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DETERMINANTS OF DOMESTIC TRADE BARRIERS IN YAM MARKETING IN SOUTH-EAST NIGERIA.

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ABSTRACT

The study investigated the determinants of domestic trade barriers in yam marketing in South East Nigeria. The specific objectives were to analyse the determinants of trade barriers on the volume of yams marketed and to describe the extent to which trade barriers affected the volume of yams marketed. Primary data were collected from 120 respondents through a structured questionnaire and analyzed using descriptive statistics and Ordinary Least Squares Multiple regression. The result of the determinants of trade barriers on the volume of yam marketed in the South East showed that quantity demanded ($P < 0.1$), municipal permit ($P < 0.1$), illegal charges ($P < 0.05$), roadblock ($P < 0.05$) had significant effects on the volume of yam marketed. The result of the extent of trade barriers affecting the volume of yams marketed showed that a total of 16747.18kg of yams were traded in a month. Barriers such as roadblocks ($\mu = 7.90$, $SD = 3.32$), illegal charges ($\mu = 5.83$, $SD = 2.32$), and tollgate ($\mu = 5.42$, $SD = 2.85$), highly influenced the volume of yam marketed while, produce charge ($\mu = 4.93$, $SD = 2.60$), municipal permit ($\mu = 4.78$, $SD = 2.46$), and security charges ($\mu = 4.67$, $SD = 2.49$), all had medium effects on the volume of yam marketed. The study recommends that given that these trade barriers significantly influence yam marketing in the southeast, governments of the southeastern states should reduce the number of checkpoints on trade routes and ensure that only properly regulated ones are allowed. They should also work at harmonizing municipal charges to encourage more traders into the markets.

INTRODUCTION

Agriculture remains the largest sector in Nigeria, which contributes an average of 24% to the nation's GDP over the past seven years and contributed about 4% of global gross domestic product (GDP) (2015–2022) (National Bureau of Statistics (NBS), 2022). The sector contributed 23.36% to the nation's GDP in the first quarter of 2022; out of this, crop production contributed more than other branches in the sector. This is evident as it accounts for 92.05% of the overall nominal growth of the sector in the first quarter of 2022 (NBS, 2022). In addition, it employs more than 36% of the country's labour force, a feat which ranks the sector as the largest employer of labour in the country (Oyaniran, 2020).

Yam is a tropical tuber crop primarily grown for domestic consumption and commercial use in Africa. Several species belong to the genus *Dioscorea*, but only six are considered economically important staple species. According to Blench (2006, cited in Igbawuaa *et al.*, 2022), these include *Dioscorea rotundata*, *Dioscorea bulbifera*, *Dioscorea dumetorum*, *Dioscorea alata*, *Dioscorea esculenta*, and *Dioscorea cayennensis*, which are commonly referred to as white guinea, aerial, trifoliate, purple, Chinese, and yellow yam, respectively. In 2012 and 2019, Nigeria produced approximately 65

million metric tons and 67.34 million metric tons of the world's yams, cultivated on 2.9 million hectares and 6.24 million hectares, respectively (Apu *et al.*, 2020). This production is valued in the billions of dollars.

Nigeria is the largest yam producer in the world, contributing to two-thirds of global yam production each year; and the south-eastern states happen to be some of her largest contributors, according to Ufondu *et al.* (2021). The commodity, after harvesting, moves into the market where it is marketed until it gets to the final consumers through commodity flow. Yam trade/marketing in Nigeria, particularly in the South-East, is generally affected by some barriers from the point of production to the point where the yam gets to the final consumers. Most of these barriers come in the form of tariff barriers (TBs) and non-tariff barriers (NTBs). The tariff barriers (TBs) are taxes and custom duties (Wallace, 2019) while The non-tariff barriers (NTBs) as identified from literatures are; quantitative restrictions (such as quotas and licenses which limit the volume of yams allowed across borders), charges on imports (levies, border tax countervailing duties), government participation in trade (such as the use of subsidies, procurement policies and competitive policy), customs procedures (clearance and classification

procedures) and technical trade barriers (such as Packaging, labelling, health and sanitary regulations) (Bouët *et al.*, 2017). These TBs and NTBs have presented serious limitations in the ease of trade for domestic commodities, particularly yams. Economists averred that these TBs and NTBs are detrimental to regional trade.

Tariff barriers and non-tariff barriers have affected not only yams but also the trade flow and the distribution of some agricultural commodities, and at the same time, affected the profits that these traders of these commodities would have earned. NTBs have posed significant challenges to agricultural commodity trade and have negatively impacted the trade dynamics of commodities, leading to high prices and a reduction in the choices of consumers from consuming the commodities (Adinnu, 2023). The barriers instead of achieving the aim have worsened the prices of these commodities and at the same time not been able to meet the demand for these agricultural commodities particularly in the South-East. Constant delays, quota sizes, different levies, and taxes paid by these traders as they move the commodities have greatly reduced the profits traders would have made. For this reason, they tend to increase the prices limiting the choices of the consumers. It is increasingly obvious that these NTBs and TBs mitigate the trade flow and the distribution of agricultural commodities, particularly yams, in the domestic trade, hence affecting the prices that consumers offer to consume yams (Adinnu, 2015). If this is not addressed, the consumers and the traders/marketers will continue to experience high costs of yams and losses in earnings (profits) on yam trade in the South-East.

Studies exist on trade liberalization (Manni and Afzal 2012; Mkubwa *et al.* 2014), wherein they indicated that trade openness has a positive and significant effect on economic growth. David-Wayas (2014) also showed that trade barriers have a positive and statistically significant impact on economic growth in Nigeria. Nsikak-Abasi and Kesit (2015) noted that trade liberalization is one of the barriers to increasing agricultural production in Nigeria.

Some others, such as Ufodu *et al.* (2021) and Umar *et al.* (2021), were on yam production and marketing in some South East and North Central zones, respectively. From the foregoing, it is obvious that most of the studies conducted on yams and trade were either cross-country based or focused on the Nigerian situation, with no specific reference to TBs and NTBs. Many of them focused on trade liberalization and yam production/marketing rather than trade barriers on yams. The studies showed mixed results on the effect of trade barriers on economic growth. Some showed a positive relationship to economic growth, while others showed negative relationships. This study focuses on the

determinants of the effect of domestic trade barriers in South-East, Nigeria, to fill the knowledge and literature gap, which appears to be a dearth of this nature.

To address these issues, the following objectives were specified:

- i. To analyse the determinants of trade on yam marketing, and
- ii. To describe the extent to which trade barriers affected the volume of yam marketed in the study area

MATERIALS AND METHODS

The study was conducted in the South-East of Nigeria. The region is located between latitudes 4°47' 35"N and longitudes 8°27'10"E. The southeast geopolitical zone is made up of five states, namely, Abia, Anambra, Ebonyi, Enugu, and Imo States, with eighty-five (85) Local Government Areas (LGAs). The region had a population of 16,395,555 people according to the 2006 census (National Population Commission, NPC, 2006), and an estimated population of 22,012,828 people (NPC, 2021). The region has a total land area of 33,664 km² (National Bureau of Statistics, NBS, 2019). The zone is bounded by the River Niger on the West, the riverine Niger Delta on the South, the flat North Central to the North, and the Cross River on the East. Agriculture is the mainstay of economic activities for most rural communities. Farmers in the region produce food crops such as yam, cassava, groundnuts, maize, cocoyam, plantains, vegetables, banana, beans, and rice and cash crops such as oil palm, pea, star apple, mango, and the region was chosen for this study because of its contribution to the total yam production in the country as it is one of the highest yam producers. Multi-stage, purposive, and random sampling techniques were used to select data for this study. In the first stage, three (3) states were purposively selected from the five states that make up the southeast zones. The reason for this selection was because of proximity to the researcher. The states were Abia, Anambra, and Imo states. In the second stage, two Local Government Areas (LGAs) each were purposively selected from the three states, making a total of six (6) LGAs. They were Aba South, Umuahia North, Onitsha North, Awka South, Owerri Municipal, and Aboh Mbaise. These LGAs produce and market yams more than other local government areas. In the third stage, two (2) major markets were also purposively selected from the six (6) LGAs, making a total of twelve (12) markets that were studied for yam marketing. These markets are known for their predominant presence of yam sellers. In the final stage, ten (10) yam sellers were selected randomly from the lists of registered yam sellers in the twelve (12) markets selected from the local government areas, making a total of one hundred and twenty (120) yam sellers in the study area. The 120 yam sellers formed the sample size for this study.

Data were obtained mainly from primary sources through a well-structured questionnaire and face-to-face visits to the respondents. The questionnaire was made simple for the respondents to understand because some of them are illiterate. The questionnaire comprised two distinct sections. The first section focused on the determinants of trade barriers along category lines vis-a-vis TBs and NTBs on yam marketing. The second section was on the description of the extent to which trade barriers affected the volume of yams marketed in the study area. Data were analyzed using descriptive statistics and ordinary least squares multiple regression model.

The trade barriers were categorized under tariff barriers and non-tariff barriers and each category was used to describe the effects examined on yam marketing respectively. The mean value and standard deviation of the categories of tariff barriers (TBs) and non-tariff barriers (NTBs) were estimated, and the mean value was used to determine the extent.

Decision Rule

μ (mean) = 4.0 - 5.0, the extent of trade barriers on the volume of yam is Medium Effect (ME),

μ (mean) = 5.0 – 6.0, the extent of trade barriers on the volume of yam is High Effect (HE),

μ (mean) = 6.0 and above, the extent of trade barriers on the volume of yam is a Very High Effect (VHE), and

μ (mean) < 4.0, the extent of trade barriers on the volume of yam is Low Effect (LE).

Model specification

$VOYM = f(TBs, NTBs, \varepsilon)$ and explicitly expressed as follows;

$$VOYM = \beta_0 + \beta_1 P + \beta_2 Q_D + \beta_3 P_C + \beta_4 T_g + \beta_5 M_C + \beta_6 R_B + \beta_7 I_C + \beta_8 S_E + \varepsilon \quad \text{--- Equation (1)}$$

Where i refer to the i th barrier.

$VOYM$ = Volume of yam marketed (₦) (Pooled values of yam marketed on TBs and NTBs)

P = Price of yam (₦) (Pooled for TBs and NTBs)

Q_D = Quantity demanded (Tons) (Pooled for TBs and NTBs)

P_C = Produce Charges (₦) (Pooled for TBs and NTBs)

R_B = Roadblocks (Number of roadblocks mounted)

I_C = Illegal charges (₦);

S_E = Security (Amount paid in ₦)

M_C = Municipal charge (₦)

T_g = Tollgate charge (₦)

β_0 = constant term

$\beta_1 - \beta_8$ = are coefficients to be estimated

ε = error or residual term.

RESULTS AND DISCUSSIONS

Determinants of Trade Barrier along Category Lines vis-a-vis TBs and NTBs on Volume of Yam Marketed

Four functional forms of ordinary least squares multiple regression were used to analyse the determinants of

trade barriers on the volume of yams marketed in South East, Nigeria. The result is shown in Table 4 below.

The result showed that the exponential functional form was the lead equation for the trade barriers, with a coefficient of multiple determination of 0.916. This means that 91.6% of the variations of the combined effects of TBs and NTBs on the volume of yams marketed were accounted for by the explanatory variables fitted in the model. Variables like the quantity of yams demanded ($P < 0.1$), municipal permit ($P < 0.1$), and illegal charges ($P < 0.05$) were positive. The coefficient of the quantity of yams demanded was positive and significant at ten percent to the volume of yam marketed. This implies that an increase in the quantity of yam demanded leads to an increase in the volume of yam marketed by ten percent. This is in line with the findings of Ezeaku and Agbo (2024), who stated that when market demand rises, producers and traders respond by increasing output and trade volumes to meet consumption needs.

The coefficient of the municipal permit charges had a positive effect and was significant at ten percent on the volume of yams marketed. This could imply that although municipal charges typically represent added costs, they may also reflect formal participation in regulated markets by these traders, indirectly supporting higher trade volumes. Ezeaku & Agbo (2024) also found that structured regulatory environments lead to improved trade performance.

The coefficient of illegal charges had a positive effect and was significant at five percent. This implies that an increase in illegal charges also leads to an increase in the volume of yams marketed. Nwosu (2023) reported that illegal tolls collected at various points along trading routes can inflate product prices by up to 20%. However, traders often absorb these costs to maintain continuity in supply chains, especially where formal enforcement is weak.

Finally, the coefficient of roadblock had a negative effect and was significant at five percent. This implies that an increase in the number of roadblocks leads to a decrease in the volume of yams marketed. This is in line with the findings of Anagor-Ewuzie (2024), which highlights that the proliferation of checkpoints on Nigerian roads, often manned by both state and non-state actors, significantly hampers trade flows. These checkpoints not only delay transportation but also serve as avenues for collecting unofficial fees, thereby inflating logistics costs and reducing market efficiency.

Table 1: Determinants of trade barriers on Volume of Yam Marketed in South East, Nigeria

Explanatory Variable	Linear Function	+Exponential Function	Double-Log Function	Semi-Log Function
Constant	534.12 (0.838)	6.581 (32.311)	-1.998 (-1.564)	-14128.64 (-2.958)
Price	0.001 (3.511)	1.54E-007 (5.247)	0.229 (1.602)	453.28 (0.850)
Quantity Demanded	0.074 (1.216)	3.41E-005 (1.747)*	0.572 (4.672)	885.54 (1.935)*
Produce Charge	0.012 (0.290)	1.15E-005 (0.838)	0.122 (1.089)	155.49 (0.371)
Municipal Permit	0.102 (1.826)*	2.93E-005 (1.637)*	0.199 (1.861)*	777.08 (1.946)*
Toll Gate	-0.016 (-0.543)	6.33E-006 (0.688)	0.010 (0.079)	-106.28 (-0.236)
Security Charge	-0.043 (-0.674)	-1.83E-005 (-0.905)	-0.118 (-1.250)	-165.99 (-0.471)
Illegal Charge	0.001 (0.023)	4.43E-005 (2.581)**	0.015 (0.115)	-257.15 (-0.533)
Roadblock	81.593 (0.213)	-0.154 (-1.958)**	0.015 (0.146)	-211.72 (-0.566)
R²	0.662	0.916	0.866	0.572
Adj R²	0.601	0.877	0.838	0.513
F-Stat	4.331	13.039	10.339	4.576

Source: Field Survey Data Analysis, 2024, + = Lead Equation, * = Significant @ 10%, ** = Significant @ 5%, Values in parentheses are the t-ratio

Description of the Extent of Effect of Trade Barriers on the Volume of Yam Marketed

The result of extent of the effect of trade barriers on the volume of yams marketed in the study area is shown in Table 2

The results of the extent of the effect of trade barriers on the volume of yams marketed showed that across the southeastern states, a total of 16747.18kg of yams were marketed in a month. Barriers such as roadblocks ($\mu = 7.90$, $SD = 3.32$), illegal charges ($\mu = 5.83$, $SD = 2.32$), and tollgate ($\mu = 5.42$, $SD = 2.85$),

highly effected the volume of yam marketed while, produce charge ($\mu = 4.93$, $SD = 2.60$), municipal permit ($\mu = 4.78$, $SD = 2.46$), and security charges ($\mu = 4.67$, $SD = 2.49$), all had medium effects on the volume of yam marketed in the study area.

This implied that these charges indirectly increase the cost of transporting the yam and the yams, thereby reducing the volume of the yams traded/marked (Ogundari and Adeyemi, 2019).

Table 2: Distribution according to the extent of the effect of trade barriers on the volume of yam marketed

COMBINED EFFECT	TBs	Frequency	%	Mean Value	Stdev	Extent of TBs Effect	NTBs	Frequency	%	Mean Value	Stdev	Extent of NTBs Effect
Volume of Yam marketed (16747.18kg)	Tollgate	66.00	36.26	5.42	2.85	HE	Roadblock	76.00	37.81	7.9	3.32	VHE
	Municipal Permit	57.00	31.32	4.78	2.46	ME	Illegal Charges	71.00	35.32	5.83	2.32	HE
	Produce Charge	59.00	32.42	4.93	2.60	ME	Security charge	54.00	26.87	4.67	2.49	ME

Source: Field Survey Data Analysis, 2024. *** Multiple Responses μ (mean) = 4.0 - 5.0, Medium Effect (ME), μ (mean) = 5.0 – 6.0, High Effect (HE), μ (mean) = 6.0 and above, Very High Effect (VHE) and μ (mean) < 4.0, Low Effect (LE).

Conclusion

The study concluded that trade barriers had significant effects on the volume of yams marketed. Most traders in the Southeast marketed an average of 16,747.18kg of yam per month. Trade barriers were found to result in additional costs for traders, spanning from the point of origin to the destination.

Furthermore, the study revealed that factors such as price, the quantity of yams demanded, produce charges, and union charges contributed to increased costs. Together, these factors diminish yam marketing by inflating costs, impacting profit margins, limiting market accessibility, reducing trade volumes, and influencing consumer behavior in the study area.

Lastly, it was found that tollgate charges directly contributed to the cost of transporting yam to the southeast markets.

Recommendations

Based on the findings of this study, the following recommendations were made:

1. Governments and authorities should reduce the number of checkpoints on trade routes and ensure that only properly regulated ones are allowed. This would help make the transport of yams, as well as other agricultural commodities, more efficient and less stressful for marketers.
2. Yam sellers often have to pay illegal charges as they move their commodities to the markets, which increases their trading costs. To fix this, the government should monitor trade routes more closely and protect these sellers from being forced to make unofficial payments. They should set up an easy way for these traders/marketers to report the issues of illegal charges.
3. Though municipal permit charges were linked to higher market volumes, they still had significant effects on costs. Local governments and stakeholders should work towards harmonizing these charges so that they are fair and predictable. This would encourage more traders to operate confidently in formal markets.

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