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Analysis of Socio-Economic Factors Influencing Cassava Production among Women In Shiroro Local Government Area of Niger State

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Abstract

This study was carried out to analyze the socioeconomic characteristics influencing cassava production of women in Shiroro LGA of Niger state.. The study involved a multistage selection of study area and respondents, 100 women farmers involved in cassava production were purposely selected and administered with the questionnaire. Regression analysis (OLS), Pearson's product normal Correlation coefficient and the t-test for statistical significance. were used. The linear functional form gave the best fit with R^2 of 68%, the results revealed that personal income of the farmers, number of extension contacts were found to be the significant socioeconomic factors influencing farmers output. The major constraint revealed by the study was inadequate capital. It is recommended that women should be assisted with capital and encouraged to participate fully in their membership association to enable them enjoy the benefits that goes with being members which invariably translates to increased credit, inputs and better output.

INTRODUCTION

Women in Africa play a central role in food production. Various studies have shown that women produce 60-80% of food and other products in Nigeria and Africa at large (Synder,1990; Buckland and Haleegoah,1996). It is also on record that rural women contribute two thirds of the labour force spent in agricultural production and marketing (Mgbada 2000; Rahman and Usman, 2004 and Ibrahim, 2002).

The study area shows, at first sight, a large number of women involved in cassava production as distinguished from the men who are seen to be more involved in yam production. Although women farmers contribute significantly to agricultural production in Nigeria, they benefit little from agricultural services such as extension service, credit acquisition and access to use of improved technologies to improve their productivity.

Cassava *(manihot species)* is an important food crop in Nigeria. It is very easy to cultivate and can thrive even in poor soils, this makes it more popular and is now replacing yam in some parts of Nigeria. It is less resistant to dry conditions than many crops.

There are two main species of cassava viz: sweet cassava *Manihot palmata;* Bitter cassava - *Manihot utilissima*. There are many varieties of these two species and many hybrids. They are given names in different localities in which they are found. Dan warri is the most commonly grown variety in the North. Planting in the south starts in March till October whereas it is between June and August in the North.

Local varieties take longer to mature, almost 2 years, but recent development has shown some species that will reach maturity between 6 – 8 months of planting.

Nigeria is the largest producer of cassava in the world. It's production is currently put at about 34 million metric tones a year (F AO, 2002). Presently, cassava is primarily produced for food especially in the form of *gari*, *lafun* and *fufu* with little or no use in agribusiness sector as an industrial raw material, but the crop can be processed into several secondary products of industrial market value. The products include chips, pellets, flour, adhesives, alcohol, and starch, which are vital raw materials in the livestock feed, alcohol or ethanol, textile, confectionery, wood, food and soft drinks industries. They are also tradable in the international market.

In 2002, the president of Nigeria announced an initiative to use cassava as a foreign revenue earner (F AO, 2002). Comparing the output of various crops in Nigeria, cassava production ranks first, followed by yam production at 27 million tonnes in 2002, sorghum at 7. million tonnes, millet at 6 million tonnes and rice at 5 million tones (FAO, 2004).

By zone, the North Central zone where Niger state is located produced over 7 million tonnes of cassava a year (1999 to 2002). South produces over 6 million tonnes a year while the South West and South East produce just less than 6 million tonnes a year. The North West and North East are small by comparison at 2 and 0.14 million tonnes respectively (FAO, 2004).

According to Babaleye, (2005) Africa's food security has hardly shown any substantial improvement over the past five decades. He stated that every year seems to bring a new food crises in some country or region.

As a result of cassava's efficient production of cheap food energy, year round availability, tolerance to extreme stress conditions, suitability to peasant farming and food system in Africa. It plays a major role in efforts to alleviate the African food crisis.

Nigeria as the largest producer of cassava in the world, produced about 26.0 million tonnes on about 1.08 million ha of land in 1990 (FAO, 1991). Despite the recognized importance of cassava in Nigeria, little attention has so far been placed on the various socio-economic factors affecting the farmers who invariably are mostly women.

Cassava farming in the study area is mostly carried out by women and yet they are faced with the problems of low output in cassava production. Several reasons could be adduced to this most probably due to socio-economic problems and other cultural and traditional norms dominant in the area.

It is against this background that this study investigated socio-economic variables such as age, marital status, sex, farmers' household size, educational status, farm size, level of personal income, membership of co-operatives, access to credit, number of extension contacts, predicts the output of cassava farmers in the study area to alleviate food crises.

Objectives of the study

The broad objective of the study is to identify some of the socio-economic factors that affect cassava farmers in the study area.

The specific objectives of the study is set to:

1. identify socio-economic characteristics of the women involved in cassava production in the study area and how it relates to their output.

2. identify the major problems or constraints affecting cassava farmers and make recommendations based on the findings.

Hypotheses

There is no significant relationship between the socioeconomic characteristics of women involved in cassava production and output .

METHODOLOGY

Area of study

The area of study is Shiroro LGA in Niger State, the state lies between latitude 8^0 - 39^0N and longitude 6^0 – 33^{0E}. Niger State, covers a total land area of about 8.3 million hectares, which represents 8% of total land area of Nigeria about 85% of the land is viable.

Sampling technique

A multistage sampling procedure was employed in selection of respondents for this study. In the first stage Shiroro Local Government was purposely selected for the study because of the prevalence of cassava production in the area.

Secondly, 5 villages namely Gwada, Kuta, Pina, Zumba and Zukuchi were randomly selected from a total of twelve villages (12) within the local government area. Thirdly, twenty cassava women farmers were purposely identified and selected from each of the villages, giving a total of 100 respondents.

Data Collection

Primary data was used for the study, primary data were obtained through a well-structured and validated questionnaire. The questionnaire were administered by trained enumerators from the Niger state ADP. Data was collected during the 2006/2007 cropping season. The socioeconomic variables were measured using the ordinary least squares regression analysis, this was used to answer objective one. While the data collected on problems faced by farmers was measured using the simple descriptive analysis, such as frequencies and percentages was used to answer objective two.

Data Analysis: Model Specification

In analyzing the socio-economic factors that affect cassava farmers' output, the ordinary least square (OLS) multiple regression was used.

$Y = f(X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, X_9, X_{10}, e)$

Where,

Y = output: of cassava (kg)

X_1= age of farmers

X_2 = marital status (single 1, married 2, divorced 3)

X_3 = cost of inputs (N)

X_4 = farmers' household size (number)

X_5 = Educational status (Number *of* years spent in school)

X_6=farm size (hectares)

X_7 = Level *of* personal income *of* the farmers (N)

X_8 = Membership of co-operative (dummy 1 yes. Otherwise 0)

X_9 = Access to credit (dummy variable 1 yes, otherwise 0)

X_{10} = Number of extension contacts (during the cropping season)

E = error terms/stochastic/disturbance terms

The elasticity of cassava output was computed using the formula:

$$e = \frac{dy}{dx} - \frac{x}{y}$$

where,

e = elasticity

$\frac{dy}{dx}$ X = first partial derivation of X with respect to Y.

and

Y = are the geometric means of the independent and dependent variables respectively.

Hypotheses were tested using Pearson's product normal correlation coefficient (r) and it is depicted as thus:

$$r = \frac{\sum (xi - X1)(Yi - Y1)}{\sqrt{\sum (Xi - X1)^2 \sum (Yi - Y1)^2}}$$

where:

y = dependent variable

x = independent variable

Y and X = Geometric means of the dependent and independent Variables respectively

= ith term

The significance was tested using the t - test as follows:

$$T_{cal} = r \sqrt{\frac{n-2}{1-r^2}}$$

Where:

n = sample size

r = correlation coefficient

RESULTS AND DISCUSSION

The result of the ordinary least square (OLS) multiple regression analysis is shown in the table below:

TABLE 1: Regression estimates of the socioeconomic factors affecting cassava farmers in Shiroro LGA

Functional forms				
VARIABLE	**LINEAR**	**DOUBLE LOG**	**EXPONENTIAL**	**SEMI-LOG**
Constant	155.554	-0.3 73	6.447	-14211.775
	(0.815')	(-0.134)	(16.969)***	(-2.274)**
Age (X_1)	2.995E-02	-8.270E-02	2.422E-03	-144.313
	(0.0191	(-1.057)	(0.782)	(-0.824)
Marital status (X_2)	-102.848	-4.056E-02	-0.166	-188.412
	(-1.1-3 I	(-0234)	(-0.951)	(-0.487)
Cost of inputs (X_3)	2.691	-1.865E-02	-0318	-102.361
	(0.052)	-0.193	1-3.071)***	-0.931
Farmers' Household	2.436	3.686E-02	1.761E-02	-220.387
size (X_4)	103681	(0321)	(1.335)	(-0.857)
Educational Status	-2398	-1.105E-03	4.909E-03	-10 1.609
(years spent)X_5	(-0.422)	(-0.014)	(0.434)	(-0.593)
Farm size (ha) X_6	168.495	0235	0.200	345.500
	(1.496'		(0.891)	(1.140)
Level of personal	8.207-03	0333	8.386E-07	746.436
income X_7	(5.143)***	(1.699)	(0.264)	(1.703)
Membership of co-operatives (X_8)	-64.937	0.417	-0.105	498.210
	(-1.882)*	0.758	(-1.535)	0.635
Access to credit X_9	-1.661E-03	0.257	-.573E-06	564.563
Number of extension	48.791	0.513	5.306E-02	1013.643
X_{10}	(5.479)***	(2.934)***	(3.160)***	(2.592)***
R^2	0.929	0.931	0.707	0.900
R^2 Adjusted	0.921	0.898	0.674	0.852
F – statistic	115.836	28.640	21.467	19.049

Source: Computed from field survey, 2006.
*Note: *** implies significance @ 1% level*
*** implies significance @ 5% level*
** implies significance @ 10% level*
Figures in parentheses are the respective t-ratios

Results presented in the table above indicates that based on the normal economic, econometric, and statistical criteria above, the linear functional form was chosen as the lead equation and was used for further discussion.

The results indicate that the model has an explanatory power (adjusted R_2 value) of 0.921. This implies that about 92.10 percent of the variation in cassava output is explained by the variables included in the model, while the remaining 7.90 percent is as a result of non-inclusion of some explanatory variables, errors in estimation as well as other factors outside the experiment. The F - statistic was also found to be statistically significant at 1% level. This implies that the variable included in the model best explain the model.

The results in the table also reveal that only 3 variables namely: X_7 (level of personal income of the farmers); X_8 (membership of cooperative) and X_{10} (number of extension contacts) were found to be the significant socioeconomic factors of women studied affecting cassava output of the 10 variables included in the model.

The estimated coefficient for X_7 is 8.207E-03, which is statistically significant at 1%. This implies that there is a positive and significant relationship between X_7 (level of personal income of farmer) and the output of cassava. From the linear functional form, the estimated coefficient are not direct elasticities of production, however the elasticities were computed. The computed elasticity for X_7 is 0.4205. This indicates that if we increase the level of personal income of the farmers by 1%, holding other variables constant, the output will increase by 0.4205%. This implies that ceteris paribus as the level of income of the farmer increases, the output realized from cassava production also increases. This is in consonance with previous findings by Adegeye and Dittoh, (1985) who reported that an increase in income would encourage producers to produce more.

The estimated coefficient X_8 (membership of cooperative) is 64.937 and significant at 10%. This implies that being negative, there exists an inverse relationship between a farmer's membership of cooperative and the output of cassava. It indicates also that in the survey area, farmers who belonged to cooperatives realized lower output. This is not in consonance with theory or apriori expectation. This could be attributed to the fact that farmers are yet to develop a positive formal membership culture to farmers groups and/or association.. It could also be adduced to the fact that the farmers do not completely through their membership body tap benefits to enhance their outputs. This is however not a surprise women farmers participation in cooperatives are limited due to culture, traditional and religious beliefs.

The computed elasticity for X_8 is -0.04587. This implies, that if membership is increased without the tapping of all benefits by 1%, holding other variables constant, the output will decrease by 0.0459%. In addition, the preponderance of low literacy level in the study area could have been responsible for this, as non-literate farmers may not see reason to join cooperatives.

The estimated coefficient for number of extension contacts (X_{10}) is 48.791 and statistically significant at 1%. This implies that there is a positive and significant relationship between X_{10} and the output of cassava. This computed elasticity for X_{10} (number of extension contact) is 0.5635. This indicates that if we increase the number of extension contacts (X_{10}) with the farmers by 1%, holding other variable constant, the output will increase by 0.5635%. This is in consonance with Obokosia, S. D; Nyangito, H. O. and Nzuma, M. J., (2005) findings that through extension agents, farmers have been able to learn about the new varieties available and its' method of application thereby resulting to increase in output and enhancing the alleviation of food crises.

TEST OF HYPOTHESES

The results of the analysis are presented in table 2 below.

TABLE 2: Correlation Coefficient between socio-economic characteristics of women and output of cassava in Shiroro LGA

Correlation Variable	Coefficient	Sig. (2 tailed)	Decision
Age	0.381***	0.000	S Accept
Marital status	0.083***	0413	S Accept
Cost of inputs	-0.280	0.005	S Accept
Household size	0.758***	0.000	S Accept
Educational status	0.774***	0.000	S Accept
Farm size	0.908***	0.000	S Accept
Level of personal income	0.946***	0.000	S Accept
Membership of cooperative	0.425***	0.000	S Accept
Access to credit	0.740***	0.000	S Accept
Number of extension contacts	0.926***	0.000	S Accept

Source: Computed from survey data, 2006.

*** implies significance @ 1% level

** *implies significance @ 5% level*

* *implies significance @ 10% level*

Further correlation analysis revealed that age, marital status and educational status were socioeconomic factors that were found to be statistically significant at 1% level of significance and thus we reject the null hypothesis stating no significant relationship between the socioeconomic characteristics of women involved in cassava production and output.

MAJOR CONSTRAINTS IN CASSAVA PRODUCTION

A number of factors were identified as constraints to cassava production. Respondents were asked to indicate the most important constraints they encountered on cassava production. This is presented in table 3.

TABLE 3: Major constraints faced by cassava farmers

Problems Identified	Frequency	Percentage
Inadequate planting materials	13	13.0
Inadequate capital	46	46.0
Inadequate working implements	10	10.0
Incidence of pest and disease	8	8.0
Gender bias	3	3.0
Inadequate storage facilities	14	14.0
Transportation	4	4.0
Unavailability of market	2	20.0
TOTAL	100	100.0

Source: Field Survey, 2006

About 46 percent of the farmers in the study area faced the problem of inadequate capital. This is because most of the farmers have no access to credit facilities and the few that have access, obtained money too small to meet their production needs. Thirteen percent faced the problem of inadequate planting materials, and 10 percent had the problems of inadequate implements especially since farmers' access to production inputs like improved crops, herbicides and farming tools depends on their access to credit, as revealed by (Lumbwama, 2005). Due to the bulkiness of cassava, 4 percent of farmers faced the problem of transportation, 14 percent of the farmers were faced with inadequate storage facilities. Eight percent complained about the incidence of pests and diseases, three percent experienced gender-bias problems, this is because quite often they have little time to participate in different forums and association for development and more so, for accessing new technologies. The remaining two percent attributed their constraints to unavailable market for their products.

CONCLUSION AND RECOMMENDATION

This study analyzed the socioeconomic characteristics influencing cassava production of women in Shiroro LGA of Niger state. The results showed that the socioeconomic characteristics of the women that affected cassava output significantly were personal income, membership of cooperative society and number of extension contacts. After carrying out the correlation analysis the null hypothesis that there is no significant relationship between farmers socioeconomic characteristics and output., was rejected because the variables age, cost of inputs, membership of cooperative society ,access to credit, extension contact, household size, educational status and personal income were all significant at 1% level of significance. The null hypothesis however, was accepted for marital status, which revealed no level of significance to farmers output. The major constraint in cassava production revealed by the farmers is inadequate capital. It is recommended that women in the study area be allowed to participate and integrate fully into the membership cooperatives, so that through it they can further access capital to enhance their output.

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