Analysis of Cassava Product Marketing in Abia State, Nigeria

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Abstract

The study was designed to analyze cassava product marketing in Abia State, Nigeria. The researcher used a multistage sampling technique to obtain a representative sample of 90 respondents (30 garri marketers, 30 fufu marketers and 30 abacha marketers). We collected data from respondents via a standardized questionnaire. The study found that the average age of garri marketers was 47 years; fufu marketers was 44 years; and abacha marketers were 42 years. The majority had completed secondary education respectively. On average, the marketing experience of garri marketers, fufu marketers and Abacha marketers was 11 years, 7 years and 8 years respectively. The average monthly revenue of N99,000.00, N21,000.00 and N18,200.00 was recorded for garri, fufu and abacha marketers respectively. The average total cost of garri, fufu and abacha marketers were N79,393.94, N16,777.69 and N10,929.96 respectively. The net profit of Garri, fufu and Abacha marketers were N19,606.06, N4,222.31 and N7,270.04 respectively. Age, household size, marketing experience, storage cost, selling price and transport cost had significant effects on the net profit of garri marketers. Household size, storage cost and selling price had significant effects on the net profit of fufu marketers. Household size, education, marketing experience and selling price had significant effects on the net profit of Abacha marketers. It is therefore necessary for public goods like roads, storage facilities, and electricity to be put in place by the government and non-government organizations to reduce the costs of transportation and storage cost for cassava product marketers.

Keywords: Analysis, cassava, products, and marketing

Introduction

Root crops are important staple food crops supporting millions of people in the world (Oladele *et al.,* 2020). These staple food crops are cultivated by a significant number of farmers in the tropics for direct human consumption and industrial purposes. In Nigeria, staple food items are planted all year round in all the ecological zones, depending on the availability of moisture. Cassava, yams, corn, coco-yams, cowpeas, beans, sweet potatoes, millet, plantains, bananas, rice, sorghum, and a variety of fruits and vegetables are the most significant staple food crops grown by farmers in Nigeria, with cassava leading in terms of availability and level of consumption (Olanrewaju *et al.,* 2022). In comparison to rice and maize, cassava is a reliable source of calories for Nigerians, and over 80% of those living in rural areas consume cassava products daily (Ani *et al.,* 2013). In addition to improving the nation's food security, it has boosted Nigeria's GDP and created jobs in specialized industries like farming, processing, and marketing (Food and Agriculture Organization, 2020). According to Akerele *et al.,* (2019), almost every household in the

Southern part of Nigeria grows cassava, making it one of the most widely grown and marketed agricultural commodities in the region. In South East, Nigeria, cassava is processed and marketed in the form of garri, fufu, lafun, and pupuru, and processed dried chips and pellets, starch, bread, biscuits, paperboard, beer, sugar syrup, ethanol, high-quality cassava flour (HQCF), and glue for industrial use (Ojo *et al.,* 2020).

In Abia State, Nigeria, marketing of cassava products is undertaken by bulkers/ aggregators, cooperatives, and retailers (Nwachukwu *et al.,* 2020). They travel to areas where cassava is grown to obtain fresh cassava roots and processed goods from the farmers, such as gari, fufu, Abacha, flour, and others, and then transport them to the open market or processors. They also distribute cassava products in rural and urban markets, as well as on the side of the road in Abia state, acting as a bridge between their members and larger processing firms and retailers by selling their products to them at the highest possible price (Uzuegbu *et al.,* 2020).

In Nigeria, several researchers have conducted studies on cassava products. For example, Olanrewaju (2022), evaluated the economic analysis of cassava production in the Akoko District of Ondo State, Nigeria; Ojo et al., (2020), Analyzed consumer preference for cassava products in Akoko South West Local Government Area of Ondo State, Nigeria; Sanusi et al., (2020), examined cassava production: prospects and challenges in Irepodun Local Government Area, Kwara State, Nigeria; Akerele et al., (2019), assessed profitability cassava products marketing in Ogun State, Nigeria; Olaomo (2021), conducted a study on gender participation in the marketing and processing phases of the cassava value chain in Nigeria; Alufohai and Izekor (2020), analysed marketing channel and margins analysis of cassava tuber and cassava products In Edo State, Nigeria and Oladele et al., (2020), examined cassava products value chain analysis among actors'' processors under traditional and improved technologies in Nasarawa State, Nigeria.

In South East, Nigeria, Ani et al., (2013), investigated the processing and marketing of cassava products in the Southeast, Nigeria while in Abia State, Onya et al., (2016) examined market participation and value chain of cassava farmers in Abia state, Nigeria; Nwachukwu et al., (2020) estimated the determinants of market participation among smallholder cassava processors in Ikwuano Local Government Area, Abia State, Nigeria and Uzuegbu et al., (2020) assessed the marketing of gari and fufu in Umuahia North Local Government Area (LGA) of Abia State. Despite all the empirical efforts made, studies on the analysis of cassava product marketing in Abia State are lacking. Therefore, a study on the analysis of cassava product marketing in Abia State is essential for the reliable assessment and formulation of appropriate cassava product marketing policies in Abia State. Hence, this study analysed cassava product marketing in Abia State. The results of this study are hoped to guide farmers, marketers, intermediaries, agripreneurs and investors who are interested in cassava enterprises. It is hoped to guide policymakers and government in formulating policies and laws and in launching programmes that would promote the marketing of cassava products in Abia State.

According to Uzuegbu et al., (2020), the development of Abia State's cassava product marketing system is effective in boosting output and consumption, both of which are crucial for economic development. Unfortunately, the majority of the markets for cassava products in Abia State are underdeveloped and are marked by, among other things, a lack of market information, a weak market structure, multiple taxes, unstable prices, a poor road system, and high transportation costs. Furthermore, buyers and sellers of cassava products may need to travel great distances to transact business, which can occasionally lead to a shock of supply and demand and an increase in product prices. In Abia State, the government has shown little to no interest in promoting the marketing of cassava

products through policies and programs, while manufacturers and investors are reluctant to commit capital to this subsector due to the high risk involved with cassava products (Nwakor, 2012).

Materials and Methods
The study was carried out in Abia State, Nigeria. Greenwich is at 7^0 23 and 8^0 02 E, 50^0 47 and 60^0 12 N. It is always hot and muggy. Temperature 22^0C-31^0C, rainfall 2000-2500mm. State borders include Imo, Cross Rivers, Akwa Ibom, and Rivers. 28455380 people live here. Umuahia, Aba, and Ohafia are the State's agricultural zones. Concerning agriculture and livestock production, the State has agribusinesses that involve distribution, while other citizens engage in petty commerce, notably in cities. To select 90 respondents for the study, a multistage sampling technique was used. In the first stage, one extension block from each of the agricultural zones in Ohafia, Aba, and Umuahia was randomly chosen. In the second stage, three communities from each of the extension blocks were randomly chosen, giving a total of nine (9) communities. In the third stage, two villages from the selected communities were randomly chosen, giving a total of eighteen (18) villages. A list of all cassava product marketers was confidentially obtained from the key informants and village heads, and this list formed the sampling frame of the study. Five (5) cassava product marketers were randomly chosen from the sampling frame, giving a total of ninety (90) respondents. A structured questionnaire was used to collect primary data from the selected respondents. Means, frequency count and percentages were used to examine the socioeconomic characteristics of the respondents. The cost, returns, and net profit related to the marketing of cassava products in the region were estimated using a market budgetary approach.
A multiple regression model was used to examine the factors affecting the net profit of cassava product marketers in the area. The market budgetary analysis is given as:

Net Profit (NP) = Total revenue from sales (TR) - Total marketing cost (TMC)

Where:
Total marketing cost (TR) = Total fixed cost (TFC) + Total variable cost (TVC)
A multiple regression model was specified thus;

$$Y_{1,2,3} = f(X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8)\ldots2$$

Where:
1= net profit of garri marketers (N), 2= net profit of fufu marketers (N) and 3= net profit of Abacha marketers (N)
X_1 = Age (Years)
X_2 = Household size (No of persons)
X_3 = Education (No. of years spent in formal schooling)
X_4 = Marketing experience (Years)
X_5 = Credit (N)
X_6 = Storage cost(N)
X_7 = Selling price (Kg)

X_8 = Transportation cost (N)
e = Stochastic error term,
b_0 = Constant,
b_1 - b_8 = Regression coefficients
X_1-X_8 = Explanatory variables

Results and Discussion

The Socioeconomic Characteristics of the Respondents is presented in Table 1

The socioeconomic characteristics of the respondents are presented in Table 1. The mean age of garri marketers was 47 years; fufu marketers was 44 years and that of abacha marketers was 42 years. The majority (60.00%) of garri marketers, the majority (53.33%) of fufu marketers and the majority (66.67%) of Abacha marketers had completed secondary education respectively. The mean years of marketing experience of garri marketers were 11 years; fufu marketers were 7 years and the mean years of marketing experience of abacha marketers was 8 years. In earlier research, Onya *et al.,* (2016) found that the average age of cassava product marketers in Abia State was 44.19 years old and that the majority (42.22%) had only completed secondary school.

The net profit of cassava products marketing in the Study Area is presented in Table 2

The result shows an average monthly revenue of N99,000.00, N21,000.00 and N18,200.00 for garri, fufu and abacha marketers respectively. The average total cost of garri, fufu and abacha marketers in the study area were N79,393.94, N16,777.69 and N10,929.96 respectively. The net profit of Garri, fufu and Abacha marketers were N19,606.06, N4,222.31 and N7,270.04 respectively. Relatively, garri marketing was more profitable in the study area, probably because the demand for garri in the study area is price inelastic. More so, the respondents' local eating habits and menu may be to blame for the low scores for fufu and Abacha in the study area. This result is in line with those of Ani, Agbugba, and Baiyegunhi (2013), who reported that garri in Southeast Nigeria is more profitable than other cassava products.

The factors affecting the net profit of cassava product marketers in the study area are presented in Table 3

Table 3 shows the Ordinary Least Squares result of factors affecting the net profit of cassava product marketers in the study area. Concerning garri marketing, the exponential functional form was chosen because of the magnitude of the multiple determination coefficient, the number of significant variables and the significance of the F-ratio. R^2 was 0.86, which indicates that the independent variables included in the model (age, household size, education, marketing experience, amount of credit, storage cost, produce price and transportation cost) explained 86.00% of the variations in the net profit of garri marketers in the study area, while error explained 14.00 percent of the variance. The investigation results showed an F-probability less than or equal to 0.0000, which indicates that the estimated regression model's variables were correct and significant at a 1% significance level. The age of the respondents was statistically significant and positively linked to the net profit of garri marketers at 1%, implying that older garri marketers realized higher net profit and younger garri marketers in the study area. The household was statistically significant and positively linked to the net profit of garri marketers at 1%, implying the larger the household size the lower the profit. This report is plausible because family members helped the respondents market the product. The marketing experience was statistically significant and positively linked to the net profit of garri marketers at 5%. The implication is that a marketer's ability to make logical garri marketing decisions that will increase net profit increases with experience. The storage cost was statistically significant and negatively linked to the net profit of garri marketers at 10%. The higher storage cost raises the overall marketing expense and lowers the respondent's net profit, so the sign of this variable coincides with the a priori expectation. In previous studies, Uzuegbu *et al.,* (2020) reported that storage costs hurt the net profit of garri marketers in Umuahia North Local Government Area Of Abia State, Nigeria. The selling price was statistically significant and positively linked to the net profit of garri marketers at 1%. The transport was statistically significant and negatively linked to the net profit of garri marketers at 1%.

For fufu marketing, the linear functional form was chosen because of the magnitude of the multiple determination coefficient, the number of significant variables and the significance of the F-ratio. R^2 was 0.75, which indicates that the independent variables included in the model (household size, storage cost and selling price) explained 75.00% of the variations in the net profit of fufu marketers in the study area, while error explained 25.00% of the variance. The investigation results showed an F-probability less than or equal to 0.0000, which indicates that the estimated regression model's variables were correct and significant at a 1% significance level. Household size was statistically significant and negatively linked to the net profit of fufu marketers at 5%. This implies that the larger the household size the lower the profit, due to the high propensity to consume marketed surplus by the large household. The storage cost of the respondents was statistically significant and negatively linked to the net profit of fufu marketers at 5%. The finding matches *a priori* expectations and collaborates with Uzuegbu *et al.,* (2020) who reported a positive relationship between the price of fufu and the net profit of marketers in Umuahia North Local Government Area Of Abia State, Nigeria. The selling price was statistically significant and positively linked to the net profit of fufu marketers at 1%.

Concerning Abacha marketing, the linear functional form was chosen because of the magnitude of the multiple determination coefficient, the number of significant variables and the significance of the F-ratio. R^2 was 0.62, which indicates that the independent

variables included in the model (household size, education, marketing experience and selling price) explained 62.00% of the variations in the net profit of Abacha marketers in the study area, while error explained 25.00% of the variance. The investigation results showed an F-probability less than or equal to 0.0000, which indicates that the estimated regression model's variables were correct and significant at a 1% significance level. The household size of the respondents was statistically significant and negatively linked to the net profit of Abacha marketers at 5%. The educational level of the respondents was statistically significant and positively linked to the net profit of Abacha marketers at 1%. The marketing experience of the respondents was statistically significant and positively linked to the net profit of abacha marketers at 1% while the selling price was statistically significant and positively linked to the net profit of abacha marketers at 1%.

Conclusion
The study showed that cassava product marketers were young, educated and relatively experienced. They made an average profit of N19,606.06, N4,222.31 and N7,270.04 from the garri, fufu and abacha enterprises respectively, with garri marketers having the highest profit in the study area. However, regression results further showed that age, household, marketing experience, storage cost, selling price and transport are the determinants of the net profit of garri marketers in the study area. Household size, storage cost and selling price are the determinants of the net profit of fufu marketers in the study area. More so, household size, education, marketing experience and selling price are the determinants of the net profit of Abacha marketers in the study area.

It is therefore necessary for public goods like good roads, storage facilities, and electricity among others to be put in place by government and non-government organizations to reduce the cost of transportation and storage cost for cassava product marketers. Marketers of cassava products should be encouraged to form cooperatives through financial incentives and sensitization to reduce marketing costs (transportation costs and storage costs) and take advantage of economies of scale.

Authors' contribution
OBO contributed to the writing of the entire manuscript; ABA prepared the survey instrument; UUJ analyzed the data and OIO contributed to the development of the materials and methods, conclusion as well as manuscript proofreading.

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Table 1: Socioeconomic characteristics of the respondents

	GARRI		FUFU		ABACHA	
Age	Frequency	%	Frequency	%	Frequency	%
20-29	6	20.00	4	13.33	3	10.00
30-39	8	26.67	7	23.33	7	23.33
40 -49	11	36.67	18	60.00	15	50.00
50-59	3	10.00	1	3.33	5	16.67
60-69	2	6.67	-	-	-	-
Mean	**47**		44		42	
Total	**30**	**100**	**30**	**100**	**30**	**100**
Educational Qualification						
No formal education	-	-	5	16.67	2	6.67
Primary education	9	30.00	9	30.00	8	26.67
Secondary education	18	60.00	16	53.33	20	66.67
Tertiary education	3	10.00	-	-	-	-
Total	**30**	**100**	**30**	**100**	**30**	**100**
Marketing Experience						
1-10	11	36.67	21	70.00	25	83.33
11-20	9	30.00	6	20.00	5	16.67
21-30	5	16.67	3	10.00	-	-
41-50	5	16.67	-	-	-	-
Mean	**11**		**7**		**8**	
Total	**30**	**100**	**30**	**100**	**30**	**100**

Source: Field survey, 2022

Table 2: The net profit of cassava products marketing in the Study Area

A	RETURNS	MEAN VALUES (₦)		
		Garri marketers	**Fufu marketers**	**Abacha marketers**
	Total Output (bags)	9	7	13
	Unit price	11,000.00	3,000.00	1,400.00
	Total returns	**99,000.00**	**21,000.00**	**18,200.00**
B	**VARIABLE COST**			
	Purchase cost	72,000.00	14,350.00	9,600.00
	Transportation cost	3,000.00	**640.89**	**460.00**
	Storage cost	350.00	180.00	-
	Loading and offloading cost	1,250.07	320.00	-
	Electricity cost	72.67	-	-
	Union cost	150.56	120.82	50.00
	Total variable cost	**76,823.30**	**15,611.71**	**10,060.00**
	Contingencies (10% of TVC)	**7,682.33**	**1,561.17**	**1,006.00**
C	**TOTAL FIXED COST**	**2,570.64**	**1,165.98**	**869.64**
	Contingencies (10% of TFC)	**257.06**	**116.60**	**86.96**
	TOTAL COST (B+C)	**79,393.94**	**16,777.69**	**10,929.96**
D	**NET RETURNS (TR-TC)**	**19,606.06**	**4,222.31**	**7,270.04**
	Total returns	99.000,00	21,000.00	18,200.00
	Total cost	79,393.94	16,777.69	10,929.04

Source: Field survey, 2022

Table 3: Regression estimate of the factors affecting the net profit of cassava products marketers in the study area

Variables	Garri marketers (+) Exponential	Fufu marketers (+) Linear	Abacha marketers (+) Linear
Constant	9.97	71.89	6090.75
	$(64.09)^{***}$	$(9.80)^{***}$	(1.08)
Age (X_1)	0.717	-0.34	6075.29
	$(5.06)^{***}$	(-0.01)	(0.28)
Household size (X_2)	-0.14	0.40	-9.30
	$(-3.02)^{***}$	$(-2.55)^{**}$	$(-2.03)^{**}$
Education (X_3)	0.00	0.67	3.98
	(0.12)	(0.92)	$(2.94)^{***}$
Experience (X_4)	0.98	0.04	4.30
	$(2.15)^{**}$	(0.56)	$(2.88)^{***}$
Credit (X_5)	-0.10	-0.07	0.66
	(-1.44)	(-1.09)	(0.91)
Storage cost (X_6)	-0.08	-0.15	0.14
	$(-1.96)^{*}$	$(-2.10)^{**}$	(0.20)
Selling price (X_7)	17.43	0.17	0.24
	$(13.88)^{***}$	$(3.49)^{***}$	$(4.07)^{***}$
Transport cost (X_8)	-0.54	-0.43	-0.89
	$(-3.59)^{***}$	(-0.95)	(-1.03)
R^2	0.86	0.75	0.62
F- ratio	27.680***	56.820***	4.124***

*Source: Field Survey, 2022, Note: +Lead equation, ***1% level of significance, ** 5% level of significance, *10% level of significance values in parenthesis are the t-value*