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Effects of Socio-Economic Characteristics of Cassava Producers' on Output in Obio/Akpor Local Government Area of Rivers State, Nigeria

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ABSTRACT

This study examined the effects of socio-economic characteristics of cassava producers' on their output in Obio/Akpor Local Government Area of Rivers State, Nigeria. A multi-stage sampling technique was used in the selection of 80 respondents. The data obtained were analysed with percentages and multiple regression analysis. The result obtained revealed that the mean age of cassava farmers was 44 years and their mean farm size was (0.1496 ha) while the double logged multiple regression result depicted that farm size (0.191ha) (P<0.05) and labour (0.361) (P<0.01) were statistically significant in increasing cassava output and majority of the farmers (100%) practices manual farming. The coefficient of determination R2 (55%) shows that there was significant relationship between output and the selected explanatory variables of cassava producers. It is therefore recommended that government should grant loan to farmers in order to boost their production and enhance their food security.

INTRODUCTION

Cassava is a tuber crop that is found in the tropical region. It serves as food and contains mainly carbohydrate. Cassava originated in Brazil, South America, and it is one of the most vital food crops of West Africa from the social and economic stand point (Cock, 1985). Cassava belongs to the family *Euphorbiaceae*, to the genus *Manihot* and specie *esculenta* and hence is scientifically known as *Manihot esculenta*. *Manihot esculenta* also called yucca or manioc in South America is a woody shrub that is extensively cultivated as an annual crop in tropical and subtropical regions for its edible starchy tuberous root. When the roots are boiled, chopped and is allowed to ferment for consumption, it is called tapioca. The plant may be occasionally called by local names such as mandioca (Brazil), akpu (Igbo – Nigeria), bankue (Ghana) etc. (James, 2002). Cassava also plays an important social role in generating employment. Cassava has over 200 species; *Manihot esculenta Crantz*, is the most important species of the genus in the country, this crop has been under-utilized in this country, in view of the fact that only the roots are explored by growers and processing enterprises (Carvalho, 1990).

There is substantial effort going into the improvement of cassava cultivars much of which is in the public sector and oriented toward the needs of the small farmer who seeks essentially to improve yields and especially by reducing the susceptibility of the plant to diseases. Cassava is naturally relatively tolerant to poor soil and climate conditions, and its leaves drop near the plant, providing a form of fertilization and weed suppression. The main obstacle for the use of cassava in animal nutrition is the toxic substance which the plant contains. Buitrago (1990) reported dehydration and heating as methods for the elimination of hydrocyanic acid (HCN) in cassava. Buitrago (1990) also reported ensiling as another process that decreases the hydrocyanic (HCN) potential in the root. Food and Agricultural Organization - FAO (2002), estimated for Africa 54% million tonnes (MT) of the 172 million tonnes worldwide in cassava production in 2000. Nigeria is estimated over 45% million tonnes, involving Rivers, Cross River, Akwa Ibom and Delta, which have dominated other states in the South South region with over 25% million tonnes.

Nigerian cassava production is by far the largest in the world; a third more than production in Brazil and almost double the production of Indonesia and Thailand. Nigerian cassava transformation is the most advanced in Africa (International Fund for Agricultural Development – IFAD, 2004). The Food and Agricultural Organization of the United Nations (FAO, 2004) estimated 2002 cassava production in Nigeria to be approximately 34 million tonnes (MT). IFAD (2004) showed that on a per capita basis, North Central is the highest producing state at 0.72 tonnes per person in 2002, followed by South-East (0.56), South-South (0.47), South-West (0.34), North-West (0.10) and North-East (0.01). National per capita production of cassava is 0.32 tonnes per person. IFAD (2004) showed that the growing demand for cassava which will spur rural industrial development of producing, processing and trading communities and well beings of numerous disadvantaged people in the world has prompted the development of the Global Cassava Development Strategy.

It is pertinent to note that good statistical data had not been made available on cassava producers' on output in Obio/Akpor Local Government Area of Rivers State. This research therefore will focus on effects of socio-economic characteristics on cassava producers' on their output in Obio/Akpor Local Government Area of Rivers State, Nigeria.

MATERIALS AND METHODS

Area of study

Rivers State is one of the 36 states in Nigeria with numerous local government areas of which Obio/Akpor is one of them. Obio/Akpor Local Government Area, with its Headquarters at Rumuodomaya, was created on the 3rd of May, 1989 out of the old Port-Harcourt Local Government Area of Rivers State by the military Administration of President Ibrahim B. Babangida. Obio/Akpor is made up of 53 communities and is constituted mainly by the people of Ikwerre ethnic nationality. Specially, there are four (4) prominent Ikwerre Kingdoms that constitute the Local Government Area which are: Akpor, Apara, Evo and Rumueme. These kingdoms are made up of several towns and villages, most of which qualify as Urban and semi-urban communities in terms of size, population and existing infrastructure. Popularly known as the gate-way Local Government Area, because of its location, Obio/Akpor has a total land mass of approximately 311.71 square kilometers and shares boundaries with Emohua, Ikwere, Etche, Oyigbo, Eleme, Okrika and Port-Harcourt Local Government Areas of Rivers State and accessible by roads, sea and air transportation. By the 1991 population, Obio/Akpor local government area had a total population of 263,017 made up of 137,031 males and 125,017 females with over 60% of them falling within the age bracket of 15-59. Recent projections based on the national average of 2.82% growth rate puts the population of the local government area as at 2004 to be over 500,000 people. The local government area is rich with natural resources such as: oil and gas, clay, sand and gravel. It has a vast arable land, forest, forest-based resources such as; fruits and vegetables and also surrounded by rivers, creeks, marshland and semi-forest zones from which various fishes and other sea food are sourced basically for subsistence. The primary occupation of people of Obio/Akpor are farming, fishing and hunting. The main crop cultivated is cassava, which is mostly processed into garri. Farming is done mostly for subsistence and generation of household income to take care of other needs of the family, such as building of family shelter, buying of clothes and payment of health and school fees (Obio/Akpor, 2009).

RESULTS AND DISCUSSION

Table 1: Socio-Economic Characteristics of Cassava Farmers Sampled

Descriptive Statistics

	N	*Minimum*	*Maximum*	*Mean*	*Std Deviation*
Years of formal education	80	6	23	11.89	2.968
Farmers' off farm income level (in Naira)	80	10000	97500	37733.38	24361.19
Farm size (in hectare)	80	0.05	0.30	0.1396	0.080
Farm labour (in mandays)	80	9	45	22.94	9.758
Household size	80	3	15	6.30	2.236
Age of farmers	80	25	67	44.06	9.633
Farming experience	80	2	16	8.45	3.416

Source: Field Survey 2018

Table 1 above shows the socio-economic characteristics of cassava producers in the study area. It revealed that, the mean age of cassava producers was (44.06) and mean years spent in formal education was (11.89). It also revealed that, the mean farm size was (0.1396), mean farm labor in man-days was (22.94) and the mean household size was (6.30).

Table 2: Frequency Distribution Showing Sampled Farmers Distribution

	Frequency	Percent	Valid Percent	Cumulative Percent
Gender				
Female	50	62.5	62.5	62.5
Male	30	37.5	37.5	100.0
Total	80	100.0	100.0	

Source: Field Survey 2018

From table 2 above, majority (62.5%) of cassava producers' are females while the percentage of male cassava producers' was (37.5%).

Table 3: Double Log Model showing the effect of Socio-Economic Characteristics of Cassava producers on Output

Variable	Coefficient	Std. Error	t-Statistics	Prob.
C	6.834684***	0.919411	7.433763	0.0000
LOG (FARM_SIZE)	0.191236**	0.074853	2.554804	0.0128
LOG (FARM _EXP)	0.048694 NS	0.078506	0.620250	0.5371
LOG (FEDN_YRS)	0.149705 NS	0.153584	0.974742	0.3330
LOG (HSHOLDSIZE)	0.298084***	0.102469	2.909013	0.0048
LOG (STEM_CUTNS)	-0.088472*	0.071347	-1.24003	0.2190
LOG (INCOME)	0.008819 NS	0.052023	0.169528	0.8659
LOG (SEX)	-0.194115***	0.066354	-2.92543	0.0046
LOG (LABOUR)	0.360549***	0.096408	3.739827	0.0004

R-squared (R^2)	0.552834	Mean dependent var	7.844846
Adjusted R-squared (R^2)	0.502449	S.D. dependent var	0.389323
S.E. of regression	0.274618	Akaike info criterion	0.358778
Sum squared resid	5.354450	Schwarz criterion	0.626756
Log likelihood	-5.351140	F-statistics	10.97223
Durbin-Watson stat	1.571567	Prob(F-statistic)	0.000000
		N =	80

Source: Field Survey, 2018
*NB: "NS" = Not Significant; "***" = figures are significant at 1 percent probability level and "**" = significant at 5 percent probability level*

Table 3 above shows the effect of socio-economic characteristics of cassava producers on output in the study area. It is revealed that farm size, household size and labor affect cassava output positively while sex affects output negatively. Farm experience, years spent in formal education, income and stem cuttings are not significant. Farm size is significant at 5 percent probability level while household size, labour and sex are significant at 1 percent probability level. Coefficient of correlation (R^2) is (0.55%).

Table 4: Method of Cassava Production

Applied Mechanized Farming (for none)

	Frequency	Percent	Valid Percent	Cumulative Percent
Do not use mechanized farming	80	100.0	100.0	100.0

Source: Filed Survey, 2018

Table 4 above revealed that (100%) of cassava producers engaged in manual farming.

Table 5: Distribution of respondents according to constraints encountered in cassava production in the study area

Constraints Encountered	Frequency	Percentage
High cost of land	75	16.30
Inadequate credit facilities	62	13.48
Inadequate capital	60	13.04
High cost of machines	55	11.96
High cost of labour	54	11.74
Poor access to fertilizer	43	9.35
High cost of transportation	41	8.91
Absence of subsidy and incentives	40	8.70
High cost of inputs	30	6.52
Total	**460**	**100%**

Multiple responses recorded
Source: Field Survey, 2018

Table 5 revealed that, (13.04%) of respondents reported that inadequate capital is a problem; (13.48%) reported that inadequate credit facilities is another problem and (11.96%) respondents reported high cost machines. The major constraint (16.30%) is high cost of land and the least constraint is (6.52%).

DISCUSSION

The mean number of years the farmers spent in formal education is (11.89) showing that, an average cassava producer is educated confirming what Fapojuwo (2010) says "Education is an important variable that tends to influence adoption of modern technology, while also influencing choice of food commodities consumed by individuals and households". The mean age of the farmers is (44.06), indicating that the farmers are still in their productive ages. Female cassava producers' account for (62.5%) of cassava output while male accounts for (37.5%) which supports the study of Mafimisebi (2008), 'Majority (71.0%) of the respondents were females, this lends credence to the assertion that the African farmer is a woman'. Increase in the number of female cassava producers increases the quality of cassava. (100%) of the farmers do not practice mechanized farming such as the use of machines, hence reducing the yield of cassava. The result of the production function used to attain objective (2) is expressed as follows:

Log Y = b_0 + $b_1$logfarm size + $b_2$logfarm experience + $b_3$logformal education in years + $b_4$logincome + $b_5$loglabour + $b_6$loghouseholdsize + $b_7$logsex + $b_8$logstem cuttings + u

Log Y = 6.834684 + log 0.191236x_1 + log 0.048694x_2 + log 0.149705x_3 + log 0.008819x_4 + log 0.360549x_5 + log 0.298084x_6 – log0.194115x_7 – 0.088472x_8
(0.074853)** (0.078506)NS (0.153584)N (0.052023)NS (0.096408)*** (0.102469)*** (0.066354)*** (0.071347)*

F-ratio = 10.97223 ≈ 10.97
R^2 = 0.552834 ≈ 55%
Note: NS = Not Significant
*** = significant at 1% probability level
** = significant at 5% probability level
* = significant at 10% probability level
S.E = Standard error = 0.274618

NB: Figures in parenthesis are standard errors of the respective coefficients.

Using the standard error test, we observed (3) variables' estimate was greater than its standard errors for x_1, x_5 and x_6 indicating that the coefficients are significant positively. It could therefore be inferred that the effect of farm size, labour and household size on cassava output were found statistically significant while sex(x_7) was significant but negative. As farm size, labour and household size increases, likewise the output produced.. These findings have shown that

farm size, labour and household size are vital factors in cassava production in the study area. The positive signs noticed for farm size, labour and household size conformed to apriori expectation. It can be deduced that for every unit of labour increase, while other variable inputs remained constant an addition cost would be recorded, hence, there is the need to cut the use of manual labour and increase adoption of mechanized practices, because by implication it is been used above economic optimum level and this will affect profit (Sani, Musa, Daneji, Yakasai and Ayodele, 2007). Farm size which is relatively small confirms what Mafimisebi said in his study in 2008 that 'Majority (80.2%) of the rural farmers had farm sizes of less than 3.0 hectares, others cultivated above hectares, the sampled farmers had a total farm size of 242.51 hectares giving an average farm size of 1.66 hectares per farmer. The positive effect of household size on cassava output confirms what Fapojuwa (2010) said 'household size is an important variable that determine total household food requirement'. The negative sign exhibited by the variable (sex), could be explained by males not participating fully in cassava production even though, some variables individually did not show any significance on cassava output. Judging from the R^2 (0.552834), it can be inferred here that fifty five percent (55%) of the variation of the dependent variable (cassava output), which was explained by the variation of the independent variables cannot be ignored as not significant. The adjusted R-squared (0.502449) is a modified version of R-squared that has been adjusted for the number of variables in the model. The R^2 increases as more variables are added.

Manual farming is common. This means that adoption of mechanized farming will enhance output. From observation, two varieties with the local names: wocha (white variety) and wijiji (red) were cultivated, meaning that varieties have effect on output. The constraints in cassava production in the study area were found to be numerous starting from inadequate capital, high cost of machines, inadequate credit facilities, poor access to fertilizer, high cost of input, absence of subsidies and incentives, high cost of land, high cost of labour and high cost of transportation. The constraints reported by the respondents are critical, therefore, to be able to improve the production of cassava, in line with the government urge and drive toward the production of cassava, proper measure must be considered. This is necessary especially under the new policy tagged "Government initiative on cassava production" (Yakasai, 2010). High cost of land was the major problem encountered by the cassava farmers in the study area. Inadequate capital is also a serious problem, while the least problem is cost of inputs (stem cuttings).

CONCLUSION AND RECOMMENDATIONS

From the results obtained in this study, it was concluded that cassava production was affected by the farmers' socio-economic characteristics. Governments should grant loans to cassava farmers. Part of this credit should be given in form of improved planting materials and fertilizers, while training in proper agronomic practices for cassava farmers should be vehemently pursued by extension agents.

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