

## ANALYSIS OF DETERMINANTS OF WOMEN'S PARTICIPATION IN PRODUCTION AND PROCESSING OF CASSAVA IN AKWA IBOM STATE, NIGERIA

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### ABSTRACT

*The study analyzed the determinants of women's participation in production and processing of cassava in Akwalbom State, Nigeria. Using multi- stage random sampling technique, 120 rural women were selected from two out of the six agricultural zones of Akwalbom state. Data were obtained using well-structured questionnaire and were analyzed using descriptive and inferential statistics such as frequency, tables, percentages, mean count and probit regression estimate. Results showed that the majority of respondents were married (72.5%) and literate (90.8%). A grand mean participation index of 2.4 implies that women always participate in cassava production and processing activities. Results further showed that the determinants of women active participation include: non ownership of farm land, inadequate funding and high cost of labour marketing problem, poor extension contact and herdsmen/cattle menace. Taking effective cognizance of the determinants and overcoming the barriers to participate in cassava production and processing, rural women would improve their standard of living. The study concludes that in order to empower rural women to overcome barriers themselves and participate more actively requires men, community and government to provide adequate support. The study therefore, recommended the need for sustainable funding assistance and effective extension system to enhance group formation and active participation of rural women in cassava production and processing.*

**Keywords:** Determinants, Cassava, Production, Processing

### INTRODUCTION

Nigeria is the world's largest producer of cassava; its production was put at about 57.1 million metric tonnes in 2016 (FAOSTAT, 2018). Cassava has great processing value. Cassava roots can be processed into many primary products like garri, fufu, tapioca chips, pellets, flour, alcohol, starch and cassava cake. Cassava processing is laborious but locally adaptable. It usually includes all or some of the following specific operations: peeling, washing, grating, dewatering, sieving, toasting, fermenting, cooking, pounding, wrapping, slicing, chipping, grinding and drying (Amadi *et al.*, 2018; Nwakor *et al.*, 2018). In Nigeria, women are very much involved in agricultural practices especially in the area of cassava production and processing. Women make a significant contribution to food production; they provide 60-80% of agricultural labour and are responsible for 80% of food production (Onyemauwa, 2012). Women play a central role in cassava production, processing and marketing, contributing about 58 percent of the total agriculture labour in the southwest, 67 percent in the southeast and 58 percent in the central zones

(Onyemauwa, 2012). Women are entirely responsible for virtually all activities like making mounds, weeding, harvesting, transporting, processing, marketing and domestic chores provides them with additional income-earning opportunity percentages to measure the strength of agreement and enhances their ability to contribute to household food security (Oladejo *et al.*, 2011).

In Akwalbom State, cassava is one of the most important food crop cultivated and consumed widely. An understanding of women contributions to food output in rural households in Nigeria is essential. This will ensure effective allocation of production resources within the rural households. Subsequently, numerous studies indicated that rural development policies directed at the household level may not have their intended effects or may even produce unintended negative outcomes, unless the role and position of gender in rural households are explicitly taken into account (Onyemauwa, 2012). Women in Nigeria form an active and reserve labour force but they rarely own the means of production (Rahman, 2004). This may be

as a result of the gender inequality that exists in most African countries including Nigeria. There has also been a great disparity between women and men in the size of land holdings as well as any overall trend of increasing landlessness pressure (Osugiri, 2007; Mgbada, 2002). Intensifying efforts to improve the production and processing of cassava will better the lives of many households particularly now that women dominate the cassava sector.

In view of the above, the need to analyze the involvement of women in cassava production and processing in AkwaIbom State becomes imperative. The objectives of this study are: (i) to describe the socioeconomic characteristics of women that participate in cassava production and processing in the area, (ii) determine the level of women participation in cassava production and processing, and (iii) analyze constraints to rural women participation in cassava production and processing in AkwaIbom State, Nigeria.

## MATERIALS AND METHODS

The study was conducted in AkwaIbom State, Nigeria. The State is credited with a resident population of about 5 million (projected from NPC, 2006). The state is divided into six agricultural zones namely: Abak, Uyo, Etinan, Eket, Ikotekpene, and Oron. A multistage sampling procedure was used in selecting the sample for this study. In the first stage two agricultural zones (Uyo and Ikot-Ekpene) were purposively selected. This is because cassava is massively cultivated in those areas. The second stage involved the selection of three (3) blocks from each of the two agricultural zones, making up a total of six (6) blocks. The third stage involved the random sampling of two circles from each of the blocks totaling twelve (12) circles. Ten (10) rural women cassava farmers were randomly selected from the list of cassava farmers in the area, making it a total number of 120 rural women cassava farmers for the study. Structured questionnaires were used in the collection of data from the respondents. Data collected were analyzed by the use of descriptive and inferential statistics, mean, tables, percentages, 3-point Type-Likert-scale as well as probit regression model.

### Probit Estimation

Probit regression model was used to estimate factors that determined women participation in production and processing of cassava. It is appropriate when the response takes one of only two possible values representing presence or absence. The model was adopted as used by Gujarati (2003). The probit regression model is explicitly expressed as

$$P_i [y_i=1] = [Fz_i] \dots\dots\dots(1)$$

Where,

$$Z_i = \beta_0 + \beta_1 X_{i1} \dots\dots\dots (2)$$

$$y_i = \beta_1 + \beta_2 X_{2i} + \dots\dots + \beta_k X_{ki} \dots\dots\dots (3)$$

$y_i^*$  is unobserved but  $y_i = 0$  if  $y_i^* < 0$ , 1 if  $y_i^* \geq 0$

$$P(y_i = 1) = P(y_i^* \geq 0)$$

$$= P(u_i \geq -\beta_1 + \beta_2 X_{2i} + \dots\dots + \beta_k X_{ki}) \dots\dots\dots(4)$$

$i = 1, 2, \dots, 120$  (respondents)

Where  $Y_i$  = constraints of participation of rural women in production and processing of cassava in the study area (Dichotomous dependent variable 1=Yes, 0 = No)

$\beta$  = A factor of unknown coefficients

$X_1$  = Pre-occupation with household chores (Yes=1, No=0)

$X_2$  = Non-ownership of farm land (Yes=1, No=0)

$X_3$  = Inadequate fund (Yes=1, No=0)

$X_5$  = Marketing problems (Yes=1, No=0)

$X_6$  = Poor extension visit (Yes=1, No=0)

$X_7$  = High cost of labour (Yes=1, No=0)

$X_7$  = Lack of farm credit (Yes=1, No=0)

$X_8$  = Unavailability of fertilizer (Yes=1, No=0)

$X_9$  = Disease and pest infestation (Yes=1, No=0)

$X_{10}$  = Herdsmen /cattle menace (Yes=1, No=0)

## RESULTS AND DISCUSSION

### Socio-economic Characteristics of Women Cassava farmers in Edo State

Table 1 shows that majority of the women farmers (74.2%) were within the age range of 31-50 years. This implies that majority of them were at their productive age which is an indication of their agricultural production effort for increased production and processing in the study area. This is consistent with the findings of Amadi *et al* (2018) that women in their early 30s and 40s take active part in food crop production and processing. The findings also revealed that most of the women farmers (72.5%) were married. The household size indicated that the majority of the respondents had between 4-6 members in their household. This constitutes (71.8%) of the total respondents. The implication is that the respondents have hands to assist in production and processing of cassava. The size of a household is an essential factor in crop production because it influences to a large extent the supply of labour for immediate farm employment. This is in line with the findings of Abdoulaye *et al*, (2015) that large households are better adopters of improved cassava varieties in Nigeria.

Considering the system of education in Nigeria, Table 1 gave an indication that 90.8% of the respondents were literate implying that most of the respondents were literate with different educational background. The implication is that with these literate set of people, the goal of most institutional support to improve the productivity of farmers may be attained. This finding agrees with Amadi *et al*, (2019), who stated that farmers with more years of schooling tend to be more productive than farmers without education except they

are improved by learning. For years of experience (60%) of the respondents had more than 10 years of active participation in cassava production and processing. Relating the level of experience with the age of the respondent as Table 1 shows, it can be added that they started engaging in the enterprises at a very young age.

Onyemauwa (2012) concurred with this result stating that women engage in cassava production and processing at a young age. Majority (67.5%) of the respondents had not more than a hectare of cassava farm size. The implication is that the women would not be able to produce cassava in a very large quantity. Majority (70.8%) generate income above 200,000 from cassava production and processing annually. This indicates that the respondents generate income from the cassava enterprise.

The Table also revealed that about (68.3%) of the women belonged to, and take part in cooperative societies activities. Obviously, their participation in cooperative activities will likely enhance their production and processing activities. The finding also showed that (59.2%) of the women had no access to farm credit; this may be due to the fact that women are rarely considered credit worthy because they have no collateral (Amadi *et al*, 2018). Majority (78.3%) of the respondents were in contact with the extension agents, which added more knowledge to their cassava production and processing capacity. Enterprise objective of producing for both household sustenance and commercialization is an evidence active participation in production and processing of cassava. Majority (96.7%) of the women involvement in cassava production and processing was for both household consumption and commercial purposes.

**Table 1: Socioeconomic characteristics of women in cassava production and processing**

<b>Variables</b>	<b>Frequency</b>	<b>Percentage</b>
<b>Age</b>		
21-30	11	9.10
31-40	39	32.5
41-50	50	41.7
>50	20	16.7
<b>Marital status</b>		
Single	13	10.8
Married	87	72.5
Widowed	20	16.7
<b>Household size</b>		
1 – 3	17	14.2
4 – 6	86	71.6
7 and above	17	14.2
<b>Educational status</b>		
Non formal	11	9.2
Primary	36	30.0
Secondary	56	46.6
Tertiary	17	14.2
<b>Farming Experience</b>		
1 – 10	48	40.0
11 – 20	59	49.2
21 and above	13	10.8
<b>Farm size</b>		
0.1-0.99	31	25.8
1.0-1.99	81	67.5
2.0 and above	8	6.7
<b>Farm Income</b>		
10,000-200,000	35	29.2
201,000-400,000	61	50.8
Above 400,000	24	20.0
<b>Cooperative Membership</b>		
Yes	82	68.3
No	38	31.7
<b>Access to credit</b>		
Yes	49	40.8
No	71	59.2
<b>Access to extension contact</b>		
Yes	94	78.3
No	26	21.7
<b>Enterprise objective</b>		
Consumption	3	2.5
Commercial	1	0.8
Both	116	96.7.
<b>Total</b>	<b>120</b>	<b>100.00</b>

**Source: field survey, 2019**

#### **Participation in Cassava Production and Processing**

Findings in Table 2 indicate that women participate actively in most of the cassava production and processing activities in the study location. Result showed that their most significant participation in the activities was in cutting of cassava stems ( $\bar{x}$  =2.83) peeling/washing ( $\bar{x}$  =2.83),planting and weeding ( $\bar{x}$  =2.83) respectively, cutting of cassava sticks, fire

preparation and frying ( $\bar{x}$  =2.6) respectively, fire application and frying ( $\bar{x}$  =2.56) respectively, harvesting ( $\bar{x}$  =2.54), fertilizer/manure application ( $\bar{x}$  =2.49) and cultivation ( $\bar{x}$  =2.10).Findings also indicate that women had low participation in activities such as tying with grating/grinding and bagging ( $\bar{x}$  =1.88) respectively, land clearing( $\bar{x}$  =1.60).The grand mean for the participation index, which was found to

be 2.4, is an indication that women in the study area always participate in cassava production and processing activities. The implication is that women played pivotal roles in various operations involved in cassava production and processing in the study area, and by that participated very high in the activities. The finding agrees with the report of Onyemauwa (2012)

that cassava is a women crop. These findings are also in agreement with many previous reports (Lenis *et al.* 2009, Anyanwu *et al.*, 2016, Udemezue and Onwueneme, 2017; Atseret *et al.*, 2017) which found women to be mostly engaged in cutting of cassava stems, planting, weeding, peeling, washing and frying.

**Table 2: Level of women participation in cassava production and processing**

Production/Processing Practices	$\bar{x}$	SD
Land clearing	1.60	.679
Cultivation	2.10	.803
Cutting of cassava stems	2.83	.423
Planting	2.61	.569
Fertilizer/Manure Application	2.49	.622
Weeding	2.61	.584
Harvesting	2.54	.548
Peeling/Washing	2.68	.505
Grating/Grinding	1.88	.865
Bagging	1.88	.865
Fire Application	2.56	.632
Frying	2.56	.632
<b>Grand mean</b>	<b>2.4</b>	

**Source:** *Field survey, 2020*. Mid Score Decision Rule: 2.0 and above indicated always participated; Less than 2.0 indicated rarely or lowly participated

#### **Constraint analysis of rural women participation in cassava production and processing in Akwalbom state, Nigeria**

The Probit estimates of rural women participation in cassava production and processing are presented in Table 3. The Chi square tests of 624.890 shows that the model is significant in explaining the participation of rural women in cassava production and processing ( $P < 0.05$ ). Six out of ten explanatory variables were significant at 1%, and 10% alpha level of probability.

##### **Non-ownership of farm land**

The coefficient of non-ownership of farm land (2.959\*\*\*) is positive and highly significant at 1% level showing that it is a strong constraint that affects active participation of the rural women in production and processing of cassava both for household consumption and income generation in the study area. The implication is that having access to large farm land has serious influence in production of cassava because women with large farm land have the chance to cultivate larger portion of cassava which in return increase the income they generate from the cassava production and processing. Small size of farm plots, as complained by the women, is to large extent a reflection of pressure on land. This finding is in line with (Anyanwu and Akintonde, 2011) who reported that much still need to be done to ensure women acquisition of land and control overexploitation of resources to alleviate constraints that hinder income

generation as main producer and providers of food for the household.

##### **Inadequate funding**

Coefficient of inadequate funding (2.115\*\*\*) is positive and significant at 1% level indicating that participation in cassava production and processing by rural women in Akwalbom is constrained by insufficient fund. The implication is that not having enough capital would affect their level of participation and hinder the rural women from affording inputs and equipment which would subsequently prevent them from participating effectively. Thus, rural women farmers require financial and othe assistance to participate in production and processing of cassava. The finding is in agreement with the work of Bolaji (2015) who observed that the inadequate capital is one of the major developmental challenges facing women empowerment in cassava production and processing in Nigeria.

##### **Marketing problems**

The coefficient of marketing (-2.576\*\*\*) is negative and significant at 1% level showing that it is not a strong constraint to production and processing of cassava by the rural women in Akwalbom state. The implication of the finding is that the cassava products are marketable and therefore there is need to provide adequate funding to boost production and processing of cassava among the rural women farmers. It enhances participation, income generation and helps to build confidence in women. According to the report of

Olatade *et al* (2016) marketability is one of the challenging factors to cassava production.

#### Poor extension visits

Amadi *et al* (2019) reported that the village extension agents are the most effective source of information for farmers as they would inform and build the capacity of farmers increasing their knowledge and reducing their uncertainty in decision-making on their involvement in cassava production and processing. This survey showed strong negative significance to poor extension visits (-5.655\*\*\*) indicating that frequent visit of extension agents is not among the serious constraints of active participation of rural women in cassava production and processing. The implication is that extension activities in Akwalbom are effective and does not affect their cassava enterprise. However, the extension agents in the study area should be encouraged and mobilized to do better.

#### High cost of labour

High cost of labour(12.786\*\*\*) is identified as a strong constraint of active participation of women in cassava production and processing. This implies that when the cost of labour is high and there is insufficient fund to

carry out the activities, it becomes certain that the rural women will not be able to produce and process cassava in a very large quantity in the study area. This result collaborated with Ani (2002) who reported that high cost of labour affect agricultural productivity. The finding is in agreement with the work of Bolaji (2015) who observed the following as the developmental challenges facing women empowerment in cassava production and processing in Nigeria: high cost of labour, inadequate capital, inadequate training, poor market and high cost of modern processing machines.

#### Herdsmen/cattle menace

Herdsmen/cattle menace (-2.072\*\*) is negative and significant at 5% level indicating that notwithstanding the activities of herdsmen/ cattle menace in the study area, the rural women still embark on their cassava production and processing activities. This implies that it is a manageable situation though there is need to take necessary caution to avoid this constraint getting out of hand. In line with this result, Amadi *et al* (2019) pointed out that herdsmen attack on farmers is a challenge to humanity and agricultural production.

**Table 3.Probit Estimates Analysis of Constraint to rural women participation in cassava production and processing in Akwalbom state, Nigeria**

Variables	Coefficient	Standard error	Z-value
Pre-occupation with household chores	.239	.555	.431
Non-ownership of farm land	.305	.115	2.595***
Inadequate funding	1.026	.485	2.115**
Marketing problems	-.304	.118	-2.576***
Poor extension visit	-.820	.145	-5.655***
High cost of labour	.179	.014	12.786***
Lack of farm credit	.065	.401	.163
Unavailability of fertilizer	-.308	.598	-.516
Diseases and pest infestation	.081	.394	.206
Herdsmen/cattle menace	.143	.069	-2.072**
Intercept	1.5346	0.355	5.521
Chi Square	514.890***		
P< 0.05.			

Source: Field Survey, 2019

\*\*\*= Significant at 1.0%

\*\*= Significant at 5.0%

\*= Significant at 10.0%

#### CONCLUSION AND RECOMMENDATION

An enabling environment will influence the capacity of rural women to be involved, participate actively and benefit from cassava business in a sustained and effective manner. The study concluded that most of the rural women in the study area always participate in cassava production and processing and their involvement were both for household consumption and commercial enterprise. The major determinants of active participation include: non ownership of farm

land, inadequate funding and high cost of labour while minor determinants were marketing problem, poor extension contact and herdsmen/cattle menace. Taking effective cognizance of these major determinants and overcoming the barriers to participate in cassava production and processing, rural women would improve their standard of living. The study concludes that in order to empower rural women to overcome barriers themselves and participate more actively

requires men, community and government to provide adequate support.

It is highly recommended that the women should have access to sustainable funding assistance and effective extension system to enhance group formation and active participation of rural women in cassava production and processing in their area. Further, there is need to review the existing land tenure system in the area and give women greater access to and control of production resources.

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