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TOWARDS A GROWING HORTICULTURAL PRODUCTS EXPORT MARKET: THE ROLE OF MARKET DYNAMICS AMONG SMALL SCALE FARMERS IN SOUTH RIFT, KENYA

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Abstract

As businesses grapple with uncertainty, there has been a growing interest in investigating how dynamics influence operations in these businesses. This study investigated the effect of market dynamics on the growth of horticultural export markets. The study was conducted against increased dynamics in the international market for horticultural products. These dynamics continue to pose significant risks to investments in the sector by small-scale farmers in 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 simple linear regression was used to analyze the data. It was established that although the export market is dynamic with many factors at play, standardization, technology adoption, and consumer preferences still influence business operations such as the growth of the growth of horticultural export markets. Additionally, the study observed a statistically significant relationship between market dynamics and the growth of horticultural export markets. From these findings, managers can leverage the market dynamics to realize the growth of horticultural export markets. They can also develop relevant policies and procedures to improve their practices.

Keywords: Market Dynamics, Growth, Export, Horticulture, Products



INTRODUCTION

The horticultural industry is dynamic (Jadhav , 2016) due to its exposure to global market dynamics. The interaction of these market forces drives the demand for horticultural products in the worldwide market. In most cases, the market skews toward the most competitive players than weaker ones. Europe accounts for about 50% of the global market, followed by the USA and China, which share 30% (USAID-KHCP, 2013). This means that most producers in the global South, including Sub-Saharan Africa, possess little market share of horticulture globally. Therefore, although Kenya depends on agricultural exports, including horticulture, it is less competitive in the international market.

In developing countries, horticultural production is largely manual with family members or relatives who are not skilled being used as sources of labour. Therefore, farms are unable to employ technology or attract competitive labor to enhance productivity. As a result, market dynamics are perceived to be the Achilles heel of the growth of the horticultural sector. Sengupta & Fanchon (2009) described market dynamics as micro-environmental factors that affect market growth. On our part, we identify standardization, technology adoption, and consumer preferences as market dynamics and propose that these factors can influence several business outcomes, including the growth of markets and performance. The current study examined its effect on the growth of horticultural export markets, which is defined as market access and improved sales for horticultural products.

A burgeoning body of literature has established a link between market dynamics and growth (De las Mercedes Capobianco-Uriarte et al., 2021; Ying et al., 2022; Luk et al., 2013; and Pradhan et al., 2020) although many studies have focused their attention on labor and financial markets and have sought to establish models to predict growth, developing countries have received the least attention among scholars in this field and, more so, the agricultural sector. Although players in the horticultural sector face market dynamics; it is our considered opinion that global market dynamics have a heterogeneous impact on the growth of horticultural sectors. Therefore, producers in developing countries are less likely to cope and, therefore, miss out on market opportunities.

The study's contribution is both theoretical and practical. Theoretically, the study explored the relevance of dynamic systems theory. The theory perceives markets as an evolving ecosystem characterized by interactions of various elements which are driven by complex processes. This is the case for the agricultural markets, too, where many drivers can impede the growth of market players. As conceptualized, certification, quality and technology drive the market dynamics and tilt the demand for produce. Just as production is increasingly becoming sophisticated, so is the marketing of the products. As a result, this paper analyzed the

dynamic forces in the marketing of agricultural products in Kenya. Managers will use the knowledge created to develop policies, procedures and strategies for marketing agricultural products.

LITERATURE REVIEW

The issue of market dynamics has been a subject of significant interest. A plethora of research has been carried out; many of them have sought to develop models to minimize market challenges. Due to this interest, there has been several multidisciplinary investigations such as programming (Nabipour, 2020), financial modeling (Baloch, 2021 & Pradhan, 2020) and marketing (Ying et al., 2022). A bulk of the investigations seeks to improve business outcomes such as the growth of markets.

There are those scholars whose interest has been in the nexus between market dynamics and business growth including Ying (2022) on industrial dynamics and economic growth within the healthcare sector among the selected OECD countries ; Pradhan (2020) on the dynamics of bond market development, stock market development, and economic growth as evidenced by G-20 countries. At the same time, McLaren, 2017 and Wesselbaum (2014) investigated globalization and labor market dynamics.

Other researchers perceive models as the panacea to the disruption arising from market dynamics, Nabipour (2020), for example, developed a model for predicting Stock Market Trends Using Machine Learning and Deep Learning Algorithms Via Continuous and Binary Data. On their part, Morcillo and Jose (2018) simulated demand growth scenarios in the Colombian electricity market by integrating system dynamics. Despite interest in this subject, few studies have looked at market dynamics in the agricultural sector more so among less competitive jurisdictions. However, (Carbone & Henke, 2023) investigated market dynamics in the Agri-food sector in Italy whereby findings revealed that firms were losing their comparative advantage as a result of unfavorable market dynamics. De las Mercedes Capobianco-Uriarte (2021) also investigated market dynamics through the lenses of emerging competition for tomato products in European markets and concluded that market dynamics influence growth.

Hypothesis Development

Questions have been raised on how businesses can leverage on market dynamics to achieve favorable market outcomes such as growth and performance. As a result, researchers have conducted investigation on market dynamics though different terms have been used. Brandt (2004), for example, referred to it as business dynamics while Laner (2018) called it

volatility. Other scholars like Davidsson (2021) as well as Tham and Ping (2021) refer to market dynamics as external forces. The concept has been featuring as an antecedent of growth or performance. To date, market dynamics have been fluid with huge business consequences and difficult to predict. Nevertheless, business can develop models to predict such occurrences and put in place safe guards measures.

Thus, researchers are looking for ways to cushion businesses from unfavorable market dynamics. This is the reason why, researchers such as Iacopetta (2019) sought to develop models to predict business outcomes. Investigations into the nexus between market dynamics and growth are critical in the agricultural industry and more so the horticultural sector which is exposed to global business shocks.

Responses towards market dynamics has proved to make to make a difference. In the past, for instance, literature is replete with cases where actions towards market dynamics have defined the future of organizations. In some cases, the sector has demonstrated its ability to promptly address such dynamics including technology and the rapidly changing consumer behavior. This is even more true when it comes to developing countries, which largely depends on agriculture for export. As such the sector remains a pillar in global and national economies that continue to support employment and foreign domestic investment.

To the best of our knowledge, there exists a dearth of investigation on the nexus between market dynamics and the growth of the horticultural sector. Therefore, the debate on how the constructs relate is still unresolved. Hence, we hypothesize the following:

H₀1: There is no statistically significant relationship between market dynamics and growth of horticultural export markets.

METHODOLOGY

The Study

The investigation was based on an explanatory research design. A population of 1891 small-scale farmers was identified from Bomet and Narok Counties in the South Rift art of Kenya. The study area was chosen because farmers produced fruits and vegetables for the export market. In Kenya, there has been an increase in horticultural production over the years, with an estimated 9% increase in export of this product in 2023 alone. The product represents one of the main economic activities of the residents in the South Rift. As a result, any intervention, such as research meant to support horticulture in the region, will boost the livelihoods of these residents.

Population and Sampling

Out of the population of 1891, the study used the Yamane 1967 formula to arrive at a sample of 363 small-scale farmers. The sample was then stratified according to counties (i.e., 235 from Bomet and 132 from Narok county) and respondents were then selected using a simple random sampling technique.

Survey Instruments and Validation

The study variables were tested using a multi-item scale to test the hypothesis. The data analysis constructs were measured with a 5-point Likert scale that ranged from "strongly Disagree" (1) to strongly Agree (5).

The instrument was taken through the process of validation where data collected from a pilot study conducted on 36 small-scale farmers in Kericho County was analyzed for validity and reliability. The standardized factor loading, Cronbach Alpha, averaged variance explained (AVE), and composite reliability of the instruments were presented. Each of the indicators' loading must be above 0.50 at the t-value. The entire factor loading in the study was above 0.50 and retained for further analysis. Data was analyzed using means, standard deviation and regression analysis.

Data Management

At the onset of data analysis, the researcher went through the data, ensuring it was complete, consistent, and right. A decision was made on whether or not to continue with data processing.

After these preliminary checks, data was entered into the Statistical Package for Social Sciences (SPSS V21) for analysis. The study checked for missing values to avoid messing up the inferential analysis. Afterward, the study checked for any missing data, whereby 13 cases were identified. Outliers were also deleted and excluded from the analysis and cleaning of the data from outlier and missing cases, thus, the study retained 334 units of inquiry.

FINDINGS

Demographics

Demographic variables such as the nature of the producer, age, gender, period of export, level of education, type of product, and land size under production were examined. 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
	3-5 years	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

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 a small scale, to sustain the global demand, there was a need for the farmers to undertake aggregation of their produce through cooperative and self-help groups. On age, the majority (48.5%) of the small-scale farmers were 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 while 7.2% were 30 years and below. These findings show that farming was not attractive to the younger generations, and they pursued 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 the 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 a Secondary level of education and 26.3% primary). Another sizable number had a tertiary level of education (24.9% had a 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.

Descriptive Statistics

To understand the perception of market dynamics in small-scale farms, the study used Means and Standard Deviation (SD) as presented in Table 2.

Table 2: Contribution of Market Dynamics

Item	N	Mean	SD
Standards			
There is a quality requirement condition for the production of products	334	4.09	.620
There are set certification requirements for materials and inputs for export products	334	4.15	.641
Technology Adoption			
Production is driven by technology	334	4.01	.567
Producers use technology to access international markets.	334	4.09	.620
Consumer Preferences			
There is a shift towards organically produced horticulture	334	4.13	.696
There is a growing demand for horticultural products with nutritional value	334	4.03	.695

This section presents descriptive statistics on standardization, technology adoption, and consumer preferences. On standardization, findings show that the horticultural market has established quality requirements for its players (Mean=4.09, SD=.620). It is also evident that it operates within set certification requirements (Mean=4.15, SD=.064). On technology, findings

showed that the production of horticultural products was driven by technology (Mean=4.01, SD=.567) and that producers use technology to access international markets (Mean=4.09, SD=.620). On consumer preferences, it was observed that there was a shift towards organically produced horticulture (Mean=4.13, SD=.696), just like the growing demand for horticultural products with nutritional value (Mean=4.03, SD=.695). Although the descriptive statistics did not point out the direction of influence, there was indeed a concurrence with the observation made by Sengupta & Fanchon (2009) that these micro-environmental factors affect business operations. Based on this limitation, the study proceeded with regression analysis.

Hypothesis Testing Results

Simple linear regression was used to test the relationship between market dynamics and growth of horticultural export markets. The results of the regression analysis are presented in Tables 3-5.

Table 3: Model Summary for Market Dynamics

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	Change Statistics			Sig. F Change
						F Change	df1	df2	
1	.610 ^a	.373	.371	.32408	.373	197.105	1	332	.000

The results in Table 3 show that market dynamics explain 37.3% of the changes in growth of horticultural export markets. This was indicated by an R square of 0.373.

ANOVA presented in Table 4 shows coefficients indicating the predictive strength of market dynamics on the growth of horticultural export markets as represented by F coefficients and significant levels.

Table 4: Anova for Market Dynamics

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	20.701	1	20.701	197.105	.000 ^b
	Residual	34.868	332	.105		
	Total	55.569	333			

As depicted in Table 4, market dynamics were found to possess sufficient predictive power on the growth of horticultural export markets as shown by $F=197.105$; $df =1$, $sig.=.000<0.05$).

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

Table 5: Coefficients on market dynamics and growth of horticultural export markets

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	T	Sig.
1	(Constant)	1.517	.133		11.448	.000
	Market trends	.501	.036	.610	14.039	.000

Based on Table 5, the null hypothesis was rejected. This was based on the score: $\beta = .610$, $t = 14.039$; $p < 0.05$. The findings show that there is a statistically significant relationship between market dynamics and the growth of horticultural export markets. The study established that the relationship between market dynamic and growth of horticultural export markets was positive and significant. Just as postulated in the dynamic systems theory, market dynamic can be disruptive and influential to business growth. It was not apparent however whether market dynamics under consideration led to the growth or decline of the export market, which can be a subject for future investigations.

RESEARCH IMPLICATIONS

Implication to Theory

As postulated in the dynamic systems theory, the findings affirm that horticultural markets are evolving daily but faced with a dynamic ecosystem which influences the growth of markets. Among them is the demand to standardize products, employ current technology and meet the needs of the changing consumer preferences. It is necessary to establish a competitive equilibrium on these market dynamics as export market increasingly become complex. This way, small scale farmers will be better equipped and competitive in the global market as envisaged in the dynamic systems theory.

Implication to Practice

Kenya relies on agricultural exports including horticulture as a means for foreign exchange and employment. Thus, researchers are looking for ways to develop knowledge that can support the advancement of the sector. This is the reason why researchers such as Iacopetta (2019) sought to develop models to predict business outcomes. Investigations into

the nexus between market dynamics and growth is therefore critical in the agricultural industry and more so the horticultural sector which is exposed to global business shocks. The findings of this study will help managers to develop policies, procedures and strategies for marketing agricultural products in order to boost export.

CONCLUSION

The current study investigated the effect of market dynamics on growth of the export of horticultural products. Small scale farmers of horticultural products in the south rift were requested to fill the questionnaire. It was established that although the export market is dynamic with many factors at play, standardization, technology adoption, and consumer preferences still influence its operations. They affect the growth of horticultural export markets. Luckily, the market dynamics are within the control of the small-scale horticultural farmers who could make necessary decisions to tilt the growth of the export market.

LIMITATIONS AND FUTURE RESEARCH

Several limitations were experienced. First, the tools of data collection were written in English, and yet the respondents were well-versed in their native language. Secondly, many of the study areas had poor roads making access difficult. In recommendations, there is a need to investigate the relationship between market dynamics and the growth of horticultural export markets. We also recommend a comparative study to establish the strength and direction of the relationship between startups and established producers.

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Conflict of interest

The authors declare that there is no conflict of interest.

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