

## Profitability Analysis of Cassava Production among Small-Scale Farmers in Mubi Area of Adamawa State, Nigeria

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### Abstract

The study examines the analysis of cassava production among small scale farmers in Mubi area of Adamawa state. The objectives of the study were to examine the costs and returns of small scale cassava production and constraints associated with small scale cassava production in Mubi Area. Data were collected mainly from primary sources through a questionnaire survey. A total of 150 respondents (cassava farmers) were selected for the questionnaire survey based on purposive and snowball sampling techniques. The statistical analytical tools used included gross margin and multiple regression model. Results show that cassava farming among small scale farmers is a profitable and economically viable means of earning livelihood in Mubi metropolitan area despite the constraints being encountered with the gross margin of ₦127, 200.00 and net farm income of ₦107, 615.12. It was also observed that for every ₦1.00 invested in cassava farming there was a return of ₦1.40. Inadequate capital, lack of improved post-harvest processing and storage facilities, improved planting materials and poor access road to markets were found to be the severe constraints faced by cassava farmers in the study area. The study concluded that cassava farming among small scale farmers is a profitable and economically viable means of earning livelihood in Mubi metropolitan area. The provision of cost-effective storage facilities for farmers in order to make products accessible on demand and eliminate postharvest losses caused by a lack of suitable storage was recommended.

**Keywords:** Cassava, Production, Profitability, Small-Scale, and Farmers

### Introduction

Cassava was originally from South American (Brazil) and later introduced to the southern regions of Nigeria in the sixteenth century. (Adeniji, *et al.*, 2017). The sweet cassava (*Manihot palmata*) and the Bitter cassava (*Manihot utilisima*) are the two most common varieties grown in West Africa. Cassava is commonly used for such food items as ‘fufu’, ‘gari’ (in most Sub-Saharan countries), flour and ‘tapioca’ (in Asia). It is used as a major raw material for the production of animal feed, ethanol, starch, gum, and glucose, among others (Eguono, 2015). The leaves are a source of vitamins, minerals, and proteins. Cassava is grown all year round, making it more appealing than seasonal crops like yam, beans, or peas. It has a remarkable ability to adapt to climatic change, with poor soil fertility tolerance, drought resilience, pest and disease resistance, and the ability to store its

roots underground for lengthy periods of time even after they have matured (Ohimain, 2015). Cassava (*Manihot spp.*) is a popular crop because of its importance as a source of dietary food energy for the majority of people living in the tropics of West and Central Africa; it has received significant food policy attention in terms of improving production, processing, and usage. Cassava production in Nigeria accounts for around 60% of global output (Ohimain, 2015; Ogunniyi, *et al.*, 2018 and Ogunniyi, *et al.*, 2016). It also has a strong potential for poverty reduction in Nigeria due to its affordable cost of production (FAO, 2015). After rice, wheat, and sugarcane, cassava is the fourth most important crop for tropical farmers, with up to a billion people worldwide consuming it (FAO STAT, 2010).

Cassava farms in Nigeria are often small-scale operations with low production. Its low productivity

is a major concern in Nigerian agriculture. To produce more efficiently, farmers' production must be enhanced with present levels of traditional inputs. Despite the fact that Nigeria is the world's greatest producer of cassava, a large proportion of the crop is still grown by small-scale illiterate and conservative farmers who use crude implements to cultivate the soil (Fakayode, Babatunde, & Ajao, 2018 & Obasi, *et al.*, 2015). Cassava is a staple meal in most households, especially in Nigeria's poor rural communities. Both poor and non-poor households use cassava or its derivatives on a regular basis. As a result, it is a critical factor in food security, poverty reduction, and job creation, among others (Igberi & Awoke, 2013).

Agriculture, particularly cassava production, plays a critical role in the process of economic growth and development that cannot be overemphasized (Alamu, 2013). Cassava has become an important component of the diet of more than 70 million Nigerians, according to the Food and Agricultural (2015), with per capita intake of 226.93g. It is a food and cash crop with a lot of potentials for value addition activities that make its production and processing good sources of employment. Cassava cultivation continues to flourish in the global markets, but mainly on small scales, mostly for domestic use with little excess for the market (FAO, 2013).

Cassava output in Nigeria is the highest in the world (International Institute of Tropical Agriculture IITA, 2017), however in the Mubi area and other parts of Nigeria, small-scale farmers plant less than 2 hectares of cassava, and their production is mostly subsistent. Cassava production in Africa, particularly in Nigeria, is constrained with pests such as cassava green mite, cassava mealy insect, and variegated grass hopper among others (International Institute of Tropical Agriculture IITA, 2017). Mosaic, bacterial blight, anthracnose, and root rot are diseases that commonly affect cassava. These in combination with poor cultural norms, can result in production losses of up to 50% in Africa (International Institute of Tropical Agriculture IITA, 2017). The output gap is mostly caused by the subsistence system of production, high production costs, and diminishing soil fertility as a consequence of a lack of effective strategies for replenishing and

preserving agricultural land quality for increased yield and income levels. The problems of subsistence agriculture which include the use of traditional technology, inadequately funded extension services and poor distribution of agricultural inputs, all leading to inefficiency were also highlighted by (Ike & Inoni, 2016). Greater cassava productivity may be attained with adequate analysis that would improve awareness of the levels of return in cassava production as well as to limits the problems faced by cassava farmers in Mubi area of Adamawa State, Nigeria.

## **Methodology**

### ***The Study Area***

The study was carried out in Mubi area of Adamawa State. Mubi area is located between latitudes 10°05'N and 10°30'N of the equator and between longitudes 13°12'E and 13°19'E of the Greenwich Meridian. The area is characterized by tropical climate, with distinct dry and wet seasons. The mean temperature of the area in January and July is 25°C and 30°C respectively. Also, the annual temperature ranges between 25°C-30°C (Adebayo, 2014). The major economic activities of the inhabitants are agriculture (crop and livestock production). The major crops grown in the area include; maize, sorghum, cowpea, millet, groundnut and cassava. During the dry season, some residents engage in cattle fattening.

### ***Sampling Techniques and Sample Size***

Purposive and snowball sampling technique were adopted for the selection of respondents for the study. Mubi Area was purposively selected because of its relative importance in cassava production. 10 wards were purposively selected from the Mubi Area. 5 villages were purposively selected from the selected wards and lastly, 15 cassava farmers were selected using snowballing from each selected village, making a total number of 150 farmers as a sample size for the study.

### ***Source and Method of Data Collection***

Data for this study was derived mainly from primary source. The primary data was collected with the aid of well-structured questionnaire supplemented with personal interview. The data were collected on socio-economic attributes of the farmers as well as

production activities during the 2020/2021 production season.

**Methods of Data Analysis**

Descriptive and inferential statistics were employed to achieve the objectives of this study.

**Descriptive Statistics**

Descriptive Statistics which involved the use of measures of central tendency such as frequency distribution and percentages was employed.

**Inferential Statistics**

This involved the use of gross margin technique to analyze the costs and return

$$GM = TR - TVC \quad (1)$$

$$NI = TR - TC \quad (2)$$

$$BCR = TR/ TC \quad (3)$$

Where;

GM = Gross Margin

NI = Net Income

BCR = Benefit Cost ratio

**Results and Discussion**

**Costs and Returns of Small Scale Cassava Production in Mubi Area**

The results on Table 1 showed the costs and returns of cassava production in the study area. The total cost of variable inputs used (cassava cuttings,

fertilizer, agrochemicals, ploughing and labour) was estimated to be ₦278, 800/ha. Total cost of fixed inputs such as rent on land and depreciation on hoe, cutlass and sprayer was amounted to be ₦19, 584.88. The total cost was estimated to be ₦298, 384.88. The total revenue generated was ₦406, 000/ha. The Net Farm Income (difference between total revenue and total cost of production) was ₦107, 615.12/ha. The return on investment was 1.4, implying that for every ₦1 invested in cassava farming there was a return of 1.4 naira. This implies that cassava production among small scale farmers is a profitable enterprise and economically viable means of earning livelihood in Mubi area of Adamawa State. This finding is consistent with that of Ojiako *et al.*, (2018) who worked on the topic “Profitability of Cassava Production: Comparing the Actual and Potential Returns on Investment Among Smallholders in Southern Nigeria shows that cassava production is a profitable venture that needs to be developed and built upon in Nigeria's quest to be food secured and to alleviate rural poverty and that of Bassey, Akpaeti & Umoh (2014) who, in their study on determinants of cassava output among small scale farmers in Nigeria: a survey of Akwa Ibom state farmers found cassava farming to be profitable with a net farm income of ₦125,590 and a return on investment of 0.73.

**Table 1:** Costs and Returns of Small Scale Cassava Farming

Variables	Average quantity/ha.	Unit price (₦)	Value (₦)
<b>Variable costs</b>			
Cassava cuttings (bundles)	50	500	25,000
Fertilizer (kg)	300	266	79,800
Agro-chemicals (litre)	4	2,250	9,000
Labour	220	750	165,000
Ploughing			20,000
<b>Total Variable costs</b>			<b>278, 800</b>
<b>Fixed costs</b>			
Rent of land			18,000
Hoe			250.40
Cutlass			494.30
Sprayer			840.18
<b>Total fixed costs</b>			<b>19,584.88</b>
Total Cost (TVC +TFC)			298,385.88
Gross Margin (gross income – variable cost)			127,200
Net Farm Income (gross income/total cost)			107,615.12
Return on Investment (net farm income/ total cost)			1.4

Source: Computed result, 2022

**Constraints Associated with Small Scale Cassava Production**

The results presented on Table 2 showed the constraints associated with small scale cassava production in the study area. These problems were ranked in percentage terms from the highest to the lowest. The analysis of the study revealed that about 20.6% of the respondents complained of inadequate capital which was ranked first. This problem may be associated with limited access to credit facilities by the farmers in the study area, on account of lack of collateral by the farmers. Farmers are then forced to depend on their meagre personal savings to finance cassava farming. 20.0% of the respondent were associated with the problem of lack of improved post-harvest processing and storage facilities. Cassava is a bulky and perishable agricultural crop in nature, and poor storage and processing facilities translate into huge post-harvest losses. 19.1% of the respondents complained of inadequate supply of improved planting materials. Improved planting materials would enhance cassava output. The reason behind this constraint could be that many of the released improved varieties are yet to be multiplied on a large-scale and made available to the farmers as well as the farmers' inability to preserve planting materials properly.

Poor access road to markets was complained by 17.5% of the farmers because most rural roads are bad and therefore make movement of inputs, produce and people is difficult. Farmers had to transport inputs and produce on their bicycles or motorcycles especially during the rainy season when most of the rural areas are inaccessible by vehicles. In addition to the problem of poor access roads to

markets, marketing of cassava can be particularly problematic because the crop cannot be stored for a long time after harvest and must be utilized or processed within a day or two after harvest. The problem of pests and diseases was reported by 13.3% of the farmers. Cassava is plagued by pests and diseases such as the cassava mosaic disease, bacterial blight, leaf rollers, termites, anthracnose, root rot, mealy bugs, spider mites, white flies, rodents, stem girdlers, green spider mite (GSM) and the large grain borer which attacks dry chips of cassava in storage. Pests and diseases reduce the quantity and quality of cassava output. Lastly, 9.5% complained of inefficient or ineffective extension service delivery which is ranked the last (6) problem. This can be attributed to the shortage of extension staff needed to give proper attention to all farmers as well as inadequate field and office facilities. The implication of this is that there will be limited access of the farmers to improved cassava farming methods and also limited transfer of farmers' problems back to the research system. Therefore, inadequate capital, lack of improved post-harvest processing and storage facilities, Lack of improved post-harvest processing and storage facilities inadequate improved planting material and poor access road to markets were the major problems affecting cassava production in the study area. This is in consistent with the result of Margaret (2016); Angba & Iton (2020) who affirms that the constraints associated with cassava farming were poor storage facilities, inadequate supply of improved planting materials, inadequate capital, poor access roads to markets, pest and diseases, inadequate access to extension delivery services, and inadequate supply of labor-saving devices.

**Table 2:** Constraints associated with Small Scale Cassava production in Mubi Area

Constraints	Frequency	Percentage	Rank
Inadequate capital	138	20.6	1
Lack of improved post-harvest processing and storage facilities	134	20.0	3
Inadequate improved planting material	128	19.1	3
Poor access road to markets	117	17.5	4
Problem of pests and diseases	89	13.3	5
Inefficient or ineffective extension delivery systems	64	9.5	6
<b>Total</b>	<b>670*</b>	<b>100</b>	

Source: Field Survey, 2022.

\* = Multiple responses from the cassava farmers

## Conclusion

Based on the findings from the study, it can be concluded that cassava production among small scale farmers is a profitable venture and economically viable means of earning livelihood in Mubi area with the gross margin of ₦127, 200 and net farm income of ₦107, 615.12, despite the constraints being encountered.

Based on the finding of the study, the following recommendations are made: Government should provide cost-effective storage facilities for these farmers in order to make products accessible on demand and eliminate postharvest losses caused by a lack of suitable storage. Government should implement agricultural policy steps to provide a ready market with stable pricing for cassava products by establishing marketing boards. The variable that accounted for the high cost of production was discovered to be labour, which was over-utilized. Attempts to reduce labour costs will result in a higher Net Farm Income and, as a result, a higher overall profitability of the business. Either the government or the private sector should provide relevant infrastructure, such as good access roads from farm gates to markets, power, and enough water supplies.

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