PROFITABILITY OF CASSAVA PRODUCTION IN OTUKPO LOCAL GOVERNMENT AREA OF BENUE STATE, NIGERIA

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ABSTRACT
This study analyzed the profitability of Cassava production in Otukpo Local Government Area of Benue State. The study used primary data collected through questionnaire administration. The respondents included cassava farmers who were randomly selected from the districts (Otukpo, Akpa, Ugboju and Adoka) in the study area. A total of 120 cassava farmers were sampled. Frequency and percentage distribution, as well as Gross margin analysis, were used to analyze the data. From the results, cassava production in the study was male-dominated, with a married majority who were still in their active years, had relative education and had good farming experience. The result shows a mean Total variable cost of ₦31915.4 per hectare, with a mean Total revenue of ₦115883.3 per hectare. The mean Gross margin per hectare was ₦ 83,967.90, indicating that cassava production in the study area is profitable. Factors such as pests and diseases, conflict, labour and capital shortages, poor extension services and drought affect cassava production in the study area. Access to credit and effective extension services should be made available by the government in order to boost productivity.
Keywords: Profitability, Cassava Production, Cassava farmers, Gross Margin

INTRODUCTION
Cassava (Manihot *esculenta*), a member of the Euphorbiaceae family, is one of the most important staple crops cultivated across tropical Africa. Its importance stems from its high food energy yield, year-round availability, resilience to harsh weather conditions, and adaptability to African farming systems (Odoemenem, 2011). Cassava is highly tolerant of poor soil conditions, resistant to drought, pests, and diseases, and its roots can remain safely stored underground for several months after maturity without spoilage (Omotayo and Oladejo, 2016). Cassava has numerous economic and industrial uses, giving the crop strong potential as a foreign exchange earner for Nigeria. Beyond its importance as a food crop, cassava serves as a valuable industrial raw material used in the production of starch, flour, alcohol, chips, gum, paper, pellets, adhesives, confectioneries, pharmaceuticals, and livestock feed (IITA, 2005).

Profit refers to the difference between total revenue and total cost (Upton, 2005). In essence, it represents the excess of income generated over the expenses incurred and may be either positive or negative. Profit is considered the reward entrepreneurs, including farmers, receive for their decision-making ability and willingness to bear risks. Consequently, profit and the desire to maximize it play an important role in promoting the efficient allocation and use of scarce resources (Hirschey, 2006).

In Nigeria, the growth of the Cassava sector has been constrained by factors which resultantly affects its productivity and profitability. This situation reflects inefficiencies in input utilization, limited access to improved technologies, and inadequate rural infrastructure (Ume and Mbah, 2022). Also, unstable market prices, rising production costs, and significant post-harvest losses affects its profitability. In addition, limited opportunities for value addition, poor access to credit facilities, and inadequate extension services continue to constrain smallholder farmers (Beban and Gironde, 2023). Addressing these challenges is essential for improving farmers' incomes, enhancing economic sustainability, and promoting growth within the cassava sector.

The findings of this study are expected to provide useful information for farmers, extension agents, policymakers, researchers, and development organizations involved in cassava value chain development. Specifically, the study will provide empirical evidence on the profitability of cassava farming and identify the major production constraints confronting farmers. The results will assist policymakers in formulating appropriate policies aimed at improving farmers' access to productive resources, strengthening extension delivery, enhancing rural infrastructure, and promoting sustainable agricultural development.
Against this background, this study assesses the profitability of cassava production in Otukpo Local Government Area of Benue State. Specifically, this study:

i. determines the socio-economic characteristics of the cassava farmers in the study area;
ii. determines the profitability of cassava production in the study area; and
iii. identifies the major factors affecting cassava production in the study area.

METHODOLOGY

The study area for this study is Otukpo Local Government Area of Benue State. Primary data was used for this study. The data was collected through the administration of Questionnaire. The sampled respondents were cassava farmers in the study area. Simple random sampling technique was used to select 120 cassava farmers from the four districts (Otukpo, Akpa, Ugboju and Adoka) in the study area. The study employed the use of the Gross Margin function to analyze the profitability of the cassava farmers in the study area. Descriptive statistics like the frequency and percentage distribution was used to analyze the socio-economic characteristics and the factors affecting cassava production in the study area.

Gross Margin Function

The Gross Margin Function is stated as follows:
GM = TR – TVC
Where,
GM = Gross Margin (₦/ha)
TR = Total Revenue (₦/ha)
TVC = Total Variable Cost (₦/ha)
Note: Total Revenue (TR) was obtained by multiplying the output harvested and sold (number of pick-up truck loads weighing about 3tonnes) by the amount sold per pick-up truck load.
Total Variable Cost (TVC) = Labour Cost + Fertilizer cost + Herbicide cost + Cultivar cost

RESULTS AND DISCUSSION

Socio-economic Characteristics of the Cassava Farmers

The results on the socioeconomic characteristics of cassava farmers presented in Table 1 indicate that the majority (79.2%) of the respondents were male, implying that cassava production in the study area is predominantly undertaken by men. The average age of the farmers was 46.7years, indicating that most respondents were in their economically active and productive years, which is expected to enhance their capacity to undertake the labour-intensive activities associated with cassava production.

The results further reveal that 75.0% of the respondents were married, suggesting that married farmers dominate cassava production in the study area and may have access to family labour for farming operations. The mean household size was 9.7 persons, indicating relatively large households that could provide additional labour for farm activities while also increasing household consumption needs.

The average farming experience of the respondents was 20.5 years, suggesting that the farmers possessed considerable experience in cassava cultivation. Such experience is likely to enhance their knowledge of production practices, decision-making, and resource management, thereby contributing to improved productivity.

With respect to educational attainment, the majority of the respondents (50.8%) had primary education, indicating that most farmers possessed basic formal education, which could facilitate the adoption of improved agricultural technologies and extension recommendations. The average farm size was 1.1 hectares, indicating that cassava production in the study area is dominated by smallholder farmers. This relatively small farm size suggests that production is largely carried out on a subsistence or semi-commercial scale, which may limit total output and income unless farmers have access to improved technologies, credit facilities, and production inputs. The above result resonates with Akerele *et al*., (2018) who found out that cassava production in Ogun State was dominated by male, who were mostly married, in their active and productive age, relatively educated and were experienced in farmers.

Profitability of Cassava farmers in the study area

Table 2 shows the result of the Gross margin (per hectare) analysis for the cassava farmers in the study area. The result shows that the average labour cost incurred by cassava farmers was ₦8,472.50. Labour constitutes an important component of cassava production due to the labour-intensive nature of activities such as land preparation, planting, weeding, and harvesting. The average expenditure on fertilizer was ₦14,295.80, making it the highest variable cost component among the inputs used. This suggests that farmers invested considerably in soil fertility management to enhance crop productivity. The mean cost of herbicides was ₦4,642.90, indicating that farmers utilized chemical weed control measures to reduce weed competition and improve cassava yields. Similarly, the average cost of cassava cultivars (planting materials) was ₦4,504.20, reflecting farmers' investment in obtaining planting stems for production.

Table 1: Distribution of the Socio-economic Characteristics of the Cassava Farmers

Variable	Frequency	Percentage (%)	Mean
Sex			
Male	95	79.2	
Female	25	20.8	
Total	**120**	**100.0**	
Age			
20-35	26	21.7	
36-50	51	42.5	46.7
51-65	33	27.5	
66-80	10	8.3	
Total	**120**	**100.0**	
Marital status			
Single	6	5.0	
Married	90	75.0	
Widowed	24	20.0	
Total	**120**	**100.0**	
Household size			
1-5	14	11.7	
6-10	70	58.3	9.7
11-20	36	30.0	
Total	**120**	**100.0**	
Farm experience			
2-10	28	23.3	
11-20	30	25.0	
21-30	38	31.7	20.5
> 30	24	20.0	
Total	**120**	**100.0**	
Level of Education			
Primary	61	50.8	
Secondary	47	39.2	
Tertiary	12	10.0	
Total	**120**	**100.0**	
Farm size			
> 1.0	36	30.0	
1.0 – 2.0	84	70.0	1.1
Total	**120**	**100.0**	

Source: Field Survey, 2023

Table 2: Gross Margin (Per Hectare) Analysis of Cassava farmers in the study area

Variable	Mean	Minimum	Maximum
Labour cost	8472.5	1200	30000
Fertilizer cost	14295.8	5000	60000
Herbicides cost	4642.9	1000	25000
Cultivar cost	4504.2	1000	20000
Total Variable Cost (TVC)	**31915.4**	9000	117000
Output harvested and sold (Pick-up Truck)	3.8	1	11
Amount sold per Pick-up Truck	31641.7	20000	40000
Total Revenue (TR)	**115883.3**	30000	330000
Gross Margin (GM)	**83967.9**		

Source: Field Survey, 2023

The average total variable cost incurred by the farmers was ₦31,915.40 per hectare. This represents the total expenditure on variable inputs required for cassava production during the production cycle. On average, farmers harvested and sold 3.8 pickup-truck loads of cassava, indicating a moderate level of production. The mean selling price per pick-up truck was ₦31,641.70, reflecting the market value of cassava during the study period.

The average total revenue realized from cassava sales was ₦115,883.30 per hectare. After deducting total variable costs from total revenue, the mean gross margin was ₦83,967.90 per hectare. The positive gross margin demonstrates that cassava production is a profitable enterprise in the study area. This implies that farmers were able to recover their production costs and generate substantial returns from their farming activities.

The profitability recorded may be attributed to the relatively high demand for cassava and cassava-based products, which provides a ready market for farmers' produce. The result further suggests that cassava farming serves as an important source of income and livelihood for rural households in the study area. This is in line with Oladoyin *et al*. (2022), who found that cassava farmers in Akoko District of Ondo State, Nigeria are profitable. Also, in Akerele *et al.* (2018), cassava farming was found to be a profitable venture in Yewa North Local Government Area of Ogun State, Nigeria.

Factors affecting Cassava production in the study area

The results presented in Table 3 show the major constraints affecting cassava production in the study area. Since the responses were based on multiple responses, farmers were allowed to identify more than one constraint affecting their production activities.

The most severe constraint identified by the farmers was pest and disease infestation, reported by 91.7% of the respondents and ranked first. This indicates that pests and diseases pose a major threat to cassava production, resulting in yield losses, reduced produce quality, and lower farm income. Effective pest and disease management strategies are therefore essential for improving cassava productivity in the study area.

Conflict was reported by 85.8% of the respondents and ranked second among the production constraints. The prevalence of conflict may disrupt farming activities through farmer displacement, destruction of farmland, restricted access to agricultural resources, and increased production risks. This finding highlights the need for peaceful coexistence and effective conflict resolution mechanisms to promote agricultural development.

The shortage of labour was identified by 81.7% of respondents and ranked third. This suggests that labour availability remains a major challenge in cassava production, particularly during labour-intensive operations such as land clearing, planting, weeding, and harvesting. Labour shortages may lead to delays in farm operations and reduced productivity.

Similarly, shortage of capital was reported by 80.0% of the respondents and ranked fourth. The inability to access adequate financial resources limits farmers' capacity to purchase improved inputs, hire labour, expand farm size, and adopt modern production technologies. This constraint underscores the importance of improving farmers' access to credit and other financial services.

Poor extension service was reported by 74.2% of the respondents and ranked fifth. This finding implies that many farmers have limited access to extension agents and agricultural information, which may hinder the adoption of improved farming practices and technologies that can increase cassava productivity.

Drought was identified by 88 respondents (73.3%) and ranked sixth. Although ranked lowest among the listed constraints, drought remains a significant challenge because it affects soil moisture availability, crop growth, and, ultimately, cassava yield. Variations in rainfall patterns associated with climate change may further exacerbate this problem.

These aforementioned factors resonate with Ume and Mbah (2022), who stated that poor infrastructure, limited access to credit, high cost of labour, and poor access to extension services, amongst others, were common challenges faced by cassava farmers in Enugu State. The persistence of these factors tends to reduce the productivity of the farmers, therefore affecting their returns.

Table 3: Factors affecting Cassava production in the study area

Factors	*Frequency	Percentage (%)	Rank
Pest and diseases	110	91.7	1
Conflict	103	85.8	2
Shortage of labour	98	81.7	3
Shortage of capital	96	80.0	4
Poor extension service	89	74.2	5
Drought	88	73.3	6

***multiple responses**

Source: Field Survey, 2023

CONCLUSION

The study examined the profitability and constraints of cassava production in the study area. The gross margin analysis revealed that cassava production is a profitable enterprise, with an average total revenue of ₦115,883.30, average total variable cost of ₦31,915.40, and a positive gross margin of ₦83,967.90. This indicates that cassava farming provides substantial returns to farmers and serves as an important source of income and livelihood in the area.

Despite its profitability, cassava production faces several challenges that limit productivity and income generation. The major constraints identified by the farmers include pest and disease infestations, conflict, labour and capital shortages, poor extension services, and drought. Among these, pests and diseases constituted the most serious constraint, affecting the majority of farmers. These challenges increase production costs, reduce output, and hinder the adoption of improved production practices, thereby limiting profit.

Based on the findings of this study, in order to improve production and profitability, the following recommendations were made:

i. The government should make credit available to farmers to improve their financial capacity and increase investment in the production process.
ii. Also, with a more effective extension service, farmers can acquire knowledge on how to navigate challenges such as pest and disease outbreaks and access technologies that will help boost productivity.

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