2. These values further confirm the superior fit of Model 2, as they account for the additional variables without inflating the explanatory power. The standard error of the estimate, which measures the average distance of the observed values from the regression line, was 0.26358 for Model 1 and decreased to 0.13078 for Model 2. This reduction in standard error indicates that Model 2 provides a better fit to the data. Additionally, the change in R Square from Model 1 to Model 2 was 0.311, with a corresponding F Change of 252.880. The p-value associated with this F Change was 0.000, indicating that the improvement in the model's explanatory power was statistically significant at the 0.05 level. Overall, the results demonstrate that the adjustments made in Model 2 significantly enhance the model's ability to predict market growth, offering a more accurate and reliable understanding of the influence of market standard dimensions and the export environment.

ANOVA was used to determine the model fitness and findings were generated as shown in 4.

Table 4: ANOVA[a] for Market Standard Dimensions, export environment on Market Growth

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	32.712	4	8.178	117.711	.000[b]
	Residual	22.857	329	.069		
	Total	55.569	333			
2	Regression	50.011	8	6.251	375.534	.000[c]
	Residual	5.558	325	.017		
	Total	55.569	333			

a. Dependent Variable: Market Growth

b. Predictors: (Constant), market dynamics, Traceability, Post-harvest handling practices, Quality Control

c. Predictors: (Constant), market dynamics, Traceability, Post-harvest handling practices, Quality Control, X4Z, X3Z, X1Z, X2Z

Based on the results on table 4, the goodness of fit for the regression analysis is indicated by the ANOVA test results. The F-value of 375.534 and a p-value of .000 (which is less than the significance threshold of 0.05) suggest that the model is a good fit for explaining the relationship between market standard dimensions and market growth in the context of horticultural products among small-scale farmers in South Rift, Kenya. A statistically significant F-value, as shown in this analysis, means that the independent variables (market standard dimensions) collectively have a significant effect on the dependent variable (market growth). This high F-value and the extremely low p-value confirm that the model fits the data well, allowing for the use of regression analysis to explore and quantify the impact of the export environment on this relationship.

Table 5 shows indices (*t* coefficients and sig. levels) that were used to test the hypothesis (the study accepted or rejected the hypothesis when the p-value was p<0.05 and vice versa).

Table 5: Coefficientsa for Market Standard Dimensions, export environment on Market Growth

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	T	Sig.
1	(Constant)	.994	.120		8.283	.000
	Quality Control	.258	.026	.406	9.802	.000
	Post-harvest Handling	.074	.023	.121	3.218	.000
	Traceability	.064	.021	.115	2.986	.000
	market dynamics	.329	.032	.401	10.300	.000
2	(Constant)	.664	.150		4.430	.000
	Quality Control	.487	.027	.765	17.816	.000
	Post harvest Handling	.029	.044	.047	.658	.000
	Traceability	.254	.046	.454	5.506	.000
	Market dynamics	.035	.018	.042	1.880	.000
	X1Z	.168	.009	1.321	17.972	.000
	X2Z	.006	.014	.053	.472	.000
	X3Z	.115	.007	.830	16.238	.000
	X4Z	.276	.0 09	1.969	30.375	.000

a. Dependent Variable: Market Growth

The results in Table 5 reveal that the interaction between the export environment and market dynamics had the strongest moderating effect, with a value of $X4Z = .276$, $p = 0.000$ ($p < 0.05$). Following this, the combination of quality control and the export environment also showed a significant impact ($X2Z = .168$, $p = 0.000$, $p < 0.05$). The third most influential factor was the interaction between traceability and the export environment ($X3Z = .115$, $p < 0.05$). On the other hand, the interaction between post-harvest handling and the export environment had the weakest effect ($X2Z = .006$, $p = 0.637$, $p > 0.05$), indicating that this factor was the least significant. Overall, the analysis confirmed a statistically significant moderating effect, leading to the rejection of the null hypothesis.

5.0 Conclusion of the Study

The findings revealed that the export environment played a significant moderating role in the relationship between market standard dimensions and market growth among small-scale fruit and vegetable farmers in South Rift. This indicates that the export environment enhances this relationship, demonstrating that appropriate policies, regulations, and trade agreements are key drivers in improving product quality, providing adequate storage and transportation facilities, and strengthening traceability. Additionally, it fosters a clear understanding of export market dynamics among producers, consumers, and other supply chain actors.

6.0 Recommendations of the Study

The export environment for fruits and vegetables is crucial, requiring farmers to thoroughly understand the global market, along with the government's export policies and regulations.

These policies often shaped by multilateral and bilateral agreements mandate that farmers adhere to specific protocols. To succeed, farmers must prioritize producing high-quality goods, employ efficient post-harvest techniques, establish reliable traceability systems, and stay attuned to consumer preferences. Additionally, it is essential for the government to create a robust framework for effectively disseminating the details of these agreements, ensuring farmers fully benefit from them. Moreover, national and county governments should work closely with the corporate sector to support farmers in fulfilling their commitments to export quality fruit and vegetable products.

Limitations and Suggestions for Further Research

The tools for data collection were designed in English, although the respondents were primarily fluent in their native language and also, the poor road network in many parts of the study area posed significant challenges in reaching the respondents, potentially affecting the data collection process. The study focused on three key export environment constructs: government support, regulations and certification, and trade agreements for market access. However, several other factors were not explored. Therefore, future research is recommended to investigate additional aspects of the export environment. Additionally, this study only sampled registered small-scale farmers who are part of organized producer groups, excluding those who are not affiliated with any organization but still engage in the production and export of fruits and vegetables. Future research should examine this category of farmers and compare the findings with those of the current study.

REFERENCES

Afesorgbor, S. K., & Demena, B. A. (2023). The impact of regional trade agreements on agri-food trade: A meta-analysis. *Journal of International Trade & Economic Development*, 32(1), 1-22.

Adenutsi, D. E., & Afawubo, K. (2020). Regional trade agreements and export performance in Africa: A panel data analysis. *Journal of African Trade, 7*(1), 35-48.

Andrade, G., & Fernandez-Stark, K. (2019). Government support for export development in the horticultural sector: A comparative analysis. *Journal of International Trade & Economic Development, 28*(4), 479-494. https://doi.org/10.1080/09638199.2019.1574785

Barkum S.V. (2021).The role of trade and policies in improving food security, Papers of the Rural Development Report, IFAD, ISBN 978-92-9266-222-6.

Bien J. & Soehn I. (2022) Unlocking the Kenyan mango value chain, In fulfilment of the requirements for the degree of Master in Public Administration in International Development, John F. Kennedy School of Government, Harvard University.

Bandolkar, K. N., Deshmukh, R., & Joshi, S. (2023). Assessing the efficacy of India's trade agreements on agricultural products. *World Development*, 150, 105664.

Coninx, I., & Kileu, J. (2020). Promoting and marketing agricultural and food products: A county-level study in Kenya. *African Journal of Agricultural Research*, 15(8), 1137-1145.

Fulano, A.M, Lengai G.M., and Muthomi J.W., (2020), AO, (2020), Phytosanitary anod Technical Quality Challenges in Export Fresh Vegetables and strategies to compliance with market Requirements: Case of Smallholder snap Beans in Kenya,MDPI, Basel, Switzerland.

Gramzow, A., Batt, P. J., Afari-Sefa, V., Petrick, M., & Roothaert, R. (2018). Linking smallholder vegetable producers to markets - A comparison of a vegetable producer group and a contract-farming arrangement in the Lushoto District of Tanzania. *Journal of Rural Studies*, *63*(July), 168–179. https://doi.org/10.1016/j.jrurstud.2018.07.011

Heher, A. D., & Steenbergen, V. (2020). Compliance with global GAPs and certification in the international supply chain. Global Food Security, 26, 100410.

KIPPRA, (2017).Kenya Economic Report, 2017, Sustaining Kenya's Economic Development by Deepening and Expanding Economic Integration in the Region, KIPPRA, ISBN 9966058 0584.

Lencucha, R., Drope, J., & Labonté, R. (2020). Government policies and initiatives in agricultural productivity: A scoping review. *Global Food Security*, 25, 100365.

Matui,M. et al (2016). From old to sustainable trade: Driving competitive horticulture sector development, a quick scan of the horticulture sector, wagening.

Match Maker Associates (2017), Horticulture Study, Mapping of Production of Fruits and Vegetables in Kenya, Kingdom of the Netherlands

Nanjunja J. et al. (2016) Shift in performance of food safety management systems in supply chains: case of green bean chain in Kenya versus hot pepper chain in Uganda, J Sci Food Agric 2016; 96: 3380–3392, DOI 10.1002/jsfa.7518

Nguyen, H. T., & Bui, T. H. (2021). The impact of trade agreements on agricultural exports: Evidence from Vietnam.World Economy,44(7), 2032-2051. https://doi.org/10.1111/twec.13045

Otieno G.A. (2016). Standards and Development: Perspectives from Kenya's Horticultural Export Industry, Doctorate Thesis, Erasmus University, Rotterdam.

Oliveira, L., & Batalha, M. O. (2021). Factors influencing the marketing of fruits and vegetables in supply chains: A systematic review. *Journal of Agricultural Marketing*, 27(3), 345-362.

Onwude,D..et al. (2020). Recent Advances in Reducing Food Losses in the Supply Chain of Fresh Agricultural Produce, Processes 2020,8,1431, DOI 10:3390/pr8111431.

Snel H., Broeze J., Kremer F.,Osena E.(2021) A food system analysis of Kenya's mango, avocado and poultry sectors; Assessing opportunities to reduce food losses. Wageningen Centre for Development Innovation, Wageningen University & Research. Report WCDI-21-185.Wageningen.

SNV. (2018). Potential of Kenya's fresh and dried mango exports to the European Union. *SNV Report*, 5, 87-105.

Tsakok, I., & Gardner, B. (2020). Phytosanitary standards and the export of horticultural products: Implications for developing countries. Food Policy,92, 101845. https://doi.org/10.1016/j.foodpol.2020.101845.

Ulrich, A. (2014). Export-Oriented Horticultural Production in Laikipia, Kenya: Assessing the Implications for Rural Livelihoods, MDPI, Basel, Switzerland, Sustainability 2014, 6(1), 337-347; https://doi.org/10.3390/su6010337

Wambui,J. (2017). Quality Improvement of the Kenyan Horticultural Produce through Standards and Management, Article in African Journal of Food, Agriculture, Nutrition and Development, March 2017.