Cost and competitiveness of agricultural produce in Nigeria: impact on exportation

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Abstract

The study investigated the perception of farmers on cost and competitiveness of Nigerian agricultural produce and impact on exportation. To assess the proposed hypotheses, a structured questionnaire was utilized and administered to 439 farmers sampled through agricultural cooperative societies across states in Nigeria. The data analysis was carried out using SPSS and PLS-SEM. Our finding showed that cost and competitiveness have positive and significant impact on export decision. In addition, this study found that cost and competitiveness have about 95% explanation variation in explaining decisions of farmers on export of agricultural produce in Nigeria. Finally, the study concluded that cost and competitiveness are critical in the decision of Nigerian farmers to export their agricultural produce.

Keyword: Cost. Competitiveness. Produce export. PLS-SEM, Nigeria.

1. Introduction

Agriculture is the foundation of development, economic growth and poverty eradication in the developing economies. Agriculture is considered to be the pillar and engine

driving economic prosperity of these nations. Going back to the view of Gunner Myrdal (1984), the agricultural sector will determine who wins or loses the battle for long-term economic growth. In any case, the view that agriculture begets economic growth is still subject to critical analysis, at least from the side of many development economists and specialists.

In the past decades, the Nigerian economic has depended so much on the agricultural sector. This sector is renowned for being the main driver of economic growth in the early 1960s. It is considered as the main driver for development and growth. To be precise, and further demonstrate the pivotal role of the agricultural sector in the Nigerian economy, the sector is part of Nigeria's Millennium Development Goals of reducing poverty in the country (Sertoğlu, Ugural & Bekun, 2017). In many of the developing nations (both for the low and middle-income economies), agricultural sector continues to be the largest contributor of foods, employment opportunities, inputs and raw materials for the industrial sector, as well as huge provider of foreign earnings through exportation of surplus, and more critically, adding significant amount of value to the different production processes (Izuchukwu, 2011; Meade et al. 2016). Essentially, majority of other sectors depend on the agricultural sector to flourish, making it a key play in overall industrial activities.

Similarly, some scholars (e.g., Gardner, 2005; Chebbi, 2010) have looked at answering questions about the impact that agricultural sector have on economic development and growth. Gardner (2005) raised a question for 85 countries, assessing whether agriculture is the engine for economic growth and this question was addressed by Lavorel et al. (2013) by assessing the causality relationship between gross domestic product (GDP) per capita and the agricultural value added per works. While their findings demonstrated enormous claim, it was reported by these researchers that they discovered causality relationship between added agricultural value and growth for the developing economies, with uncertainty about the impact for the developed nations. Therefore, this finding is in line with the earlier view of agricultural being the backbone for economic development and growth in developing economies.

With the question of whether or not the agricultural sector influences economic development and growth attended to, the next question is to determine how this effect is made possible. For the records, the journey starts with agricultural produce, the unprocessed raw products of agriculture. In Nigeria, this is made possible through varied forms of subsistence agricultural practices. However, the practice of subsistence agriculture marginal lands and the utilization of low income is no longer considered feasible when it comes to sustainable

agriculture in today's world (Fan et al., 2013). Therefore, the need to develop farming systems have risen, calling for such development to be made by integrating the resources and components of farming families in a way that will allow them to minimize costs while maximizing positive yields. Therefore, farming systems are developed in order to ensure that the livelihoods of farmers are sustainable (Martin, Martin-Clouaire, & Duru, 2013).

It has been documented that most of the agricultural produce in Nigeria are sold raw and at farm gate and this reduces returns for farmers (Abu, Issahaku & Nkegbe, 2016). Similarly, estimates show that about 50% of the agricultural produce in Nigeria are obtained at rural areas and priced below commercial value (Food and Agricultural Organisation (FAO), 2018). In any case, through value additions these farmers can be able to improve their returns and incomes (Mmasa, 2013), and this is the main reason why value creation has gained prominence in the agricultural sector recently. Such value creating efforts will entail developing new products and creating market-base remunerations that would allow agricultural commodities to attain higher value (Ubalua, 2007; Brees, Parcell & Giddens, 2010). For the smallholder in Nigeria, value addition is critical as it would raise their livelihood (Lu & Dudensing, 2015). From the basis of value addition processes within the agricultural sector, there have been developments of important concepts and analytical frameworks like value webs and value chains. Value addition within the agricultural produces would amount to great opportunities consider its versatility (Virchow, 2014; Adeyemo & Okoruwa, 2018). This issue is further intensified by the fact that SMEs are most hit during pandemic (Bouey, 2020), making it necessary to understand how best to sustain their businesses.

While a significant amount of studies have been conducted in relation to agricultural products (processed), limited efforts have been made from the angle of agricultural produce (raw). Additionally, no empirical study has been conducted to assess the impact of cost and competitiveness of agricultural produce on exportation, making this research a necessity. This present study will fill this gap both empirically and theoretically. The essence is based on the fact that produce have direct influence on products, both competitiveness and price. The overall sustainability of agricultural products depend on sustainability of agricultural produce, and since majority of firms depend on this produce, it can also be argued that overall industrial sustainability depend on sustainability of agricultural produce. Based on this, it is important to further assess factors that influence sustainability of agricultural produce, cost and competiveness, and impact on exportation as is the basis of this paper.

2. Literature

2.1. State of the Nigerian agricultural sector

At This Point, It Is Important To Have A Picture Of The Nigerian Agricultural Sector. In Afcfta Workshop Paper Titled: Current State Of Nigeria Agriculture And Agribusiness Sector, Oyaniran (2020) Offered A Summarized Picture Of The Sector. As Of The First Quarter Of 2020, The Nigerian Agricultural Sector Contributed Approximately 22% Of The Country's GDP, It Is The Largest Employer In The Country With More 36% Of The Employed Under The Agricultural Sector, The Government Earmarked About 40 Billion Naira For Research And Development (R&D) In The Sector In 2019, And 80% Of The Farmers In The Country Are Smallholder Farmers (Shfs) And They Account For About 90% Of The Country's Agricultural Produce.

Additionally, Of The Total 2020 Budget Size, Agriculture Budget Was 1.8% (Or 183 Billion Naira) And This Is Significantly Lower Than 10% Specified In The Maputo Declaration (Oyaniran, 2020). Comparing Exports And Import, It Was Recorded That In Four Years (2016-2019) The Cumulative Expenditure Of Nigeria For Importation Was Naira 3.35 Trillion, And This Is At Least Four Times Bigger Than The Cumulative Export For Agriculture At The Same Period Which Was Naira 803 Billion (Oyaniran, 2020). Nigerians Also Spent 22.8 Trillion On Food Items In 2019 And This Is More Than Half (56.7%) Of The Total Household Expenditure Of 40.2 Trillion (Oyaniran, 2020).

2.2. Agriculture development: its impact on national development

The general conception is that agricultural produce's production and marketing represent a potential area for numerous households in Nigeria to earn income. This is clearly due to the by-products obtained through agricultural produce. In any case, it is essential to point out that significant losses occur in agricultural produce in the country because the process is yet to be exploited to its full potential; as a result of some salient marketing related issues that, when handled, would bring about enhancement on the economic benefits that farmers and agroprenuers are supposed to enjoy in Nigeria.

In line with Awoyinka (2009) work, Nigeria has a recognized tremendous potential for agriculture. The government has aligned itself with the notion that the country needs to evolve

better to ensure that agriculture is unequivocally made the mainstay of the nation's economy. The same author stated that agricultural development would mean, in addition to other things, ensuring that agricultural productivity is increased to create substantial surpluses. This issue of surplus brought about the case of the market. That is to say, the production of surpluses is something that should be made to occur with adequate processing, storage, and distribution simultaneously to ensure that these surpluses don't turn into waste. In essence, when there are surpluses in the absence of proper processing, the impact would be an increase in post-harvest regimes' losses and a resulting decrease in the farmers' overall earnings. All these factors would eventually bring about a reduction in expected productivity (as farmers will not be willing to produce more if they will be making a loss at the end of the day) and inadequate income to the agricultural sector (RUSEP (2002) in Awoyinka (2009)).

In most developing countries (such as Nigeria), agriculture continues to be a dominant driver of development. It is said to employ 40% of the global active labor force (Adenegan et al., 2013; Nyanamba & McCullough, 2009). In line with the World Bank (2008) record, the number of populations dependent on agriculture in sub-Saharan Africa, Asia, and the Pacific is over 60%. In Nigeria, to be precise, over 70% of the active labor force is employed in the agricultural sector, and they account for about 30% of the country's GDP (World Bank, 2008), although one of the largest oil-exporting countries in the world. Therefore, the agricultural sector's importance on the country's socio-economic development and poverty reduction cannot be overemphasized.

Agricultural development has been constrained by the marketing of commodities, especially for staple food (Awoyinka, 2009; Adesope et al., 2006; Adekanye, 1977; Olatunbosun & Olayide, 1974). To this end, the government has put up marketing reforms to encourage the development of the agricultural sector (Awoyinka, 2009) and promote agropreneurship. Thus, several policy studies have been commissioned to identify potential agricultural marketing contributions to agricultural development (Mayong et al., 2003). However, these studies failed to incorporate strategies for combating perennial constraints to effective and efficient agricultural produce marketing (Awoyinka, 2009).

Since sustainable agricultural policy issues require different strategies for both domestic and international markets and other techniques for minimizing the problems confronting agricultural produce marketing; it is essential to identify strategies for reducing constraints to agricultural produce marketing and also incorporates these strategies into the agricultural produce marketing policy framework (Mayong et al., 2003). Studies have shown that an efficient marketing system stimulates agricultural production (Adesope et al., 2005;

Awoyinka & Ikpi, 2004). However, agro-produce marketing in Nigeria has been characterized by many deficiencies that have constrained sustainable agricultural development (Abdullahi, 1983; Adekanye, 1970) and agropreneurship in one way or another.

2.3. standardization of agricultural produce in nigeria: impact on the export of agricultural produce

The Standard Organization of Nigeria (SON) (2017) noted that standardization in the Nigerian agricultural sector is crucial because it would aid the Nigerian agricultural policies' effective attainment. As pointed out by the Director-General of the Standards Organisation of Nigeria (SON), Dr. Joseph Odumodu, the main factor behind this decision is to initiate home testing of Nigeria's agricultural produce and ensure that they are acceptable at the international market (Ojosipe, 2015).

In terms of how the standardization would be affected, it was pointed out by the Minister of Agriculture, Audu Ogbeh, that the Federal Government will soon create commodities' certification centers across the six geo-political zones where the standardization process will be aided through certification (African Harvesters, 2017). This declaration was made in Kano's disclosure when the nationwide advocacy on agricultural quality control and standardization was initiated.

The primary decision to improve efforts on standardization of agricultural produce, as pointed out by the Minister, is that the Nigerian government is receiving several notifications across the world about the low quality of its agricultural produce. For instance, it was pointed out by the Minister that the Federal Government has received 48 notifications about the presence of aflatoxin and other contaminants (either biological or chemical) between July 2016 and June 2017 on its agricultural produce, leading to a subsequent ban on yam of Nigerian origin by the European Union (African Harvesters, 2017). This is also an eye-opener to the ministry that the Nigerian market has been consuming poisons for awhile.

Mr. Ogbeh continued by stating that Nigerians deserve to consume safe, good, and quality agricultural produce. Such produce should also be standardized to be accepted globally if the country is to generate income through its exports (African Harvesters, 2017). During the same conference, an address was presented by Governor Abdullahi Ganduje of Kano State, stating that reverting to agriculture is the only antidote that the country has in resolving its economic crisis, urging the federal government to site one of the proposed zonal certification centers in Kano because of the state's potentials (African Harvesters, 2017).

Still on the need for standardization of agricultural produce in Nigeria, Agbota (2017), while reporting for Sun News, discussed the sad story of Nigerian yams that were rejected at the USA border. As noted by the reporter, Nigeria started to export yam to Europe and the United States on June 29, 2017, as part of its plan to diversify its economy and earn the much-needed foreign exchange. This was based on the initial objective of earning foreign exchange in the region of $10.0 billion over four years. There was excitement all over the country about the adventure of the yam project, following the recent ban on Nigerian beans by the European Union, which was yet to be lifted at the time of the export plan date (Agbota, 2017).

According to a recent report, 67 containers of processed and semi-processed food products from Nigerian origin, exported to the EU region, were rejected in 2015 and 2016. These rejected food items include: white and brown beans, palm oil, melon seeds, bitter leaf, mushrooms, ugu leave, smoked fish, crayfish, and shelled groundnuts. Outside of all these arguments, there is nothing more embarrassing for Nigerians than hearing 72 tonnes of its yam that left the country's shore through the Apapa Port to the USA in June, all ultimately rejected at the US border. Notwithstanding the euphoria that came with the historic export, which the Vice President, Yemi Osinbajo, officially flagged off in Lagos, the yams were discovered to have rotten upon arrival in the USA (Agbota, 2017).

Although the ministry attempted to exempt itself from blame by stating that they are not exporters as the exporters are made up of local and international businesses, the stakeholders were quick to shun them by saying that the ministry should be held to book for such national embarrassment. In line with the view of the stakeholders, it was learned by Agbota (2017) that Ghana also exports yam, and Ghana's yam export trade employs over 1 million workforces with the country currently accounting for 94 percent of the total yam exports in West Africa and covering markets in USA, Canada, UK, and Europe. Between 2005 and 2010, yam production in Ghana contributed about 16 percent of its Gross Domestic Product (GDP). The Government of Ghana has also developed the National Yam Development Strategy and Yam Export Strategy to increase export volumes from the current 35,000 metric tonnes to as high as 400,000 metric tonnes with expected revenue of about $5 billion by 2018.

Therefore, the critical influence of standardization of agricultural produce in Nigeria on the export of such produce, as pointed out by The Standard Organization of Nigeria (SON) (2017), is that it would make the produce acceptable in the international market. In the absence of acceptability, the overall objective would be lost because upon rejection, and the produce would eventually spoil, leading to significant losses for businesses and the Nigerian

agricultural sector as noted in the case of 72 tonnes of yam exported to the USA. Standardization is thus said to positively influence agricultural produce's export because it enhances the produce's quality and ensures its acceptability in the international market.

2.4. Cost and competitiveness of agricultural produce

On the need for competitiveness, it has been stated that the overall performance of a company depend extensively on their ability to understand consumers' need and create products that meet these needs (Iloka & Anukwe, 2020; Iloka & Onyeke, 2020). This is the same for companies in the agricultural sector, and agricultural produce need to be competitive in order to gain comparative advantage. Considering the complex business conditions, increased global competition and limited resources, it is required that enterprises find ways to conduct their businesses in a way that is most efficient for the companies, that is, requiring companies to offer best quality products at least possible price.

Competitiveness is no longer a matter of choice, but a condition for sustainability of enterprise (Babool et al. 2007; Meade et al. 2016; Savić et al., 2014). Thus, the basis of efforts made by companies to sustain their operation is the search for competitiveness, and the essence of competence need to be defined based on the customers' view and choices. Essentially, the goal is to create and deliver higher value for the customers at a price similar to or lower than what the competitors offer, or to create and deliver an identical value for the customers at a lower price (Savić et al., 2014). In the course of delivering this value, it is important to understand all the tangible and intangible benefits that customers enjoy when using the product. In previous definitions, these values have been defined to imply the product integrity, technology functionality, and access to market (Milisavljević, 2000). This is relatively the same for agricultural produce, considering that majority of the transactions are businesses to business. Therefore, the agricultural produce need to bee of high standard and come from a company with sound integrity. Functionality in this case can be defined to cover the ability of the produce being able to yield highest standard when transformed into a product. One has to bear in mind that the competitive and cost of agricultural produce will also affect competitive and cost of companies transforming them into products. For instance, an expensive but yet poor quality potatoes will likely yield expensive and poor quality potato chips once manufactured.

With the source of competitive advantage placed within the context of the target market, one will be able to highlight four generic strategies: differentiation; low cost, focus on cost and focus on differentiation. The focus of the first two strategies is on the mass market with the other two focused on the market niche (Đuričin & Janošević, 2006). While the source of competitive advantage demands that one develop a broader conceptual framework, this paper has primarily considered cost management as the foundation for cost leadership. Cost management simply entail the ability of an enterprise to ensure that its products are designed, produced and distributed in the most efficient way possible, at a cost lower than that of competitors (Savić et al., 2014).

As Danko et al. (2019) stated, is an integral factor that influences demand for agricultural produce. Price is acknowledged as one of the decision factors that prompt production and determine competitiveness of goods, including agricultural products, in the consumer market. Based on earlier discussions, cost isn't just a source of competitive advantage but also its limiting factor. That is to say, cost can affect the ability of companies to gain or loss comparative advantage. The premise for generating value is low cost. Considering that differentiating agricultural produce is virtually impossible (or at least extremely difficult) as a result of their sound similarities, it becomes imperative that overall competitiveness of such produce will be determined by its price. On the basis of norm, differences in price for firms that produce identical products are determined by differences in technology, followed by their capacities and the presence of minor restrictions as it concerns availability of certain resources (factors of production). For effective cost management, it is necessary to determine these cost drivers, as they are the factors that infuse the appearance of cost (Shank & Govindarajan, 1993).

In terms of this research, cost is related to the cost associating with producing agricultural produce (land lease, seedlings, cultivations, harvesting, distribution and so on), while competitiveness references the comparative advantage that the produce has over others produce in the international market (value as expressed through increased demand for importation of such produce in the foreign market). The significance of cost was demonstrated in the study of Meade et al. (2016) who investigates the impact of production cost of some agricultural produce on the export competitiveness in Argentina, Brazil and the United State. The study found that production cost has a significant impact on export of agricultural produce. In reference to competitiveness, some studies posits that a significant relationship exist between competitiveness and export (Babool et al. 2007; Firmansyah et al.

2017). For instance, Firmansyah et al. (2017) found a significant impact of competitiveness on export performance of Indonesian food commodities.

In view of the above, this paper adopts the hypothesis that lower cost and higher competitiveness – as measured through high value at low price of the produce (Hasan & Rjoub, 2017; Alkhurshan & Rjoub, 2020; Alrub, Ağa & Rjoub, 2020) – will influence demand for importation of such agricultural produce. This was tested with respect to the Nigerian agricultural sector.

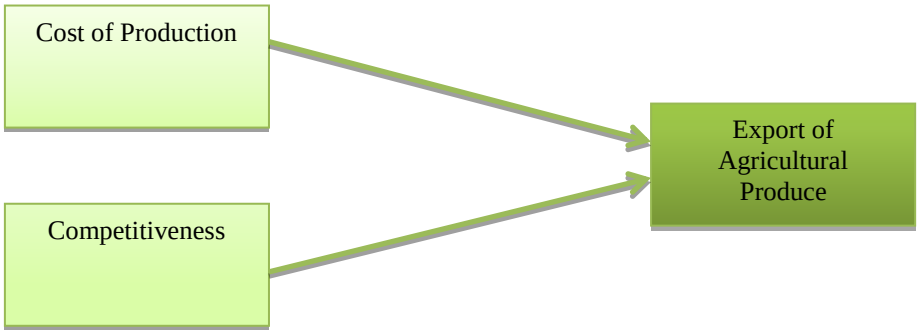

Figure 1: Research Model

3. Research Methodology

A questionnaire was developed to assess the cost and competitiveness of Nigerian agricultural produce, and its impact on exportation. The questionnaire was based on past studies that reviewed validity and reliability indicators. The original questionnaire were written in English, and adopted so, requiring for further translation. Obadia (2013) tested and validated the scale of items for assessing cost and competitiveness of export products, and while the focus of this paper was on produce, the same item was adopted because there has not been past studied in relation to cost and competitiveness of export produce. This scale was further validated by Snieskiene and Cibinskiene (2015) which focused on how to make export price more competitive. Prior to actual distribution of the questionnaire, pilot test was conducted with 10 laymen, and the focus was primarily on grammar and readability.

There were 29 items in the final form of the questionnaire used for data gathering. For scoring the data, a 5-point Likert scale was used to examine the views of the respondents with 5 being the highest score “Strongly Agree” and 1 as the lowest score “Strongly Disagree.

Therefore, the rule of the means is based on these classifications: Less than 2.33 indicate low; between 2.34 and 3.55 indicate medium; while value from 3.67 and above indicate high level of agreement.

The study population were export farmers across Nigeria, that is, the farmers that are exporting their produce directly or through other export parties. Unlike what the researchers were expecting, they discovered that high number of farmers is actually farming to export their produce out of Nigeria. At the end, a sample of 500 farmers was selected to participate in this study. The sample were selected randomly through agricultural cooperative societies across states in the country, with the state divided in such a way that data came from North, South, East and West parts of Nigeria. To avoid response bias, we accounted one individual who entered the prospective data collection site and distributed the questionnaire to the second person, and this was done several times per day for the same reason. The data collection was delayed by 6 months due to government's restrictions as a result of covid-19, and eventually was collected over a period of 2 months from December 2019 to January 2021 following the Nigerian government's decision to lift these lockdowns.

Of the total number of questionnaires distributed in the study sample, 439 were valid for further analysis. The response rate was 87.8%, which is significant, although comparability could not be measured because no research has been done in this context before. The demographic features of the responses are shown in the Table (1), in which majority of the respondents were male (66.5%). On the same note, majority were aged 31.40 years old (55.6%); attained bachelor's degree (67.4%); and majority (47.2%) have been in the agriculture business for 6-10 years.

Table 1: Demographic Features

Variables	Categories	Frequency	%
Gender	Male	292	66.5
	Female	147	33.5
	Total	**439**	**100.0**
Age	20-30 years old	124	28.2
	31-40 years old	244	55.6
	41-50 years old	59	13.4
	Above 50 years old	12	2.7
	Total	**439**	**100.0**

Level of Education	Certificate / Diploma	72	16.4
	Bachelor's Degree	296	67.4
	Master's Degree	59	13.4
	Doctorate Degree	12	2.7
	Total	**439**	**100.0**
Years in the Agricultural Sector	Below 1 year	60	13.7
	1-5 years	112	25.5
	6-10 years	207	47.2
	Above 10 Years	60	13.7
	Total	**439**	**100.0**

4. Results and Discussion

IBM's SPSS Statistical tool was used to analyze the gathered data. First analysis focused on the perception of farmers about cost and competitiveness of agricultural produce, while the second section focused on the effect of these perceptions on exportation of agricultural produce from Nigeria. Meanwhile, in order to establish the significant impact of the independent variables (cost and competitiveness) on the dependent variable (export), "Partial Least Square-Structural Equation Modelling (PLS-SEM)" was employed. The "WarpPLS 7.0 (Kock, 2020) was utilized to analyse the model structure of this study. According to Kock (2020), WarpPLS is "a partial least square regression procedure that is effective for analysing both linear and non-linear relationship simultaneously". PLS-SEM is believed to be efficient in testing the relationship between constructs and the results predictions that reflects the complexity of real life situations. In addition, it is efficient in addressing a small sample because of its non-dependence on data normality.

4.1. Perception about cost

Earlier on, it was stated that the rule of mean adopted for this research include: Less than 2.33 indicate low; between 2.34 and 3.55 indicate medium; while value from 3.67 and above indicate high level of agreement. For the Table (2), what this means is that all the

values are higher than 3.67 and it imply high level of agreement. Therefore, it is concluded that the respondents highly agree that the cost of agriculture produce (in terms of cultivation, weeding, harvesting, distribution and other general costs incurred) has significantly increased over the past 10 years. For these farmers, the implication is that they have seen drop in their profitability, even with increased price for agriculture produce. Ten years was used as a measure for the respondents to base their view. The Food and Agriculture Organization of the United Nations (FAO) (2012, 2016) made similar discovery, with the prices of food and agricultural products found to have skyrocketed beyond what it used to be in the past, and the farmers have also been affected by this new development. Therefore, cost of agriculture is now an important issue of discussion in the global scene as organizations are seeking for ways to reduce this cost in order to ensure food security.

Table 2: Perception about cost of agriculture produce in Nigeria

	N	Mean	SD
I believe that price is a significant factor in the agriculture sector.	439	4.17	1.14
I think that the price of seedlings and roots have increase over the past 10 years.	439	3.81	.98
I think that the price of livestock rearing has increased over the past 10 years.	439	4.08	1.06
I think that the price of labour for agriculture (cultivation, weeding and harvesting) has increased over the past 10 years.	439	4.05	1.00
I think that farmers now pay more incentives to the government for their crop yields than in the last 10 years.	439	4.21	1.01
I think that it is now more expensive to market agricultural produce than the last 10 years.	439	4.15	1.15
Overall, I think that increased cost of production has forced the price of agricultural produced up.	439	4.26	.95
Overall, I think that the increased cost of production has reduced farmers profitability.	439	3.92	1.18
Valid N (listwise)	439		

4.2. Perception of competitiveness

On the perception of competitiveness, the respondents also agree that there has been significant increase in the level of competitiveness within the agricultural sector, or at least the need for farmers to be competitive. This is based on the mean value >3.65 obtained for all

the loaded questions (See Table. 3). For the respondents, this competitiveness is measured as the extent to which farmers can offer best quality product at the least price, and it has direct impact on their overall competitiveness. Similar findings were also made by FAO (2012, 2016), stating that agricultural produce and products now need to be competitive due to changes in consumers' tastes. By competitive, they imply the need for these products and products to align with consumers' needs (including change in taste).

Table 3: Perception about competitiveness of agricultural produce in Nigeria

	N	Mean	SD
I think that the number of farmers in Nigeria has increased.	439	3.88	1.02
I think that quality of agricultural produce has improved in general	439	4.08	1.13
I think that people are now conscious of what they consumer, and prefer organic products	439	3.82	1.09
I think that brands go after the produce with highest quality, even if price is higher	439	3.88	1.23
I think that Nigerian agricultural produce are competitive in the global market	439	4.19	1.02
I think that the value of export has increased for Nigerian agricultural produce	439	4.18	1.23
I think that farmers can easily switch to people that can offer them higher price for their produce.	439	3.89	1.02
Overall, I think that farmers need to offer best quality and lower priced produce if they are to attract buyers continuously.	439	4.50	.73
Valid N (listwise)	439		

4.3. Evaluation of model measurements

The assessment of the model measures are presented in Table 4. The results shows that the loadings of all the items associated with "cost", "competitiveness", and "export" were greater than the threshold value of 0.5, in addition, the P values associated with these loadings were found to be statistically significant at less than 1% confidence level. This is an indication according to Kock (2014; 2015) and Kock and Lynn (2015) that the measurement instrument utilized for cost, competitiveness, and export demonstrates a good "convergent validity". Moreover, the "Cronbach alpha" and "composite reliability" coefficients for cost (0.958 and 0.965), competitiveness (0.982 and 0.985), and export (0.949 and 0.964) respectively as shown in Table 2 were both greater than the conservative threshold value of 0.7 (Kock, 2014; 2015) which is an indication that the measurement instrument has a good reliability. In addition, the "average variance extracted" of cost (0.775), competitiveness (0.891), and export (0.870) are all greater than threshold value of 0.5 (Kock, 2015) which is an indication of an acceptable internal consistency. Finally, the associated "full collinearity variance inflation"

(FVIF) with cost (1.703), competitiveness (2.03), and export (2.94) are all below the recommended threshold of less than (3.3). According to Kock and Lynn (2012), the coefficient of FVIF is "s model-wide measure of multi-collinearity, calculated in a way that incorporates the variations in the other variables in the model, and that allows us to test whether respondents viewed our constructs as conceptually different from all of the other constructs".

Table 4: Assessment of model measurements

Construct	Items	Loadings	Cronbach alpha	Composite Reliability	AVE	FVIF
Cost	I believe that price is a significant factor in the agriculture sector	0.835	0.958	0.965	0.775	1.703
	I think that the price of seedlings and roots have increase over the past 10 years	0.887				
	I think that the price of livestock rearing has increased over the past 10 years	0.906				
	I think that the price of labor for agriculture (cultivation, weeding and harvesting) has increased over the past 10 years	0.866				
	I think that the farmers now pay more incentives to the government for their crop yields than in the last 10 years	0.855				
	I think that it is now more expensive to market agricultural produce than the last 10 years	0.914				
	Overall, I think that increased cost of production has forced the price of agricultural produce up	0.912				
	Overall, I think that the increased cost of production has reduced farmers profitability	0.862				
Competitiveness	I think that the number of farmers in Nigeria has increased	0.950	0.982	0.985	0.891	2.03
	I think that quality of agricultural produce has improved in general	0.944				
	I think that people are now conscious of what they consume, and prefer organic products	0.782				
	I think that brands go after the produce with highest quality, even if price is higher	0.972				
	I think that Nigerian agricultural produce are competitive in the global market	0.971				
	I think that the value of export has increased for Nigerian agricultural produce	0.967				

	I think that farmers can easily switch to people that can offer them higher price for their produce	0.976				
	Overall, I think that farmers need to offer best quality and lower priced produce if they are to attract buyers continuously	0.976				
Export	I think that high production cost will force me to export my produce in order to earn more	0.974	0.949	0.964	0.870	2.94
	I think that farmers who export their produce earn more profit	0.946				
	I think that high competitiveness will force me to seek for more markets outside Nigeria	0.944				
	I think that farmers who export their produce face huge competition abroad	0.863				

In addition to the assessment of the measurement instrument reliability, we examine the discriminant validity of the constructs. The result as presented in Table 5 shows a conformity with the proposition in the literature that the "square root of average variance extracted shown in diagonal of each construct must be greater than the correlations between that construct and other constructs" (Fornel & Larcker, 1981). Our result is an indication that the cost, competitiveness, and export displays good discriminant validity in the context of our model.

Table 5: Correlations among 1.vs. with sq. rts. Of AVEs

	Cost	Competitiveness	Export
Cost	**0.600**		
Competitiveness	0.516	**0.794**	
Export	0.519	0.662	**0.757**

Note: square roots of AVEs shown in diagonal

4.4. Impact of cost and competitiveness on export of Nigerian agricultural produce

The model testing result is presented in Figure 2 with relevant expected path coefficients. In order to ensure the fitness of our model, several indices as suggested by Kock (2015) and Kock (2020) were examined and presented in Table 6. The indices and their coefficients presented in Table 6 indicate the fitness of our model.

Table 6: Model fit and quality indices

Indices	Coefficient	Decision
Average path coefficient (APC)	0.491	P<0.001
Average R-squared (ARS)	0.951	P<0.001
Average full collinearity VIF (AVVIF)	2.336	Acceptable if <=5, ideally <= 3.3
Tenenhaus GOF (GOF)	0.897	Small >= 0.1, medium >= 0.25, large >= 0.36
R-squared contribution ratio (RSCR)	1.00	Acceptable if >0.9, ideally = 1
Standard residual mean ratio (SRMR)	0.072	Acceptable if <= 1, ideally <= 0.08

Subsequent to the assessment of the model fitness, the linear relationship of the cost and competitiveness with export and their significance were analysed and depicted in Figure 2. The result depicted in Figure 2 shows that cost ($\beta = 0.10, P = 0.01$) has a positive and significant impact on export of agricultural produce with a confidence level of 1%. This implies that a unit increase in the cost of agricultural produce in Nigeria will significantly increase the export of agricultural produce by 0.10 units. Similarly, the impact of competitiveness ($\beta = 0.180, P < 0.01$) to be positive and significant on export of agricultural produce with less than 1% confidence level. This finding implies that a unit increase in competitiveness will increase the export of agricultural produce in Nigeria by 0.80 units.

Moreover, the contribution of the two variables (cost and competitiveness) in explaining the variation in export of agricultural produce in Nigeria shows that the cost and competitiveness provide about 95% explanation variations in explaining export of agricultural produce from Nigeria. This is an indication that the variables have a good explanation variation (R^2). What constitutes a good R^2 depends on the nature of the outcomes and the explanatory variables. In this case, taking the R^2 as depicted in Figure 2 indicates that cost and competitiveness explain a relatively large proportion of exportation of agricultural produce from Nigeria. This is expected because similar findings have been obtained in the works of FAO (2012, 2016), where increased cost of production and high competitiveness has forced farmers to gain interest in foreign markets in order to enhance and sustain their profitability.

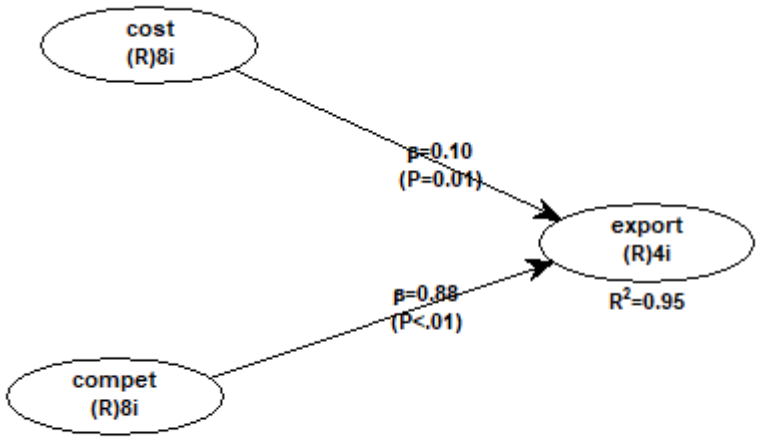

Figure 2: Model Testing Results

5. Discussion and Conclusion

The reported results in this study are correlated with the results of several previous studies (FAO, 2012, 2016), where cost and competitiveness of agricultural produce have been shown to influence decision of farmers to export their produce. The implication is that higher cost of farming and increased competitiveness of the produce will determine whether or not famers are willing to sale to their local markets or seek foreign earnings through export. Similar with the work of Danko et al. (2019), this paper suggests that cost yields the most significant influence on decision of farmers to export. This is based on the understanding that since the cost of farming has increased in Nigeria, farmers' profitability has reduced, the only viable option is to avail their produce to markets with higher currency value in order to enhance and sustain their profitability.

In the measure of perception, the responses had mean value higher than 3.65, which indicates that they highly agree with cost and competitiveness as having increased in the past 10 years within the agriculture industry. The implication is that increased cost of farming and competitiveness of agricultural produce will positively influence the decision of farmers to export their produce into the international market. Similar finding was made by FAO (2012).

To visualize the nature (and possibly direction) of the relationship, PLS-SEM was utilized and results from the parameters estimates showed that cost and competitiveness have

positive direction. This implies that, high cost of farming and competitiveness among them will likely increase the decision of farmers to export their produce to foreign market. The R-Square also supported these findings which show that both variables have a large explanation variation in decision of farmer to export their produce to foreign market. Therefore, it is concluded in this research that cost and competitiveness have a significant impact on the intention of Nigerian farmers to export their agricultural produce.

5.1. Managerial and policy implication

For countries seeking to create sustainable food supply through exports from Nigeria, the findings from this study goes to suggest that Nigerian farmers can be wowed with enhanced pay (return on investments). Therefore, they can increase imports from Nigeria (or at least, the desired and commitment of farmers from Nigeria to export their agricultural produce) by offering them prices higher than what is obtainable in the local market. However, competitiveness should also be strengthening to increase the willingness to export, thus, it is also important that the importing agency reduces overall competitiveness by creating stronger and reliable supply chain.

For the Nigerian government and local agencies, findings from this research are also important. This is because the issue of food security is affecting all nations and, Nigeria also needs to ensure that they sustain food supply before exporting. Therefore, findings from this study suggest that the farmers are seeking better treatments for their efforts and, governments together with other private sector agencies can join forces and work towards enhancing overall earnings of farmers in Nigeria, subsequently reducing their intention to purchase – with the resulting impact being a filled food bank in Nigeria, one that is capable of sustainably meeting the food supply and demand matrix in the country.

5.2. Limitation

Notwithstanding certain limitations, the value of this research should not be undermined. The first limitation is that since this study was based on self-report measures for all the key variables, this increases the possibility of common method bias. However, to overcome this drawback, scales used were previously validated ones. On the second note, the geographical distribution of the farmers cooperatives where the data were gathered was vast, and this could limit (or at least create difficult) ability to replicate this study. Finally, while

there are numerous factors (variables) that can influence the decision of farmers to export their produce, only two variables were employed in this case and this limits overall understanding of the factors that influence exportation of agricultural produce from Nigeria.

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