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DETERMINANTS OF POVERTY LEVEL AMONG RURAL YAM FARMERS IN WUKARI, TARABA STATE, NIGERIA

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Abstract

The research examined the determinants of poverty among the rural yam farmers in Wukari Local Government Area of Taraba State. Ninety-five (95) yam farmers were randomly sampled from five wards. Data were collected using well-structured questionnaires. The arithmetic mean, percentages, frequency and binary logit regression were used to analyze the data. The result revealed that the mean age of the respondents was 39.24 years, 60.0% of the respondents were male, 50.50% of the respondents were married, about 83% of them were literate and the average years of farming experience was 13.92 years. About 61% of the respondents had no access to credit facility. About 62% of the respondents were involved in farmer's associations. About 54% of them had no access to social amenities. The binary logit regression showed that, the coefficient of annual income, age, educational level, farming experience, membership of association, and access to credit, were the significant socio-economic variables affecting poverty level in the study area. The study recommends organisation of adult education programme and encouragement of farmer's group formation as avenues for sharing information and knowledge among themselves which could help in poverty level reduction.

Keywords: Factors, Farmers, Hunger, Income, *Dioscorea* species

Introduction

Poverty is a state where a person lacks the income (or other means of support) to reliably meet their basic personal needs such as food, shelter, and clothing. Poverty can also be defined as a state where people cannot achieve the desired state of well-being and socially acceptable standard of living (Ogunniyi, Oluseyi, Adeyemi, Kabir & Philips 2017). Global poverty is one of the worst problems that the world faces today. The poorest in the world are always hungry, have less access to education, they do not have light at night regularly and suffer many health challenges. To make a headway against poverty is therefore one of the most urgent global goals.

World Poverty Clock shown that, by the end of 2018, about four million people were added to the population of people living below $1.90 per day, thereby increasing the number of severe poverty to an estimated 90.8 million Nigerians. This represents 50% of its estimate of over 200 million (World Poverty Clock, 2018). Poverty is a topical issue in developing countries especially in Africa. International Future sub-Saharan Africa (2021) accounted for roughly 60% of the global population living in poverty in 2020 and it is expected that Africa will represent nearly 87% of the World's poor by 2030. This implies that Africa will fall short of achieving Sustainable Development Goal (SDG) 1, eradicating extreme poverty by 2030, underscoring the need to reduce poverty from the grassroots (Agom, Okon & Archibong).

According to the National Bureau of Statistics (NBS) in the World Bank (2020) report, 40% of the total population, that is almost 83 million people, lives below the country's poverty line of ₦137,430 per year. Nigeria Poverty Assessment (2022), affirmed that, prior to the outbreak of COVID-19 pandemic, about 4 out of 10 Nigerians were living in poverty. In 2018/19, 40.1 percent of Nigerians lived on less than the national poverty line of 137,430 naira per person per year. This means that 82.9 million Nigerians were living in poverty. Poverty was more concentrated in rural areas where 52.1 percent of the populations were poor as compared to 18.0

percent of the poor population in urban areas. Besides, 84.1 percent of poor Nigerians lived in rural areas. This, on its own is an indicator of Nigeria's spatial inequality (Nigeria Poverty Assessment, 2022).

Nigeria has experienced a high incidence of poverty in the last two decades due to the adverse macroeconomic performance of the economy especially as dictated by the effects of insecurity and recently COVID 19 pandemic in addition to the poor utilization of the land resources. The scarcity of studies on quantitative determinants of poverty in Nigeria is a major weak point in the country's poverty reduction policy and strategy formulation (Olawuyi & Adetunji, 2013).

Despite Nigeria's huge agricultural resource base which has great potential for growth, poverty has continued to spread widely in the country and has been on the increase. The largest percentages of Nigerians are poor (40.1%), and a good percentage of them, especially in rural areas live in absolute poverty (52.1) (National Bureau of Statistics (NBS), 2020). The country's poor rural women and men depend on agriculture for food and income. About 70 per cent of Nigeria's food is produced by small-scale farmers who cultivate small plots of land and depend on rainfall rather than irrigation systems. Nigerian government have tried many ways by initiating lots of policies and programs aimed at restoring the agricultural pride but to no avail (Adama, Ohwofasa & Ogunjobi 2016).

According to World Bank (2021), Nigeria has a population of over 206 million the largest in Africa and a fast-growing economy where agriculture is the bedrock of the economic growth, development and poverty eradication of the economy. It is one of the major contributors to the country's GDP (Olawuyi & Adetunji, 2013). Poverty is a major constraining factor among farming households in Nigeria, hence, it is important to carry out research on the determinants of poverty among the farming households in the country to ascertain their contribution to agricultural output especially now that the price of food in the market is on the increase and the standard of living is rising high.

Yam (*Dioscorea* species) are annual root tuber bearing plants with more than 600 species out of which six are socially and economically important in terms of food, cash and medicine (IITA, 2009). Some of the yam species are water yam (*Dioscorea alata)*, white yam (*Dioscorea rotundata*), yellow yam (*Dioscorea cayanensis)*, Chinese yam (*Dioscorea esculant*), Bulb yam or Air potato (Dioscorea bulbifera) and Three-leaf yams or Bitter yam (Dioscorea dumetorum) (Ike & Inoni, 2006; Olubukola & Bolarin, (2006); Zaknayiba & Tanko, (2013)). Yam is grown in tropical regions and mostly produced in the savannah region of West Africa, where rainfalls are divided into wet and dry seasons (FAO, 1997). Nigeria is the largest producer of yams in the world, followed by Ghana, Côte D'Ivoire, Benin, Togo, and Cameroon (IITA, 2020). Yams are mostly marketed as fresh tubers and prepared for consumption. Transportation and marketing are carried out both by farmers and traders (Ike & Inoni, 2006).

Yam is the fifth most harvested crops in Nigeria, following after cassava, maize, guinea corn, and beans/cowpeas. More so, after cassava, yams are the most commonly harvested tuber crops in the country (National Bureau of Statistics, 2012). Yams do not only serve as the main source of earnings and food consumption, but also as a major employer of labour in Nigeria. Besides, yam being the major sources of employment generation for family members in rural areas, a study conducted by Okeoghene, Egbodion and Ose (2013) confirmed that over 65% of smallholder farmers used family labour in Delta State, Nigeria.

Despite the importance of yams to people, the attention to its production is still not impressive (Verter & Bečvářová, 2014). Yam production being a source of revenue generation, food security and employment to Wukari people and Taraba state as a whole, the high cost of inputs in yam production is a limiting factor to meeting the demand and supply of yam in the study area. Perhaps, the adoption of yam production technologies by small scale farmers in the area will solve the problem of scarcity of planting material and will allow small scale farmers the opportunity to produce yam in large scale and of uniform sizes.

Yam plays significant roles in the social-cultural activities in sub-Saharan Africa such as Nigeria and Ghana. For instance, some households used it during marriage and fertility ceremonies. More so, the festival takes place yearly to celebrate its harvest, and other social ceremonies (Izekor and Olumese, 2010). In many sub-Saharan African countries including Nigeria, agriculture is the largest employer of labor, providing food and raw materials for the rural and urban populations (Okon, Frank, Etowa & Nkeme, 2017). About 60% of the Nigerian labor force was in agriculture, and they had contributed over 40% to the country's annual average of real GDP (National Bureau of Statistics, 2012).

Despite the importance of the Agricultural sector and the fact that a larger percentage of Nigerian households engage in agriculture, most Nigerian farmers are wallowing in abject poverty. One of the damaging effects of the rural poverty is food and nutrition insecurity, and its socio-economic and political costs. Rural poverty is endemic in Nigeria and this situation has attracted much attention but the problem is yet to be addressed. Upon the involvement of rural farmers in Agriculture, many obstacles work against their efforts to produce more food and live a better life. The small-scale farmers who constitute the largest percentage of the farming population are seriously threatened by the problems of rural poverty and neglect. Many rural farmers sell their farm produce at giveaway price regardless of the cost of production to meet some pressing needs of the family therefore remaining in perpetual poverty (Henry Henry, Idi, & Abdullahi, 2023).

Literature has shown that there are little or no empirical studies on the Determinants of poverty level among rural yam farmers in wukari local government Area of Taraba state, Nigeria. It is against this backdrop that this research is designed to: describe the socio-economic characteristics of the rural yam farmers and determine the factors influencing the poverty level of the rural yam farmers in Wukari Local Government Area of Taraba State.

Methodology

Study area

The study was conducted in Wukari local government area of Taraba State Nigeria.

The Wukari people are predominantly farmers, hunters and partly fishermen, while some are civil servants (Anyeze, 1983). Geographically, Wukari local government is situated in the southern part of Taraba state. Ibi local government area borders it to the north, east by Gassol local government area, from the south by Donga local government area of Taraba State, and to the west by Ukum local government area of Benue State. The local government area has a total area of 4,308 km^2 (1,663 Square mile), located between latitude 7°51′ N 9°47′ E and longitude 10°E and 12°E. According to 2006 National population Census figures, Wukari has a population of 241,546 people which was projected to be 374,800 people in 2022. Wukari lies on the Guinea Savannah zone vegetation, which is marked by mainly forests and tall grasses. The plain and fertile land and the consistent annual flood of the rivers and streams within the area make the land conducive for seasonal farming and grazing, and all-season fishing. The dry and rainy season common to tropical regions are the dominant climatic features. The rainy season starts in April and ends in October, while the dry season begins in November and ends in March. The dry season peaks in January and February when the dusty northeast trade winds blow across the study area. These activities informed the distribution of cultural and natural resources in the area and made Wukari a rich agricultural land. The land is suitable for the cultivation of both arable and perennial crops such as yam, cassava, rice, sorghum, maize, millet, groundnut, cowpea, beans, banana, coconut, fruit trees, and vegetables, as well as animals such as cattle, sheep, goats and pig among others. It is also blessed with a large volume of mineral deposits such as salt lead, zinc, limestone, and others all untapped (Danjuma, 2005).

Sampling procedure

The primary data used for this study were obtained using well-structured questionnaires to obtain reliable and unbiased results, purposive and multistage random sampling techniques were adopted in sampling of the respondents. In the first stage, five wards (Jibu, Hospital, Rafin-kada, Chonku, and Kente) were purposively selected from the ten wards in the Local Government Area while in the second stage; 20 respondents were randomly selected in each ward and administered the questionnaire making a total

of 100 respondents. Out of 100 questionnaires administered and returned, 95 were found suitable and were used for the analysis.

Data collection

The population for this study comprises yam farmers in Wukari LGA, Taraba State. The data that were employed in this work were mainly from primary sources which were obtained using well-structured questionnaires and one-on-one observation of the respondents

Analytical techniques

To achieve the objectives, descriptive statistics such as mean, percentage, frequency, and binary logit regression were used.

Model specification

Descriptive statistics tools such as frequency mean and percentages were used to identify the socio-economic characteristics of the respondent.

The mean is expressed as:

$$X = \sum \frac{FX}{N}$$

Where X = mean

∑FX = Sum of individual observations

N = Sample

A binary logit regression model was used to identify the determinants of poverty level among the rural yam farmers in the study area. The relationship is explicitly expressed as:

$Y = B_o + B_1X_1 + B_2X_2 + B_3X_3 + B_4X_4 + B_5X_5 + B_6X_6 + B_7X_7 + B_8X_8 + B_9X_9 + e$... (5) where;

Y = Poverty (1=Yes, 0=No)

B_o = constant term of the intercept (autonomous poverty depth),

$b_1 - b_9$ = regression coefficient

X_1= Annual income (in Naira)

X_2 = Age (in years)

X_3 = household size (numbers)

X_4 = Educational level (years)

X_5 = Farming experience (Years)

X_6 = Sex (dummy, If male = 1, 0 = Otherwise)

X_7 = Membership of association (dummy, Yes =1, No = 0)

X_8 = Access to social amenities (dummy, Yes =1, No = 0)

X_9 = Access to Credit (dummy, Yes =1, No = 0)

e = independently distributed error term

Results and Discussion

Socioeconomic Characteristics of the Respondents

The socioeconomic characteristics of the respondents as presented in Table 1 revealed the demographic traits including age, gender, marital status, household size, educational background, farming experience, and annual income, among others. The results on age indicated that 17.89% of the respondents were between 21-30 years of age, 24.21% were within the age range of 31-40years, 31.58% were within the age of 41-50 years, 14.74% were within the age range of 51-60 years, while 11.58% were within the age of 61 and above years. The mean age of the respondents stood at 39.24% years, with the implication that the respondents are still very active in engaging in yam production which will contribute towards household poverty level reduction. The result is in line with the findings of Dercon and Krishnan (1996) and Yusuf *et al.*, (2015) who reported that at the active working age, household heads adopt innovations that positively affect their productivity and income.

The result on the gender revealed that 60.0% of the respondents were males, while females constituted 40.0%. The result shows that both males and females were involved in yam farming but it is mostly undertaken by the males being the household heads, thus agreeing with the finding of Ndaghu *et al.*, (2009) and Robert *et al.*, (2013) who reported that males being the household heads engaged more in food production and they are responsible for major production decision. This finding however disagrees with Zubairu and Maurice (2014) and Hadebe and Mpofu (2013) who found that women are mostly involved in food crop Production which ensures food security.

Majority (50.50%) of the respondents were married, 13.68% were single, while widows and divorced accounted for 23.16% and 12.64% respectively. This explains the significance of family labour to Yam production in a typical or normal rural community in Nigeria. Households where the respondents are married and both the spouses are working are expected to have lower

poverty levels than single households, widowed or divorced. Most rural farmers will prefer to marry to have cheap labor for agricultural activities to enable their households to be food secure (Kirwan & Maye, 2013). The result on educational qualification reveals that 16.84 % of the respondents had no formal education, 33.68% had primary education, 30.53% had secondary education and 18.95% had tertiary education. The result depicted that, majority of the respondents were literate and their literate level exposed them to embrace improve method of yam production for increase productivity resulting to food security as well as poverty level reduction.

Table 1: Distribution of the respondents by Socioeconomic Characteristics

Variables	Frequency	Percentage (%)	Mean
Gender			
Male	57	60.00	
Female	38	40.00	
Total	**95**	**100**	
Age			
21-30	17	17.89	
31-40	23	24.21	
41-50	30	31.58	
51-60	14	14.74	
>60	11	11.58	
Total	**95**	**100**	**39.24**
Marital status			
Married	48	50.53	
Single	13	13.68	
Separated	12	12.63	
Widowed	22	23.16	
Total	**95**	**100**	
Educational level			
Non formal	16	16.84	
Primary	32	33.68	
Secondary	29	30.53	
Tertiary	18	18.95	
Total	**95**	**100**	
Years in school			
1-6	18	18.95	
7-12	20	21.05	
13-18	36	37.89	
>19	21	22.11	
Total	**95**	**100**	**10.75**
Farming experience			
1-10	34	35.79	
11-20	22	23.16	
21-30	19	20.00	
>30	20	21.05	
Total	**95**	**100**	**13.92**
Cooperative			
Yes	62	65.26	
No	33	34.74	
Total	95	100	
Access to credit			
Yes	37	38.95	
No	58	61.05	
Total	**95**	**100**	
Access to social Amenities			
Yes	44	46.32	
No	51	53.68	
Total	**95**	**100**	

Source: Field Survey2023

The level of education of the household head is an important factor in improved Yam production and management techniques. It also determines income earning capacity and food expenditure. The findings of the study agreed with the findings of Adebayo (2012) and Akarue and Bakporhe (2013) who states that literate status can improve food security as well as adoption of improved farm practices. Educated farmers adopt agricultural innovations easier, and this could improve their agricultural productivity and ensure food security.

The respondent's years of experience revealed that 35.79% of the respondents had 1-10 years of farming experience, 23.16% had 11-20 years of farming experience, 20.0% had farming experience of 21- 30 years and 21.05% had farming experience of 31 years and above. The mean years of farming experience was 13.92 years. This implies that most of the farmers in the study area were well-experienced in Yam production. This is in consonance with the finding by Zubairu and Maurice (2014) who reported that farmers with more years of experience in farming are likely to adopt innovations that would improve their productivity and ensure food security. Access to credit depicted that, 38.95% of the respondents had access to credit facilities while 61.05% had no access to credit facilities. Access to credit is an important factor that can influence the likelihood of adoption of new technologies by food crop farmers to attain a lower poverty level. Farm credit was widely recognized as one of the inter-mediating factors between the adoption of farm technologies and the increase in farm income among rural farmers in Nigeria (Akpan, Jeiyol, and Tee, 2013).

The distribution of the respondents based on members of the association revealed that most (62.36%) were involved in farmer's associations while 34.74% of the farmers were not. This implied that members of the association will contribute their resources together to operate a large-scale yam production that would boost their output and increase their income level which would eventually improve their living standard.

The distribution of the respondents based on access to social Amenities revealed that 53.68% of the respondents had no access to social Amenities while 46.32% of the respondents had access to social Amenities. This implied that lack of access to social amenities hindered the yam farmers in the study area to produce to their full capacity to earn more income and come out of poverty line.

Factors influencing the poverty level of the rural yam farmers

The factors influencing household poverty level among yam farming households are shown in Table 2. The logit binary model has a good fit as the functional parameters showed a pseudo-R2 of 0.3628 and a negative log-likelihood estimate of -39.093757 with a chi-square value of 44.51. The Pseudo R^2 (coefficient of determination) of 0.3628 indicates that 36.28% variation in poverty is explained by the variation in the specified explanatory variables, suggesting that the model has good explanatory power on the changes in factors influencing poverty among the respondents. The coefficient of annual income, age, household size, educational level, farming experience, sex, membership of association, access to social amenities and access to credit were the significant socio-economic variables affecting poverty level. This Agreed with the study of Saediman *et al.*, (2019), who identified sex, farm size, family size, and access to credit as factors affecting food security.

Annual income of the household head was significant in explaining changes in household poverty level. The result shows that annual income (X_1) variable had positive effect on poverty level and was significant at 5%. The positive sign of the coefficient implies that a unit increase in annual income of the farmer will lead to increase in the possibility of the household breaking out of poverty. This is due to the fact that annual income contributes to household income and would lead to an increase per capita food expenditure and consequently improve the poverty level of the household. This finding corroborated that of Fidelis, Ajimuda & Adekunle, (2019), that household annual income increases the odd ratio of being non poor. The age of the household head is expected to have impact on his poverty level. The result shows that age (X_2) variable was negative and was significant at 1% level. This implies that the higher the age, the lower their poverty level. This result can be attributed to the ability of older farming

household heads with more farming experience to diversify their sources of income and manage their household income well to meet their expenditure and push them above the poverty level. Educational level (X_4) has positive effects on poverty level reduction and is significant at 5%. This implies that the higher the level of education the greater the chance of the yam farmers embracing the improved method of yam production that will increase their production capacity for higher income enhancement that will enable them to meet their financial expenses and break out of poverty level in the study area. This is in line with Inyang, Okwuokenye, & Inyang, (2023) finding that the more an individual is educated, the more likely he/she would accept and participate in technically oriented development adoption that will improve their income. Farming Experience (X_5) is an important factor in determining both productivity and the production level in farming. The result of the binary logistic regression model indicated that farming experience was statistically significant at 10% level of significance. Therefore, there is a positive association between farming experience and poverty level of the rural yam farmers. The positive association could be attributed to the fact that farmers who have many years of experience in yam farming are more likely to be non-poor. This means that as yam farmers' experience is increased, their knowledge and skills about sustainable strategies and resource management and effective utilization of the available small farmlands will be increased, as a result enable them to produce more outputs. This result is in line with the study conducted in Ghana by Kuwornu, Suleyman & Amegashie (2012), which indicated that an experienced farmer is expected to have more insight and ability to diversify his or her production and minimize the risk of food shortage.

Membership of an association (X_7) has a positive effect on the poverty *l*evel and is significant at 1% level indicating that the poverty level will reduce with increase in membership of the association. This implied that association members who operate for a common goal pulling their resources together to embarked on large scale yam production will eventually lead to increase in output and thereby resulting to increase in income level of the members and push them out of poverty cycle. Access to credit (X_9) was significant at 1% and was negative. This implies that yam farmers who had access to credit will have lower poverty levels than those without access. This is due to the fact that the loans received will enable them to increase their yam production capacity and earn more income to meet their financial obligations and come out of the poverty level.

Table 3: Binary Logit Regression for the Factors Influencing the Poverty Level of the Rural Yam Farmer

Variable	Coefficient	Std. Err	P>|z|
Annual income	0.3352719	0.1584426	0.034**
Age	-2.277775	0.8404995	0.005***
Household size	0.7608665	0.7608665	0.379
Educational level	0.4439651	0.4439651	0.011**
Farming Experience	0.9881855	0.522965	0.059*
Sex	-0.9829949	1.009505	0.330
Membership of association	3.8793896	1.035582	0.000***
Access to social Amenities	1.41756	1.224383	0.247
Access to Credit	-3.946498	1.075608	0.000***
Cons	-5.562047	2.165583	0.010***
Pseudo R^2	= 0.3628		
Log Likelihood	=-39.093757		

Source: Field Survey, 2023.

Conclusion and Recommendations

The majority of the respondents in the study area were male, married, and educated. It was also found that sex, educational level, age, and annual income were significant determinants of poverty.

Based on the findings of this research, the following recommendations are proffered.

i. Education was found to be a significant determinants of poverty level in the study area thus; adult education programme should be organized by the local government in order to increase the literacy levels of the respondents to enhance high production capacity among farmers which will eventually lead to poverty level reduction in the study area and the nation at large.

ii. Farmer's Association was also found to be significant therefore; group formation should be encouraged by the extension agent, as it is an avenue for sharing information and knowledge among themselves which could also help in poverty level reduction.

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