



Analysis of viability of cassava products across selected value chain in Enugu State, Nigeria

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ABSTRACT

Key Words

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The study examined the viability of processing and marketing of 'garri', 'akpu' and 'abacha' in Nkanu-East Local Government of Enugu State. The objectives of the study are to: analyze the socio-economic characteristics of cassava processors and consumers in the study area, determine the demand and supply elasticity of the products in the area, compare the demand and supply of the selected products in the area, and finally, describe the consumption pattern of the selected products in the area. A multistage sampling procedure was used to select 100 respondents from five (5) communities in the study area. Data were analyzed using rate of returns per naira on investment (RRI), benefit cost ratio (BCR), profit margin and other analytical tools. From the analysis, it was found that cassava processing and marketing in the area is a very lucrative business with returns of 20kobo, 17kobo and 29kobo per ₦1 invested into garri, akpu and abacha business respectively. From the study, it is recommended that effective strategies of preserving cassava products especially akpu should be developed in order to increase the demand and supply of the product.

1.0 Introduction

Agriculture has been the major driver of the Nigerian economy over the years, providing employment for about 70% of the population and accounting for more than one third of total gross domestic product (GDP) and labour force (FAO, 2005). The sector provides food for the growing population and income for millions of smallholders. It provides employment for about 65% of the labour force for industrial development and also raw materials for industries and has made a remarkable contribution to the gross domestic product with its contribution rising from 36.5% to 41.48% in 2009 and 44.40% in 2011 (Itam, Ajah and Agbachom, 2012).

Cassava, whose consumption cuts across all parts of the country (Abang and Agom 2004), is a well-

known root crop which derives its origin from South and Central America and was introduced into Africa in the 16th century (ICTA 2001). Cassava is produced mostly by small holder farmers on marginal or sub-marginal lands of the humid and sub-humid tropics (Ani 2010). Such smallholder systems as well as other aspects of its production often create problems, including: the unreliability of supply, uneven quality of products, low producer prices, and an often costly marketing structure. Thus, the challenge is to create a strategy that affects production, processing, and marketing in such a way that they provide an array of high quality products at reasonable prices for the consumers, while still ensuring a good profit margin for the producers without requiring them to



assume the largest part of the development risk (Ntawuruhunga 2010).

Research Objectives

The main objective of this study is to determine the profitability of processing and marketing of the selected cassava products (garri, akpu, and abacha) in Nkanu-East Local Government Area of Enugu state.

The specific objectives include to;

- i. analyze the socio-economic characteristics of cassava processors and consumers in the study area,
- ii. determine the elasticity of demand and supply of the products in the area,
- iii. compare demand and supply of the selected products in the area,
- iv. describe the consumption pattern of the selected products in the area.

2.0 Research Methods

The study was carried out in Nkanu-East L.G.A. of Enugu State. Nkanu-East is one of the seventeen (17) L.G.As that make up Enugu State. It consists of Amagunze, Ugbawka, Nara, Nkereffi, Mburubu, and Nome. The vegetation of the area is mixed with forest and savanna vegetation. Trees like raffia-palms and palm trees are normally found in the area. The major occupation of the inhabitants of the study area is farming though petty trading, palm wine tapping and hunting are also practiced in the area. Geographically, the co-ordinate of Nkanu-East L.G.A is latitude $06^{\circ} 10' N$ and longitude $07^{\circ} 39' E$. The area is bounded by Akpugo in the West, Nkereffi in the South, Amaechi-Idodo in the North and Ebonyi State to the East.

A multi-stage sampling technique was employed in the study. The first stage involved a purposive selection of Ugbawka, Nkereffi and Amagunze reputed for cassava processing and marketing. The second stage involved a random selection of four (4) villages from each of the five communities. And in the third stage, a census and listing of cassava

processors and consumers in each of the communities was conducted through market associations and community leaders. From the formed sampling frame, a purposive selection of seven (7) respondents from each of the four (4) villages from Ugbawka, six (6) from each of the four villages from Nkereffi were done. Furthermore, selection of five (5) respondents from each of the four villages from Amagunze, four (4) from each of the four villages from Nara and three (3) from each of the four villages from Nome were carried out for the purpose of this research. The respondents comprised of both cassava processors and consumers in each of the four villages in each community and it made a total number of 100 respondents. Data were collected with the use of well-structured questionnaires.

Descriptive statistics and budgetary analysis were used to analyze data collected. Specifically, the budgetary analysis (BCR, profit margin and RRI) was deployed for the determination of profitability level.

2.1 Model Specification

The following expressions were used to determine the relevant variables.

- ✓ Rate of returns per naira on investment (RRI):- $RRI = \frac{Net\ Income\ (NI)}{Total\ Cost\ (TC)}$
- ✓ Benefit Cost Ratio (BCR):- $BCR = \frac{Total\ Revenue\ (TR)}{Total\ Cost\ (TC)}$ and
- ✓ Profit Margin (PM):- $PM = \frac{Net\ Income\ (NI)}{Total\ Revenue\ (TR)} \times 100$.

The profit margin on sales indicates the relationship between profit and sales. An increasing profit margin on sales is also an indication of good business.

In the expressions,

$$NI = TR - TC$$

$$TR = \text{Total Revenue}$$

$$TC = TFC + TVC = \text{Total cost}$$

$$TFC = \text{Total fixed cost}$$

TVC = Total variable cost

TC = TVC + Depreciation

$$\text{Depreciation} = \frac{(\text{Total Cost of assets} - \text{Salvage value})}{\text{Useful life}}$$

3.0 Results and Discussion

3.1 Socio-Economic Characteristics of the Respondents

The socio-economic variables considered in this research are: sex, age, marital status, occupation, level of education, household size, years of

experience, source of credit, and how much they get as income every month. This is shown in table 1. Table 1 above shows that 82% of cassava suppliers in the study area were female while 18% were male. This agrees with the report that women play a

Table 1: Socio-economic characteristics of cassava processors and consumers in Nkanu East L.G.A

Variables	Suppliers		Consumers		mean
	Frequency	Percentage	Frequency	Percentage	
Sex					
Male	9	18	22	44	
Female	41	82	28	56	
Age					
≤ - 25	3	6	12	24	
26 – 35	25	50	12	24	
36 – 45	14	28	18	36	36
46 – 55	5	10	5	10	
≥ 55	3	6	3	6	
Marital status					
Single	10	20	14	28	
Married	34	68	20	40	
Divorced	1	2	5	10	
Widowed	3	6	9	18	
Separated	2	4	2	4	
Household size					
≤ - 5	25	50	20	40	
6 – 10	17	34	23	46	6
≥ 11	8	16	7	14	
Income					
≤ 5,000	3	6	9	18	
6000 – 10,900	10	20	8	16	
11,000 – 15,900	9	18	9	18	
16,000 – 20,900	10	20	8	16	₦16,245
21,000 – 25,900	10	20	6	12	
≥ 26,000	8	16	10	20	

Source: Field survey 2015



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central role in cassava production, processing and marketing, contributing about 58% of the total agricultural labour in the southwest, 67% in the southeast and 58% in the central zones (PIND 2011). They are almost entirely responsible for processing cassava; these provide additional income-earning opportunity as well as enhance its ability to contribute to household food security (FMANR 2006).

The number of male processors in the area is less because most of them find the job feminine hence they engage more in other activities such as hunting, palm wine tapping, transportation and other activities rather than in cassava processing. This is probably why cassava is considered a “women’s crop”. Nweke (2004) contends that this is an important half-truth. He argues that men are increasingly involved in cassava production, processing and marketing as cassava transformation unfolds in Africa. From the same table, 56% of the consumers were female while 44% were male. The disparity between the percentages is low and this could mean that cassava consumption has no gender stereotype. From the table 1, majority (94%) of the suppliers were more than 25 years of age. This justifies the record of Orebiyi and Nzeh (2002) that age influences managerial decision making.

The table 1 above shows that a higher proportion of the suppliers are married (68%) while the least with 2% are the divorced. According to Kulik (2001), singles are more likely than their married counterparts to view unemployment as a personal advantage because it gives them more time to themselves. By implication, married people tend to seek for jobs and work more than singles as they (married people) have more mouths to feed and this responsibility has to be carried out on daily basis. Divorce, being a legal act (Yukon, 2004), is likely dominant among literates who have attained a high level of tertiary education. The divorced couples, having attained that high level of tertiary education, engage themselves in white collar jobs rather than in processing of cassava in a rural village. This could be seen as the reason for the low response of divorced respondents in the area. The average

household size of the respondents was 6. The average income earned by both suppliers and consumers is ₦16,245.

The distribution according the incomes of both suppliers and consumers shows that the supply and consumption of the products is relatively equal for all households notwithstanding the amount of income earned. This agrees with IFAD (2005) that garri has substantial market demand among low-medium- and high-income rural and urban households because it is cheaper and more convenient to cook than grains.

3.2 Economic viability of processing and marketing of garri, akpu and abacha

The profitability of processing and marketing of garri, akpu and abacha was analyzed using benefit cost ratio (BCR), profit margin, and rate of return on investment (RRI). The profitability analysis for processing and marketing 0.1ton of cassava is shown in table 2.

Table 2. Profitability analysis for processing and marketing 0.1ton of cassava in Nkanu East L.G.A

	Garri	Akpu	Abacha
Total Revenue	₦5,000	₦3,500	₦3,000
Average Variable Cost	₦2,315	₦1,060	₦1,040
Average Fixed Cost (Depreciation)	₦1,863.3	₦1,920	₦1,280
Average Total Cost	₦4,178.3	₦2,980	₦2,320
Gross Margin (GM)	₦2,685	₦2,440	₦1,960
Net Income (NI)	₦821.7	₦520	₦680
Benefit Cost Ratio (BCR)	1.1967	1.1745	1.2931
Profit Margin	16.4%	14.9%	22.7%
Rate of Return on Investment (RRI)	0.1967	0.1745	0.2931

Source: Field survey, 2015

The results of the rate of returns of investment (RRI), benefit cost ratio (BCR) and profit margin show that cassava processing and marketing is an income earning venture. The return per naira of investment on the processing of 100kg of cassava tuber into different products gave 20 kobo for garri, 17 kobo for akpu and 29 kobo for abacha. This implies that for every ₦1 invested in the processing and marketing of 0.1ton of garri, akpu and abacha yielded the sum of 20 kobo, 17 kobo and 29 kobo respectively.

According to Greene and Stellman, (2007), any business is good its BCR is greater than one (i.e., if $BCR > 1$). This implies that processing and marketing of the three products are good businesses since their BCRs are all greater than one. The profit margins of the products also attest the fact that processing and marketing of the products are profitable enterprises. It shows that approximately 16%, 15% and 23% of net income comes from every Naira of sales of garri, akpu and abacha respectively. The result further indicates that processing cassava tubers into abacha is more rewarding since the return to investment, Benefit Cost Ratio and profit margin is higher for abacha compared to garri and akpu.

3.3 Elasticity of demand and supply

This section analyses the price and income elasticity of demand and supply of the products as well as the

cross elasticity of demand for garri and akpu. Table 3 above result of the findings shows that the price elasticity of demand for garri, akpu and abacha are 0.37, 1.2 and 2.5 respectively. This means that the demand for garri is relatively inelastic, that of akpu and abacha in the area are both relatively elastic. From the table 3, the result for price elasticity of supply of garri, akpu and abacha implies that supply of garri is relatively inelastic, akpu, unitary while that of abacha is relatively elastic. The relatively inelastic nature of demand and supply of some of the products indicates that a larger change in price leads to a small or slight change in the quantity of those products demanded (Ande, 2005).

From table 3 above, income elasticity of both demand and supply for garri, akpu and abacha are all positive and this agrees with the result of the study done by IFAD (2005) where the income elasticity of demand estimates for cassava products were found to be positive at all income levels. The table 3 above shows that the demand and supply of garri and abacha is relatively elastic, while that of akpu is relatively inelastic. According to IFAD (2005), an income elasticity of demand of more than one percent (1%) implies that market demand is very high for the commodity.

Table 3 Price elasticity of demand and supply in Nkanu East L.G.A

Product	DEMAND		SUPPLY	
	Price elasticity(%)	Income elasticity(%)	Price elasticity(%)	Income elasticity(%)
Garri	0.37	1.38	1.38	0.5
Akpu	1.2	0.83	0.83	1.38
Abacha	2.5	1.16	1.16	1.65

This means that the demand for garri and abacha is very high in the area. This could be because garri can be purchased and stored for a longer period of time than akpu and this makes consumers buy more of the storable products (garri and abacha), when there is an increase in income, and store them for future purposes. Suppliers don't supply more akpu even when there is an increase in income and this is because it cannot be stored for a long time because it has a very low shelf-life. Also, the demand for akpu is very low because majority dislikes its taste and smell (both during and after processing).



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4.0 Conclusion

Cassava is one of the world's most important food crops, feeding over 60% of the world's population. It is a multi-purpose crop whose production, processing and marketing is quiet cheaper than other important food crops like rice, maize, etc. The low input culminating in a maximized output observed in this study is one of the major reasons people venture into the cassava business. From the findings in this study one can observe that for every ₦1 invested in the processing and marketing of 0.1ton of garri, akpu and abacha it yielded the sum of 20 kobo, 17 kobo and 29 kobo respectively. This implies that market demand is very high for these commodities.

Based on the findings from this study, it is therefore recommended that better strategies of preserving cassava products like akpu should be developed in other to increase the demand and supply of the product. It is also recommended that the rules of processing and packaging of cassava into various products should be strictly adhered to in other to prevent low quality of the final product(s) which may turn out to be detrimental to human consumption.

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