SOCIO-ECONOMIC FACTORS INFLUENCING CASSAVA PRODUCTION IN KUJE AND ABAJI AREA COUNCILS OF THE FEDERAL CAPITAL TERRITORY, ABUJA, NIGERIA.

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ABSTRACT

This study examined socio-economic factors influencing output level of cassava production in Kuje and Abaji Area Councils of Federal Capital Territory, Abuja. The specific objectives were to:identify the socio-economic characteristics of sampled cassava farmers in the study area; determine the socio-economic factors influencing the output level of cassava in the study area; estimate costs and returns of cassava production in the study area. A total sample size of eighty (80) farmers was sampled using simple random sampling technique. Primary data were collected using structured questionnaire. The questionnaire was designed to extract information on socio-economic characteristics, inputs, prices of outputs and inputs. Information collected on socio-economic characteristics were age, sex, farming experience, household size, level of education, marital status. The data were analyzed using descriptive statistics, farm budgeting model, and multiple regression analysis. The result of the analyses shows that eighty (80) percent of sampled farmers are female. About seventy-three (73) percent of sampled cassava farmers are less than 45 years of age. Also eighty-five (85) percent are married. Econometric multiple regression analysis revealed that age, level of education and sex were significant at 10% level of probability. The coefficient of multiple determinations implies that 58.9% of variation in output of cassava is explained by variation in the explanatory variables included in the model. Estimated costs and returns revealed a net farm income of ₦42, 207 per annum, which shows that cassava production in the study area is profitable. From the findings, it is suggested that extension agent should make new technology available in the study area to enhance skills acquisition and increase in output.

Key words: Cassava, socioeconomic factors, output, Federal capital territory.

INTRODUCTION

Background of the Study

Cassava is primarily produced for food especially in forms of *garri, fufu, tapioca*, chips for livestock feed and flour for bakery as a lucrative by-products of cassava (Agbamu and Waziri, 2007). FAO (1998) reported that 88% of cassava produced in African countries especially Nigeria are consumed in form of human food. The processed cassava are used or consumed for food or feed livestock in different forms. The processing of cassava tubers into *garri, tapioca, fufu, flour and lafun* are consumed mostly by human and the chips for animal feed (Amedu, 2006). Cassava has shown enormous potentials for supplying energy, calories intake and supply of more than 50% food requirement for over 600 million people in the World (Agbaraevoh, 2003). Oke (1998) stated that cassava as food items which many local people tends to have comparative advantages are widely eaten or consumed in West tropical and Subtropical

Countries as it help to supplement other sources of energy and drive other useful materials like industrial raw material , modified starch, textiles foods, beverages, pharmaceuticals, pulp and paper industries (Singer, 1997). Mbansor (1998) argued that cassava act as source of income for rural areas to meet their pressing need.

Statement of the Problem

Cassava is a staple food in Nigeria, yet it link between the rural farmers who cultivate most crops with large scale industry who can process the product with no much time i.e less time, easy way of processing and less cumbersome. Traditional means of processing cassava products consume much time, lead to bruises or wounds (avenue for pest and disease infestation) and result to dumping ground for the yield to market (Nweke, 1996). Mbansor (1998) argued that cassava act as source of income for rural areas to meet their pressing need. This study therefore intends to provide solutions to the following research questions:

(i) What are the socio-economic characteristics of cassava farmers in the study area?

(ii) What are the factors influencing output level of cassava production in the study area?

(iii) What are the costs and returns of cassava production in the study area?

Objectives of the Study

The broad objective of this study is to evaluate socio-economic factors influencing cassava production in Abaji and Kuje Area Councils of F.C.T, Abuja, Nigeria. The specific objectives are to:

(1) identify the socio-economic characteristic of sampled cassava farmers in the study area.

(2) evaluate socio-economic factors influencing output level of cassava production in the study area.

(3) estimate costs and returns of cassava production in the study area.

Cassava (*Manihot esculenta Crantz*) has a woody shrub, belong to the family *Euphorbiacea.* The crop possess tall, thin, straight stems when fully matured. In some cases have average height of 1-2 meters, other varieties may show up to 4 meters, the leaves reserve rich source of proteins compared to storage organs (root and tuber), vitamins and other trace amount of nutrient that are consume by human and animal has social-economic importance of the content (IITA,1996).Cassava originated from Brazil where it is being consumed as staple food for entire people. It was believed to originate originally from the native of Tupinamba or Amazon Indians of Eastern Brazil later dispersed to different parts of the World by Portuguese explorers thereafter introduced in Africa dates back 1558. Its consumption is of people living along African coasts and Island, but about 300 years ago the people of Nigeria got a glance at it but never accepted it until 1890s (IITA, 1990).

Cassava as Source of Raw Material for Society Benefits

Cassava posses' high percentage of carbohydrate and other quality products such as amalyse, amylopectin ratio significant energy industry as useful materials (Odorukwe and Oji,

1983). Opina and Wheatley (2005) projected that several advantages are derived from the production of cassava and its by-products especially rich in energy for human consumption and animal utilization and prepared as industry used for economic benefits such as for cloth, paper for use in offices.

Cassava as Food Security Crop

Food availability is the ability of individuals and households to secure enough food to meet their requirement throughout the season. Eircher and Staatz (1985) stated that it is the ability of a country or region or local areas, for a long term basis, power the total population access to timely and nutritionally adequate supply of cassava food. Hahn (1988) opined that cassava by-products can be easily gotten access to satisfy minimal nutritional requirements of both national and household level. The process that involve the ability of farmer to ensure production of adequate food supplies maximum stability in the flow of supply and security, both physical and economic accessibility (Amedu, 2006).

Prospect Generated by Cassava Production

Study carried out over the years has shown lucrative tendency in terms of production high profit (IITA, 1990). The steady high demand of cassava based products calls for massive investment into the industry and tap from the venture in order to raise substantial flow of profit (Okoli and Nnodu, 1990). Inlang (1995) reported that familiar products like *fufu*, stripes, *garri, abacha*, over the years show high demand from the final consumer, so many farmers now diverse ways to tap from the existing opportunity in utilizing the resource within their domain in mapping out strategic tools to achieve unprecedented turn-over in producing more to generate maximum amount of profit (Oke, 1998).

METHODOLOGY

The Study Area

The study was conducted in two Area councils of the Federal Capital Territory (FCT) Abuja. They are Kuje and Abaji Area Councils. The climate of the Federal Capital Territory is characterized by two main seasons: rainy (April to October) and dry (November to March), the temperature also varies from 30^0C-37^0C in the hot (dry) season. The annual rainfall ranges from 1,100mm to 1,600mm. The soil type is generally shallow and sandy in nature. It is predominately a grasses savannah region, thus has potentials to produce both forest root crops and tubers such as yam and cassava. It also sustains legumes (groundnut and cowpea), grains (maize sorghum and rice), seeds and nuts (melon seeds and benniseeds), animal products (goats, cattle, and sheep), fruits and vegetables. Kuje is geographically located in the North central of Abuja, lies between Longitudes 8^0-9^0 East and Latitude 7^0 North. Kuje has a land area of 1,800 Sq Km which represent about 22.5% of the land area of Federal Capital Territory. Its estimated population is 250,000 people (NPC 2006). Abaji is geographically located in the same zone, located at Latitudes 7^0 57' North of Equator and Longitudes 6^0 45' East of prime meridian. Abaji has a land area of 2080 Sq Km and a population of 350,000 people (NPC,2006).

Climate Condition of Abaji and Kuje Area Councils

The serious burden in cassava production cannot be overemphasized. The sudden blowing of soil, storm occurrence, and lack of rainfall stand against increase in cassava cultivation. Ojo (1999) stated that where cassava seem leaching and soil erosion reduce soil nutrients, excessive heat and humidity, upset animal physical and productivity may induce severe losses in food shortage. The tropical environmental tends to foster multiplication of pests and disease pathogen than temperate regions.

Sampling Techniques and Sample Size

The simple random sampling method was employed in choosing two Area Councils out of six (6) Area Council in the Federal Capital Territory Abuja. The choice of Kuje and Abaji Area Councils was based on the population of cassava farmers, most especially those who practice subsistence farming, small scale, and the proximity of the areas to the researches. The systematic random sampling method was used in selecting forty (40) farmers from each of the Area Councils making a total sample size of eighty (80) cassava farmers.

Method of Data Collection

Primary data were used for the study. Primary data were collected with the use of a structured questionnaire. The questionnaire was designed to extract information on socio-economic characteristics, inputs, prices of output and inputs. The socio-economic characteristics were age, sex, farming experience, household-size, and level of education. The production parameters include: cost of seeds, chemicals, tools, labour, management, and information of sales of roots, sales of processed raw.

Method of Data Analysis

The following analytical tools were used to achieve the stated objectives:

(i) Descriptive Statistics
(ii) Farm Budget Techniques
(iii)Multiple Regression Analysis

The model employed is implicitly stated as:

$$Y = (X_1, X_2, X_3, X_4, X_5, X_6, U_i)$$

Where,

Y = Output of Cassava (Kg or tones)

X_1 = Age of Farmer (Years)

X_2 = Household-Size (Number of People in a Household)

X_3 = Farming Experience (Years)

X_4 = Level of Education (Yrs)

X_5= Sex of Farmers (1 Male; 0, Otherwise)

X_6 = Farm Size (Ha)

U_i = Error Term

Descriptive Statistics

This involves the use of percentage and frequency distribution to organize and analyze data collected from the field survey. This was used to achieve specific objectives (1).

Farm Budgeting Techniques

The farm budget analysis involves operations leading to estimate of total revenue and total cost of production during the period. The difference between the two parameters is a measure of profit or (loss) or net return for that period. The farm budget technique gives a measure of the profitability of farming and resources used on the farm.

(i) Gross Margin: This is given by the difference between Gross Income (GI) and Total Variable Cost (TVC).

$$GM = GI - TVC$$

(ii) The Net Farm Income (NFI) analysis was estimated as follows:

$$NFI = TR - TVC - TFC$$

Where, NFI = Net Farm Income, TVC = Total Variable Cost, TFC = Total Fixed Cost and TR= Total Revenue.

The total revenue includes sales of cassava processed forms and waste materials. Total fixed cost includes cost of land, interest on loan, costs of equipment. The variable cost of production includes: cuttings, chemicals (fertilizers, treatment), transportation cost, labour cost, and cost of processing. This is used to determine the profitability of cassava production enterprise. This technique was used to satisfy specific objective (3).

Multiple Regression Techniques

Output of cassava production (Y) was assumed to be dependent upon inputs which are: Age of farmers (X_1); Household size (X_2); fFarming Experience (X_3); Level of Education (X_4), Sex of Farmers (X_5). Farm Size (X_6), Error – Term (U_i).

The model employed is implicitly stated thus:-

$$Y = (X_1, X_2, X_3, X_4, X_5, X_6, U_i)$$

This was used to achieve specific objective (2). The SPSS computer analysis package was used to run the regression analysis. Three (3) equations were fitted to the model above; this includes: Linear, Semi-log and Double-log. Explicitly, the equations can be represented thus:

$$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + U_i \text{ (Linear)}$$

$$\text{Log } Y = a + b_1 \log X_1 + b_2 \log X_2 + b_3 \log X_3 + b_4 \log X_4 + b_5 \log X_5 + b_6 \log X_6 + U_i \text{ (Double-log)}$$

$Y = a + b_1 \log X_1 + b_2 \log X_2 + b_3 \log X_3 + b_4 \log X_4 + b_5 \log X_5 + b_6 \log X_6 + U_i$(Semi-Log)

The best fit, equations was selected using criteria of selecting best fit, and these are:-

(i) The significance of t- ratio
(ii) The significance of f-value
(iii) Level of the R^2 (Coefficient of Multiple Determinations)
Conformity of signs with *a priori* expectation (Olayemi and Olayide, 1981).

RESULTS AND DISCUSSION

Socio-Economic Characteristics of Sampled Farmers

Table 1: Sex Distribution of Sampled Farmers

Sex	Frequency	Percentage (%)
Male	64	80.00
Female	16	20.00
Total	**80**	**100.00**

Source: Field Survey, 2011.

Table 1 show that eighty (80) percent of sampled farmers are male. Also, twenty (20) percent of sampled farmers are female.

Table 2: Age Distribution of Sampled Farmers

Age (yrs)	Frequency	Percentage (%)
15-25	05	06.20
26-35	14	17.50
36-45	40	50.00
46-55	18	22.50
56-65	02	02.50
66-75	01	01.25
Total	**80**	**100.00**

Source: Field Survey, 2011

About seventy three (73) percent of sample cassava farmers are less than 45 years of age. This implies that cassava farmers in the area are middle-aged and are still active in cassava production. Furthermore, twenty seven (27) percent of the sampled cassava farmers are above 45 years of age (Table 2).

Table 3: Distribution of Sampled Farmers by Marital Status

Marital Status	Frequency	Percentage (%)
Married	68	85.00
Single	02	02.50
Divorced	10	12.50
Total	**80**	**100.00**

Source: Field Survey, 2011

Table 3 indicated that eighty-five (85) percent of cassava farmers in the study area are married, thirteen (13) percent of the farmers are divorced furthermore, three (3.0) percent tend to

be single. This shows that married respondents tend to have greater willingness in cassava production than divorced and single respondents.

Table 4: Educational Level of Sampled Farmers

Educational Level	Frequency	Percentage (%)
Primary	33	41.25
Secondary	20	25.00
Tertiary	04	05.00
Non-Formal	23	28.75
Total	**80**	**100.00**

Source: Field Survey, 2011

Table 4 observed differences in educational level of sampled farmers. The percentages of farmers that had primary, secondary, and tertiary education are forty-one (41), twenty-five (25), and five (5) percent respectively. The study further shows that seventy-one (71) percent of the cassava farmers had formal education and are literate, hence can read and write, while twenty-nine (29) percent of sampled farmers had no-formal education.

Table 5: Years of Farming Experience of Sampled Farmers

Years of Farming Experience	Frequency	Percentage (%)
< 10	46	57.50
11-20	15	18.75
21-30	12	15.00
31-40	06	07.60
41-50	01	01.25
Total	**80**	**100.00**

Source: Field Survey, 2011

Seventy-six (76) percent of sampled cassava farmers had less than twenty-one (21) years of experiences in cassava farming. In addition, twenty-five (25) percent of sampled farmers had between twenty (20) and fifty (50) years of experiences in cassava farming.

Table 6: Multiple Regression Analysis (Linear Equation as Lead Equation)

Variables	Regression Coefficient	Standard Error	t-value	p-value
Constant	46456.354	18314.67	2.53**	0.014
Age (X_1)	611.74	358.146	1.708*	0.094
Household Size (X_2)	1596.54	1296.15	1.232	0.191
Farming Experience (X_3)	141.656	225.576	0.628	0.533
Level of	1463.962	779.971	1.877*	0.066

Education (X_4)				
Sex (X_5)	13811.50	7367.56	1.875*	0.066
Farm Size(X_6)	-1213.828	1419.209	-0.855	0.396
R^2	0.589			
F-value	2.021*			

Source: Field Survey, 2011 (Computer Print Out)

** ——→Significant of 5% Probability Level

* ——→Significant of 10% Probability Level

Table 7: Multiple Regression Analysis for Cobb-Douglas Functional Form

Variables	Regression Coefficient	Standard Error	t-value	p-value
Constant	1.416	1.010	1.4030	0.105
Age (X_1)	1.036	0.649	1.596	0.115
Household size (X_2)	0.032	0.324	0.098	0.922
Farming Experience (X_3)	0.198	0.165	1.206	0.232
Level of Education (X_4)	0.434	0.143	3.034***	0.003
Sex (X_5)	0.039	0.290	0.134	0.894
Farm Size (X_6)	-0.188	0.295	-0.638	0.526
R^2	0.134			
Adj R^2	0.075			
F-value	**2.286***			

Source: Field Survey, 2011 (Computer Print Out)

*** ——→ Significant at 1% Probability Level

** ——→Significant of 5% Probability Level

* ——→Significant of 10% Probability Level

Table 8 : Multiple Regression Analysis for Semi-Log Functional Form

Variables	Regression Coefficient	Standard Error	t-value	p-value
Constant	-48752.79	31593.11	-1.543	0.127
Age (X_1)	24797.113	20303.201	1.221	0.226
Household Size (X_2)	7390.072	10126.079	0.730	0.468
Farming Experience (X_3)	4758.004	5150.44	0.924	0.359
Level of Education (X_4)	1165.724	4481.275	2.601**	0.011
Sex (X_5)	0.05	0.490	0.102	0.919
Farm Size (X_6)	-1826.703	9243.998	-0.198	0.844
R^2	0.113			
Adj R^2	0.053			
F-value	**1.877***			

Source: Field Survey, 2011 (Computer Print Out)

*** ——→ Significant at 1% Probability Level

** ——→ Significant of 5% Probability Level

* ——→ Significant of 10% Probability Level

Table 9: Costs and Returns of Cassava Production

Item	Mean Value Per Annum (₦)
Variable Costs	
(a) Agrochemical Cost	6,871.429
(b) Fertilizer Cost	21,232.813
(c) Transportation Cost	7,330.380
(d) Cost of Hired Labour	5,219.243
(e) Loading and Offloading Cost	242.973
Total Variable Cost	**40,896.838**
Gross Income	**83,104.188**
Net Farm Income	**42,207.35**

Source: Field Survey, 2011

The socio-economic factors influencing output level of cassava production in the study area are presented in the econometric multiple regression analysis (Table 6). The variables examined in the model include:- age, household size, farming experience , level of education, sex and farm-size. The linear regression equation was selected as lead equation. In the lead equation, all the estimated coefficients except farm-size (X_6) are positive, but age, farm size and sex had positive and significant relationship with output of cassava at 10% level of significance. The Coefficient

of Multiple Determinations (R^2) is 0.589; this implies that 58.9% of variation in dependent variable (output of cassava) is explained by variation in the explanatory variation included in the model. The F-statistic with the value of 2.021 was found to be statistically significant at 10% level of probability. This implies that the independent variables included in the model adequately explained the dependent variable. Table 7 presented the Cobb-Douglas functional form fitted, the Coefficient of Multiple Determinations (R^2) were 0.134 which implies that 13.4% of dependent variable were explained by explanatory variables included in the model. Furthermore, only level of education (X_4) was significant at 1% level of probability. The entire estimated coefficients were positive. The regression coefficients are the elasticity's of cassava production. The F-value was significant at 10% level of significance. Table 8 shows the semi-log functional form which revealed Coefficient of Multiple Determinations (R^2) of 0.113 which also implies that 11.3 percent of dependent variable is explained by independent variables included in the model. The level of education (X_4) was significant at 5% probability level. All the estimated coefficients except farm size (X_6) had positive value. The F-value was not significant. From the costs and returns of cassava production presented in Table 9, the Total Variable Cost was ₦ 40,896. 83, Gross Income was ₦ 83,104.18 which gives Net Farm Income of ₦ 42,207.35 per annum.

SUMMARY OF THE FINDINGS

The study examined socio-economic factors influencing cassava production in Abaji and Kuje Area Councils of FCT, Abuja. The specific objectives are to: identify the socio-economic characteristics of sampled cassava farmers in the study area; determine socio-economic factors influencing cassava production in the study area; estimate costs and returns of cassava production in the study area. Sample size of eighty (80) farmers was selected. A simple random sampling technique was used. Primary data were used for this study. The data were collected using structured questionnaire. The data were analyzed using descriptive statistics, farm budgeting model, and multiple regression analysis. The result of the analysis shows that eighty (80) percent of sampled farmers are male, while twenty (20) percent were female. About seventy three (73) percent of sampled cassava farmers are less than 45 years of age. Also eighty-five (85) percent are married. About seventy-one (71) percent of sampled farmers had formal education and also seventy-five (76) percent of sampled farmers had less than twenty-one (21) years experiences in cassava farming. The linear functional form was selected as lead equation among the three (3) functional forms fitted into the econometric multiple regression models. The three (3) functional forms fitted to the econometrics regression analysis were used to examine the influence of socio-economic factors on output level of cassava production in the study area; analysis shows that age, farm-size, and sex had positive and significant relationship with output of cassava at 10% level of probability. The coefficient of multiple determinations (R^2) of 0.589 implies that 58.95 of variation in dependent variable (output) of cassava are explained by variation in the independent variables included in the model. The F-value was significant at 10% level of probability, which further shows that all explanatory variables included adequately explained the dependent variable in the model, estimated costs and returns of cassava production showed that cassava production in the area is profitable with a net farm income (NFI) of ₦42,207.35 per annum.

CONCLUSION AND RECOMMENDATIONS

This study shows that cassava farming in the study area is profitable, and it is a lucrative and interesting occupation and basically small-scale production which can be combined with other occupational activities. Based on the findings of this study the following recommendations are made:

(1) There is need to organize cooperative business in the area to form a body which will take care of their affairs and able to boost the business enterprise, expand the production and export their products to boost revenue generation.

(2) Government should create conductive atmosphere for borrowers, get a credible, credit policy to enhance greater cassava production.

(3) Agriculturalist or extension agent should strategies the cheaper technology means to enhance skills and output production.

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