COSTS AND RETURNS ANALYSIS OF CASSAVA PRODUCTION IN IJEBU-NORTH LOCAL GOVERNMENT AREA OF OGUN-STATE, NIGERIA.

ABSTRACT

The study on Costs and Returns of Cassava production was carried out in Ijebu-North local government area of Ogun state in Nigeria. in 2023. Given the importance of cassava in the lives of the farmers and the general public in Ijebu-North LGA, there is need to examine the current trend whether the farmers make profit or not by engaging in cassava production per hectare in the area. This gap will help to encourage farmers to cultivate cassava for improve family living and better income. The study described the socio-economic characteristics of the farmers and determine the farm profit per hectare of the cassava farmers. A multi-stage random sampling technique was used to select one hundred and twenty (120) cassava farmers as respondents. The tools used for data collection were questionnaire and oral interviews. Data were analyzed with descriptive statistics and profitability analysis. The results showed that 75.8% of the cassava farmers are male, 79.2% of the cassava farmers are married, 50.8% are within the age bracket of 51 years and above, 99.2% of the respondents are educated i.e. they have obtained at least a First school leaving certificate, 50% have an household size of 6-10 persons per family, 65.8% of the respondents have a farming experience of 11 years and above, 47.5% of the respondents have a farm size of 4ha and above and 100% of the respondents have personal savings as their major source of capital. The Profitability analysis revealed that the total variable cost (TVC) of producing cassava per hectare was ₦185,500 and the total fixed cost (TFC) of producing cassava per hectare was ₦72,015 giving a total cost (TC) per hectare of ₦257,515. The total revenue generated per hectare was ₦368,000 with a gross margin of ₦182,500. The finding further revealed that a profit of ₦110,485 with ₦1.43k made on every naira invested into the business. On cassava production constraints, the farmers ranked Lack of Credit/loan facilities, Poor extension facilities and Lack of improved cassava varieties as the three top major constraints. The study recommends that youths should be encouraged to engage themselves in cassava production on a large-scale basis in the study area.

KEYWORD: Cassava production, cost and returns, analysis, Ijebu-North, LGA.

INTRODUCTION

Agriculture plays essential role in sustaining and driving the economies of Nigeria and the world generally [1]. It is significant to the growth of Nigeria's economy especially, as it provides food for the populace, raw materials for industries as well as a major source of revenue to government both locally and internationally. The sector employs over 70% of Nigeria's active population and its contribution to the Gross Domestic Product (GDP) was 24.1% in 2020 (www.data.worldbank.org). [2].

Cassava (*Manihot esculenta crantz*) is a native crop of South America which was introduced into the country during the period of slave trade by the Portuguese explorers in the sixteenth century. The importance of the crop in the country got a boost in the nineteenth century when slave trade was abolished and many slaves returned and introduced processing techniques into cassava[3].

Cassava is among the important staple and cash crops grown in Nigeria, particularly in the southern part in terms of area cultivated and the number of farmers growing it [4]. Nigeria is the world largest producer of cassava while Thailand is the largest exporter of cassava starch. In 2021, it was estimated that cassava production was about 63,031,376 tonnes in Nigeria from the total land area of 9,085,736 hectares with an average yield of 69,374kg/ha [5]. Though the crop is produced in twenty-four of the thirty-six states in the country, both in terms of area covered and numbers of farmers growing the crop, the major states of Nigeria which produces cassava are Anambra, Delta, Edo, Benue, Cross-River, Imo, Ogun, Oyo and River states and to lesser extent Kwara and Ondo states [6].

Cassava is rich in carbohydrate, calcium and vitamin B and C. However, nutrients composition differs according to variety and age of harvested crop and soil conditions, climate, and other environmental factors during cultivation. Cassava is very versatile, and its derivative starch is applicable in many types of products such as food (Garri, Fufu, Lafun, Pupuru etc.), confectionery, sweeteners, glues, plywood, textile, paper, biodegradable products, monosodium glutamine and drugs [7]. Cassava chips and pellets are used in Animal feeds and production of Alcohol [8].

The growth in cassava production has been primarily due to rapid growth in population, large domestic demand, complemented by the availability of high-yielding improved varieties for cassava, a relatively developed market and the existence of improved processing and technology with so many value addition to the product [9]. The efforts of Agricultural Development Programmes (ADPs), Ministries of Agriculture and Natural Resources (MANRs), United State Agency for International Development (USAID) in collaboration with National Root Crop

Research Institute (NRCRI) Umudike, Abia State, Nigeria, and International Institute of Tropical Agriculture (IITA) have helped in cassava genetic improvement and many improved cultivars currently in use by farmers in the country [10,11]

More than 80% of the country's population lives in rural area and is dependent on Agriculture for their livelihood [2]. Majority of the active population is employed in the Agricultural sector and are living in the rural areas; the sector holds a major role in Nigeria's economic development [12]. In Nigeria, Cassava is grown in all ecological zones and is planted all year round depending on the availability of moisture [13].

Farmers especially tend to invest in what is profitable and into what can give them better economic returns. Given this scenario, do farmers in Ijebu-North who produce cassava make any economic gains or are they still producing at subsistence level? Is the Cost Component involved in Cassava production so enormous that it does not make it attractive as a business? Is the market and profit margin per hectare attractive? Investigating the above questions will guide the farmers on the profit margin per hectare of cassava production in the LGA.

Accordingly, the study generally analyzed the Costs and Returns as well as identified the major constraints in Cassava Production in Ijebu-North Local government area of Ogun state, Nigeria.

METHODOLOGY

The study was carried out in Ijebu-North Local Government area (LGA) of Ogun state which has its headquarters in Ijebu Igbo. Ijebu-North local government area lies between latitudes 6° 59' 44" and 6.99 55° North of the Equator and longitudes 3° 58' 15"E and 3.9706° east of the Greenwinch Meridian. Ijebu-North LGA is bounded by Oluyole Local Government of Oyo State in the north, in the east by Ijebu East Local Government, in the south by Ijebu Northeast, Odogbolu and Ijebu Ode Local Government, and in the west by Ikenne Local Government [14]. It has an area of 1, 074 square kilometers and a population of 477, 100 [15]. The local government area is divided into eleven political wards: These are Atikori, Oke-Agbo, Ojowo/Japara, Oke-Sopen, Ome, Oru-awa-ilaporu, Osun and Ago-Iwoye urban I, Ago-Iwoye urban II, Ako-Onigbagbo Gelete, and Mamu/Ehin-Etiri [14].

In Ijebu-North, agriculture is the economic mainstay of the people of the Local Government area, producing farm outputs such as oil-palm, cocoa, kolanut, maize, yam, cassava, cocoyam, vegetables, and poultry.

Sampling Techniques

Multi-stage sampling was used to select respondents for the study. The first stage involved purposive sampling of six wards from the eleven political wards in Ijebu North local Government area. The six political wards selected are Osun, Omen, Atikori, Oke-sopen, Oke-agbo and Japara/Ojowo.

The second stage involved purposive selection of twelve villages from the six wards. The villages include Ajebandele-nugba, Erigboro, Ita-egba, Orita-Agbede 1, Gbogiri, Dagbolu, Lagada, Atikori, Italiwo, Egan moro, Oke-agbo, Tisaba. and Topon from the Local Government Area ADP, Ministry of Agriculture.

The third stage involved the purposive selection of 10% proportionality factor of the sample frame of each village. A total of 120 farmers were randomly selected using random numbers.

Table 1: Selection of respondents in the study area

S/N	Wards	Villages	Sample frame	Sample size
1.	Atikori	Dagbolu	110	11
		Oduja	80	8
2.	Omen	Ita-Egba	110	11
		Orita Agbede 1	90	9
3.	Osun	Ajebandelenugba	120	12
		Erigboro	70	7
4.	Oke Agbo	Egan moro	70	7
		Tisaba	100	10
5.	Japara/Ojowo	Lagada	150	15
		Gbogiri	100	10
6.	Oke-sopen	Italiwo	80	8
		Topon	120	12
Total	**6 wards**	**12 Villages**	**1200 farmers**	**120 respondents**

Source: Field data, 2023.

Source of Data

The major source of data collection for this study was primary data. This was collected using structured questionnaire to capture the objective of the study. Data were collected on the socio-economic characteristics of the cassava farmers such as Age, Gender, House-hold size, Annual

income, marital status as well as the years of experience in cassava farming. Data on the cost of cassava farming per hectare such as the cost of labour, cassava cuttings, fertilizer and herbicides were collected. Also, the returns per hectare and the gross margin per hectare were collected from each farmer.

Analytical Technique

Descriptive statistics (simple averages, percentages and tables) were used to discuss the socio-economic characteristics of the farmers, while profitability analysis was used to determine the net farm income of the farmers per hectare.The Likert-scale rating was used to discussed the constraints identified by the farmers.

The Gross Margin (GM) analysis was expressed as:

GM = TR – TVC (1)

where;

GM = Gross margin

TR = Total revenue

TVC = Total variable cost

While Net Farm Income (NFI) was expressed as:

NFI = TFR-TFC (2)

Where:

NFI = Net Farm Income

TFR = Total Farm Revenue

TFC = Total Farm Cost

The Likert rating was rated as; VSC= Very severe constraint, SC= Severe constraint MSC= Moderately Severe constraint and NC=No constraint.

RESULTS AND DISCUSSION

Socio-Economic Characteristics of Cassava Farmers

The socio-economic characteristics of cassava farmers in the study area that were considered include: gender, marital status, age of respondents, educational level, house-hold size, farming experience, farm size and major source of capital. The result of the analysis is presented in table 2 below.

Table 2: Showing Socio-economic Characteristics of Cassava Farmers in the Study area.

S/N	VARIABLES	FREQUENCY (120)	PERCENTAGE	MEAN
1	**GENDER**			
	Male	91	75.8	
	Female	29	24.2	
	Total	**120**	**100**	
2	**MARITAL STATUS**			
	Married	95	79.2	
	Single	11	9.2	
	Widow	12	10	
	Widower	02	1.6	
	Divorced	00	00	
	Total	**120**	**100**	
3	**AGE**			49 years
	Less than 20 years	00	00	
	21-30 years	06	5	
	31-40 years	08	6.7	
	41-50 years	45	37.5	
	51 years and above	61	50.8	
	Total	**120**	**100**	
4	**EDUCATIONAL LEVEL**			
	No Formal Education	01	0.8	
	First School Leaving Certificate	30	25	
	Senior Secondary Certificate	68	56.7	
	Higher Institution	21	17.5	
	Total	**120**	**100**	
5	**HOUSEHOLD SIZE**			10 persons
	Less than 5 Persons	04	3.3	
	6-10 Persons	60	50	
	11-15 Persons	53	44.5	
	16 Persons and above	03	2.5	
	Total	**120**	**100**	
6	**FARMING EXPERIENCE**			11 years
	Less than 5 years	03	2.5	
	6-10 years	38	31.7	
	11 years and above	79	65.8	
	Total	**120**	**100**	
7	**FARM SIZE IN HECTARE**			3.4 ha
	0.1-1ha	03	2.5	
	1.1-2ha	16	13.3	
	2.1-3ha	33	27.5	
	3.1-4ha	11	9.2	
	4ha and above	57	47.5	
	Total	**120**	**100**	
8	**MAJOR SOURCE OF CAPITAL**	120	100	
	Personal Savings	00	00	
	Loans from Banks	00	00	
	Family and Friends	00	00	
	Money Lenders	**120**	**100**	
	Total			

Source: Field Survey, 2023

Gender

From the table, the variable of Gender shows that majority (75.8%) of the Cassava farmers in the study area were male while (25.2%) were female. This implies that there were more male cassava farmers than female cassava farmers in the study area. This finding agrees with that of Olanrewaju *et al* (2022) [7] who reported that about 72.7% male and 27.3% female produced cassava in his study area in Akoko District of Ondo State, Nigeria. The predominance of male in Cassava production may be attributed to the tedious nature and hard work involved in the production process.

Marital Status

The table revealed that 79.2 % of the cassava farmers in the study area were married while 9.2% were single. The widowed/widower represented 11.6%. This means that married farmers dominated in cassava production in the study area and that cassava production would serve as a reliable source of income to meet the need of the family. Also, being married could create potential for increased farm labour supply which will contribute positively to cassava production. This result is in accordance with Akomolafe *et al* (2023) [16] findings in Bwari Area council, Abuja, Nigeria. The author found that majority of his respondents (75%) were married.

Age of respondents

On age distribution, the age bracket of 51 years and above had 50.8%, 41-50 years had 37.5%, while 6.7 % and 5% were within the age brackets of 31-40 years and 21-30 years respectively. This implies that most of the farmers in the study area were still active, agile, and energetic to carry out Agricultural activities. They will be able to adopt new innovations, new ideas, research findings and new farming technologies that can increase productivity in Cassava production.

This result buttresses the study of Olanrewaju *et al* (2022) [7] in Akoko District of Ondo State that majority of the respondents (51.3%) are within the age bracket of 51 years.

Educational level

The educational level of the respondents as shown in table 1 indicates that majority of the respondents (99.2%) have some form of formal education. The result reveals that 56.7% of the

farmers has SSCE, 25% has First School Leaving Certificate, about 17.5% have attended a higher institution, while 0.8% had no formal education. With this finding, it shows that majority of the farmers can read and write and may understand the use of improved technology. Apeh *et al* (2023) [17] had similar result in Imo state, Nigeria where about 93% of the farmers were literate while only 7% had no formal education. This means that farmers in this area can be able to understand and apply new techniques involved in Cassava farming and value chain processes.

Household size

The result revealed that 50% of the Cassava farmers in the study area had a household size of 6-10 members per family, 44.5% had household size of 11-15 members per family. However, 3.3% and 2.5% of the farmer claimed they had less than 5 members per family and 16 members and above respectively in their family. It has been observed that large family size may imply more supply of labour in cassava production as large households has a direct bearing on increased availability of able-bodied labour for production activities. This finding agrees with Olugbenga *et al* (2023) [18] study in Federal capital territory, Abuja where majority (58%) of the cassava producers had between six and ten people per household. This is because House-hold size is the major determinant of labour availability especially in small scale farm production given the relative high cost of hired labour.

Farming experience

The study revealed that majority of the cassava farmers in the study area are experienced with 66.8% having a farming experience of 11 years and above, followed by 31.7% of the farmers with 6-10 years farming experience and then farmers (2.5%) with less than 5 years farming experience. This means that the cassava farmers in the study area are highly experienced. This result is in line with Ume *et al* (2022) [19] findings in Enugu state, Nigeria where majority of the farmers in his study area had a farming experience of 11 years and above.

Farm size in hectare

On farm size, the result revealed that 2.5% of the farmers cultivated 0.1-1 ha, 9.2% cultivated 3.1-4ha, 13.3% cultivated 1.1-2ha, 27.5% cultivated 2.1-3ha, while 47.5% cultivated 4ha and above. This shows that majority of the farmers have large farm holdings. The finding is in line with Apeh

et al (2023) [17] who observed that in Imo state, Nigeria where majority of the farmers (41%) cultivated land of 4 ha and above.

Major source of capital

The finding showed that 100% of the farmers have their major source of capital from personal savings. This suggests the difficulty in accessing loan for Cassava production in the study area.

COSTS AND RETURNS ANALYSIS OF CASSAVA PRODUCTION PER HECTARE IN THE STUDY AREA

TABLE 3: Showing costs, returns and the gross margin of Cassava production in the study area per hectare.

VARIABLE	QUANTITY/ RATE	UNIT PRICE (₦)	TOTALVALUES (₦)
Variable costs			
Cassava cuttings/Planting materials	25(Bundles)	2300	57500
Fertilizers (2bags)	100 (Kg)	19500	39000
Herbicide	4 (Litres)	3500	14000
Labour	30 (Man/day)	2000	60000
Transportation	(Naira)	15000	15000
Total variable cost (TVC)			**185,500**
Fixed costs			
Rented land	1 (Hectare)	19620	19620
Farm capital	(Naira)	52385	52395
Total fixed cost (TFC)			**72,015**
Total cost (TC)			**257,515**
Revenue from sales (TR) (Returns)	18.4 (Tonnes)	20,000	**368,000**
Gross margin (GM)	GM=TR-TVC		**182,500**
Profit/Net farm income (NFI)	NFI=TR-TC		**110,485**
Benefit cost ratio (BCR)	BCR=TR/TC		**1.43**

Source: Field survey data, 2023.

Cost of cassava production per hectare

The results presented in table 3 reveals that the Total variable cost of cassava production per hectare in the study area was ₦185,500 with cost of labour accounting for the highest percentage of the variable cost (₦60,000). The labour operations include Clearing/Packing, Tilling, Planting, Herbicide application, Weeding, Fertilizer application, Harvesting and Transportation. Also, the total fixed cost (TFC) was ₦72,015 for cassava production per hectare in the study area with farm capital constituting the highest proportion of the fixed cost (₦52,395), The farm capitals include Cutlass, Hoe, knapsack sprayer, wheelbarrow, digger, axe, and spade/shovel. These farm capitals

are sometimes rented and used within the cycle of production. The total cost (TC) of Cassava production per hectare in the study area was ₦257,515.

Revenue of cassava production per hectare

The results from table 3 show that the total revenue per hectare was ₦368, 000.

Gross margin of cassava production per hectare in the study area

The result from table 3 shows that the Gross margin (GM) value for cassava production per hectare was ₦182,500. Further analysis revealed that cassava production gave a profit of ₦110,485 per hectare with ₦1.43k made on every naira invested into the business. These findings indicate that Cassava production is a profitable venture in the study area and so can improve the standard of living of the rural populace especially the youths who may want to engage in the sector.

This study agrees with the findings of Jatto *et al* (2020) [20] Who observed that in Akinyele Local Government Area cassava farmers had a gross margin of ₦72,318.75 and a net farm profit of ₦64,575.00 per hectare with a cost benefit ratio of ₦1.85 implying that for every ₦1.00 invested in cassava production, there was corresponding profit of 85 Kobo and hence cassava production is a profitable venture that is capable of providing sufficient income for the farmer. The result of the study also agrees with the findings of Sanusi et al (2020) [21] in Irepodun local Government Area, Kwara state, Nigeria who found that the average gross margin per hectare for cassava production in the study area was ₦24, 949.28 with a cost benefit ratio of 1.38, suggesting that for every ₦1 invested in the business of cassava production, there is a corresponding profit of ₦1.38. Establishing the fact that despite the problem encountered in the study area, Cassava production is profitable and can serve as a panacea for economic improvement of households.

Constraints of cassava production in the study area

TABLE 4: showing the constraints of cassava production in the study area.

CONSTRAINTS	VSC (4)	SC (3)	MSC (2)	NC (1)	TOTAL	SUM	MEAN	RANK
Lack of credit/loan facilities	80	37	3	0	120	437	3.64	1st
Poor extension services	55	60	4	1	120	409	3.41	2nd
Lack of improved cassava varieties	48	68	3	1	120	403	3.36	3rd
Lack of farm capital	46	69	5	0	120	401	3.34	4th

Price fluctuation of Cassava products	7	97	15	1	120	350	2.92	5th
Pest and disease attack	3	101	16	0	120	347	2.89	6th
High cost of labour per man day	2	92	26	0	120	336	2.8	7th
High cost of cassava cuttings	2	88	29	1	120	331	2.76	8th
Land fragmentation	5	82	29	4	120	328	2.73	9th
Low demand for produce	2	23	95	0	120	267	2.23	10th
Weather/climatic condition	2	4	112	2	120	246	2.05	11th

Source: Field survey, 2023

NOTE: VSC= Very severe constraint. SC= Severe constraint.

MSC= Moderately Severe constraint. NC=No constraint.

- Mean score less than 2.5= Minor constraints and mean score greater than 2.5= Major constraints.

Human endeavor is plagued with problems and agriculture especially cassava production is not an exception. The result in table 4 revealed that Lack of Credit/loan facilities, Poor extension facilities, lack of improved cassava varieties, lack of farm capital, price fluctuation of Cassava products, pest and disease attack, high cost of labour per man day, high cost of cassava cuttings and land fragmentation, (mean values being 3.64, 3.41, 3.36, 3.34, 2.92, 2.89, 2.8, 2.76 and 2.73 respectively) are the major constraints confronting cassava production in the study area while low demand for produce and weather/climatic condition (mean value 2.23 and 2.05 respectively) are the minor constraints faced by cassava farmers in the study area.

This study agrees with the findings of Olanrewaju *et al* (2022) [15] in Akoko district of Ondo state which showed that the foremost and major constraint encountered in cassava production in Akoko district is lack of credit facilities while low demand of cassava products and climate conditions were no constraint. The result is also in line with the findings of Ume *et al* (2022) [19] in Enugu state, Nigeria who reported that access to credit/ loan facilities is a major constraint. The poor access to credit may be connected to the high interest rate and high collateral demanded by lending agencies.

This result is in accordance with Olugbenga *et al* (2023) [18] finding in Federal Capital Territory, Abuja, Nigeria where the two major constraints faced by the farmers are the Lack of credit facilities and Inadequate extension services.

CONCLUSION

In view of the findings of this research, it is concluded that cassava production is a profitable venture in the study area given that a gross margin of ₦182,500 and a net farm income of ₦110,485 were generated per hectare, while a cost benefit ratio of 1.43k for every naira invested is realized. Labour constituted the highest cost of production meaning that the different labour operations for Cassava production in the area are high.

RECOMMENDATIONS

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

1. Youths should be encouraged to engage themselves in Cassava production on a large-scale basis in the study area, since there is profit in cassava production per hectare and majority of the farmers in the study area are above 51 years of age.
2. Credit/loan facilities should be made available by the government and other relevant financial institutions at interest rate, so as to encourage farmers to go into cassava production.
3. Farmers should be encouraged by the government through subsidies on agro-chemicals like fertilizers, herbicides, and insecticides at affordable rate for use in their production process.
4. Improved cassava varieties should be made available to the farmers for cultivation.

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