DETERMINANTS OF WOMEN'S PARTICIPATION IN AGRICULTURAL ACTIVITIES IN LAFIA METROPOLIS, NIGERIA

Abstract

The study analysed the determinants of women's participation in agriculture in Nasarawa State, Nigeria; with a particular emphasies on how socio-economic factors determines women's participation and agricultural productivity. Tothis end, a study was conducted in lafia metropolis with a random sample of 210 women to examine the status of women's participation in agriculture. Data analyse was collected by administering a structured questionnaire to women in the study area. Descriptive statistics and a logit regression model were employed to analyse the data. The findings from the analysis revealed that the main determinants of women's participation in agriculture are the size of the farmland and women's cooperative participation. On the otherhand, Age, level of education, accessibility to credit, and household size were insignificant in determining women's participation in agriculture in Lafia Metropolis. The study recommended that

Keywords: agriculture, participation, women, Nasarawa State, Nigeria

1. Introduction

A good number of studies have highlighted the fundamental role of agriculture in lifting rural people out of poverty in most developing countries in the twenty-first century (Firafis, 2016; Adekanye, Otitolaiye& Opaluwa, 2009). Agriculture is the vertical backbone of most developing countries, with a major part of the population earning its livelihood from various agricultural activities. For instance, the Nigerian economy is still predominantly agrarian and

women are key players in the agricultural sector, most notably within rural communities (Adebisi &Monisola, 2012). Although Nigeria has one of the lowest recorded female labour force participation rates way below that of their foreign counterparts, women still contribute between 40 and 65% of all hours spent in agricultural production in sub-Saharan Africa, thus providing more than two-thirds of the workforce in the agricultural sector (Tijani & Tijani, 2019; Barau&Oladeji2017;Food and Agriculture Organization of the United Nations (FAO) 2011). However, women still face formidable limitations in contributing their quota to the development of the agricultural sector (Rahman, 2008; Awotide, Karimov & Diagne 2016).

Despite the obstacles faced by most female farmers in Africa, women have taken a critical role in agricultural production in Nigeria, ranging from crop and livestock production to food processing, storage, and marketing. But to a large extent, the determinants of their participation in agriculture connect to the roles of various actors or stakeholders (Rahman and Haruna, 1999). However, a steady increase in population growth has been identified as a key fuelling factor stimulating the demand for a timely supply of food and raw materials for production which could only be satisfied through agricultural production (Yohanna, Ishaq & Muhammad, 2021). This increasing human population and high demand for food, has also fuelled women's participation in agriculture.

The greatest challenge to the Nigerian agricultural sector is increasing agricultural production and the value of agricultural products. Such an increase will have to be based on intensification and on adding value to products. Women are at the forefront of meeting this challenge, as agricultural production is primarily their domain. For women, the long-term benefits of agricultural growth are unclear. As women are the backbone of the agricultural sector, contributing significantly to agricultural production, it is important to try to assess what these benefits are likely to be (Kabeer, 1999; Rahman, 2008).

The North-central path of Nigeria has been leading the call for increasing agricultural production, especially in food and cash groups. As of 2021, the north central produces about 30 percent of the food crops in Nigeria (Abur, 2014; Ibrahim, Kigbu& Mohammed, 2011). Interestingly, women's participation has been on the increase over the years, although this can not be said for all regions. Nasarawa state which is the second largest producer of root crops is leading the trail in the participation of agricultural activities (Ayoade, Ibrahim& Ibrahim 2009). The government of the state has employed programs such as Nasarawa State Agricultural Development Programme (NSADP) (Kagbu, Omokore, &Akpoko; 2016) aimed at encouraging women's participation in agricultural activities. Despite this loadable effort, the factors that influence women's participation and the extent to which women's participation affected agricultural productivity in the state are scarcely discussed in the literature. This discussion is vital because according to the FAO (2011), food security can only be guaranteed if women are allowed to own land and participate fully in agricultural activities.

Identifying the factors capable of increasing women's participation in agriculture is a step in the right direction necessary for policy formulation. To formulate agricultural policies, policymakers need to first understand the determinants of women's participation in agriculture, identify women's perception, adoption, and accessibility to modern agricultural techniques for increased agricultural productivity. Despite the existence of agricultural interventions and policies by the Nigerian government and other private organizations in Nigeria, women's participation in agriculture is still very low. Given this, there is a need to examine the factors influencing female farmers' willingness to participate in agriculture. Therefore, the specific objectives of this study are: to examine the determinants of women's participation in agricultural activities as experienced in Lafia Metropolis; identify the level of awareness and accessibility of female farmers to productive resources in Lafia

metropolis.Determine how satisfied women are with their participation in agricultural production in Lafia Metropolis. And identify the factors that determine the level of women's satisfaction in agriculture in Lafia Metropolis.

2. Literature Review

Many studies have analysed the effect of women's participation in agriculture on agricultural production, the constraints faced by women's participation in agriculture, and examined the resource domain of empowerment. However, scanty literature exists on the determinants of women's participation in agriculture in Lafia Metropolis. Some notable studies that drew the attention of researchers to the effect of women's participation in agriculture on productivity include the works of Baurau and Oladeji (2017), Sireeranhan (2013), Adebisi and Monisola (2012). The findings from these studies revealed that food security, income supplement, and accessibility to land are the motivating factors for women's involvement in agriculture. Also, Sireeranhan (2013), Olawepo, and Fatulu (2012), and Ghash and Ghosh (2014) revealed that women'slevel of education, years of experience, extension services, cooperative bodies women belong to and their level of contribution in such cooperatives had a positive significant relationship and allocation of inputs for household farm production positively affect the efficiency of agricultural productivity of women.

Literature on the resource domain of empowerment reveals that increasing women's control over productive resources has significant effects on women's development indicators such as their share of household budgetary expenditure (Duflo, 2003; Doss, Meinzen-Dick, Quisunbing&Theis, 2006), child nutritional outcomes (Salawu, Rufai, Salman &Oguniyi, 2020) and productivity (Samto, Kerr, Hoddinott, Garigipati, Olmos & Young, 2019), among others. A woman's access to these productive resources will improve her decision-making within the household, enhance her freedom of mobility and develop her views and voice. These will, in turn, improve interest in participating in agriculture and the overall output of

the household (Salawu, Rufai, Salman &Oguniyi, 2020). Also, literature on women empowerment, in terms of the effect of educational achievement, training, access to knowledge, and information on the use of improved techniques on women's agricultural productivity revealed that education, training on the use of modern technology, women's access and adoption of new technology has a positive effect on women agricultural productivity and as well enhances their participation in agriculture (Nwaobiala and Uchechi, 2016; Anik and Rahman, 2021;Korgitet and Biru 2019, Alkire, Meinzen-Dick, Peterman, Quisumbing, Seymour and Vaz 2013).

Identifying the major determinants of women's participation in agriculture has received attention in recent times. However, studies that have analysed the determinant of women's participation in agriculture (Rahman, 2008; Firafis, 2016; Anslem and Taofeeq, 2010) found that the major determinants of women's participation in agriculture include access to productive resources, women's share of farm income, cooperative participation, contact with agricultural extension services, age, educational level, farm size and level of experience.

Studies by Farayola1, Adedeji, Popoola, and Amao, 2013 and Ogunlel and Mukhtar (2009) Noted that time spent in agricultural activities, awareness, access and increased adoption of new technology by women are strong determinants of women's participation in agriculture. However, the effect of these determinants may be positive or negative on women's participation in agriculture and productivity. For instance, women's participation in cooperative activities may increase women's income but at the same time, reduces the time allocated to engaging in agricultural activities. This may, in turn, lead to poor agricultural output and national output. The findings from the literature thus reveal that the various determinants of women's empowerment have both positive and negative effects on women's participation in agriculture and agricultural output.

3. Methodology

3.1. Study Area

We carried out a survey in Lafia Metropolis in Nasarawa State located in the North central region of Nigeria. The study used mainly primary data, the relevant primary data were obtained through a survey of farm households. According to the National Bureau of Statistics (2017), the estimated population of the target area is about1,869,377 where 50 percent of the population are farmers, 30 percent are civil servantsand the other 20 percent are artisans and other related trade. Of the total population in the area, the NBS (2018) statistics show that about 56 percent are women. The study employed the Yamane (1973) sample size determination using the Yamane Sample size determination the estimated sample for the study is calculated thus:

$$n = \frac{N}{1+N*(e)^2}$$

where n is the sample size; N is the population size and e is the level of precision or sample of error which in this study is plus or minus 5 percent. The estimated sample size based on the formula is about 210 Structured questionnaires administered to women were the main instrument used to obtain data for the empirical analysis. Seven wards were first randomly selected from the 13 wards that make up Lafia Local Government Areas (LGAs). Secondly, out of these seven wards, there was a random selection of sample farm households from the selected wards. In each of the seven selected wards, 30 farm Households were randomly selected giving a total of 210 sample households. Of the 210 questionnaires issued, 209 questionnaires were successfully returned and verified for analysis.

3.2. Materials and Methods

The details of the survey data included information on the household and demographic characteristics of the respondents such as the size of household farms, household size, age, and educational status; and farm characteristics which include the farm size, use of

improvedseedlings, contact with extension agents, accessibility to credit, years of farming experience, cooperative participation, involvement in farm-decisions, the accessibility of productive resources and respondents level of satisfaction participating in agriculture. Analysis of the data was done using descriptive statistics such as mean, frequency, and percentage.

This study further employed a logit regression model to estimate the relationship between the variables of interest. The logit regression model is a multivariate or unit technique that allows for the estimation of the probability that an event may or may not occurs by predicting a binary dependent outcome from a set of independent variables (Farayola, Adedeji, Popoola & Amao, 2013). This method was used to determine the factors affecting farmers' participation in agriculture in Lafia metropolis. The two main reasons for choosing the Logit model in this study instead of linear probability models according to (Rahman 2008), is that the Logit model ensures the production of the probability of choice within the (0, 1) range. This is an advantage over the linear probability model and the ease and convenience associated with the computation of the logit model. The logit model is based on a cumulative logistic probability function and it is computationally tractable. According to Gujarati and Porter (2009), the logit model is expressed as: $p_i = E\left(Y = \frac{1}{X_I}\right) = B_1 + B_2X_2 + B_3X_i$ (1)

In its simple form, equation (1) can be expressed as

$$p_i = \frac{1}{1+e^{-zi}} = \frac{e^z}{1+e^z} \quad (2)$$

Where pi is the probability that the event will occur, therefore the explicit model of the logistic regression for this study is expressed as:

$$\boldsymbol{Y_i = B_0 + X_iB_i + V_i} \quad \textbf{(3)}$$

Where X_i represents independent variables and Y_i is a dichotomous response variable that denotes women's participation in agriculture proxied by the level of women's satisfaction with participating in agriculture (Y= 1 if respondent *i*satisfaction is high; 0 if satisfaction is low)

X_1= Farm Size (acres)
X_2 = Cooperative participation (1 if a member of a cooperative; 0 if otherwise)
X_3 = Age (years)
X_4 = Educational Status (1= no formal education, 2 = primary, 3 = secondary, 4 = tertiary)
X_7 = Accessibility to Credit (Amount of loan farmer accessed)
X_6 = Household Size
b_0= constant term
u= error term

4. Presentation and Discussion of Finding

4.1. Socio-economic characteristics of respondents and descriptive statistics of variable

The socio-economic characteristics distributions of respondents summarized in Table 1 showed that the mean age of respondents was 6.43. This indicated that the majority of the respondents fall within the age range of 35 and 44 years and the highest percentage 19.14 % of the respondents fell within the age range of 40 to 44 years as shown in Table 2. The results of this study revealed that most of the respondents were still within the middle and active age group. The majority of the respondents (69.86 %) were married whereas 11.48 % were single, 8.13 % were divorced and 10.53% were widows. This finding implies that married women dominate various farming activities in the study area. This observation can be attributed to the fact that married women may have more access to agricultural resources such as land, credit, and improved input and are considered to be dependent because of their marital status. The report of this finding is supported by Tijani and Tijani (2019) who reported that married women are more engaged in agricultural productivity than single due to

the great responsibilities faced by married women in their households. Which includes providing food, generating income, and providing other basic household needs. Thus, engaging in agriculture is a necessary path to generating food and income needed by women to sustain their households.

In Table 1 it was also observed that the mean of the educational status of the respondents was 3.51 and Table 2 showed that the highest number (148) of women had attained a tertiary level of education. While the least number (15) of women farmers in the study area had no formal education. The findings revealed that only a few women farmers in the study area had no formal education. The educational status of farmers is a vital factor because, it could be used to determine farmers' level of adoption of new agricultural innovations and techniques of farming without difficulties which is capable of increasing their agricultural output (Iheanacho, 2000).

Table 1: Descriptive Statistics of Variables

Variables	**Age**	**Marital Status**	**Household Size**	**Farming Experience**	**Education Status**	**Farm Size**	**Access to credit**	**Improved Seedlings**	**Level of Satisfaction**
No of observations	209	209	209	209	209	209	209	209	209
Mean	6.43	1.59	6.15	11.66	3.51	1.69	0.095	0.98	0.88
Standard deviation	1.86	1.02	2.497	7.92	0.89	1.40	0.029	0.15	0.33
Maximum	9	4	18	37	4	10	1	1	1
Minimum	2	1	2	2	1	1	0	0	0

Source: Computed from field survey data (2022).

Table 2: Socio-economic Characteristics of Respondents

Variables	Description	Frequency	Percentage
Age (years)	Less than 14	0	0
	15-19	3	1.44
	20-24	6	2.87
	25-29	34	16.27
	30-34	25	11.96
	35-39	33	15.79
	40-44	40	19.14
	45-49	31	14.83
	50 and above	37	17.70
Marital Status	Married	146	69.86
	Single	24	11.48
	Divorced	17	8.13
	Widow	22	10.53
Education	No Education	15	7.18
	Primary	12	5.74
	Secondary	34	16.27
	Tertiary	148	70.81
Farming Type	Crop Farming	186	89.48
	Animal Farming	12	9.09
	Fish Farming	3	1.44
Use of improved seedlings	Yes (1)	204	97.61
	No (0)	5	2.39
Membership of cooperative	Yes (1)	136	65.07
	No (0)	73	34.93
Access to credit (Loans)	Yes (1)	20	9.51
	No (0)	189	90.43

Source: Computed from field survey data (2022).

The results from Table 2 showed that crop farming (89.48 %) was the major type of farming practiced by the respondents, followed by animal husbandry (9.09 %). This means that the majority of the female farmers in the study cultivated various types of crops to produce food and generating income. Results of the farm size cultivated by respondents in Table 1 showed a mean value of 1.69 for farm size. This implies that the majority of the respondents cultivated less than 2 acres of farmland for agricultural production. This agrees with the findings of Yohanna, Ishaq, and Muhammad (2021) which suggested that most female farmers are faced with the difficulty of acquiring land for farming purposes and most farmers in Nigeria produce generally on small scale.

The data on years of farming experience revealed a mean value of 11.66, this shows that the average years of farming experience of the respondents was 11 years, with the respondents with the highest years of farming experience of 37 years while the farmer with the least years of farming experience is 2 years. The result shows that most of the women farmers in the study area have reasonable years of farming experience. According to Ufondu, Maziya-Dixon, Okonkwo and Okoyeuzu (2021) The higher the number of years of farming experience, the more the farmer becomes aware of new production techniques, socio-economic policies and factors affecting agriculture and the higher the agricultural output obtained.

Considering the rate of use of improved seedlings by female farmers in the study area, Table 2 shows a high rate of use of improved seedlings of about 97.61% (204). This implies a high rate of adoption and employment of new methods and techniques of agriculture by female farmers in Lafia metropolis. This is an indication that female farmers are aware of the role of improved seedlings in boosting their agricultural output and productivity. Table 2 further revealed that about 136 (65.07%) of the respondents are members of various cooperative

groups. Indicating a high rate of cooperative participation among female farmers in the study area.

The study observed generally very low accessibility to loans and credit by farmers in the study area. Only about 9.51% (20 respondents) had accessed loans for agricultural purposes. The other 189 (90.49%) respondents had never accessed credit for agricultural production (Table 2). Women's lack of access to credit facilities limits the scale of their farm production and willingness to adopt new farming practices, and buy new equipment and other agricultural inputs (Rahman, 2008). To examine the extent these factors affect women's participation in Lafia Metropolis, we estimate the logit regression equation in Table 3.

Table 3: Logit Regression of Factors Affecting Women's Participation in Agriculture

Logit maximum likelihood estimates for the factors determining women's participation in agriculture in Lafia metropolis, Nasarawa State.

Variables	Coefficients	Z-statistics
Farm Size (X1)	0.6636 (0.4007)**	1.66
Cooperative participation (X2)	1.3126 (0.4655)*	2.85
Age (X3)	0.0590 (0.1306)	0.45
Education (X4)	0.2198 (0.2055)	1.07
Accessibility to credit(X5)	-0.2473 (1.1315)	-0.22
Household size (X6)	0.0043 (0.1011)	0.04
Constant (b_0)	-0.4979 (1.0617)	-0.47
-2 log likelihood	68.44	

Note: ***P < 0.05 **p < 0.10** Significant level.
Values in parentheses = Standard errors
Source: Computed from field survey data (2022).

Table 3 depicts the result of the logit regression of factors affecting Women's participation in agricultural activities in the Lafia metropolis. The result indicates that Age, education, accessibility to credit, and Household size were found to be insignificant in influencing

women's participation in agriculture in Lafia metropolis. The coefficient of Farm size of the farmer which was found to be positive and significant at 10% implies that the higher the farm size of the farmers, the higher their participation in agricultural activities. This could largely be attributed to women's accessibility to farm productive resources. The more women have access to productive resources such as land the more they are stimulated to venture into large-scale agricultural production as such increasing the participation rate in agriculture.

The result of this study is consistent with the result of a similar study by Rahman (2008) on Women's involvement in agriculture in northern and southern Kaduna State, the study revealed that improved women's access to productive resources such as land, credit, and appropriate technologies could enhance their food production and processing.The coefficient of cooperative participation by the female farmers was found to be positive and significant at 5% implying that the higher the cooperative participation by farmers, the higher their participation in agricultural activities; which was evident in the response of most farmers that it is easier for them to access loans, moral support, counsel and other facilities from this cooperatives than from banks and other government agencies needed to increase their agricultural production.

4.2 Women's responsiveness and satisfaction from participating in agriculture in Lafia metropolis

Women's orientations and understanding of the benefits accrued to participating in agriculture can improve their satisfaction and trigger agricultural development of the country. Hence, it is therefore imperative to identify the key factors that determine women's satisfaction in participating in agriculture. Table 4 shows the result of the level of satisfaction of respondents. To understand the degree of each determinant factor on women's satisfaction, an estimation of the level of satisfaction of the respondents is important.

Table 4 Level of women's satisfaction with participating in agriculture in Lafia Metropolis

Level of Satisfaction	Percentage (%)	Frequency
Low	11.96	25
High	88.4	186
Total	100	209

Source: Computed from field survey data (2022).

In table 4 the level of women's satisfaction in agriculture in lafia metropolis is identified to be high. The result revealed that 88.4 % of the respondents are highly satisfied with participating in agriculture, while 11.96% of the respondent derive low satisfaction from participating in agriculture.

5. Conclusion and Recommendation

The findings of this study showed that despite the constraint faced by female farmers in the study area,the majority of the respondents (88%) are satisfied with participatingin agriculture in lafia metropolis. Similarly, the result of the logit regression analysis showed that women's participation in cooperative groups and farm size are the major determinants of women's participation in agricultural activities in the study. Women gain financial, material, and moral assistance from participating in cooperative groups highly needed to expand their agricultural production, and loans from these cooperatives are easily accessible to members. Also, the size of the farmland increases the agricultural productivity of women in the study area, the higher the land cultivated the higher the agricultural output. Hence, the study recommends the following:

1. Government and Non-government agencies should increase and improve female farmers' accessibility to productive resources, such as credit, land, new technologies for farming, and modern machinery in other to enhance women's interest in participating in agriculture in Nigeria.

2. Develop and devise ways to increase women's participation in cooperatives and other small educative forums. These channels can increase women's accessibility to productive resources, ideas, and innovations necessary to increase their agricultural output.
3. Government should as a matter of urgency, increase investment in education, literacy programs, and training for females most notably in the rural areas of the country needed to enhance women's participation in agricultural production.

References

Abur, C. C. (2014). Assessment of Food Security Status among Rural Farming Households in Guma Local Government Area of Benue State, Nigeria. *International Journal of Research in Humanities and Social Studies*, *1*(2), 32-42.

Adebisi, A &Monisola, A.T (2012). Motivations for women's involvement in urban agriculture in Nigeria. *Asian Journal of Agriculture and Rural Development*, 2(3), 337-343.

Adekanye T.O., Otitolaiye, J.O., & Opaluwa, H. I. (2009). Food and agricultural production in Nigeria: some empirical considerations for engendering economic policy for Africa. Paper prepared for presentation at IAFFE conference on Feminist Economics Boston Massachusetts, USA (26 the– 28th June) pp1-20

Alkire, S., Meinzen-Dick, R., Peterman, A., Quisumbing, A. R., Seymour, G & Vaz, A. (2013). The Women's Empowerment in Agriculture Index. *World Development*. 52: 71–91.

Anik, A. R., & Rahman, S. (2021). Women's empowerment in agriculture: Level, inequality, progress, and impact on productivity and Efficiency. *The Journal of Development Studies*, *57*(6), 930-948.

Anselm, A.E., &Taofeeq, A. A. (2010). Determinants of Women's Contribution to FarmingDecisions in Cocoa Based Agroforestry Householdsof Ekiti State, Nigeria. *Field Actions ScienceJournal*, 4, 1-6. Retrieve fromhttp://journals.openedition.org/factsreports/396

Awotide B.A, Karimov A.A and A. Diagne (2016): Agricultural Technology Adoption, Commercialization and Smallholder Rice Farmers' Welfare in Rural Nigeria. *Agricultural and food economics*. 4(3): 1–24.

Ayoade, J. A., Ibrahim, H. I., & Ibrahim, H. Y. (2009). Analysis of women's involvement in livestock production in Lafia area of Nasarawa State, Nigeria. *Age*, *21*(30), 31-40.

Barau, A. A., & Oladeji, D. O. (2017). Participation of urban women in agricultural production activities in the Sokoto Metropolis, Nigeria. *JNRD-Journal of Natural Resources and Development*, *7*, 84-90.

Doss, C., Meinzen-Dick, R., Quisumbing, A., & Theis, S. (2018). Women in agriculture: Four myths. *Global food security*, *16*, 69-74.

Duflo, E. (2003). Grandmothers and granddaughters: Old-age pensions and intrahousehold allocation in South Africa. *The World Bank Economic Review*, 17(1), 1–25.

Farayola,C.O., Adedeji, I. A., Popoola,P. O., &AmaoS. A. (2013). Determinants of Participation of Small Scale Commercial Poultry Farmers in Agricultural Insurance Scheme in Kwara State, Nigeria. *World Journal of Agricultural Research, 1(5)*96-100. Retrieve fromhttp://pubs.sciepub.com/wjar/1/5/5

Firafis, H. (2016). Factors affecting women farmers' participation in agricultural extension services for improving the production in rural district of Dendi West Shoa Zone, Ethiopia. *Journal of Culture, Society and Development*, (21) 30-41.

Food and Agriculture Organization of the United Nations [FAO] (2011). *The State of Food and Agriculture 2010–2011*. Women in Agriculture: Closing the Gender Gap for Development. Rome.

Gabriel, T., 1991. The human factor in rural development. London: Belhaven Press.

Ghosh, M., & Ghosh, A. (2014). Analysis of women's participation in Indian agriculture. *IOSR J. Human. Soc. Sci*, *19*(5), 1-6.

Gujarati DN and Porter CD (2009). *Basic Econometrics* (5th Edition). McGraw-Hill, New York.

Ibrahim, H. I., Kigbu, A. A., & Mohammed, R. (2011). Women's experiences in small-scale fish processing in Lake Feferuwa fishing community, Nasarawa State, Nigeria. *Livestock Research for Rural Development*, *23*(3), 1-8.

Iheanacho, A. C. (2000). "Pattern and Technical Efficiency of Resource Use in Millet-Based Crop Mixtures in Borno State of Nigeria. Research Journal of Science. Vol. 6 No. 1 and 2, pp. 97 – 103.

Kabeer, N. (1999). Resources, agency, achievements: Reflections on the measurement of women's empowerment. *Development and change*, *30*(3), 435-464.

Kagbu, J. H., Omokore, D. F., &Akpoko, J. G. (2016). Adoption of recommended rice production practices among women rice farmers in Nasarawa State, Nigeria. *Journal of Agricultural Extension, 20*(1), 107-120.

Korgitet, H. S., & Biru, M. W. (2019). The Effect of Farmer's Education on Farm Productivity: Evidence from Small-Scale Maize Producing Farmers in North Bench District, Bench Maji Zone. *Res Humanit Soc Sci*.

National Bureau of Statistics, (NBS, 2017): Demographic Statistics Bulletin. Federal Republic of Nigeria. nigerianstat.gov.ng

National Bureau of Statistics [NBS] (2018). *Conflict and Violence in Nigeria: Results from the North-East, North-Central, and South-South zones*. Preliminary Draft Report. Retrieve from http://www.nigerianstat.gov.ng/nada/index.php/catalog/55/download/503

Nwaobiala C.U and T.N Uchechi (2016): Utilization of Cocoyam Production Technologies among Women Farmers in Abia State, Nigeria, J*ournal of Agricultural Extension* 20(1)

Ogunlela Y. I. and A. A. Mukhtar (2009): Gender Issues in Agriculture and Rural Development in Nigeria: The Role of Women. *Humanity and Social Sciences Journal* 4 (1): 19–30

Olowa, O. W., & Olowa, O. (2013). Policy Interventions and Public Expenditure Reform for Pro-Poor Agricultural Development in Nigeria. *African Journal of Agricultural Research, 9*(4), 487-500. Retrieve from https://ssrn.com/abstract=2384986

Pindyck, R.S. and Rubinfeld, D.L., 1976. Econometric models and economic forecasts. New York:McGraw-Hill Book Company.

Rahman, S. A. (2008). Women's involvement in agriculture in northern and southern Kaduna State, Nigeria. *Journal of Gender Studies, 17*(1), 17-26.

Rahman, S.A. and Alamu, J. F., (2003). Estimating the level of women's interest in agriculture: the application of Logit Regression Model. Nigerian journal of scientific research, 4 (1), 45 – 49

Rahman, S.A. and Haruna, I.M., (1999). Determinants of women's economic contribution to the farm sector in Nasarawa State, Nigeria. A paper presented at the National workshop of the Society for International Development held at the Institute of Administration, Ahmadu Bello University,Zaria, Nigeria, 3–4 November.

Salawu, M. B., Rufai, A. M., Salman, K. K., & Ogunniyi, I. A. (2020). *The influence of women empowerment on child nutrition in rural Nigeria.* (Working Paper GMBF-013) African Economic Research Consortium AERC. Retrieve from https://www.africaportal.org/publications/influence-women-empowerment-child-nutrition-rural-nigeria/

Santoso, M. V., Kerr, R. B., Hoddinott, J., Garigipati, P., Olmos, S., & Young, S. L. (2019). Role of women's empowerment in child nutrition outcomes: *A systematic review. Advances in Nutrition, 10*(6), 1138-1151.

Sireeranhan, A. (2013). Participation of family-women in agricultural production: A case study of Jaffna District, Sri Lanka. *Journal of Economics and Sustainable Development, 4*(13), 143-147.

Tijani, B. A. & Tijani, H. (2019). Socio-economic factors influencing women participation in agricultural productivity in Damaturu Local Government Area, Yobe State,Nigeria. International Journal of Economics, Commerce, and Management. Vol. VII, Issue 12

Ufondu, H.E., Maziya-Dixon, B., Okonkwo, T.M., &Okoyeuzu, F. C. (2021).Socio-economic Factors Influencing Women Participation in Agricultural Productivity in some Yam Producing Areas of Ebonyi State. *International Journal of Innovative Agriculture & Biology Research 9(3),* 32-38.

Whatmore, S., 1991. Women in agriculture. Journal of rural studies, 7 (1/2) (Special Issue).

Yohanna, J.A., Ishaq, Danbauchi, S., Muhammad, A.M. (2021). Effectiveness of gender participation in agricultural productivity in Zuru Southern Guinea Savannah of Nigeria. *International Journal of Agricultural Extension and Rural Development Studies,8*(1) 1-8.

Yamane, Taro.(1973), Statistics: An Introductory Analysis.London: John Weather Hill, Inc.