

GENDER ANALYSIS OF INPUT-OUTPUT LEVELS AMONG SMALL SCALE MAIZE FARMERS IN LAFIA LOCAL GOVERNMENT AREA OF NASARAWA STATE, NIGERIA.

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ABSTRACT

The study assessed Gender Analysis of Input-Output Levels among Small Scale Maize Farmers in Lafia Local Government Area of Nasarawa State. A total sample size of 60 respondents were used for the study. Data generated were analyzed using descriptive statistics such as frequency, percentages and mean. Also, inferential statistics such as the t-test was used to compare the mean input and output of male and female maize farmers in the study area. It was revealed from the findings that a larger proportion (48.3%) of the respondents fall between the ages of 31-40 years. The mean age was 32.3 years. Results from the findings also revealed that a majority (51.7%) were males. It was further revealed that a majority (76.7%) of the respondents were married, also a larger proportion (38.3%) of the respondents were farmers and a majority (61.7%) of the respondents belong to one cooperative society or the other. The mean farming experience was approximately 10 years and that majority (85.0%) of the respondents owned their farm lands. A majority (75%) of the respondents had no access to credit institutions. Larger proportion (48.3%) of the respondents had annual income within the range of ₦150,001- ₦200,000, while the mean annual income was ₦179,600. Results of the t-test revealed that there is a significant difference in the mean output of male and female farmers engaged in maize production while, there was no significant difference in the mean input between the male and female maize farmers. The study further showed that, farmers in the study area were faced with constraints such as limited land, inadequate extension contact, high cost of labour and inadequate capital. The research concluded by recommending that women farmers should be involved in decision making relating to agricultural activities, allowed access to farm lands and other productive inputs as these will enhance their productivity.

Keywords: Maize Farmers, Gender Analysis, Input-Output Levels, Nasarawa State, Nigeria

INTRODUCTION

Agriculture is the largest single sector in the Nigeria economy, providing food, income and employment for sustainable livelihood of both the rural and urban population. Agriculture is the largest non-oil export earner and the largest employer of labor accounting for 88% of the non-oil foreign exchange earnings and 70% of the active labor force of the population. Food crops constitute the largest component of the crops sub-sector of the Nigeria's agriculture (CBN, 2003).

In Nigeria of about 160 million people, men constitute about 50.4% and women 49.6% (N.P.C, 2006). Both genders are responsible for producing the nation's food and one of the major problems confronting mankind in recent times is food crisis. Gender has often been misunderstood as being about the promotion of women only, but it focuses on the relationship between men and women, their roles, access to and control over resources, division of labor and needs. Men and Women are affected differently in their operation in factors like markets and socio-economic environments. Women are more constrained than their men counterparts in terms of access to credits, agricultural inputs, and information technology, among others. Some crops such as yam production are mostly cultivated by men while others like sweet potatoes and cocoyam production are mostly cultivated by women especially in the south-eastern Nigeria (Ndukwu *et al.*, 2010).

Much of the food in Nigeria is produced by small scale rural farmers. Men are considered the traditional bread winners among households (Springer, 2010). Notwithstanding, women play key roles in the bread winning of their families. They are important sources of food for their families (Ibnouf, 2009) so much so that women produce about 60–80 percent of the food in most developing countries and are responsible for half of the world's food production (FAO, 2012) asserted that in Nigeria women are responsible for about 70% of actual farm work and constitute up to 60% of the farming population although their contributions are often hidden and attributed to men. Gender in agriculture focuses on the relationship between men and women with regard to their roles, access to and control of resources, division of labor and needs. In agricultural production, women have been found to be more constrained in accessing production resources than their male counterparts. This has often been reflected in women having less access to information, technology, inputs and credit resulting in women having more depressed productivity than men.

The role of gender in agriculture, hence cannot be overemphasized. The pervasiveness of gender stratification in the distribution of production resources, information and even access to appropriate technologies is an issue of great importance. According to Akanji (1999), gender of agricultural worker is significant not only to total subsistence food output in which they

predominate but also to performance of cash cropland, mainly managed by men. Findings by FAO (2008) on women in Agriculture show that women make up over half of the agriculture labor force yet they are frequently subjected to discrimination, poverty and hunger. (Hjorts, 2005), also reported that compared to men, women especially those from small and marginal farming families perform over 60% of on-farm activities in sub-Saharan Africa and comprise a major driving force in the economics of a nation with major responsibilities in agricultural and non-agricultural business enterprises. The ability of women to obtain agricultural inputs is directly constrained by gender discrimination.

The low growth rates of productivity in the African agricultural sector have been widely considered as one of the most important causes of current high poverty rates and food insecurity levels, particularly in rural areas. Notwithstanding some substantial progress during the last 2 decades, Africa is still lagging behind in terms of production and yield levels, rates of modern input uses, technology adoption, and access to credit or insurance markets which are often failing or incomplete (Dillon and Barrett, 2014; FAO, 2015).

This poor performance of the African agricultural sector is an important impediment to the economic development of the continent and prevents its structural transformation (AfDB, 2015). In this context, ensuing agricultural productivity growth for small holder farmers in Sub-Saharan Africa is believed to trigger more poverty gains than growth in other economic sectors (Kilic *et al.*, 2013)

Justification of the study

According to the Food and Agriculture Organization of the United Nations (FAO), in developing countries, rural women act as a keystone of small-scale agriculture and daily family subsistence. The recognition of their crucial roles has recently increased as well as the recognition of their contribution in agricultural production. Regardless of the fact that the roles and needs of female farmers are recognized in policy, agricultural policies still do not address the needs of women farmers satisfactorily and tend not to be adequately translated into practice in agricultural development programs and planning. In almost all these countries households headed by females belong to the poorer level of society and often have lower incomes than households headed by males. The situation they face may not only vary according the efficiency of men over women as often claimed but also due to lack of access to agricultural resources.

Agricultural production in Nigeria has always been seen as dominated by men and this assumption undermines the women involvement in agricultural production. Studies that have measured productivity of men and women farmers without attempting to take into account women's lower access to resources have found women to be less productive than men

(Quisumbing, 1996). Despite the volume of attempts to document male-female productivity differences, relatively few studies control for individual characteristics of the male and female farmers such as education and physical assets. The focus on the gender relations within which resources are controlled and used is crucial both for understanding local resource management, practices and innovations, and for assessing policies to support or supplement them. There is therefore, the need to sustain the level of production through productivity and resource use studies. Given the already large and growing contribution that women farmers are making to agricultural production in general, and to feeding their households in particular, it is necessary to investigate the determinants of gender differentials in agricultural productivity in order to understand their peculiar limitations in production.

Agriculture can be an important engine of growth and poverty reduction. But the sector is underperforming in many countries in part because women, who are often a crucial resource in agriculture and the rural economy, face constraints that reduce their productivity. Improving agricultural productivity, achieving self-sufficiency in agricultural production and other food crops has therefore been a major concern to scholars and policy makers as well as farmers themselves, majority of who live in the rural areas. This is more worrisome considering the fact that Nigeria is endowed with rich and abundant resources and hence has the potential to greatly increase its agricultural productivity. Women are actively involved in agricultural production in Nigeria, In Sub-Saharan Africa; women grow 80 percent of the food crops. They play a variety of roles in agriculture as farmers in their own rights, working in their husbands farms and are increasing entering employment in the production of all kinds of crops for sale World Bank (2009).

Akanji (1999) pointed out that the current state of knowledge is limited due to the under reporting of the contributions of women and children to commercial agriculture, this study will highlight some of the problems confronting especially women farmers, pointing out the direction for ensuring higher efficiency in farm resource utilization and productivity. This study will be essential to understand the nature of the constraints women face in order to effectively help women farmers because failure to take into account gender relationships leads to the marginalization of the disadvantaged sector of the society and a large part of the agricultural work force. It will equally provide the much needed micro level data and the empirical basis for farm planning, policy formulation and implementation, for no society can afford to neglect the needs, rights, aspirations and contributions of half of its population. It will ensure policies that will improve the productivity of male and female smallholder farmers as well as information on relative access to and control over resources will be important in the development of food security strategies. The study will also provide a basis for equitability, effective and better allocation of resources between male and female farmers. This study will add to the already

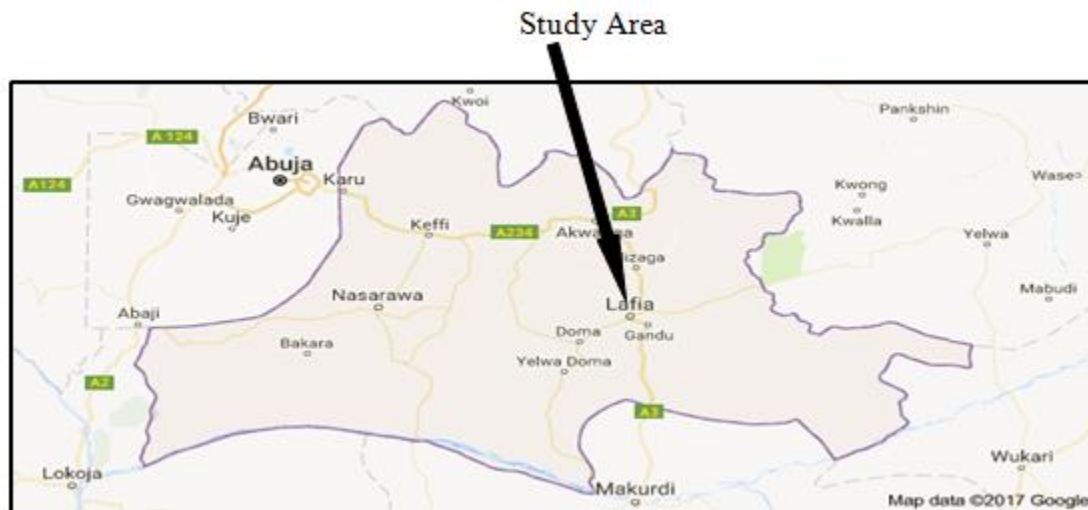
existing literature on production which may aid further researchers in other geographical areas. It can also provide useful information, which will help in decision making for improvement of agricultural production in Nigeria.

Objectives of the Study are to:

- i. describe the socio-economic characteristics of small scale male and female maize farmers in Lafia Local Government Area.
- ii. estimate and compare the mean input and output of small scale male and female maize farmers in the study area.
- iii. identify the major constraints to agricultural productivity faced by the small scale male and female maize farmers in the study area.

METHODOLOGY

The study was conducted in Lafia Local Government Area of Nasarawa State, Nigeria. The population of the area is about 330,713 people (NPC, 2006). The climate of the study area is tropical climate with two distinct seasons, namely; rainy and dry seasons with an average annual rainfall of approximately 1,288mm. Lafia is located on latitude 07° 9¹N and longitude 07° 9¹E and an annual mean temperature of between 23-33°C around June-July with an altitude of 18.5m above sea level (Abu *et al.*, 2011). The Local Government Area is bordered by Obi Local Government Area to the South, Nasarawa Eggon to the North, Doma Local Government Area to the West The soil texture is predominantly sandy-loam. Major crops grown in the study area include Yam, maize, rice, millet, soybean, beniseed, cassava, and cocoyam. Others include: amaranthus, pepper and Moringa. It is made up of various ethnic groups which include; Kanuri, Eggon, Migili, Mada and Gwandara.



Map of Nasarawa State showing the study area.

Sampling Technique and Data Analysis

A two-stage sampling technique was used in this study. The first stage was the purposive selection of six (6) communities out of the over 200 communities in Lafia namely; Quanka, Agyragu, Agunji, Akurba, Assakio, Akunza. The second stage was the random selection of 5 male and 5 female maize farmers making a total of 10 respondents in each community and total of sixty (60) respondents that were used for the study.

Primary data was used for this study. Data was collected with the aid of a well-structured questionnaire that was administered to the respondents. Data was collected on the socio-economic characteristics of the respondents, farm input and output level of the respondents and major constraints to agricultural productivity faced by the respondents. Production functions and multiple regressions have been used by other researchers in their analysis of gender productivity differential among small scale farmers. Chibuzo *et al.* (2016) in their study on productivity differentials along gender lines of Cocoa farmers in Abia State, Nigeria also utilized the log-linear model derived from semi-log functional form as the econometric models specified for explaining factors influencing productivity. However, in this study, descriptive analysis such as mean, frequency and percentages were used to address objectives i and iii, while t-test was used to address objective ii.

RESULTS AND DISCUSSION

Socio-economic Characteristics of Respondents

Results from Table 1 shows that larger proportion (48.3%) of the respondents in the study area were within the age bracket of 31-40 years, 28.3% were within the age bracket of 41-50 years, while 13.3% and 10.0% of the respondents were within the age bracket of 51-60 years and 21-30 years respectively. The mean age was 32.3 years. This implies that the respondents were in their active and productive age and could provide ample labour for farm productivity. This is in consonance with the findings of Alabi (2006) that agricultural productivity is expected to increase when the population is comprised of young individuals with vital energy.

Results from Table 1 also revealed that majority (51.7%) were male while only 48.3% were female. This implies that most of the respondents were male. This supports the observation of Khabele (2000) that labour can be divided and used for different operations depending on the age and sex, the nature of the task to be performed and the size of land to be cropped.

Results from the findings revealed that majority (76.7%) of the respondents were married, 15.0% were widowed, 5.0% were divorced, while only 3.3% were single. This could mean more family labour for farming activities and there is a probability that farmers could marry more wives for farm work. Most married respondents have more than one wife and this supports the assertion of Ekong (2001) that farmers marry many wives to raise large families that could cope with labour required in farms.

Results from the study also revealed that larger proportion 43.3% had secondary education, 36.7% had primary education while 10.0% had tertiary education. On the overall, 80.0% of the total respondents had attended one form of education or the other. . Education has been discovered to be highly related to effectiveness of work and economic function (Meskel, 2006).

It was also discovered from the findings that larger proportion (38.3%) of the respondents were farmers. Also 31.7% of the respondents were traders, while 18.3% and 11.7% were civil servants and artisans respectively. This means that most of the respondents in the study area are into farming which serves as their major source of income. This supports the findings of Kinkinginhoun-Medagbe *et al.* (2010) who observed that the major occupation of people residing in rural area is farming.

It was further revealed that majority (61.7%) of the respondents belongs to one cooperative society or the other, while only 38.3 do not belong to any cooperative group. This could affect their farm productivity as the ease of getting loan from financial institution could prove difficult. This findings support the Abdulquadri and Mohammed (2012) who in their study of comparative

analysis of gender involvement in agricultural production in Kaduna, Nigeria observed that farmers who were members of cooperative group easily obtained loan from financial institution for maize production.

Also, results from the findings that larger proportion (35.0%) of the respondents had farming experience within the ranges of 6-10 years, 23.8% had farming experience within the ranges of 11-15 years, while 18.3% had farming experience within the ranges of 1-5 years. The mean farming experience was approximately 10 years. This is an indication of that farmers in the study area were experienced in maize farming.

Results from the study also showed that majority (85.0%) of the respondents owned their farm land while only 15% hired their land. This implies that maize farmers in the study owned their farm land. This supports the findings of Denning (2009) that majority of rural farm land were owned by the rural farmers. Results from the findings also revealed that majority (75%) of the respondents had no access to credit institutions, while only 25% had access to credit institutions. This is an indication of low credit access among the maize farmers. It was also revealed that larger proportion (48.3%) of the respondents had annual income within the range of ₦150,001- ₦200,000, while 33.3% had annual income within the ranges of ₦100,000- ₦150,000. The mean annual income was ₦179,600. Kuponiyi (2000) in his study observed that income provides capital that improves crop production and farmers' ability to expand their production capacity.

Table 1: Socio-economic Characteristics of Respondents

Characteristics	Frequency	Percentage	Mean value X
Age			
21-30	6	10.0	
31-40	29	48.3	
41-50	17	28.3	32.3
51-60	8	13.3	
Total	60	100.0	
Gender			
Male	31	51.7	
Female	29	48.3	
Total	60	100.0	
Marital status			
Single	2	3.3	
Married	46	76.7	
Divorced	3	5.0	
Widowed	9	15.0	
Total	60	100.0	
Educational qualification			
non formal education	6	10.0	
Primary	22	36.7	
Secondary	26	43.3	

Tertiary	6	10.0	
Total	60	100.0	
Major occupation			
Farming	23	38.3	
Trading	19	31.7	
civil service	11	18.3	
Artisan	7	11.7	
Total	60	100.0	
Membership of cooperative			
Yes	23	38.3	
No	37	61.7	
Total	60	100.0	
Farming experience			
1-5	11	18.3	
6-10	21	35.0	9.8
11-15	14	23.3	
16-20	5	8.3	
21-25	7	11.7	
26-30	2	3.3	
Total	60	100.0	
Mode of land ownership			
Owned	51	85.0	
Hired	9	15.0	
Total	60	100.0	
Access to credit			
Yes	15	25.0	
No	45	75.0	
Total	60	100.0	
Annual income			
100,000-150,000	20	33.3	
150,001-200,000	29	48.3	
200,001-250,000	8	13.3	179,600
250,001-300,000	3	5.0	
Total	60	100.0	

Source: field Survey, 2017

Result of t-test showing the Mean Input of Male and Female Maize Farmers

Results of the t-test as presented in Table 2 revealed the mean differences in the input used by the male and female respondents in the study area. The results revealed that there is no statistically significant mean difference at 5% confidence interval in level of input used by the male and female farmers engaged in maize production. This is indicated by the mean value of the male (305.28) and female (302.96) maize farmers, the reason for the lack of difference in input used is that they might have both obtained their inputs from the same source.

Table 2: Result of t-test showing the Mean Input of Male and Female Maize Farmers

	Gender						95% CI for Mean Difference	T	df
	Male			Female					
	M	SD	N	M	SD	N			
Mean input	305.28	55.227	31	302.96	43.558	29	12.797	0.182	58

Source: Field Survey, 2017

Result of t-test showing the Mean output of Male and Female Maize Farmers

Results of the t-test as presented in Table 3 revealed the mean differences in the output between the male and female maize farmers. The results revealed that there is a statistically significant mean difference at 5% confidence interval in the output between male and female farmers. The results show that male maize farmers in the study area tend to have a higher output than the female maize farmers. This is indicated by the differences in the mean output of the male maize farmers (2097.13) and the female maize farmers (1186.02). The reason for these significant differences is that women tend to be more risk-averse in extension contact, access to capital, and adoption of modern inputs used in farming.

Table 3: Result of t-test showing the Mean output of Male and Female Maize Farmers

	Gender						95% CI for Mean Difference	t	df
	Male			Female					
	M	SD	N	M	SD	N			
Mean output	2097.13	1226.530	31	1186.02	816.055	29	267.320	3.408	58

Source: Field Survey, 2017

Constraints affecting the Productivity of Male and Women Respondents involved in Maize Farming

It was observed from Table 4 that larger proportion (63.3%) of the respondents had problem of pest and diseases as a major constraint affecting their maize productivity. This was followed by insufficient capital (50%) which also affected the maize farmers in the study area. Also, inadequate fertilizer, high cost of labour, labour unavailability, limited land and inadequate extension contact constituted 48.3%, 45.0%, 31.7%, 30.0% and 26.7% respectively as constraints affecting the output of maize in the study area. This agrees with Ogunlela and Mukhtar (2014) who stated that inputs availability inadequate extension contact and high cost of labour were the major constraints affecting farmers output in maize production in Kenya is a primary instrument for increasing adoptability of an innovation.

Table 4: Constraints affecting the Productivity of Male and Women Respondents involved in Maize Farming

Constraints	Frequency	Percentage
Inadequate credit	25	41.7
Poor infrastructural facilities	14	23.3
Low soil fertility	16	26.7
Problem of pest and diseases	38	63.3
Limited land	18	30.0
Labour unavailability	19	31.7
High cost of labour	27	45.0
Lack of capital	30	50.0
Lack of skill	13	21.7
Inadequate extension contact	16	26.7
Lack of fertilizer	29	48.3
High cost of agrochemicals	13	21.7
Lack of market for produce	4	6.7
High cost of seed	10	16.7
Seed not available on time	8	13.3
Lack of processing facilities	10	16.7
Lack of storage facilities	4	6.7

Source: Field Survey, 2017

*Multiple responses were allowed; hence the total frequency exceeded the total sample size of respondents.

CONCLUSION

It can be concluded from the study that the output level of male maize farmers were higher compared to that of the female maize farmers in the study area even though their level of input were observed not to be significant. Also, the maize farmers in the study area were faced with numerous factors that constrained them from being more productive. These constraints were high cost of labour, poor access to loan, inadequate extension services, limited farm land and low access to credit facilities. Based on the study, the research recommended that:

Extension agents should pay more attention to maize farmers in the study area especially the female farmers as this will help consolidate their efforts, thus increasing their output and improving their standard of living. Maize farmers in the study area should be encouraged to form cooperatives in order to boost their chance of accessing credit institutions. Women farmers should be involved in decision making relating to agricultural activities, allowed access to farm lands and other productive inputs as these will enhance their productivity.

REFERENCES

- Abdulquadri, A. F. and Mohammed, B. T. (2012) Comparative analysis of gender involvement in agricultural production in Nigeria. *Journal of Development and Agricultural Economics*, 4(8), pp. 240-244.
- Abu, G. A., Ater, P. I. and Abah, D. (2011). Profit Efficiency among Sesame Farmers in Nasarawa State, Nigeria. *Journal of Social Sciences* 4(4): 261-268
- AfDB, OECD, WB, and WEF (2015), *Africa Competitiveness Report 2015*. Retrieved from http://www3.weforum.org/docs/WEF_ACR_2015/Africa_Competitiveness_Report_2015.pdf. Accessed: February, 2017.
- Akanji, B. (1999). Differentials and Patterns of Gender Responsibility in Tradable Crop Agriculture in Nigeria. Paper presented at a Conference on Women Farmers. Enhancing
- Alabi, C. (2006) Gender, Agricultural Production, and the Theory of the Household. *Journal of Political Economy*, 104(5), pp. 1010-46.
- Central Bank of Nigeria, CBN (2003). Central Bank of Nigeria Annual Reports and statement of Accounts for the year ended 31st December, 2007.
- Denning, G., Kabambe, P., Sanchez, P., Malik, A., Flor, R., et al. (2009) Input Subsidies to Improve Smallholder Maize Productivity in Malawi: Toward an African Green Revolution. *PLOS Biology*, 7(1).

- Dillon, B. and Barrett, C.B. (2014). Agricultural factor markets in Sub-Saharan Africa: An updated view with formal tests for market failure, *Policy Research Working Paper*, No.7117, The World Bank.
- Ekong E.E. (2001). An Introduction to Rural Sociology. Ibadan; Jumak Publishers Ltd; pp 45-51.
- FAO (2008). FAOSTAT. Food and Agriculture Organization, Database Results.
- FAO (2012). Women and sustainable development. www.fao.org/sd/fsdirect/fbdirect/FSP001.htm
- FAO (2015), *The State of food insecurity in the world*. Retrieved from <http://www.fao.org/3/a-i4646e.pdf>. Accessed: February, 2017.
- Hjorts, M. I. (2005). Watershed Development Programme, Development Support to the Indian Agriculture Sector, Ministry of Foreign Affairs of Denmark; October 28, 2005.
- Ibnouf, F. O. (2009). The role of women in providing and improving household food security in Sudan: Implications for reducing hunger and malnutrition. *Journal of International Women Studies*. 10 (4): 144 – 167.
- Khabele A. (2000), “Labour use in Agriculture”. Bulletin of the South African Labour Institute iv (2): 10-21.
- Kilic, T., A. Palacios-Lopez, and M. Goldstein (2013), “Caught in a productivity trap: A distributional perspective on gender differences in Malawian agriculture.” *Policy Research Working Paper*, No. 6381, The World Bank.
- Kinkingninhoun-Medagbe, F., Diagne, A., Simtowe, F., Agboh-Noameshie, A. and Adegbola, P. (2010) Gender Discrimination and its impact on income, productivity, and technical efficiency: evidence from Benin. *Agriculture and Human Values*, 27(1), pp. 57-69.
- Kuponiyi, E. E. (2000): Rural sociology; An Introduction and Analysis of Rural Nigeria. Dove Publishers Uyo, Pp.305.
- Meskel, M. (2006) Access to resources, productivity and income generation of gender-differentiated households in Ogun State, Nigeria. *Journal of Development and Agricultural Economics*, 4(8), pp. 233-239.
- National Population Commission (N.P.C)(2006), Abuja, Nigeria.

- Ndukwu, P.C., Nwaru, J.C., and Okoye, B.C. (2010). Gender and Relative Economic Efficiency in Sweet Potatoe Farmers of Imo State, Nigeria. A stochastic Cost Frontier Approach. *The Nigerian Agricultural Journal*. 41(1):65-70
- Ogunlela, Y. and Mukhtar, A. (2014) Gender Issues in Agriculture and Rural Development in Nigeria: The Role in Women. *Humanity & Social Sciences Journal*, 4 (1), pp19-30.
- Quisumbing, A. R. (1996). Male-Female Differences in Agricultural Productivity: Methodological Issues and Empirical Evidence. *World Development*, 24 (10): 1579-1595.
- Springer, K. W. (2010). Economic dependence in marriage and husband's midlife health: Testing three possible mechanisms. *Gender and society* 24 (3), 378 – 401.
- World Bank (2009). *Gender in Agriculture Sourcebook*. Vols 1 and 2. World Bank, Washington DC.