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ASSESSMENT OF EFFECTS OF AGRICULTURAL CREDIT ON PROFITABILITY OF CASSAVA PRODUCTION AMONG RURAL FARMERS IN BENUE STATE, NIGERIA

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Abstract
This study assessed effects of agricultural credit on cassava production among rural farmers in Benue State, Nigeria. A Multistage sampling technique was used to select 114 respondents. Data were collected via questionnaire and analysed using Descriptive and inferential statistics, t-test and profitability analysis were employed. The result revealed that land clearing and ridging accounted for the highest variable costs of N27,000.00 and N17,500.00 for beneficiaries and non-beneficiaries, respectively. The total variable costs for beneficiaries and non-beneficiaries was N95,550.00 and N59,375 per hectare, while the total revenue was N219,365.00 and N90,395.00 per hectare, respectively. The gross margin for beneficiaries was N123,815.00, with benefits-cost ratio of 2.29, while gross margin for non-beneficiaries was N31,020, with benefits-cost ratio of 1.52 per hectare. Implying that credit beneficiaries realized a return of N2.29 for every one Naira in cassava production as against N1.52 for non-beneficiaries. Cassava farming with the aid of credit facilities is more profitable in the study area ($P<0.05$). Major constraints hindering cassava production were cumbersome processes of lending credit (24.24%), unavailability of credit within the locality (21.21%), and lack of collateral by the lenders (25.15%). Conclusively, agricultural credit remains sine quo non to increased productivity and improved profit as well as living standards. It enhances the cassava farmers' purchasing powers to enable them acquire more inputs and modern technologies for their cassava production. The study recommended relaxation of stringent application conditions and bureaucratic processes involved in processing agricultural credits; organization of educative seminars for cassava farmers on methods of acquiring credit should be encouraged by agricultural stakeholders; and cassava farmers should form effective cooperatives for easy provision of collaterals and access to credits.

Keywords: Effects, agricultural, credit, profitability, Cassava production.

1.0 Introduction

It was being projected that by 2020, cassava production in Nigeria would be 65 million metric tonnes (International Institute of Tropical Agricultural (IITA), 2012). This was not met due to some constraints, challenges and limitations experienced by cassava farmers. These challenges were those associated with minimization of input cost for crop production. According to FAO (2004), cassava production in Nigeria is faced with very low average yield of 9-11 tonnes/hectares. Low cassava production could as a result of poor accessibility, inefficient, high cost and untimely inputs supply, plus absence of timely credit to farmers, where credit is even available. According to Olagunju and Adeyemo (2007), absence of formal policy on National as well as institutions responsible for agricultural credit management is accountable for the continuous decline in the support agriculture gives to the economy. Nweke (2004) noted that, one of the major constraints militating against adoption of modern innovations was availability of adequate credit, which has also affected adaptation of newly introduced production technologies.

Asogwa et al. (2014), found that most farmers were confronted with diverse challenges negatively affecting farmers' accessibility to timely credit for agricultural production. However, untimely approval, delay in disbursement and dearth of commensurate collateral to serve as security for the credit constitute the main constrictions to obtaining adequate agricultural credit amongst agricultural practitioners in Benue State. Thus, this could reduce the profit level of the farmers. Profit motivates for larger production and large farm sizes. Although, the fund received as agricultural credit by individual farmers is always grossly inadequate to make meaningful profit in their agricultural productions. majority of entrepreneurs in the agricultural sector especially cassava farmers are considered not credit worthy due to low turn-out from the enterprise, which reflects the production ability, especially by most formal credit institutions.

Extant literature shows that; some studies have been carried out on profitability of cassava production influenced by access to agricultural credit by farmers in Benue State. Nmadu et al., (2010) assessed factors affecting loan acquisition among small scale farmers in Otukpo Local Government Area of Benue State. Abu et al. (2011) determined optimum farm credit needs of small scale farmers in Benue State; Jeiyiol et al. (2013) did a gender analysis of access to credit by rural small scale farmers in Benue State. Nigeria. Also Asogwa et al. (2014), carried out an analysis of peasant farmers' access to agricultural credit in Benue State Nigeria.

Agricultural credit has shown to be a great contributing factor to agricultural productivity and efficiency (NNB, 2014), as such, Ukwuaba et al. (2020) posited that agricultural credit insufficiency has been considered a hindrance to the development of rural farmers in Nigeria and the world at large, thereby affecting the profit obtained from farming activities as well as livelihood of the farmers. Agricultural credit has been defined as the present and pro-term transfers of purchasing power from a person who owns it to a person who wants it, allowing the latter the opportunity to command another person's capital for agricultural purposes, but with confidence in his willingness and ability to repay at a specified future date (Kuwornu et al., 2013). According to United Nations Food and Agriculture Organization (FAO), agricultural credit refers to loans and advances given to farmers, cooperatives, or agribusinesses for crop production, livestock, marketing, or other agricultural activities.

Notwithstanding, the studies carried out by Obisesan (2012) pointed out the need for raising the volume of loan resources available to the credit institutions so as to permit increase in lending to the individual borrowers, so that farmers can widen their profit nest. Etonihu et al. (2003) attributed most of the shortcoming of institutional credits in Nigeria to facts such as; time consuming, loan processing and gearing absences of financial projections. According to Elegham (2000), the availability of credits to local Cassava farmers poses a serious problem mostly in the act of loan repayment, and absence of collateral security required by banks. It is in light of this that the government has always maintained that commercial banks should not neglect agricultural and allied activities since they are the big agents, of mobilization of savings. Agricultural facilities are also known to be specific-purpose oriented, that is, planting, fertilizing, harvesting and transporting. As a result of follow-up facilities, the indications of possibility of default (usually) referred to as "ganger sign" of default are easily detected, hence solved timely.

Adeoti and Soyele (2019) reported a significant difference between profitability of beneficiaries and non-beneficiaries of agricultural credit among poultry farmers. Chandio et al. (2020) posited that formal credit was statistically significant in increasing agricultural output and profitability. Ahmed (2019) observed a net farm income of N95,834.40, when credit is offered to the farmers via formal channels, indicating profitable enterprise. Ibrahim et al. (2009) examined the effects of loan utilization on the outputs of youth rice farmers in Shiroro Local Government Area of Niger State, and concluded that a significant difference exists between rice farmers who utilized loans obtained and those without credit.

2.0 Objectives of the Study

The broad objective of this study was to assess effects of agricultural credit on profitability of cassava production among rural farmers in Benue State. The specific objectives were to:

1. compare profitability of credit beneficiaries and non beneficiaries cassava farmers in Benue State.
2. identify challenges to accessing agricultural credit in the study area.

3.0 Methodology

3.1 The Study Area

This study was conducted in Benue State of Nigeria. The State is located in the Middle Belt of Nigeria, it lies between latitudes $6^0 25'$N and $8^0 8'$N of the equator and longitudes $7^0 47'$E and $16^0{}'$E of the Greenwich Meridian (NPC, 2006). The State shares boundaries with States like: Nasarawa to the North, Taraba to the East, Cross River to the South-East, Enugu to the South West, Kogi to the west. The South East part of the State also shares an international boundary with the Republic of Cameroon. The State is also bordered on the North by 280km of River Benue, and is traversed by 202km of River Katsina-Ala in the inland areas. The State has a total land mass of about 30,955km^2 Benue State has a population of about 4.2 million in the 2006 census, but in 2024, the population has risen to 6,550,567 people using 2.5 population growth rate (NBS, 2023). Over 75% of the populations live in the rural areas and their main occupation is farming. That's why Benue State is referred to as the "Food Basket of the Nation" because of the abundance of its agricultural resources. The rainy season starts from April to October while the dry season starts from November to March of the following year from annual average rainfall varies from 1750mm on the Southern part of the State to 1250mm in the Northern part. The hot season comes in mid-February to April with temperatures between 32°C and 38°C and with high humidity (Benue Agricultural and Rural Development Authority, BNARDA, 1999). The State is a major producer of food and cash crops such as; cassava, yams, rice, groundnuts, melon and maize.

Multistage sampling technique was used to select a sample size of 114 respondents. Data were collected via questionnaire. Descriptive statistics, such as means, frequency distribution tables and percentages were used as well as inferential statistics (t-test). Profitability analysis (gross margin and cost-benefit analysis) were employed to analyse the objectives 1 and 2.

3.2 Model specification

Independent sample t-test

This was used to test if there was significant difference in commercial cassava output between the two groups of farmers (credit beneficiaries and non-beneficiaries). According to Iheanacho and Iheanacho (2012), independent samples are two samples not drawn from a repeated measure or within the same subjects, designs or under similar conditions. They are drawn from two separate sampling frames. The independent sample t-test function is specified as follows:

$$t = \frac{X_1 - X_2}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}}$$

Where:

t = t-test

X_i = Mean output for cassava farmers who are beneficiaries of agricultural credit

X_j = mean output for commercial cassava farmers who are non-beneficiaries of agricultural credit

S^2_i= Sample variance for cassava farmers who are beneficiaries of agricultural credit

S^2_i =Sample variance for commercial cassava farmers who are non-beneficiaries of agricultural credit

N_i= number of cassava farmers who are beneficiaries of agricultural credit

N_j = number of commercial cassava farmers who are non-beneficiaries of agricultural credit

Profitability analysis (Gross Margin and Benefit-Cost Analysis)

Gross Margin and Benefit-Cost Ratio Analysis were used as tools of analysis in determining the profitability of cassava farmers who are credit beneficiaries and non-beneficiaries in the study area. The model is specified as follows:

GM = GFI - TVC

Where GM = Gross Farm Income (N)

TVC= Total Variable Cost (N)

Benefit-Cost Analysis

The profitability ratio used was the Benefit-Cost Ratio (BCR). It is specified as

$$BCR = \frac{\text{Gross Benefit}}{\text{Total Variable Costs.}}$$

4.0 Results And Discussion

4.1 Comparison of Profitability of credit beneficiaries and non-beneficiaries Cassava Farmers

Table 1 shows the profitability of cassava farmers (both credit beneficiaries and non-beneficiaries) in the study area. It compared the two gross margins and benefit-cost ratios. The analysis of costs and returns of cassava production per hectare of both beneficiaries and non-beneficiaries were made up of the variable costs of farm inputs (cassava stems, fertilizers and herbicides), tractors, tools (big hoes, small hoes, cutlasses and axes) and labour (land clearing and ridging, planting, spraying, harvesting and transportation). Land clearing and ridging accounted for the highest variable costs of N27,000.00 and N17,500.00 for beneficiaries and non-beneficiaries, respectively. This is so because cassava farmers in the study area used more hired labour for land preparations than family labour. The total variable costs for beneficiaries and non-beneficiaries was N95,550.00 and N59,375per hectare, while the total revenue was N219,365.00 and N90,395.00 per hectare, respectively.

The gross margin for beneficiaries was N123,815.00, with benefits-cost ratio of 2.29, while gross margin for non-beneficiaries was N31,020, with benefits-cost ratio of 1.52 per hectare. The implication of this result is that cassava farmers who are credit beneficiaries realized a return of N2.29 for every one Naira invested in cassava production, while those who are non-beneficiaries realized a return of N1.52 for everyone Naira invested in cassava production. It could be concluded that cassava farming with the aid of credit facilities is more profitable in the study area. Access to credit helps cassava farmers to make timely decisions, make budges and forecast, also make use of high yielding technology, access to credit could lead to improved farmers' productivity and higher incomes (revenue). On the strength of this findings, the hypothesis (**$H0_2$**) which stated that "there is no significant difference in the profit of the beneficiaries and non-beneficiaries of agricultural credit is thus **rejected** and the alternative accepted.

Table 1: Profitability of Cassava Productions per Hectare (n=114)

	Costs and Returns	Beneficiaries (n=72)			Non-beneficiaries (n=42)	
		Qty (ton/ha)	Price/Unit (N/ton)	Total (₦)	Qty (ton/ha)	Price/Unit (N/ton)
A	Farm Revenue					
	Cassava Roots	9.92	21,000	208,320.00	4	21,000
	Cassava Stems	4.7	2,350	11,045.00	2.7	2,350
	Total Farm Revenue (TFR)			219,365.00		
B	Variable Cost					
	Farm Inputs					
	Cassava stems	2	2,350	4,700.00	1	1.5
	Fertilizers (Bag) Herbicides	4	4,000	16,000.00	2	4000
	(Bottle)	4	900	3,600.00	3	950
	Farm tools					
	Big hoes	5	1,200	6,000.00	3	1,200
	Small hoes	7	450	3,150.00	4	500
	Cutlasses	4	500	2,000.00	2	700
	Axes	3	700	2,100.00	1	800
	Labour (Man-days)					
	Land preparation					
	(Clearing and ridging)			27,000.00		
	Planting			2,500.00		
	Weeding			12,000.00		
	Harvesting			7,000.00		
	Transportation			9,600.00		
	Total Variable Cost (TVC)			95,550.00		
C	Gross Margin					
	Gross Margin = TFR – TVC			123,815.00		
D	Benefit-Cost Ratio (BCR) = TR/TVC			2.29		

Source: Field Survey (2024)

4.2 Challenges to accessing agricultural credit in the study area

Table 2 shows the constraints that hindered the cassava farmers from having access to timely credit facilities in the study area. Most (31.82%) of the cassava farmers opined that credit facilities were inaccessible due to cumbersome processes from the lenders, followed by 24.24% of the farmers who maintained that credit facilities were not available within the locality, while 22.73% of the cassava farmers lacked collateral to access the credit facilities. This implies that cumbersome procedural process, unavailable within the locality of credit, and lack of collateral constituted the major constraints to sourcing timely agricultural credit among the respondents. Asogwa et al. (2014) in their study reported that these farmers faced problems of lack of collateral security as a constraint to sourcing agricultural credit.

Also, 10.61% of the cassava respondents reported that they had no access to credit facilities due to high interest charges by lenders, while another 10.61% of the respondents were denied access to credit facilities for not being active members of cooperatives. A study by Von-Pischike (1991) had earlier reported that money lenders generally charged exorbitant rates due to risks involved and in some cases they extract economic surplus provided by commercial labour, capital and possibly land.

Also, 9.09% of farmers applied for credit but they were not granted, while another 9.09% believed that the poor market value of cassava products cannot guarantee their access to credit facilities. Also, 7.58% of farmers could not access credit due to family problems, while 6.06% of farmers used their personal earnings for cassava farming. Osamwonyi and Tafamel (2010) noted that family problems among other reasons are problems in obtaining loans from banks and financial institutions. Some farmers (4.55%) had no access due to unfaithfulness of the lenders, while 4.55% of the respondents reported that they lacked exposures and boldness to request for credit facilities. This implies that cassava farmers in the study area who were non-beneficiaries to credit facilities might have had the disadvantages of not having the privilege of having their farming needs satisfied through credit facilities which increases commercial farmers' risk-bearing ability compared to personal earnings of farmers.

Table 2: Challenges to credit access to credit facilities by cassava farmers in the study area.

Constraints to credit facilities	Non-beneficiary (n=42)		Beneficiary (n=72)	
	Frequency	Percentage	Frequency	Percentage
Not available within locality	7	21.21	1	1.24
Complicated procedures	8	24.24	23	28.40
Lack of collateral	5	15.15	6	7.41
Applied but not granted	2	6.06	-	-
High charges/interests	3	9.09	12	14.81
Unfaithfulness of credit institutions	1	3.03	2	2.47
Not a member of cooperatives	2	6.06	-	-
Lack of exposure and boldness	1	3.03	-	-
Used personal earnings	1	3.03	-	-
Family problems	1	3.03	3	3.70
Poor market value of cassava products	2	6.06	5	6.17
Delays in Approvals/Disbursements	-	-	29	35.80

Source : Field Survey Data, (2024)

5.0 Conclusion and Recommendations

5.1 Conclusion

The result of this study showed that 63.3% of the respondents (were beneficiaries of credit facilities, with the mean farm size of 8.15 hectares and mean cassava outputs of 9.92ton./ha, while 42% were non-beneficiaries, with mean farm size of 4.58 hectares and mean cassava outputs of 9.98ton./ha. There was a significant difference in the cassava outputs of beneficiaries and non-beneficiaries in the study area ($P< 0.05$). Constraints to cassava farmers' access to agricultural credits were cumbersome credit procedures, non-availability of credit sources within the locality, lack of collateral security, high charges/interests and non-membership of cooperative societies.

Agricultural credit remains the sine quo non to increased outputs/productivity and improve profit as well as living standards. It enhances the cassava farmers purchasing powers to enable them acquire more inputs and modern technologies for their cassava productions.

5.2 Recommendations

It is therefore, recommended that: relaxation of stringent application conditions and bureaucratic processes involved in processing agricultural credits, and organization of educative seminars for cassava farmers on methods of acquiring credit should be encouraged by agricultural stakeholders; Cassava farmers should form effective cooperatives for easy provision of collaterals and access to credits; Agricultural and micro finance bank should be established in the rural sectors so that cassava farmers will only travel for a short distance to access effective services. This will go a long way in encouraging utilization of institutional credit by cassava farmers with the view of improving their economic activities at home and Nigeria at large.

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