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# ECONOMIC ANALYSIS OF WOMEN ACTIVITIES IN CROP PRODUCTION IN LAFIA LOCAL GOVERNMENT AREA, NASARAWA STATE, NIGERIA

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***Abstract***
*The study was conducted to investigate the characteristics of women in agriculture, their farming practices, crops cultivated by them and factors that influenced the income generated. Data were obtained from a simple random sample of 120 women farmers who were interviewed for this purpose. Descriptive statistics and Cobb-Douglass production function were used to analyse the data. Results showed that most of the women farmers were married (62.5 %), and most of them (66.7%) inherited their farm lands. The women equally carried out farming activities the men traditionally did such as land clearing, ridge and heap making and light activities like harvesting, storage and processing. The women grew such crops as maize, cassava, sorghum, yam which are the principal staple crops in the area. Results of the estimated Cobb-Douglass production function revealed that membership of cooperative societies (0.459), labour (o.573), farm size (0.330) had positive coefficient and each influenced level of income at 1%, while cost of transportation (-0.243) had negative coefficient and influenced level of income negatively at 1%,.. However, recommendations were made to ease their farming activities which include reviewing land tenure system operating in the area, encouraging women to join cooperative societies and construction of feeder roads for easy evacuation of farm produce.*
***Keywords: Women, Activities, Food crop, Production***

## Introduction

Women play crucial roles on the farms and homes in Nigeria and other parts of the world. Women grow crops, raise animals and also carry out households chores. Women are involved in quite enormous activities in meeting the challenges of agricultural production and rural development, Rahman (2008). Rural women play crucial roles in supporting their households and communities in achieving food and nutrition, generating income, improving livelihood and over all well-being, Nnadi *et.al* (2012). Women and their husbands jointly participate in energy sapping activities on the farm and when they both come home, women go to the kitchen to prepare food for the family. They equally take care of the physical appearance of the homes and the children while the husband would be resting waiting for the meal. According to UNESCO (2017), women are the key to the well-being of their families. Therefore, increasing productivity of women through empowerment programme will increase overall agricultural productivity.

Nigerian women also actively participate in non-agricultural activities such as craft and dyeing, weaving and spinning, tailoring, retail trade and other home based activities. Contribution of women to agricultural production varies from country to country, crop to crop and task to task, Marilee (2009). Therefore, no meaningful household food security can occur without women who make up more than half of the rural population. Most women activities are undervalued because they are not defined as economically active employment that could contribute to the gross domestic product. Caring for children, they elderly and the ill, collecting water and fuel for cooking and heating and maintaining households and preparing food are the responsibilities which are mostly taken up by women and girls, Fontana and Paciello, (2010). They also perform tasks in household crop production activities including sowing seeds, weeding, applying fertilizers and pesticides and harvesting of the crops. Women are also responsible for post-harvest food processing, storage, transportation and marketing. Marilec (2009). Despite this huge contribution of women to agricultural production, they are not allowed to inherit farmlands. Most of them farm on land gifted to them by their husbands and their ownership of these lands ceases with loss of such husbands or divorce. Even though women help to work on their husbands' farms, they are not allowed to take part in decisions concerning the farms. It is in the light of these numerous contributions of women that this study was carried and to show case the pivotal roles of women on the farms and at homes. Objectives of the

study were to describe the socioeconomic characteristics of the women farmers, their farm activities, crops grown by them and determination of the factors that influenced income generated by the women.

## Materials and Methods

The study was carried out in Lafia Local Government Area of Nasarawa State, Nigeria. Agriculture is the major occupation of the people in the area. Major food and cash crops grown in the area are yam, maize, rice, millet, sorghum, melon, soyabean, beniseed, cassava and sweet potatoes. Tree crops that are grown here include oil palm tree, mango, orchard and cashew. Major animals that are reared here are cattle, sheep and goats, pigs and poultry.

A purposive sample of eight settlements in the Local Government Area was selected for the study. The settlements were selected because they were rural and the major activity of women there was farming. A simple random sample of 15 women was selected from each of the settlements making a total of 120 women farmers. Primary data were used for the study and they were collected from the women farmers with the use of structured questionnaire. Information collected from the women includes their socioeconomic characteristics such as age, sex, marital status, education attainment among others. Information collected also includes farming activities concerning maize, sorghum, yam, cassava and rice and income generated from these crops. The data were analysed with the use of descriptive and inferential statistics. Descriptive statistics such as frequency distribution mean and percentages were used to analyse the characteristics data, activities carried out by the women and major crops grown by them. Cobb-Douglas production function was used to determine factors that influenced income generated by the farmers. The explicit form of the Cobb-Douglas production function used was as follows

$\text{Log}y = \text{Log}a + b_1\text{Log}x_1 + b_2\text{log}x_2 + b_3\text{log}x_3 + b_4\text{log}x_4 + b_5\text{log}_5 + b_6\text{log}x_6 + b_7\text{log}x_7 + \text{log}_e$ where,

y = Income in naira

$x_1$ = Farm size in hectares

$x_2$ = Education (years spent in school)

$x_3$ = Extension contact (Number of times visited by extension agent)

$x_4$ = membership of farmer's association

$x_5$ = Labour (Mondays)

$x_6$=Transportation cost (N)

$x_7$ = Age of farmers (in years)

E = Error term

a = Constant, log=Natural log

$b_1 – b_7$ = Estimated parameters

## Results and discussion

The results of this study are presented and discussed under the socioeconomic characteristics, activities carried out by the women farmers, crops grown by the women and factors that influenced income generated by the farmers.

The socioeconomic characteristics of the women farmers are presented in Table 1. Distribution of the farmers based on their age. This information is presented in Table 1 and it shows that 83.33 percent of the farmers were in the age bracket of 21 – 50 years while 16 percent of the farmers were 51 years and above. This finding shows that most of the women farmers were young and they possessed the requisite energy to perform farming activities that require much energy. In a similar study in Kogi State, Nigeria Audu, (2012) found out that most cassava farmers were young and energetic. Distribution of the farmers based on their marital status. As shown in Table 1, most of the farmers representing 62.5 percent were married. The farmers that were single, widowed and divorced were 12.5 percent, 10 percent and 15 percent of the respondents respectively. Marriage confers family responsibilities on people because such people have to work to take care of members of their families. This may account for the high percentage of the respondents engaging in farming activities. In a similar study, Audu (2012) found that most cassava farmers in Kogi State were married.

Distribution of the farmers based on their educational qualification, Educational qualification of the respondents is presented in Table1 with 25 percent of them being illiterate. About 41.67 of the farmers had primary school education while 20.83 percent and 12.50 percent of them had secondary school and tertiary level of education respectively. Education is an eye-opener for most activities carried out by

people. It enables one to discover new ventures and master ventures. It makes farmers to quickly accept innovation. According to Girei *et al* (2020) education has positive influence on farmers' adoption of improved production technologies. Distribution of the farmers based on their farming experience. As can be seen in Table I, 64.16 percent of the farmers had farming experience of 11 – 30 years while 3.33 percent had experience of 31 – 40 years. Average year of farming experience was about 15 years. This shows that the farmers were highly experienced. As one continues to perform certain farm tasks and taken management decisions repeatedly the possibility of making mistake becomes remote. Nwaru et al (2006) corroborated this when they stated that the number of years a farmer has spent in farming business may give an indication of the practical knowledge he has acquired on how to cope with inherent farm production processes and marketing problems.

Distribution of the respondents based on method of acquiring farmlands. Inheritance which had 66.76 of the respondents was the most popular method of requiring farmlands. Other methods of acquiring farmlands were lease, gift, purchase and crop sharing which had 15 percent, 10 percent, 10 percent and 4 percent of the respondents respectively. As indicated by many of them their husbands acquired their farmlands from their parents and they got their own portions from their husbands. As reported by Audu (2013), most cassava farmers in Kogi State acquired their farmlands through inheritance.

Distribution of the farmers based on farm size: As can be seen in Table 1, most of the farmers represented by 65.83 percent had farm size of 1 – 2 hectares; 27 percent had farm size of 3 – 4 hectares while 6.67 percent of the farmers had farm size of 5 – 6 hectares. Most of the farmers were small scale farmers.

Distribution of the farmers based on extension visit. As shown in Table 1, only 42.5 percent of the respondents received few extension visits, while 57.5 percent of the respondents were not visited by the extension agents. Extension visit is important to farmers because the farmers learn a lot from the extension agents. Messages on new methods of farming are passed to the farmers by extension agents. Farmers that don't have such interaction cannot adopt innovation which may result in low performance of their enterprises. (Ezeamo *et.al.* 2007) opined that extension services delivery in Nigeria was generally poor as a result of low extension staff to farmers' ratio.

Distribution of the farmers based on membership of cooperative societies majority of the farmers representing 79.17 percent were members of cooperative societies while 20.83 percent of the farmers were not member of cooperative societies. A lot of advantages accrue to farmers who are members of cooperative societies. Societies can help members to market their produce at favourable prices, procure farm inputs for members at favourable prices and stand as guarantor for loans on behalf of members

**Table 1: Socioeconomic Characteristics of Women Farmers**

| Socioeconomic Items | frequency | percentage |
|---|---|---|
| 21 – 30 | 10 | 8.33 |
| 31 – 40 | 40 | 33.33 |
| 41 – 50 | 50 | 41.67 |
| 51 – 60 | 5 | 12.50 |
| 61 and above | 5 | 4.17 |
| Totals | 120 | 100.00 |
| Marital status | | |
| Married | 75 | 62.50 |
| Divorce | 15 | 15.00 |
| Single | 12 | 12.50 |
| Widow | 12 | 10.00 |
| Totals | 120 | 100.00 |
| Education | | |
| No formal education | 30 | 25.00 |
| Primary school | 50 | 41.67 |
| Secondary school | 25 | 20.83 |
| Tertiary school | 15 | 12.50 |
| Totals | 120 | 100.00 |
| Farming experience (yem) | | |
| 1 – 10 | 39 | 32.5 |
| 11 – 20 | 55 | 45.83 |
| 21 – 30 | 22 | 18.33 |
| 31 – 40 | 4 | 3.33 |
| Totals | 120 | 100.00 |
| Methods of acquiring farmlands | | |
| Inheritance | 80 | 66.67 |
| Lease | 15 | 12.50 |
| Gift | 10 | 8.33 |
| Purchase | 10 | 8.33 |
| Share cropping | 5 | 4.17 |
| Totals | 120 | 100.00 |
| Farm size (ha) | | |
| 1 – 2 | 79 | 65.83 |
| 3 – 4 | 33 | 27.5 |
| 5 – 6 | 8 | 6.67 |
| Totals | 120 | 100.00 |
| Extension visit | | |
| Yes | 51 | 42.50 |
| No | 69 | 57.50 |
| Totals | 120 | 100.00 |
| Membership of cooperatives | | |
| Yes | 95 | 79.17 |
| No | 25 | 20.83 |
| Totals | 120 | 100.00 |

**Source: Field survey 2021**

**Activities Carried Out By Women on the Farm**

Activities women carried out on the farm and off farm are presented in Table 2. All the women participated in land clearing, ridging/heap making, seed planting, weeding, and harvesting.

**Table 2: Farm Activities Carried Out By Women on the Farm**

| Types of activities | frequency | Ranking |
|---|---|---|
| Land clearing | 120 | 1 |
| Ridge and Heap making | 120 | 1 |
| Seed planting | 120 | 1 |
| Fertilizer application | 120 | 1 |
| Weeding | 120 | 1 |
| Harvesting | 120 | 1 |
| Marketing | 95 | 2 |
| Pesticide application | 80 | 3 |
| Storage | 70 | 4 |
| Processing | 65 | 5 |
| Total | 1030* | |

*** Multiple responses**

**Sources: Field survey, 2021**

These women could perform these strenuous farm activities because they were mostly young and energetic. They possess the energy to carry out these activities because of they were mostly young. According to (Fontana and Paciello, 2010) women perform tasks in household crop production activities including sowing seeds, weeding, applying fertilizers and pesticides and harvesting of the crops.

The number of farmers that applied chemical were 80; those engaged in storage were 70; processing was carried out by 65 farmers while 95 farmers engaged in marketing the produce. As can be seen, women participated in all aspects of crop production. This is in agreement with Marilee (2009) who opined that women were responsible for post harvest food processing, storage and transportation and marketing.

**Crops grown by Women**

The crops grown by the women are presented in Table 3. Women also grew almost all the crops that men traditionally grow in the area. All the women grew maize and cassava. This is because the two crops are mostly eaten as staple food in the area. No family can stay in a day without a meal of cassava and maize. The flour of the two crops are mixed and steamed to make a thick paste which is eaten with soup. Sesame is another popular crop among the women. The crop is grown for its small leathery seeds which are used for soup. It also fetches income for the women because its high economic value. Sorghum, rice, yam, melon, and millet in that order of popularity among the women are grown for home consumption and sales.

**Table 3: Crops grown by the Women**

| Types of crops | frequency | Ranking |
|---|---|---|
| Maize | 120 | 1 |
| Cassava | 120 | 1 |
| Sorghum | 120 | 1 |
| Sesame | 90 | 2 |
| Rice | 70 | 3 |
| Yam | 65 | 4 |
| Melon | 55 | 5 |
| Millet | 57 | 6 |
| Total | 697* | |

**Multiple responses***

**Source: Field survey, 2021**

**Factors that Influence Income Generated by the Women Farmers**

Cobb-Douglass production function was used to estimate the factors that influenced income generated by the women. The estimated production function is presented in Table 4. The result revealed a coefficient of multiple determination ($R^2$) of 0.719 meaning that 71.9% of the variation in the income of the women was explained by the variables included in the model. F-ratio was also significant at 1 %. These implied that the model was a good fit for the data. Education, membership of cooperative societies, labour, farm size and cost of transportation significantly influenced the level of income generated by the women.

Education with coefficient of 0.171 was significant at 10 percent level of risk. This means that educated women can make more money than illiterate women. Education helps in the adoption of innovation which can increase output. This agrees with Nwaru *et al* (2006) who opined that education increases technical efficiency of farmers.

Membership of cooperative societies had a coefficient of 0.459 and was statistically significant at 1 percent level of probability. Membership of cooperative societies confers many advantages on farmers such as arranging to sell membership produce at high prices, buying farm inputs for members at controlled prices and channel for passing technical information to the farmers. This agrees with Anyaegbunam, *et al* (2009) in their study found that cassava farmers who were members of farmers association had high technical efficiency.

Labour had coefficient of 0.573 and it was statistically significant at 1 percent level of probability. Labour is very important in farming because even if farmers mechanised, labour is needed to operate the machines and there are other manual aspects of farm operations that labour will carry out.

**Table 4: Estimate of the Parameters of Cobb-Douglas Production Function on Factors That Influenced Income of Women Farmers**

| Variables | Coefficients | Standard error | t-ratio |
|---|---|---|---|
| Constant | 7.050 | 1.600 | 4.406 |
| ln education | 0.171 | 0.094 | 1.819 |
| ln extension visit | 0.017 | 0.098 | 0.173 |
| ln membership of cooperative | 0.459 | 0.104 | 4.413* |
| In labour | 0.573 | 0.081 | 7.074* |
| In age | 0.038 | 0.309 | 0.123 |
| In farm size | 0.330 | 0.093 | 3.548* |
| In transport cost | -0.243 | 0.060 | -4.050* |

**$R^2$ = 0.719 Adjusted $R^2$ = 0.486 F-ratio 17.196 *significant at 1 percent**

**Source: Field survey, 2021**

Farm size had a coefficient of 0.330 and it was statistically significant at 1 percent level of probability. The positive sign of the coefficient of farm size shows had increase in farm size will lead to increase in income of the farmers.

Transport cost had a negative coefficient of –0.343 and it was significant at 1 percent level of probability. Negative coefficient of cost of transportation implied that increase in transport cost will eat into farm revenue hence reduction in farmer income.

**Conclusion**

Women farmers in the area were mostly young and married. Most of them inherited their farm lands. The women grew almost all the crops that men traditionally grew. The women also carried out both light and high energy demanding farm activities such as land clearing, ridge and heap making, harvesting and marketing of produce. Membership of cooperative societies, farm size and labour were positive and significant determinant of income, while cost of transportation was negative and significant.

**Recommendations**

From the findings of the study, the following recommendations are made to ease the activities of the women. Land tenure system currently in operation in the area should be reviewed to make more land available to people who cannot enjoy inherited land. The women should be encouraged to form and join cooperative societies so that they can enjoy advantages of cooperation. Feeder roads should be

constructed by the State and Local Government to reduce the cost of moving farm produce out of the farm and to the market.

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