Economic analysis of cassava production in Esan West Local Government Area, Edo State, Nigeria

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Abstract

This study examined the economics of cassava production in Esan West Local Government Area of Edo State, Nigeria. Primary data were collected from 60 cassava farmers, selected across six wards using the simple random sampling technique. Relevant information was elicited through the administration of questionnaires. Data were analyzed using descriptive statistics, budgetary techniques, and multiple regression analysis. The results showed that cassava farming was dominated by males (63.3%), married farmers (66.7%), and smallholders cultivating one hectare or less (80%). The enterprise was profitable, with a mean annual revenue of ₦870,000 per hectare, a gross margin of ₦550,000/ha, a net farm income of ₦517,000/ha, and a benefit–cost ratio of 2.47, indicating that cassava production is economically viable. Fertilizer use was low, as 60% of farmers applied no fertilizer, while only 3.3% accessed credit or extension services. Regression results indicated that none of the socio-economic variables significantly influenced cassava revenue at the 5% level, suggesting that productivity variations were driven more by technical and institutional factors than by farmer demographics. Major constraints included poor extension services (83.3%), inadequate storage facilities (73.3%), weak marketing systems (73.3%), and limited access to credit (70%). The study recommends strengthening extension services, improving market linkages, facilitating access to affordable credit and subsidized inputs, and investing in storage infrastructure to enhance productivity and farmers' income.

Keywords: Cassava production, economic analysis, profitability, smallholder farmers, Edo State, Nigeria

Introduction

Agriculture remains the backbone of Nigeria's economy, employing approximately 70% of the national labour force and serving as the primary source of livelihood for rural communities (Omoluabi & Ibitoye, 2024; Olutumise et al., 2024). Despite its critical role in food security and economic development, the sector is characterized by subsistence-based practices, limited mechanization, low adoption of modern technologies, and restricted access to essential inputs. These constraints contribute to persistently low productivity levels and limit the sector's contribution to national economic growth (Akubo et al., 2023).

Cassava (*Manihot esculenta* Crantz) is one of the most important tropical food crops globally, ranking after rice, wheat, and sugarcane. It provides essential calories to over 500 million people worldwide and serves as a major contributor to household food security across sub-Saharan Africa (Omoluabi & Ibitoye, 2024). Nigeria is the world's largest producer of cassava, accounting for approximately 19% of global output, with annual production exceeding 36 million metric tonnes (Food and Agriculture Organization of the United Nations, 2022; Otekunrin et al., 2021).

The crop's versatility enhances its economic importance. Cassava roots are processed into diverse products, including garri, fufu, flour, tapioca, starch, and ethanol, while the leaves provide vitamins, minerals, and protein for human consumption and livestock feed (Olutumise et al., 2024; Morgan et al., 2021). Beyond food provision, cassava contributes to industrial development through applications in starch production, sweeteners, pharmaceuticals, and biofuel manufacturing (Olutumise et al., 2024; Akubo et al., 2023). Its resilience—tolerance to drought, poor soils, pests, and diseases—makes it particularly suited to the smallholder farming systems prevalent in Nigeria (Omoluabi & Ibitoye, 2024; Organisation for Economic Co-operation and Development (OECD)–FAO, 2016).

Despite Nigeria's leading position in global cassava production, numerous challenges constrain the sector's economic potential. These include high labour costs, limited access to improved planting materials, poor rural infrastructure, low mechanization, pest and disease pressures, and weak market linkages for both fresh and processed products (Esheya, 2019; Olutosin & Barbara, 2019). Notwithstanding the various constraints associated with its production and utilization, cassava remains one of the most rapidly expanding staple food crops in countries where it is widely consumed. Its importance among smallholder farmers continues to increase, alongside a steady rise in industrial demand (Food and Agriculture Organization (FAO), 2018).

At the global level, cassava production has recorded sustained annual growth rates exceeding 3% (FAO, 2018). By 2018, global cassava output was estimated at approximately 278 million tonnes, with Africa accounting for about 170 million tonnes, representing nearly 56% of total world production (FAO, 2018; FAOSTAT, 2019). Within this context, Nigeria emerged as the leading producer, contributing roughly 60 million tonnes during the same period (FAOSTAT, 2019). Nevertheless, although cassava production remains substantial, nearly 90% of output is consumed domestically, while only about 10% is channeled into industrial processing or export markets (FAO, 2018).

In Esan West Local Government Area (LGA) of Edo State, cassava farming is dominated by smallholders cultivating less than two hectares, primarily for household consumption and sales within local markets. Surplus produce is either processed on-farm or sold to intermediaries, limiting economies of scale and reducing

profitability. This production structure restricts opportunities for integration into industrial value chains and limits farmers' income potential.

Recent studies have emphasized the need for localized assessments of cassava production systems. Onini et al. (2025) and Nwadiolu et al. (2024) identified substantial inefficiencies in cassava farming across Delta and Bayelsa States, driven by socio-economic barriers and infrastructural deficiencies. Similarly, Akubo et al. (2023) reported profitability constraints in small-scale cassava processing in Kogi State, stressing the importance of analyzing farmers' socio-economic profiles, input usage, and operational scales to enhance productivity.

Nigeria's limited participation in global cassava markets contrasts sharply with its production volume. While countries such as Thailand and Indonesia dominate cassava exports, Nigeria's production is directed almost entirely toward domestic use (Olutosin & Barbara, 2019). Despite its significant contribution to food security and economic resilience, cassava production remains below its potential owing to persistent structural constraints, including insecure land tenure systems, limited mechanization, market instability, and inadequate policy support (Aditya, Barbara, & Oliver, 2017). Additionally, systemic issues such as poor infrastructure, insufficient extension services, and limited mechanization restrict farmers' ability to scale up production or engage in value-added processing. These constraints contribute to a persistent gap between actual and potential yields, thereby reducing income, threatening food security, and limiting Nigeria's ability to leverage cassava for industrial development and export growth (Omoluabi & Ibitoye, 2024; Olutumise et al., 2024).

Research Objectives

The main objective of this study was to conduct an economic assessment of cassava production in Esan West Local Government Area (LGA), Edo State. The specific objectives were to:

I. describe the socio-economic characteristics of cassava farmers in the study area;

II. estimate the costs, returns, and profitability of cassava production;

III. assess the extent of inorganic fertilizer and agrochemical use among cassava farmers;

IV. examine the relationship between farmers' socio-economic characteristics and cassava revenue; and

V. identify the major constraints affecting cassava production and marketing.

Research Hypotheses

H_{01}: There is no significant relationship between selected socio-economic characteristics of cassava farmers and their annual revenue from cassava production.

Materials and Methods

Study Area

The study was conducted in Esan West Local Government Area of Edo State, Nigeria. The area is geographically located at approximately latitude 6.75347° N and longitude 6.075347° E, corresponding to 6°45′12″ North and 6°04′26″ East. According to projections by the National Population Commission of Nigeria and the National Bureau of Statistics, the population of Esan West Local Government Area was estimated at 188,700 as of 2022.

The area is situated on a relatively flat upland plain at an elevation of approximately 335 meters above sea level. The climate is humid tropical, characterized by two distinct seasons: the wet season (April–October) and the dry season (November–March). Average temperatures range from approximately 25°C during the wet season to 28°C in the dry season. Annual rainfall ranges from 1,500 to 2,500 mm, with peak rainfall occurring between June and September. The predominant soil type is ferrosol on loose sandy sediment, which is well drained and suitable for root crop cultivation.

Esan West is primarily an agricultural region, with cassava as the dominant crop. The area's fertile agricultural land, flat terrain, and favorable climatic and edaphic conditions support the cultivation of cassava alongside other crops such as maize, plantain, and yam, as well as cash crops including kolanut, oil palm, rubber, and cocoa. Agriculture is the primary livelihood for the majority of the population, with cassava serving both subsistence and commercial purposes.

Sampling Procedure and Sample Size

The sampling frame for this study consisted of a comprehensive list of registered cassava farmers in Esan West Local Government Area, obtained from the local office of the Agricultural Development Programme (ADP) and validated with ward-level extension agents. This list formed the basis for the random selection of respondents in each ward. Only active cassava farmers who had participated in cassava production during the most recent farming season were included in the sampling frame, thereby ensuring the relevance and accuracy of the selected sample.

A two-stage random sampling technique was employed to select the respondents. In the first stage, six out of the ten wards in Esan West Local Government Area were selected using a simple random sampling technique to ensure adequate geographical representation of the study area. In the second stage, ten cassava farmers were selected from each of the six wards using simple random sampling, resulting in a total sample size of 60 cassava farmers.

Table 1: Distribution of Sampled Cassava Farmers by Ward

S/No	Ward/Village	Number of Farmers
1	Ujiogba/Ebute	10
2	Eguare/Emaudo	10
3	Ihimhudumu/Ugiemen, Ido/Uke	10
4	Ukpenu/Emuhi	10
5	Uhiele	10
6	Ile	10
Total		**60**

Data Collection

Primary data were collected through face-to-face interviews using questionnaires administered to the sampled cassava farmers. The questionnaire was pre-tested with a small group of farmers outside the study area

to ensure clarity, validity, and relevance. Data collected included farmers' socio-economic characteristics (age, sex, marital status, household size, educational level, farming experience, and income); production information (farm size, quantity of inputs used, and output levels); cost and revenue data; input usage (fertilizers, agrochemicals, planting materials, and labour); and constraints to cassava production and marketing.

Data Analysis

Data were analyzed using descriptive statistics, budgetary analysis, and inferential statistics. All analyses were performed using the Statistical Package for the Social Sciences (SPSS), version 25.0.

Descriptive Statistics

Frequencies, percentages, means, and standard deviations were computed to summarize the socio-economic characteristics of the farmers, patterns of input usage, and constraints to cassava production. The results were presented in tables for clarity.

Budgetary Analysis

The profitability of cassava production was evaluated using the Net Farm Income (NFI) approach.

The following formulae were employed:

Gross Margin (GM):

$GM = TR - TVC$

Where:

GM = Gross Margin (₦/ha)

TR = Total Revenue (₦/ha)

TVC = Total Variable Cost (₦/ha)

Net Farm Income (NFI):

$NFI = TR - TC$

Where:

NFI = Net Farm Income (₦/ha)

TC = Total Cost (sum of variable and fixed costs) (₦/ha)

Benefit-Cost Ratio (BCR):

$BCR = TR / TC$

A BCR greater than 1 indicates profitability, while a BCR less than 1 indicates a loss-making enterprise.

Multiple Regression Analysis

Multiple regression analysis was employed to examine the relationship between farmers' socio-economic characteristics and their annual revenue from cassava production. The implicit functional form of the model is specified as:

$Y = f(X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, X_9, u)$

The explicit linear form is:

Where:

Y = Annual revenue from cassava production (₦)

X_1 = Sex (1 = male, 0 = female)

X_2 = Household size (number of persons)

X_3 = Educational level (years of formal education)

X_4 = Nature of farming (1 = full-time, 0 = part-time)

X_5 = Farm size (hectares)

X_6 = Farming experience (years)

X_7 = Access to credit (1 = yes, 0 = no)

X_8 = Access to extension agents (1 = yes, 0 = no)

X_9 = Pest and disease incidence (1 = serious problem, 0 = not serious)

β_0 = Intercept

$\beta_1 - \beta_9$ = Regression coefficients

u = Error term

The Ordinary Least Squares (OLS) estimation technique was used, and the model was evaluated based on the coefficient of determination (R^2), F-statistics, and the statistical significance of individual regression coefficients at the 5% significance level.

Constraint Analysis

Constraints faced by cassava farmers were evaluated using mean scores derived from a 3-point Likert scale, where 1 = Not Serious (NS), 2 = Serious (S), and 3 = Very Serious (VS). Weighted means were calculated as:

$\text{Weighted Mean} = \Sigma (fx) / \Sigma f$

Where f = frequency and x = Likert scale values.

$\text{Weighted Mean} = (\Sigma (3 + 2 + 1) / 3) = 2.0$

Constraints with mean ≥ 2.0 were considered major

Results and Discussion

Socio-Economic Characteristics of Cassava Farmers

Table 2 summarizes the socio-economic attributes of cassava farmers in the study area. The age distribution shows that the majority of the farmers (60%) fell within the 27–45-year range, representing the economically active population. This suggests that cassava production was largely undertaken by farmers in their productive years, which positively affects labour availability and output. Similar age patterns have been reported by Belonwu et al. (2023) and Morgan et al. (2021), who noted that most cassava farmers in their respective studies were within the 21–50-year age bracket. In particular, Morgan et al. (2021) found that 74% of the respondents fell within this age range, with an aggregate of 78% representing an economically active workforce in Ogbia Local Government Area of Bayelsa State.

The relatively small proportion of younger farmers (10%) indicates low youth involvement, which may threaten the long-term sustainability of cassava production. In terms of sex categorization, males constituted 63.3% of the farmers, while females accounted for 36.7%. This male dominance may be linked to the labour-intensive nature of cassava farming; however, the level of female participation highlights their significant contribution and underscores the need for gender-responsive interventions (Oladoyin et al., 2022).

Most of the farmers (66.7%) were married, indicating potential access to family labour and pooled resources, which can enhance production efficiency (Adewale & Nwankwo, 2021). Household sizes predominantly fell within the range of one to five members, suggesting a balance between household consumption requirements and the availability of family labour (Olayide & Afolabi, 2020; Angba & Iton, 2020).

Educational attainment was relatively high, with most respondents having primary or secondary education, which likely improves decision-making, technology adoption, and engagement with extension services (Akerele et al., 2018). Half of the farmers interviewed were full-time farmers, while the remainder engaged in other income-generating activities. Analysis of farm sizes indicated that cassava production in the study area is predominantly smallholder-based, as 80% of the

respondents cultivated one hectare or less, indicating limited landholdings among the majority of farmers (Esheya, 2019).

Most farmers were experienced, with 90% having more than five years of farming experience, which can enhance productivity (Aboajah et al., 2018). The income distribution reflects relatively low to average earnings among the respondents, with sustained improvements contingent upon enhanced access to credit facilities and investment capital (Obikeze et al., 2020).

Capital Acquisition and Access to Support Services

The distribution of farmers by sources of capital, access to credit, cooperative membership, and extension services is presented in Table 3.

The results indicate that the vast majority of farmers (86.7%) relied on personal savings to finance their cassava farming activities. Only 6.7% accessed government grants, 3.3% obtained loans from banks or cooperatives, and 3.3% sourced funds from informal lenders. This heavy reliance on personal savings reflects limited access to formal credit facilities, which constrains farmers' ability to invest in improved inputs, expand farm size, or adopt modern technologies.

Furthermore, 96.7% of the farmers had no access to credit facilities, 96.7% were not members of any cooperative society, and 96.7% had no access to extension services. These findings are consistent with Olorunwa (2018), who reported poor access to credit, cooperative support, and extension services among smallholder farmers in Nigeria. The lack of institutional support severely limits farmers' capacity to improve productivity, access markets, and increase income.

Table 2: Socio-Economic Characteristics of Cassava Farmers (n = 60)

Variables	Frequency	Percentage
Age (in years)		
27-35	10	16.7
36-45	8	13.3
46-60	12	20
Sex Categorization		
Male	38	63.3
Female	22	36.7
Marital Status		
Married	20	66.7
Single	5	16.7
Divorced	2	6.7
Widow(er)	3	10.0
Household Size		
1-5	21	70.0
6-10	8	26.7
11-15	1	3.3
Religion		
Christianity	23	76.7
Islam	7	23.3
Educational Status		
No formal Education	1	3.3
Primary Education	10	33.3
Secondary Education	15	50.0
Tertiary Education	4	13.3
Primary Occupation		
Farming	15	50.0
Trading	5	16.7
Civil Servant	2	6.7
Artisan	5	16.7
Others	3	10.0
Nature of Farming		
Full-time	15	50.0
Part-time	15	50.0
Farm Size		
≤1	24	80.0
2-4	5	16.7
≥5	1	3.3
Farming Experience		
1-5years	3	10.0
6-10years	8	26.7
11-15years	12	40.0
≥15years	7	23.3
Household Income		
Below N50,000	2	3.3
51,000-90,000	16	26.7
91,000 and above	42	70.0

Source: Field Survey, 2023

Costs, Returns, and Profitability of Cassava Production

The cost structure, returns, and profitability of cassava production in the study area are presented in Table 4. The results of the cost and returns analysis indicate that cassava production in Esan West Local Government Area was economically viable and profitable. The total variable cost of production was estimated at ₦320,000 per hectare, with labour constituting the largest share at ₦180,000 per hectare, representing 56.4% of the total variable cost. Similar findings were reported by Sanusi et al. (2020), who identified labour as the most significant cost component in cassava production in Nigeria.

The total revenue realized from cassava production was ₦870,000 per hectare. This resulted in a gross margin of ₦550,000 per hectare and a net farm income of ₦517,000 per hectare. Furthermore, the benefit–cost ratio (BCR) was estimated at 2.47, indicating that for every ₦1 invested in cassava production, farmers obtained a return of ₦2.47. This clearly demonstrates the profitability of cassava farming in the study area.

These findings are consistent with previous studies by Sanusi et al. (2020) and Esheya (2019), who reported that cassava production is a profitable enterprise in Nigeria. Despite the profitability observed, the high variable costs particularly labour costs suggest the need for increased mechanization and the adoption of improved production technologies. In addition, the limited use of fertilizers and agrochemicals indicates potential opportunities for enhancing productivity, efficiency, and farm income through improved input utilization.

Patterns of Input Usage

The distribution of farmers by type and quantity of inputs used in cassava production is presented in Table 5. The results indicate a low level of fertilizer adoption among cassava farmers, with 60% using no fertilizer at all. Only 13.3% applied inorganic fertilizers, 20% used organic manure, and 6.7% used both types. This low level of fertilizer usage contributes to reduced yields and profitability. The limited use of fertilizers may be attributed to high costs, low levels of awareness, limited access, and inadequate extension support.

Regarding agrochemical usage, 43.3% of farmers applied herbicides, 16.7% used pesticides, 3.3% used fungicides, and 36.7% used no chemicals at all. The moderate use of herbicides reflects farmers' efforts to control weeds, which are a major constraint in cassava production. However, the low use of pesticides and fungicides suggests inadequate pest and disease management, which may negatively affect yields. The majority of farmers (66.7%) incurred annual variable costs ranging between ₦101,000 and ₦500,000, while 30% spent ₦100,000 or less, and only 3.3% spent between ₦501,000 and ₦1,000,000. This cost distribution reflects the small-scale nature of cassava farming in the area and the limited level of investment in production inputs.

Constraints Affecting Cassava Farmers

The distribution of constraints faced by cassava farmers in the study area is presented in Table 6. The results show that inadequate funding was perceived as a major challenge, with 66.7% of the farmers rating it as very serious (VS), 20% as serious (S), and 13.3% as not serious (NS). This indicates that although funding constraints exist, they are not uniformly experienced among farmers.

Land availability was generally not considered a major limitation, as 60% of the farmers reported insufficient land as not serious, while 33.3% and 6.7% rated it as very serious and serious, respectively. Poor marketing systems emerged as a significant constraint, with 73.3% of farmers identifying it as very serious, highlighting weak market linkages and limited access to profitable outlets. Access to credit was also identified as a critical issue, with 70% of the farmers rating poor access to credit facilities as very serious.

Similarly, inadequate storage facilities were considered very serious by 73.3% of farmers, suggesting high post-harvest losses and limited capacity to store produce. Poor extension services were identified as the most severe constraint, with 83.3% of the farmers rating them as very serious, reflecting limited access to technical support and advisory services.

Other constraints, such as low manpower (60% VS), pest and disease incidence (40% VS), and poor knowledge of technology (33.3% VS), were moderately significant. In contrast, drought was perceived as less severe, with 63.3% of the farmers indicating that it was not serious. Overall, the findings suggest that institutional and market-related constraints particularly weak extension services, poor marketing systems, inadequate storage facilities, and limited access to credit pose major barriers to cassava production.

These results are consistent with FAO (2022), which reported similar challenges among cassava farmers in sub-Saharan Africa, and Oguejiofor et al. (2021), who noted that such constraints reduce farmers' ability to invest in improved inputs and adopt modern production technologies.

Table 3: Capital Acquisition and Access to Support Services (n = 60)

Variable	Category	Frequency	Percentage (%)
Source of Capital	Personal savings	52	86.7
	Government grant	4	6.7
	Bank/Cooperative loan	2	3.3
	Informal lenders	2	3.3
Access to Credit	Yes	2	3.3
	No	58	96.7
Cooperative Membership	Yes	2	3.3
	No	58	96.7
Access to Extension Services	Yes	2	3.3
	No	58	96.7

Source: Field Survey, 2023

Table 4: Cost and Returns Analysis of Cassava Production per Hectare (n = 60)

Item	Amount (₦/ha)	Percentage of Total Variable Cost (%)
A. Variable Costs		
Cassava cuttings	45,000	14.1
Inorganic fertilizer	28,000	8.8
Organic manure	12,000	3.8
Herbicides	18,000	5.6
Pesticides	8,000	2.5
Labour (land preparation, planting, weeding, harvesting)	180,000	56.4
Transportation	15,000	4.7
Miscellaneous	14,000	4.4
Total Variable Cost (TVC)	320,000	100.0
B. Fixed Costs		
Land rent	25,000	—
Depreciation on tools/equipment	8,000	—
Total Fixed Cost (TFC)	33,000	—
Total Cost (TC = TVC + TFC)	353,000	—
C. Revenue		
Average yield (kg/ha)	14,500	—
Price per kg (₦)	60	—
Total Revenue (TR)	870,000	—
D. Profitability Indicators		
Gross Margin (GM = TR – TVC)	550,000	—
Net Farm Income (NFI = TR – TC)	517,000	—
Benefit–Cost Ratio (BCR = TR/TC)	2.47	—

Source: Computed from Field Survey Data, 2023

Table 5: Input Usage among Cassava Farmers (n = 60)

Input Type	Category	Frequency	Percentage (%)
Fertilizer Usage	Inorganic fertilizer	8	13.3
	Organic manure	12	20.0
	Both	4	6.7
	None	36	60.0
Agrochemicals	Herbicides	26	43.3
	Pesticides	10	16.7
	Fungicides	2	3.3
	None	22	36.7
Annual Variable Cost (₦)	≤100,000	18	30.0
	101,000–500,000	40	66.7
	501,000–1,000,000	2	3.3

Source: Field Survey, 2023

Table 7: Regression Analysis of Factors Influencing Cassava Revenue (n = 60)

Variable	**Coefficient (β)**	**Std. Error**	**t-value**	**p-value**	**Significance**
Constant	1.771	1.435	1.234	0.231	NS
Gender (X_1)	0.000	0.358	0.000	1.000	NS
Household Size (X_2)	0.194	0.314	0.618	0.543	NS
Educational Level (X_3)	0.293	0.294	0.998	0.330	NS
Nature of Farming (X_4)	-0.216	0.375	-0.576	0.571	NS
Farm Size (X_5)	-0.148	0.270	-0.546	0.591	NS
Farming Experience (X_6)	-0.166	0.205	-0.811	0.427	NS
Access to Credit (X_7)	0.727	0.644	1.129	0.268	NS
Access to Extension (X_8)	-1.314	1.193	-1.102	0.284	NS
Pest/Disease (X_9)	0.286	0.199	1.241	0.229	NS

R^2 = 0.182; Adjusted R^2 = -0.047; F-statistic = 0.794; p-value = 0.626 ***Belonwu et al.***

Constraints Affecting Cassava Farmers

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Land availability was generally not considered a major limitation, as 60% of the farmers reported insufficient land as not serious, while 33.3% and 6.7% rated it as very serious and serious, respectively. Poor marketing systems emerged as a significant constraint, with 73.3% of farmers identifying it as very serious, highlighting weak market linkages and limited access to profitable outlets. Access to credit was also identified as a critical issue, with 70% of the farmers rating poor access to credit facilities as very serious.

Similarly, inadequate storage facilities were considered very serious by 73.3% of farmers, suggesting high post-harvest losses and limited capacity to store produce. Poor extension services were identified as the most severe constraint, with 83.3% of the farmers rating them as very serious, reflecting limited access to technical support and advisory services.

Other constraints, such as low manpower (60% VS), pest and disease incidence (40% VS), and poor knowledge of technology (33.3% VS), were moderately significant. In contrast, drought was perceived as less severe, with 63.3% of the farmers indicating that it was not serious. Overall, the findings suggest that institutional and market-related constraints particularly weak extension services, poor marketing systems, inadequate storage facilities, and limited access to credit pose major barriers to cassava production.

These results are consistent with FAO (2022), which reported similar challenges among cassava farmers in sub-Saharan Africa, and Oguejiofor et al. (2021), who noted that such constraints reduce farmers' ability to invest in improved inputs and adopt modern production technologies.

Determinants of Cassava Revenue

Table 7 reports the regression estimates for factors influencing cassava revenue among the sampled farmers ($n = 60$). The analysis shows that none of the explanatory variables significantly influenced cassava revenue at the 5% level ($p > 0.05$). Although the intercept was positive ($\beta = 1.771$), it was statistically insignificant ($p = 0.231$), indicating that baseline revenue is not sufficiently explained in the absence of the included socio-economic factors.

These results contrast with the findings of Okoronkwo et al. (2017) and Daud et al. (2015), who reported a positive and significant relationship between farm size and cassava output, highlighting the role of land expansion in enhancing productivity.

Conclusion and Recommendations

The study investigated the economics of cassava production in Esan -West Local Government Area, Edo State, Nigeria, focusing on farmers' socio-economic characteristics, profitability, input use, and production constraints. Findings indicate that cassava farming was dominated by middle-aged farmers (27–45 years), married individuals (66.7%), and males (63.3%). Education levels were relatively high, with 50% of respondents having secondary education and 13.3% having tertiary education. Smallholder production was prevalent, as 80% cultivated one hectare or less, and 90% had more than five years of farming experience.

Despite these advantages, institutional support was shown to be very limited, with only 3.3% of farmers accessing credit and extension services, while 86.7% relied on personal savings. Economic analysis showed that cassava production was profitable, with a benefit–cost ratio of 2.47, a gross margin of ₦550,000/ha, and a net farm income of ₦517,000/ha. However, high labour costs (56.4% of total cost) constrained profitability. Input use was low, with 60% of farmers using no fertilizers and 36.7% applying no agrochemicals. Regression results showed that none of the socio-economic variables significantly influenced revenue, suggesting that productivity depended more on technical efficiency, soil quality, and market factors. Key constraints included poor extension services, inadequate storage, weak marketing channels, and limited access to credit. Targeted interventions addressing these constraints could enhance productivity and farmer incomes.

Based on the findings, several policy measures are recommended to enhance cassava production, improve farmer incomes, and boost sector productivity in Esan - West LGA. Firstly, agricultural extension services should be strengthened by deploying more agents. Secondly, government agencies, microfinance institutions, and development banks should provide accessible credit with subsidized interest rates, flexible repayment terms, and simplified collateral requirements to enable farmers to invest in inputs, expand farm sizes, and adopt mechanization. Thirdly, marketing linkages should be enhanced through cooperative formation, direct connections with processors, and market information systems to ensure fair prices. Fourthly, subsidies on fertilizers, improved cuttings, herbicides, and pesticides should be provided and distributed transparently. Fifthly, mechanization via tractor hire, equipment leasing, or cooperative ownership can reduce high labour costs. Finally, farmers should be encouraged to join cooperatives, and future research should expand sample sizes, explore technical efficiency, value chain integration, gender-specific issues, and the potential for industrial cassava production.

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