Agrosearch, 21(1&2), 32-45, (2022) https://dx.doi.org/10.4314/agrosh.v21i1-2.3

ANALYSIS OF GENDER DYNAMICS IN CASSAVA PRODUCTION FOR RESOURCE EMPOWERMENT AMONG FARMERS IN OYO STATE, NIGERIA

Awotona, T. O., *Oladimeji, Y. U. and Damisa, M. A.

Department of Agricultural Economics, Faculty of Agriculture / Institute for Agricultural Research, Ahmadu Bello University, Zaria, Nigeria.
Corresponding Author's Email: yusuf.dimeji@yahoo.com

ABSTRACT

One of the key hindrances to agricultural advancement is the wide gender gap in agricultural productivity. This study focused on gender dynamics in cassava production towards resource empowerment among farmers in Oyo State, Nigeria. The specific objectives of the study were to determine the level of involvement of cassava farmers based on gender and to determine the empowerment status and gender parity of women and men cassava farmers. Primary data were collected through a structured questionnaire administered to randomly selected 245 cassava farmers made up of 68 adult male, 58 adult female, 61 youth male and 58 youth female cassava farmers. Data were analyzed using descriptive statistics, and empowerment in agriculture index. Both genders were highly involved in cassava farming. However, results further showed that adult males and females were more involved ($\bar{X} = 2.28$ and $\bar{X}$=2.3) than the youth male and female cassava farmers ($\bar{X}$=2.18 and $\bar{X}$=2.07 respectively). The disempowered headcount ratio was 60.3% for women as against 40.5% for men. This can be attributed to a number of indicators and domains of the 5DE sub-index in which women were considerably disadvantaged. The average adequacy score reveals that men achieved adequacy in 64% of dimensions of 5DE, while the 5DE adequacy score was 53% for women. The 5DE disempowerment index disaggregated by gender establishes that the domain of production and control over resources were the major contributors to the disempowerment index for both women and men. Within the domain of the resources, the combined influence of ownership of assets and access to credit and associated decisions contributed 26.86 and 31.52 % respectively to women and men disempowerment. Formulation of policies, planning and preparation of projects/programmes that would encourage gender sensitivity on cassava production by relevant agencies is advocated.

Keywords: Cassava Production, Empowerment, Gender, Resources, Oyo State

INTRODUCTION

Gender dynamics is the relationships and interactions between adult males, adult females and youths, which are characterized as changes over time in the standards governing the accepted roles, obligations and rights of adult males, adult females and youth. It is the variety of methods used to understand the relationships between gender, their access to resources, and the relative constraints genders face. Gender dynamics help find ways to mitigate possible risks that may exacerbate gender inequality and highlights opportunities to enhance positive outcomes. It is informed by socio-cultural ideas about gender and the power relationships that define them. Depending upon how they are manifested, gender dynamics can reinforce or challenge existing norms (USAID, 2016). An overview of the gender dimension in agricultural production is poorly documented in Oyo State. However, agriculture is a major and strategic component of Oyo State's economy contributing 24.21% to its GDP in 2018 (National Bureau of Statistics, NBS, 2019).

Cassava (*Manihot esculenta crantz*) is one of the most important staple food crops in Oyo State and, its average consumption exceeds 300 kg per person annually in some areas of the state. It is about the cheapest source of calories (Raufu *et al.*, 2018). The roots are rich in energy, starch and soluble carbohydrates, but low in protein. It is vital, not only as a food crop but also as a source of income for rural households.

Cassava is easy to produce as it endures poor soil, adverse weather, pests and diseases, hence its ability to grow and be available all year round. This gives it an advantage over other major staples food crops like yam and cocoyam in the State (James and Faleye, 2015). Its dry season resistance, resilience on marginal agricultural land and capacity to be stored in the ground makes it an important food crop for poverty alleviation among small-holder farmers (Agada *et al.*, 2018; Oyewo *et al.*, 2018). It is worth noting that about 1.630 million and 3.055 million MT of cassava were produced in Oyo State in 2011 and 2018 respectively (OYSADEP, 2019).

One of the key hindrances to agricultural advancement as supported by World Bank (2014) is the wide gender gap in agricultural productivity. Gender dynamics take into consideration the fact that adult males, adult females and youths participate in social and economic realities differently depending on their socio-economic status and culture. Most policies, programs, and projects that are targeted towards rural farming households have not made their intended impacts because the role and position of gender were not considered. The work performed by adult females and youth farmers remains underestimated, unreported, or underreported in economic analysis reports, while the work performed by adult males remains the focal point (Oladosu *et al.,* 2018). This has prompted inequality in agricultural strategies and policies developed for execution in Nigeria. Therefore, the failure to perceive the gender roles,

differences and disparities between adult males, adult females and youths represent a genuine risk to the effectiveness of the agricultural development agenda (IFPRI, 2010).

In Nigeria, adult females and youths represent practically half of the agricultural labor force, yet loans, extension services, farm credit, and other financial services are more targeted towards adult males than adult females and youths (USAID, 2017). Adult female and youth farmers are handicapped, and do not have much control over their resources, have low yields, low rates of modern input and technology adoption, and are hindered as far as human and physical capitals are concerned. These gender-based differences likewise concern economic capacities and incentives which in turn undermine their capacity to add to and partake of economic growth, influence intra-household resource allocation, land productivity, and welfare levels.

In Oyo State, there is scanty information about gender contribution in cassava production (Olaosebikan *et al*., 2019). Thus, it becomes important for empirical documentation of gender dynamics in cassava production, so that development intervention agencies, NGO's and Government could target the beneficiaries across the board in the study area. This research analyzed gender dynamics in cassava production for resource empowerment among farmers in Oyo State, Nigeria. It also determined the level of involvement of adult males, adult females and youth farmers in cassava production and determined the empowerment status and gender parity of women and men cassava farmers.

METHODOLOGY

The study area

The study was conducted in Oyo State, one of the six states in Southwest, Nigeria. The state is among the major cassava-producing states in the country and the region in particular. It is geographically located within Latitudes 5^{o}15' N and 9^{o}10' N, and Longitudes 2^{o}50' E and 5^{o} 52' E. The annual temperature varies from 25 to 35^{o}C. The vegetation has a rainfall pattern of about 1300 mm to 1500 mm per annum. Vegetation is a combination of rain forest to derived savannah. The climate is equatorial with notable dry and wet seasons with high relative humidity. The state has a projected population of 8,617,931 in 2020, with an estimated growth rate of 3.2 percent (NBS, 2017). The state covers an area of approximately 28,454 square kilometers (Ladele *et al.,* 2015) and the state comprises 33 LGAs and 4 Agricultural Zones namely, Ibadan / Ibarapa, Oyo, Ogbomosho, and Saki.

Sampling procedure and sample size

A multi-stage sampling procedure was used to obtain the sample size (Table 1). The first stage involves the random selection of two LGAs from each of the four agricultural zones in the state. This was followed by a random selection of two villages from each of the LGAs selected to make a total of 16 villages. Slovin's formula developed by Yamane (1967) was

used to calculate the minimum sample size based on the assumption of 5% expected margin of error, 95% confidence interval and applying the finite population correction factor. The formula is expressed as follows:

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

Where: N= the population under study, n= the desired sample, e= the level of tolerable error assumed to be 0.05; while1 is a constant value

$$n = \frac{634}{1+634(0.05)^2}; \; n = \frac{634}{2.59} \; n = 245; \qquad \frac{245}{634} x \; 100 = 38\%$$

Table 1: Sampling procedure and sample size of cassava farmers in the study area

Zones	LGAs	Villages	Sample frame	Sample size (39%)
Ibadan/Ibarapa	Ido	Apete	36	14
		Idi-oro	28	11
	Ibarapa Central	Abule Oba	27	11
		Lanlate	35	14
Oyo	Iseyin	Iseyin	48	19
		Akinwumi	42	16
	Afijio	Fiditi	67	25
		Ilora	42	16
Saki	Atisbo	Tede	45	17
		Irawo	30	11
	Iwajowa	Okeho	48	19
		Temidire	38	15
Ogbomosho	Surulere	Iresaadu	55	20
		Oko	36	14
	Ori-ire	Oolo	35	14
		Ikoyile	22	9
Total	**8**	**16**	**634**	**245**

Source: OYSADEP (2019).

The sample size of 245 cassava farmers was sorted by gender for the purpose of this study. Therefore, the sample size was made up of 68 adult males, 58 adult females, 61 youth males and 58 youth females cassava farmers.

Method of data collection

Data collection from primary sources was accomplished with the aid of an interview schedule. This was administered to cassava farmers by trained enumerators via personal interview method. Cross-sectional data were collected, analyzed and used in the data analysis.

Data analysis

The analytical tools that were used in this study include descriptive statistics and the women empowerment in agriculture index (WEAI). A likert-type scale was used to measures the level of involvement of farmers in cassava production. A 3-point Likert scale of Strongly Agreed (SA), Agreed (AG) and Undecided (U). Weights of 3, 2 and 1 respectively were assigned. For each indicator a weighted mean was obtained as follows:

$$WM=\frac{[(fSA*3)+(fAG*2)+(fU*1))]}{N} \quad (2)$$

WM = weighted mean; f = frequency; Values 3, 2, 1 = attached weights and N= sample size. Thus, the benchmarks adopted for this study are 1.00 -1.50 (low), 1.51-1.99 (moderate) and 2.00 and above (high).

Women empowerment in agriculture index (WEAI)

Women empowerment in agricultural index adopted from Alkire *et al*. (2012) was used to determine the empowerment status of women and men among cassava farmers in Oyo State. The five dimensions of empowerment with ten indicators were used. According to Alkire *et al*. (2012), to be empowered, one has to achieve adequacy in more than 80% of the indicators.

The 5DE index

The 5DE sub-index of the WEAI was used to assess women's empowerment among cassava farmers. A farmer is defined as empowered having exhibited its adequate achievements of 80 percent or more in four of the five domains through some combination of the weighted indicators which reflect total adequacy (Alkire *et al*., 2013). This is accomplished firstly by computing a disempowerment index across the five domains (M0); thereafter, compute 5DE as $(1-MO)$. Inadequacies across all indicators are used to compute the total inadequacy score for each cassava farmer. The inadequacy score for each farmer lies between 0 and 1 which is calculated by adding the weighted inadequacies experienced by each cassava farmer. The score is directly proportional to the number of inadequacies, that is, increases as the number of inadequacies of the farmer increases and attains its maximum of 1 when the cassava farmer experiences inadequacy in all 10 indicators. A cassava farmer who lacks inadequacy on any indicator gets a c_i score equal to 0. Hence,

$$C_i = w_1 I_1 + w_2 I_2 + \cdots + w_d I_d \quad (3)$$

Where $I_1 = 1$ if the cassava farmer has an inadequate achievement in indicator i and $I_1 = 0$ otherwise, and w_i is the weight attached to indicator i with $\sum_{i=1}^{d} w_1 = 1$
As a result, the first component is called the disempowered headcount ratio(H_p):

$$H_p = \frac{q}{n} \quad (4)$$

Where q is the number of cassava farmers who are disempowered and n is the total cassava farmer that is the population. The second component is called the intensity (or breadth) of disempowerment (A_p). It is the average inadequacy score of disempowered cassava farmers and can be expressed as follows:

$$A_p = \frac{\sum_{i=1}^{n} C'(k)}{q} \quad (5)$$

Note: $C_i(k)$ is the censored inadequacy score of individual farmer i and is the number of disempowered individuals. M_o is the product of both:

$$M_o = H_p * A_p. \quad (6)$$

In the last stage, $5DE$ is obtained

$$5DE = 1 - M_o \quad (7)$$

$5DE$ is built based on M_o which can be expressed as:

$$5DE = H_e + H_p * A_e \quad (8)$$

Where: H_e is the empowered headcount ratio, which is equivalent to $(1H_p - H_p)$; and A_e is the average adequacy score of disempowered farmers, which is the same as$(1 - A_p)$.
Equations 1-5: Alkire *et al*., (2013).

RESULTS AND DISCUSSION

Distribution of involvement of gender in cassava production activities

Table 2 shows the gender involvement in cassava production activities. The result shows that both adult male and female cassava farmers were highly involved in most of the activities in cassava production with a grand mean score of 2.28 and 2.30 respectively. However, the adult females were less involved in making ridges as shown by a low mean score of 2.10. This result is in tandem with the findings of Etuk *et al.,* (2018) and Nwaobiala *et al*., (2019) that adult females were actively involved in cassava production activities in Nigeria. The results also indicate that youth male and female cassava farmers were also involved in cassava production. The grand mean score of youth male and female farmers were 2.18, and 2.18 respectively indicating that the duo was not as involved in cassava production activities as adult male and female farmers. Therefore, the result of the level of involvement indicates that all categories of gender were all actively involved in cassava production activities.

However, adult male and female cassava farmers recorded higher participation in all cassava farming operations than youth cassava farmers. Although, adult males and females cassava farmers dominated the production of cassava, it is important to note that youth activities in cassava production had increased because of the increased need for food, income and cash. The findings agree with Agada *et* al., (2018) that adult female and youth cassava farmers are involved in all cassava production activities.

Table 2: Level of Involvements of farmers in cassava production activities based on gender

Variables	Adult male	Adult female	Youth male	Youth female
Selection	2.26	-	2.07	-
Site selection	2.24	2.31	2.15	2.03
Making ridges	2.01	2.34	2.11	2.02
Planting	2.29	2.30	2.16	2.05
Planting date	2.34	2.30	2.15	2.05
Planting pace	2.31	2.29	2.20	2.05
Weeding	2.35	2.31	2.23	2.07
Fertilizer	2.35	2.31	2.28	2.07
Spraying	2.35	2.29	2.21	2.09
Harvesting	2.34	2.31	2.26	2.16
Grand score mean	2.28	2.30	2.18	2.07

Source: Field Survey (2020)

Empowerment status and gender parity of men and women cassava farmers

Computation of 5DE empowerment index

Results in Table 3 show the 5DE sub-index of the WEAI by gender in Oyo State. The result reveals the domains and indicators that contributed to the disempowerment of the cassava farmers in the study area as follows:

Disempowered headcount ratio (H): which is the first component of computing 5DE tells the percentage or incidence of farmers whose share of weighted inadequacies is more than the cutoff mark. H was 60.3% for women as against 40.5% for men. The difference between men and women empowerment was approximately 20%. This high percentage of 5DE disempowerment index for women can be attributed to a number of indicators and domains of 5DE sub-index in which women were considerably disadvantaged. These include the domain of control over income use and autonomy in production where women who are into cassava farming stated that they do not have control over their income, lack access to credit and decisions making over credit compared to men, did not have the ability to act on what they

valued when it comes to production. This agrees with the findings of Ogunnaike *et al.* (2019) who reported that women's disempowerment headcount ratio was greater than that of men among farming households in Ogun State, Nigeria.

Table 3: 5DE (Domains of Empowerment) sub-index of WEAI for women and men cassava farmers in Oyo State

Indexes	Women (%)	Men (%)
Disempowerment headcount (H)	60.3	40.5
Empowered Headcount (1-H)	39.7	59.5
Average inadequacy score (A)	47.0	36.0
Average adequacy score (1-A)	53.0	64.0
Disempowerment Index (M_0)	0.28	0.15
5DE Index (1-M_0)	0.72	0.85

Source: Field Survey, (2020)

Empowered Headcount (1-H): The 5DE for cassava farming households in Oyo State shows that 39.7% of women are empowered compared to 59.5% of men. The high level of 5DE empowerment for men can be credited to the effect of several indicators and domains where men were more influential. These include the indicators of access to credit, speaking in public and control over their time compared to women. For access to credit, it may be due to the fact that men have more valuable assets to use as collateral compared to women whose assets are jointly owned with men.

Average inadequacy score (A): The average inadequacy score shows that 60.3% of the women cassava farmers who were not yet empowered, had on average, inadequate achievements in 47.0% compared to men who had 36.0% inadequate achievements in the domain. This implies that the disempowered women had inadequacy in 47% of the indicators compared to men who had inadequacy in only 36% of the indicators.

Average adequacy score (1-A): Similarly, the men achieved adequacy in 64% of dimensions of 5DE, while the 5DE adequacy score was 53% for women. The difference in the adequacy score for the 5DE of men and women was about 11%. This contradicts the findings of Ogunnaike *et al.* (2019) who reported a higher inadequacy score for men compared to women. The domain that men experience inadequacy is comparable to that of women, but men have uniformly more empowerment in all the indicators except resources. This is in line with the findings of Alkire *et al.* (2013) in a pilot study conducted in Guatemala. Both gender groups experienced adequacy in the domain of time and leadership.

5DE disempowerment index disaggregated by gender, WEAI indicators and domains

The disempowerment index for women and men was disaggregated by indicators and domains and presented in Table 4. The data illustrates the percentage that each indicator contributed to the disempowerment index for women and men. The domain of production and control over resources was the major contributor to the disempowerment index for both women and men. Both men and women were highly empowered (3.42% and 4.24% respectively) in the domain of leadership. The data shows that within the production domain, the combined influence of inputs in production decisions and autonomy in production, as indicators, contributed 35.68% and 39.03% to the disempowerment of women and men, respectively. This indicates that men felt more strongly that they were not (more) in control of productive resources. This may be because production decisions were jointly (men and women) made within women's households; thus, women's production scores were the aggregate of their sole and joint decisions as well as men, resulting in them being less disempowered for that indicator relative to men.

Women's decision-making power regarding the choice of crops and the purchase of inputs was limited. Consequently, their ability to influence cassava farming was limited. This finding is consistent with those of Quisumbing *et al*., (2014) in the Bogra and Rangpor districts of Bangladesh, where land is almost exclusively owned by husbands, with a very small portion of land jointly owned with wives within a patriarchal structure. Rahman (2008) has also reported that women in northern Nigeria do not have adequate access to land and that the land commercialization process has overlooked their cultivation rights. According to Rahman (2008), the rates of access to productive resources for women observed for the northern and southern zones in Nigeria were 4.76 percent and 17.74 percent, respectively. Oyewo *et al*., (2018) also noted that male cassava farmers had more access to land through inheritance compared to women.

Table 4: Cassava production 5DE disempowerment index disaggregated by gender, WEAI indicators and domains

Domain	Production		Resources			Income	Leadership		Time
Indicators	1	2	3	4	5	6	7	8	9
Women									
Censored headcount	0.40	0.61	0.34	0.34	0.46	0.35	0.11	0.01	0.12
% contribution	14.13	21.55	8.01	8.01	10.84	24.73	3.89	0.35	8.48
Contribution to Mo	4.00	6.10	2.27	2.27	3.07	7.00	1.10	0.10	2.40
% C. by domain	35.68	26.86				24.73	4.24		8.48
Men									
Censored headcount	0.16	0.41	0.24	0.24	0.21	0.16	0.03	0.02	0.03
% contribution	10.96	28.08	10.96	10.96	9.59	21.91	2.05	1.37	4.11
Contribution to Mo	1.60	4.10	1.60	1.60	1.40	3.20	0.30	0.20	0.60
% C. by domain	39.03		31.52			21.92	3.42		4.11

Source: *Field Survey, (2020).* ***NB: 5DE= five domains of empowerment; (1)*** *Inputs in production decisions; (2) Independence in production; (3) Asset ownership; (4) Purchases/sale/transfer of assets; (5) Access to credit and associated decisions; (6) Control of income use; (7) Cooperative/group member; (8) Speaking in public and (9) Leisure*

Within the resources domain, the combined influence of assets ownership, purchase/sale or transfer of assets and access to credit and associated decisions contributed 26.86% and 31.52% respectively to women and men disempowerment. Here, lack of access to credit and associated decisions contributed most to both genders' disempowerment (10.84% for women and 9.59% for men). This may be because of a lack of collateral on the part of the women. In general, there are very limited credit facilities available for both men and women in cassava production in the study area, as the majority of them did not source credit from formal credit institutions. The duo rather preferred to source credit from their various cooperative societies as revealed by the descriptive statistics. Therefore, cassava farming activities among both men and women were mostly funded from their off-farm income, loans from cooperative societies and savings. This is in line with the findings of Rahman (2008) and Oyewo *et al*. (2018) who reported inadequate access to credit as a major obstacle limiting agriculture's economic contribution and its productivity in Nigeria. Cassava productivity has been limited by a lack of access to credit facilities, especially for women.

Similar results to those mentioned above were obtained for the following indicators: ownership of resources and purchase, sale, or transfer of assets demanding joint decision making. The majority of decisions regarding the use, as well as the purchase or sale of resources were jointly made. This has been alluded to in Table 4. Both men and women were empowered in relation to leadership and time allocation.

Empowerment profile of cassava farmers based on socio-economic characteristics

Table 5 shows how empowerment is related to other important household characteristics. Age is seen to be significantly associated with men's and women's empowerment. The data shows that a greater percentage of women aged 15-25 were empowered, compared to those in older age groups. This may be due to the relative lack of power of older females, who are typically daughters-in-law, and elderly women, who may now be dependent on sons for support (Alkire *et al*., 2012; Sraboni *et al*., 2012). A greater percentage of men older than 65 were more empowered compared to men from other age groups.

The results indicate that 82.26% of married women were disempowered, while 62.34% of married men were empowered among cassava farming households in the study area. These findings suggest that women may have been disempowered because their husbands control household resources and time allocation. However, we cannot demonstrate here that husbands' empowerment directly contributed to their wives' disempowerment. Other factors may have contributed to married women's disempowerment, including local customs.

Table 5: Relationship between empowerment and farmers' household characteristics

Household Characteristics	Range	Empowerment			
		Women		Men	
		Yes	No	Yes	No
Age range	15-25	34(58.62)	24(41.38)	21(43.75)	27(56.25)
	26-45	5(25.00)	15(75.00)	14(66.67)	7(33.33)
	46-55	3(25.00)	9(75.00)	15(71.43)	6(28.57)
	56-65	4(20.00)	16(80.00)	14(66.67)	7(33.33)
	>65	0(0.00)	6(100.00)	5(100.00)	0(0.00)
	Total	46(39.66)	70(60.34)	69(59.48)	47(40.52)
Marital status	Single	32(71.11)	13(28.89)	21(53.85)	18(46.15)
	Married	11(17.74)	51(82.26)	48(62.34)	29(37.66)
	separated	2(50.00)	2(50.00)	0(0.00)	0(0.00)
	Widowed	1(20.00)	4(80.00)	0(0.00)	0(0.00)
	Total	46(39.66)	70(60.34)	69(59.48)	47(40.52)
Educational level	No education	6(46.15)	7(53.85)	7(53.85)	6(46.15)
	Primary	2(8.70)	21(91.30)	7(58.33)	5(41.67)
	Secondary	23(36.51)	40(63.49)	42(68.85)	19(31.15)
	Tertiary education	15(88.24)	2(11.76)	13(43.33)	17(56.67)
	Total	46(39.66)	70(60.34)	69(59.48)	47(40.52)

Source: Field Survey, (2020)

The majority (88.24%) of the women who attained tertiary education were empowered compared to 8.70% of empowered women with primary education and 36.51% with secondary education compared to 53.85% of women with no education were disempowered. Education is expected to increase the empowerment of men and women. However, this is not so among the men cassava farming households in Oyo state. This might be because of their higher educational attainment as men cassava farmers may be dedicating more of their time to off-farm activities. According to Asaduzzaman (2010), although women are also involved in agriculture, and their number in the agricultural labor force is increasing, it remains a male domain, and women continue to have limited decision-making power in agriculture. Thus, a woman with higher educational attainment may still not be able to make agricultural decisions, as this is considered a male domain.

CONCLUSION AND RECOMMENDATIONS

The findings from the result have established that all the actors: men, women and youth were highly involved in cassava production activities. The study also clearly demonstrated that men are more empowered in cassava production activities in virtually all the resources with the domains and indicators used.

From the findings of this study, the following recommendations are made;

(i) Formulation of policies, planning and projects/programmes by relevant agencies that would encourage gender sensitivity on cassava production should be promoted.

(ii) Policies and programmes must address the three domains that contribute significantly to both men's and women's disempowerment which; are lack of control over resources, autonomy in production, and lack of control over income.

(iii) Government should encourage more women and youths to engage in farming through agricultural and social programmes and inputs subsidies.

REFERENCES

Agada, M. O., Onuche, F. I. & Mbah, E. N. (2018). Gender participation and constraints in cassava production, processing and marketing in Makurdi, Benue State, Nigeria. ***International Journal of Gender and Women's Studies,*** 6(1), 79-87.

Alkire, S. R., Meinzen-Dick, R., Peterman, A., Quisumbing, A. R., Seymour, G. & Vaz, A. (2012). *The Women's Empowerment in Agriculture Index.* **IFPRI Discussion Paper** 1240. Washington, DC: International Food Policy Research Institute.

Alkire, S., Meinzen-Dick, R., Peterman, A., Quisumbing, A. R., Seymour, G. & Vaz, A. (2013). *The women's empowerment in agriculture index.* **OPHI working paper No:** 58. Oxford University poverty and human development initiative (OPHI).

Asaduzzaman, M. (2010). The Next Agricultural Transition in Bangladesh: Which Transition, Why and How? Paper presented at the conference on Understanding the Next Generation in Asia, Bangkok, April 23.

Ayevbuomwan, O. S., Popoola, O. A. & Adeoti, A. I. (2016). Analysis of women empowerment in rural Nigeria: a multidimensional approach. ***Global Journal of Human-Social Science,*** 16(6), 35-48.

Etuk, E. A., Udoe, P. O. & Okon, I. I. (2018). Determinants of livelihood diversification among farm households in Akamkpa local government area, Cross River State, Nigeria. ***Agrosearch,*** 18(2), 88 – 110.

IFPRI, (2010). WEAI resource center. Retrieved 2019, from international food policy research institute.

James, D. & Faleye, T. (2015). Cassava mechanization prospects and future in Nigeria. ***International Research Journal of Agricultural Science and Soil Science,*** 5(3), 98-102.

Ladele, A. A., Oyelami, B. O. & Balogun, O. T. (2015). Extent of sharp practices in credit allocation and utilization among staff and beneficiaries of the bank of agriculture in Oyo State, Nigeria. ***Agrosearch,*** 15(2), 31-45.

National Bureau of Statistics (NBS) (2017). Annual report of the federal republic of Nigeria.

National Bureau of Statistics (2019). www.nigerianstat.gov.ng

Nwaobiala, C. U., Alozie, E. N. & Anusiem, C. N. (2019). Gender differentials in famers' involvement in cassava production activities in Abia State, Nigeria. ***Agrosearch,*** 19(1), 72-86.

Ojiako, I. A., Tarawali, G., Okechukwu, R., Chianu, J., Ezedinma, C. & Edet, M. (2018). Profitability of cassava production: comparing the actual and potential returns on investment among small-holders in Southern Nigeria. ***Journal of Biology, Agriculture and Healthcare***, 8(16), 51-65.

Oladosu, I. O., Afolabi, J. O. & Buhari, A. K. (2018). Gender differentials in the accessibility of agricultural production resources among yam farmers in Saki agricultural zone of Oyo State, Nigeria. ***Journal of Agricultural Science and Food Research,*** 9(1), 1-4.

Olaosebikan, O., Bello, A., Owoade, D., Ogunade, A. and Parkes, E. (2019). Gender-based constraints affecting biofortified cassava production, processing and marketing among men and women adopters in Oyo and Benue States, Nigeria. ***Physiological and Molecular Plant Pathology*****,** 105, 17-27.

Oyo state Agricultural Development Agency (OYSADEP) (2019).

Oyewo, I. O., Momoh, E. O. & Adelalu, K. O. (2018). Gender differential analysis among cassava farmers in Osun State. ***Scientia Agriculturae***, 21 (3), 73-77.

Quisumbing, A. R., Rubin, D., Manfre, C., Waithanji, E., van den Bold, M., Olney, D. & Meinzen-Dick, R. (2014). Closing the gender asset gap, learning from value chain development in Africa and Asia. IFRPI discussion paper 01321.

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

Raufu, M. O., Adesina, B. A. Abdulazeez, A. A. & Marizu, J. T. (2018). Cassava production and options of sales outlets in Oyo State. ***International Journal of Research in Agricultural Sciences*****,** 5(4), 2348-3997.

Sraboni, E., Quisumbing, A. R. & Ahmed, A. U. (2012). The Women Empowerment in Agriculture Index for Bangladesh's Feed the Future Zone of Influence. Project report submitted to the U.S. Agency for International Development. International Food Policy Research Institute, Dhaka.

United States Agency for International Development (USAID) (2016). Gender integration in democracy, human rights, and governance (DRG). June, 2016.

United States Agency for International Development, (2017). Assessing how agricultural technologies can change gender dynamics and food security outcomes: part 1.

World Bank (2014). Gender equality at work: a global priority. April 14, 2014.

Yamane, T. (1967). Statistics: An Introductory Analysis, 2nd Ed., New York: Harper and Row.