

Determinants of Women Involvement in Agro Processing in Owerri Agricultural Zone of Imo State: Implication for Food Security

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ABSTRACT

The study assessed determinants of women's involvement in agro-processing in Owerri agricultural zone of Imo State. The objectives are: to examine the socio-economic characteristics of the women farmers involved in agro-processing, determine the extent of women's involvement in agro-processing, and ascertain the reasons for their involvement in agro-processing and the constraints to agro-processing activities. Multi-stage random sampling procedure was used to select 90 rural women farmers for the study. Structured interview schedules through the use of in-depth interviews and focus group discussions were used to collect data. Of all the variables tested: age (2.451***), income (14.237***), marital status (3.259***), farming experience (5.976***), farm size (2.951***) and information sources (1.629*) had a positive relationship with involvement in agro-processing activities. All the respondents admitted that their involvement in agro-processing activities has increased their financial contributions to their families. The major constraints to women's involvement in agro-processing include inadequate capital, high cost of manual labour and low level of infrastructure (100%), low access to cooperative benefits (77.8%), inadequate processing equipment (67.7%) and poor access to training programs (44.4%). The significance of the regression (F ratio =22.835***) shows that women's involvement in agro-processing activities is affected by their socioeconomic characteristics. It is strongly recommended that concerted actions should be taken by the government and agricultural institutions to make women-centric policies in the areas of fund availability, availability of infrastructure and extension services..

Key Words: Determinants, Women, Involvement, Agro Processing, Food security

INTRODUCTION

Nigerian Agricultural Development Project (ADP) set up a training programme for women farmers in 1991. The aim is to improve agricultural extension services for women by training women contact farmers in

agricultural and extension methodologies. This is because it has been noticed that in Nigeria, women produce, process and preserve the majority of agricultural produce for food availability. Millions of them work as farmers and farm workers such that they constitute 82% of the wage employment in agriculture (Costa, 2023) thus highly contributing to the national agricultural output, maintenance of the environment and family food security. The vital role women play in food security is evident both in the household and society at large. Women farmers in sub-Sahara Africa produce over sixty per cent of food by managing seventy-five per cent of storing of food, marketing of produce and rearing of animals (Hamed, 2020).

This necessitates increased women's participation as extension advisors at various agricultural developmental levels. The essence is to reposition to an extension status where women can effectively facilitate food production and processing programmes that will have a direct impact on ensuring adequate human nutrition and food security. It has been observed that most aspects of agricultural production are primarily the responsibility of farm women. This is because the majority of the farmers were mostly females covering about 54.17% of the total population. Most of them are no longer in their youthful age and choose to stay away from stressful farming. (Obi-Nwandikom *et al.*, 2021). They engage in kitchen gardens, vegetable production and selection, sowing, weeding, harvesting and processing (Udemezue and Odia, 2021). Women's involvement in processing activities is being limited by demand and supply factors. The supply factors include lack of registration certificate, low literate clientele, and availability of collateral and high covariate risk associated with formal credit histories. The demand factors include a lack of collateral such as landed property, buildings, equipment and loan transaction costs. The low level of education of most women farmers coupled with the unfamiliarity with banking procedures make it difficult for these women to overcome the procedural barriers of taking a loan (Fabiya, 2021).

Amanze *et al.*, (2023) stressed that the women farmers are the most involved in the off-farm activities of food processing. Women are highly involved in cassava processing into gari, tapioca, odourless fufu, into pancake and cassava flour, maize processing into pap, corn meal, processing and utilization of soybean into soya flour, soya milk etc, Others are maize processing into maize flour and malted maize-milk drink, cocoyam processing into cocoyam chips, cocoyam flour. Further processing activities include plantain processing into plantain chips and plantain flour.

Women farmers have been noted for farming on small pieces of land partly due to limited access to labour-saving equipment, low access to land and time constraints due to their multiple roles. Women disadvantaged access to resources, inputs and support services reduce their potential agricultural impact by 20%. Land ownership which is an indispensable resource to farmers is in the hands of male household heads even though women have been the historical mainstay of the world's viable agro-ecological zone system in most countries. In southeast Nigeria, gender disparity in access to land shows that women are in possession of twenty percent agricultural land while men have eighty percent (Baatar *et al.*, 2020). Though access to land is multi-dimensional (inheritance, purchase, lease, rent), women's disadvantaged access to land is handicapped by low purchase capital and allegiance to men. Despite the dominant and important roles women play in food processing, access to processing technologies and farm inputs are threatened by poor extension contact, low level of capital and low capacity of operatives. This is because financial institutions hardly grant them loans due to unavailability of collaterals. These conditions have hampered their economic empowerment in agro processing. Thus, this work addresses involvement of women in agro processing, reasons for women involvement in agro processing, constraints in agro processing and the association between socioeconomic characteristics of women and their involvement in agro- processing activities.

MATERIALS AND METHODS

The Study was carried out in the Owerri Agricultural Zone situated in the Imo State rain forest vegetation belt of Nigeria between latitude 4°45'N and 7°15'C and longitude 6°50'E and 7°25' Of Greenwich

(Anyanwu *et al.*, 2022). The study targeted rural women and employed multistage random sampling technique in selecting the respondents. From the list of eighteen blocks in Owerri Agricultural Zone of Imo namely Aboh Mbaise, Ahiazu Mbaise, Egbema / Agwa, Emekuku, Ezinihitte, Ikeduru East, Ikeduru West, Mbaitoli East, Mbaitoli West, Obibi / Ihiagwa, Obokwe, Obosima, Oguta, Oke Uvuru, Owerri Urban North, Owerri Urban South, Umuneke and Umuekwune, six blocks were randomly selected. Two communities were selected from each of the six blocks without replacement giving a total of twelve Communities (cells). The sample frame was drawn from 500 women farmers from the twelve selected communities. However, out of the 500 women farmers, 200 women were identified as agro-processors by the extension agents. With the help of the extension agents and contact farmers, eight women participating in agro-processing activities were selected randomly from each community to ensure the reliability of the information. This gave rise to a sample size of 96. However, six respondents did not return their questionnaire reducing the sample size to 90. The study made use of primary data collected through a questionnaire which sought information on the socio-economic characteristics of farmers, involvement in agro-processing activities and reasons for involvement in agro-processing activities.

The data collected were analysed using mean, frequency, percentages and standard deviation. Involvements of women in agro-processing activities were evaluated on a 4 –1 rating scale (very highly involved, highly involved, lowly involved and never involved) with a mean of 2.5 adjudged to be acceptable. The mean of the Likert scale was obtained by adding together the number of scales and then dividing by the number of scales to obtain the discriminating index of 2.5 (e.g. 4+3+2+1 = 10/4= 2.5). Reasons for women’s involvement in agro-processing activities and constraints were analysed using multiple responses. The formula for the standard deviation was derived as follows: $\sigma = (Xi - \mu) / N$. where: σ = standard deviation, X_i = i th observation, μ = mean and N = Number of observations in the population.

The logistic regression analysis was used to determine the association between the socio-economic characteristics of women and their involvement in agro-processing activities. The implicit model of the logistic regression analysis (Anamika, 2023) was adopted and is as follows ($X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, X_9+e$)

- Y = Rate of adoption of processing technologies
- X_1 = Farmer’s age (years)
- X_2 = Farmer’s educational level (No of years)
- X_3 = Farmer’s Income (₦)
- X_4 = Farmers access to credit (Dummy variables Yes1, No 0)
- X_5 = Marital status (1 for single, 2 for married, 3 for widowed, 4 for divorced)
- X_6 = Household size (No of persons)
- X_7 = Farming Experience (Years)
- X_8 = Farm Size (hectares)
- X_9 = Source of information (1 for person to person, 2 for audio / visual ,3 for bulletins / journals,4 for person to person and audio visual, 5 for person to person, audio – visual and Journals / bulletins.
- e = error term.

Table1: Explanatory variables, measurement and expected sign

Variables Measurement	Type	Exp. Sign
Age	Years	continuous-
Farmers educational level	number of years spent in school: 0 for no formal, 1-6 primary, 7-12 college, 14 and above tertiary	categorical+/-
Farmers income	Naira per month	continuous+
Farmer’s access to credit	1 if yes, 0 If No	dummy+
Marital status	1 for single, 2 for married 3 for divorced, 4 for widowed	Categorical +/-
Household size	Number of persons	continuous+
Farming experience	years	continuous+
Farm size	hectares	continuous+
Extension contact	Number of visits by extension agents	continuous+
Livestock holding	Number of livestock	continuous+
Varieties holding	Number of varieties	continuous+

RESULTS AND DISCUSSION

Table2: Socioeconomic characteristics

Variable	Adopter (A) (60) Mean	SD	Non Adopter(NA) (30)		Min	Max	T-value difference
			Mean	SD			
Age	44	0.733	36	1.200	20	65	-0.004***
Household size	6	0.1	4	0.133	2	13	-0.008***
Experience	25	0.416	5.5	0.517	9	30	-0.009***
Farm size	3.5	10.059	1.54	0.051	0.5	11	-0.016***
Extension contact	4	0.066	1	0.033	3	8	-0.023***
Varieties holding	7	0.117	3	0.1	4	10	-0.016***
Livestock holding	8	0.133	2	0.066	1	7	-0.023***

Source: Field survey, 2022 ***Significant at P<0.0001

The result in Table 2 shows the socio-economic characteristics of the women processors examined in the study. It indicates that the t-values computed for all continuous variables were found to be statistically significant for all the tested variables at 0.01% level of significance. This implies that there was a significant difference in age, household size, experience, farm size, extension contact, varieties holding, livestock holding between the varieties adopters of processing activities and the non-adopters. This will lead to differences in output between adopters and non-adopters from processing activities.

Table 3: Involvement in agricultural produce processing

Processed products	Mean	SD	Rank
Cassava processing into odourless fufu	3.13	0.80	4 th
Cassava processing into Flour	2.50	1.41	7 th
Dry season vegetable Production	3.10	0.87	5 th
Tapioca	2.93	0.77	6 th
Cocoyam processing and utilization into chips and food thickening	3.56	0.61	1 st
Maize flour paste	2.50	1.41	7 th
Corn Meal	1.60	0.02	11 th
Processing and utilization of soya milk	2.31	1.23	8 th
Soya Meal	1.89	0.81	10 th
Cassava processing into gari	3.56	0.61	1 st
Cassava processing into Pancake	2.00	0.02	9 th
Maize Flour	1.40	0.02	12 th
Processing and Storage of melon	3.23	0.99	2 nd
Harvesting and storage of paddy rice	0.00	0.00	13 th

Source: Field survey, 2022

*Multiple responses

Table 3 shows that the mean and standard deviation of women involvement in processing activities. The results show that women were most involved in processing cassava into gari and cocoyam into chips and food thickening (mean = 3.56), processing and storage of melon (mean = 3.23), cassava processing into odourless fufu (mean = 3.13), dry season vegetable production (mean=3.10) and maize flour (mean=2.50).The reason could be that the products are in high demand in the are leading to availability of ready market. However, there are processed products with lesser mean indicating that the potentials of some agro products are underutilized. This agrees with Agricultural Development Bank (2015) findings that women processors have not been able to untie the full potentials of agro products due to low income and support.

Table4: Reasons for women involvement in processing activities

Reasons	*Frequency	%
Financially better	66	73.3
Acquisition of property	54	60.0
Increased household contribution	90	100.0
Children education funding	90	100.0
Improved livelihood	90	100.0
Food and nutrition security	90	100.0
Higher respect from husband	90	100.0

*Multiple responses

Source: Field Survey, 2022

Table 4 shows the reasons for women’s involvement in agro-processing activities. All the respondents admitted that their involvement in agro- processing activities has increased their financial contributions to household and children’s education (100%), livelihood, food and nutrition security(100%), higher respect from their husbands (100%), financial independence (73.3%) and acquisition of property (60%).This findings support the assertion of Agricultural Development Bank (2015) that an increase in women’s income has a positive effect on the way household budgets are allocated especially for improving the welfare of the family.

Table 5: Constraints encountered by women involved in agro processing activities

Constraints	Frequency	Percentage
Inadequate capital	90	100
Poor access to training programmes	40	44.4
Inadequate access to information	28	31.1
Inadequate processing equipment	60	66.7
High cost of manual labour	90	100
Inadequate raw materials	30	33.3
Low level of infrastructure	90	100
Limited knowledge of marketing strategy	20	22.2
Low access to cooperative benefits	70	77.8

Source: Field survey, 2022

*Multiple responses

Table 5 shows that women’s involvement in agro-processing activities is affected by constraints such as: inadequate capital, high cost of hiring manual labour and low level of infrastructure (100%), low access to cooperative benefits (77.8%), inadequate processing equipment (67.7%) and poor access to training programs (44.4%). Others are inadequate raw materials (33.3%), inadequate access to information (31.1%) and limited knowledge of marketing strategy (22.2%). The above constraints are in line with Adeniyi *et al.*, (2023) report that a high skill gap exists in agro-processing because women do not have good access to training, high-capacity equipment and other processing inputs that can increase their output and income.

Table 6: Regression analysis on the association of farmer’s socio-economic characteristics and involvement in agro processing activities.

Variables	Coefficient	T- values
Constant	-30.980	(-2.412)
Age(X_1)	0.388	(2.451)**
Education(X_2)	0.103	(0.363)
Income(X_3)	4.68E-005	(14.237)***
Access to credit(X_4)	14.237	(-0.443)
Marital Status(X_5)	19.041	(3.259)***
Household Size(X_6)	0.684	(0.871)

Farming experience(X_7)	2.906	(5.976)***
Farm Size(X_8)	10.166 -1	(2.951)***
Information Source(X_9)	1.698	(1.629)*
R^2		0.720
F-Ratio		22.835***

Source: Field Survey, 2022 and computer printout of SPSS result.

*** Significant at the 1% level

** Significant at the 5% level

*Significant at the 10% level

Table 6 shows the association of the socio-economic characteristics of women and involvement in processing activities. The logistic regression analysis R^2 value of 7.20 indicates that about 72% of the variations on the level of women involvement in agro processing activities were explained by the joint action of the explanatory variables in the model. The respondents' age, income level and marital status, farming experience, farm size and information source had a positive relationship with involvement in agro processing activities. This implies that an increase in the variables, increased women's involvement in agro-processing activities. An increase in age increasing the involvement of in agro- processing is against the a priori expectation. The reason could be that as the women increased in age, their responsibilities increase and their involvement in agro processing increased to earn more income. An increase in income level, farm experience, farm size and information source increased the involvement of women in agro processing in line with the a prior expectation because the availability of material/input resources, established skills and innovative information are good incentives for women to be involved in agro-processing. The higher the percentage of married women, the higher the involvement of women in agro-processing to build their capacity to take proper care of their families

CONCLUSION

The desire of women for financial relevance in their families made women to be involved in agro-processing activities. However, inadequate capital, high cost of manual labour, low level of infrastructure, low access to cooperative benefits and inadequate equipment for processing were the main constraints hampering their involvement in agro-processing activities. Therefore, the study projects concerted actions by government and agricultural institutions to make women-centric policies in the area of fund availability, provision of extension services and availability of infrastructure. This could be in the form of localizing a platform for agricultural value chains for farming communities to integrate producers, processors, marketers and consumers of agricultural outputs. This will also help women to establish links with high-scale industrial processors which will highly increase access to productive and processing resources and increase food security and incomes.

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