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ASSESSMENT OF THE SUSTAINABILITY OF AGRICULTURAL LIVELIHOOD ACTIVITIES AMONG RURAL WOMEN IN KWARA STATE, NIGERIA

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ABSTRACT

Women play important role in the agricultural sector of the economy. They engage in different agricultural livelihood activities so as to sustain the economic life and wellbeing of their households. Issues affecting the sustainability of their livelihood activities should therefore be given the necessary concern. The study assessed sustainability of agricultural livelihood activities among rural women in Kwara State. The data for this study were collected through a two-stage sampling technique from 369 rural women using structured questionnaire. The analytical tools used were descriptive statistics, 5- point Likert - type scale and sustainability index. The study reveals that the agricultural livelihood activities of the majority (75%) of the rural women were economically unsustainable. The perceived constraints to economic sustainability of agricultural activities identified were cattle invasion, unavailability of credit facilities, inadequate input, inadequate transportation facilities and high cost of labour. The study concluded that agricultural livelihood activities among rural women are not economically sustainable. It is therefore recommended that measures including improved technology and provision of credit facilities are required to ensure economic sustainability of agricultural livelihood activities.

Keywords: Agricultural, Livelihood Activities, Wellbeing, Sustainability, Rural Women, Constraints

INTRODUCTION

Agricultural growth has been known to play key role in the sustenance of economic development in Nigeria. The importance of the agricultural sector in addressing food insecurity and human development challenges cannot be underplayed. Its high impact in terms of its potentials to reduce poverty is quite enormous, especially in the developing countries (Etonihu *et al.,* 2013). Wrzaszcz and St. Zegar (2016) asserted that sustainability of agriculture and agricultural farms has become a subject of increasing interest of the society and researchers. Sustainable agricultural production systems, according to Nwaiwu et al. (2013) involve those approaches to food

production that ensure constant increases in productivity without compromising the chances of future generations to provide for themselves.

The position of women in agriculture in Nigeria is central, women's important contributions through their agricultural livelihood activities to household food security is increasingly being recognized (Ajamu, Matanmi, & Adekoya 2016). Rural women are known for their attempts to sustain the economic life and wellbeing of their households through their engagements in many activities such as production and processing that can promote their livelihoods (Nnodim, 2019). According to United Nations Women, (2015), rural women are key agents that will bring about the transformational economic, social changes and environmental protection that are required for achieving sustainable development in agriculture.

However, the performance of the agricultural sector is still below expectation in many countries due to the fact that women, who are often crucial resources in agriculture and the rural economy, face diverse constraints such as inadequate access to productive resources in the course of carrying out their livelihood activities (Adebayo & Adekunle, 2016; Njuki *et al.,* 2013). This was also corroborated by Okoye and Adamade (2016) who noted that agriculture still remains the largest sector of the Nigerian economy which employs two-thirds of the entire labour force. However, the production hurdles have significantly stifled the performance of the sector. These constraints are having a bearing on rural women's economic sustainability level especially on their agricultural production activities.

Poverty and food insecurity have been increasingly recognised as integral parts of sustainable development. This has led to poverty reduction and food security being key components of both the millennium and sustainable development goals (Ahmadu, & Edeoghon, 2018). Addressing the challenges and achieving these goals is crucial to attaining sustainable development.

In order to achieve sustainability, it is essential and important that the economic needs of the rural women households in terms of food security and poverty alleviation are met through their agricultural livelihood activities such as production and processing. These activities should be able to meet their daily minimum calorie and protein requirements as well as daily minimum income requirement.

Access to productive resources enables rural households to sustain their livelihoods, which leads to enhanced family wellbeing through poverty reduction and food security thereby contributing to sustainable development. The fact that only few women own or control the needed productive resources such as land, credit, technical services, market outlets, and information (Adams 2017; Ajadi *et al.*, 2015) call to question, the level of economic sustainability of women's livelihood activities.

Based on the foregoing, the study therefore assessed the sustainability of the agricultural livelihood activities among rural women in Kwara State.

The specific objectives were to: examine the level of economic sustainability of agricultural livelihood activities; and identify the perceived constraints to economic sustainability among rural women in Kwara State.

METHODOLOGY

Study Area

The study was carried out in Kwara State. The State has four Agricultural Zones which are Zone A: Baruteen and Kaiama Local Government Areas; Zone B: Edu and Patigi Local Government Areas; Zone C: Asa, Ilorin East, Ilorin South, Ilorin West and Moro Local Government Areas; and Zone D: Ekiti, Ifelodun, Irepodun, Isin, Offa, Oke-Ero and Oyun Local Government Area (KWADP, 2014). The village-list for the zones is 227 villages, 237 villages, 483 villages and 311 villages respectively.

Sampling Technique

Primary data were used for the study. Cross sectional data were collected from the rural women involved in agricultural livelihood activities using structured questionnaire. A two-stage random sampling technique was used for the sample selection. The first stage was proportionate random selection of 3% of the villages in each of the zones making a total of 40 villages. The second stage was random selection of 10 rural women in each of the selected villages; giving a total of four hundred (400) rural women. However, only three hundred and sixty- nine (369) of the rural women gave sufficient data found useful for the study.

Descriptive Statistics, sustainability index, and Likert-type scale were the tools of analysis used for the study. Details of the tools of analysis are as follows:

Sustainability Index

Two indicators namely; food security and income were used to construct sustainability index. Each indicator was categorized into three and the categories were scored on a 3-point Likert-type scale. The average score for the two indicators for sustainability was used to determine the sustainability index. This was estimated by using the average of the aggregate Likert- type scale for the two indicators for any of the three categories (Equation 2). Food security indicator: This was based on households' per capita daily calorie and protein intake from their previous production using food nutrient composition compared against the daily per capita recommended calorie (2470kcal) and (65g) protein intake adapted from Omotesho and Muhammad-Lawal (2010) and scored as follows:

Food security indicator (M) could take values such as 1, 2, and 3 depending on which of the following categories the rural women belong:

Meeting less than 2470kcal and 65g protein per capita = 1

Meeting only 2470kcal or 65g protein per capita = 2

Meeting both 2470kcal and 65g protein per capita = 3.
Average Food Security Indicator (Ma) was estimated as M/3.
Income Indicator: This was estimated as the proportion of the daily per capita income realized from the rural women agricultural activities to the recommended minimum daily per capita income requirement of ₦617.50 at ₦325.00 per dollar (poverty line of $1.90) World Bank Group, (2016) estimated as a percentage.

Income indicator (N) = $\frac{daily\ household\ per\ capita\ income}{recommended\ minimum\ daily\ per\ capita\ income} * 100$ ……. (1)

Income indicator (N) could take values such as 1, 2, and 3 depending on which of the following categories rural women belong:
Meeting less than (33.33%) of the per capita income indicator = 1
Meeting between (33.33%) and (66.67%)) of the per capita income indicator = 2.
Meeting more than (66.67%)) of the per capita income indicator = 3.
Average Income Indicator (Na) was estimated as N/3.
Therefore, the sustainability index was estimated as follows:

$\frac{(Ma+Na)}{2}$ …….. (2)

The sustainability index was further used to determine the level of sustainability according to Ghalib *et al.* (2017) as follows:
< 0.50 (unsustainable).
0.50 – 0.75 (moderately sustainable).
> 0.75 (sustainable).
The per capita daily calorie/protein indicator was computed by multiplying the quantity of food consumed in kg from their output of their agricultural activities and the daily recommended calorie /protein content divided by the adjusted household size and number of days. The adjusted household size was computed using the equivalent male adult scale weight (Omotesho, *et al.,* 2006) while the calorie content was obtained from energy content of food items (Omotesho, *et al.,* 2006; FAO, 2010). The per capita daily income indicator was computed from the gross margin from the output of their agricultural activities divided by the adjusted household size and number of days while the gross margin is the difference between the total revenue and the total variable cost of production.

5-Point Likert – Type Scale
A five-point Likert type scale was used to identify perceived constraints to economic sustainability. The rural women rated the problems they encountered in their agricultural livelihood activities on a 5- point numerical rating scale of: *very serious problem* =5*, serious problem* =4, *less serious problem* =3, *not serious problem*= 2 *and not a problem at all*= 1. The total scores for the number of constraint area of rural women were calculated as follows;

(i) Mean Percent Score- Mean score was obtained as total scores of each problem statement divided by total number of rural women, i.e.

$$\text{Mean score} = \frac{\text{total score of each problem}}{\text{total number of rural women}} \quad \ldots\ldots\ldots\ldots \quad (3)$$

(ii) The Mean Percent Score (MPS) was obtained as total score obtained by the rural women for each problem statement divided by the maximum obtainable score for each problem multiplied by a hundred.

$$\text{Mean Percent score} = \frac{\text{total score obtained}}{\text{maximum obtainable score}} * 100 \ldots\ldots\ldots\ldots\ldots \quad (4)$$

(iii) Rank – The values of the MPS were then used to rank the constraints faced by the rural women in descending order from responses that were considered to be very serious problem to those that were considered as not a problem at all.

RESULTS AND DISCUSSION

Socioeconomic Characteristics of Rural Women in Kwara State

This section presents the socioeconomic characteristics of the rural women in Kwara State. The characteristics discussed are age, household size, level of education, types of agricultural livelihood activities, farm size, membership of group, number of extension visit, amount of credit accessed, type of technology, monthly income from other sources, per capita daily calorie intake and per capita daily protein intake from purchased food items. The details are as presented in Table 1.

Table 1: Socioeconomic Characteristics of Rural Women in Kwara State

Characteristic	Category	Frequency	Percentage
Age (Years)	20-30	26	7.04
	31- 40	59	15.99
	41-50	182	49.32
	51-60	97	26.29
	>60	5	1.36
Household size	< 5	34	9.21
	5 - 10	272	73.71
	>10	63	17.08
Level of education	None	92	24.93
	Quaranic	8	2.17
	Primary	170	46.07
	Secondary	82	22.22
	Tertiary	17	4.61
Types of agricultural livelihood activities	Crop production	200	54.20
	Processing	70	18.97
	Livestock rearing	13	3.52
	Crop production &processing	30	8.13
	Crop production & livestock rearing	47	12.74
	Processing & livestock	7	1.90
	Crop production, processing & livestock	2	0.54
Farm size	< 1.0 ha	148	53.05
	1.0 -2.0 ha	105	37.63
	> 2.0 ha	26	9.32
Membership of group	Yes	306	82.93
	No	63	17.07
Number of extension visits			
	< 5	153	49.68
	5 - 10	59	19.16
	>10	96	31.17
Amount of credit accessed	< ₦50,000	49	42.98
	₦50,000- ₦100,000	61	53.51
Type of technology	Local	105	28.46
	Improved	264	71.54
Monthly income from other sources	No other	121	32.79
	<₦20000	186	50.41
	₦20000- ₦40000	40	10.84
	>₦40000	22	5.96
Per capita daily calorie from purchased food items	1001-2000kcal	81	22.00
	2001-3000kcal	34	9.21
	>3000kcal	54	14.63
Per capita daily protein from purchased food items	≤ 30.00g	194	52.57
	30.01-40.00g	52	14.10
	40.01-50.00g	27	7.32
	50.01-60.00g	14	3.79
	60.01-70.00g	12	3.25
	> 70g	70	18.97

Source: Data Analysis, 2018

As shown in Table 1, about sixty-five percent of the rural women were between 31 and 50 years of age. The average age recorded among the rural women was 46 years. About 74 percent of the rural women had household size that was between 5 and 10 members. Forty-six percent (46%) of them had just primary education. Only 54 percent of the rural women were involved in only crop production while about 19 percent were involved in only processing activities and just 4 percent were involved in only livestock production. Majority (90%) of the rural women had between less than 1.0 and 2 hectares of land. The average farm size cultivated by the rural women was 0.80ha.

About 83 percent of the rural women belonged to one form of group or the other. About 50 percent of the rural women had extension contact of up to four visits per year. A large percentage (69%) of the rural women did not have access to credit; about 54 percent of the rural women that had access to credit accessed between ₦50,000- ₦100,000 per annum. The average amount of credit accessed was ₦49,637.93.

A large proportion (72%) of the rural women made use of modern technologies such as tractor and processing machines in carrying out their agricultural activities. Majority (67%) of the rural women had other sources of income apart from agriculture. The average monthly income recorded from other sources of income of the rural women was ₦21,794.92.

Fifty-four percent of the rural women had a per capita calorie intake of less than 1000kcal while an average per capita calorie intake of 1435kcal was from purchased food items. Fifty-three percent of the rural women had a per capita protein intake of less than 30g.The average per capita protein intake recorded was 45g from food items that were purchased.

Level of Economic Sustainability of Agricultural Livelihood Activities among the Rural Women

This section shows the level of economic sustainability of agricultural livelihood activities among rural women in the study area. The items discussed are per capita calorie daily intake, per capita protein daily intake, daily calorie and protein intake indicator, monthly income realised from the output of their agricultural livelihood activities, per capita daily income, income indicator, sustainability index and level of economic sustainability. Details of the items on the level of economic sustainability of rural women's agricultural livelihood activities are as presented in Table 2.

Table 2: Level of Economic Sustainability of Rural Women's Agricultural Livelihood Activities

Items	Frequency n=(369)	Percentage %
i. Per capita daily calorie intake (kcal)		
≤ 1000	287	77.78
1001 -2000	44	11.92
2001 - 3000	13	3.52
> 3000	25	6.78
ii. Per capita daily protein intake (g)		
≤ 30.00	307	83.19
30.01-40.00	10	2.71
40.01-50.00	6	1.63
50.01-60.00	4	1.08
60.01-70.00	8	2.20
> 70	34	9.21
iii. Daily Calorie & protein intake indicator		
< 2470 kcal & 65g per capita	329	89.16
2470 kcal or 65g per capita	14	3.79
> 2470& 65g per capita	26	7.05
iv. Monthly Income		
≤ ₦100,000	167	45.26
₦100,001-₦200,000	85	23.04
₦200,001-₦300,000	46	12.47
₦300,001-₦400,000	19	5.15
₦400,001-₦500,000	15	4.07
>₦500,000	37	10.03
iv. Per capita daily income (%)		
≤ 20.00	219	59.35
20.01-40.00	78	21.14
40.01-60.00	24	6.50
60.01-80.00	16	4.34
80.01-100.00	1	0.27
>100.00	31	8.40
v. Income indicator		
< (33.33%) income per capita	286	77.51
(33.33% - 66.67%) income per capita	45	12.20
> 2/3 (66.67%) income per capita	38	10.30
vi. Sustainability index		
≤ 0.40	276	75.07
0.41-0.60	35	9.49
0.61-0.80	27	7.31
0.81-0.90	12	3.25
> 0.90	19	5.14
vii. Level of economic sustainability		
< 0.50 (unsustainable)	276	74.80
0.50 - 0.75 (moderately sustainable)	62	16.80
> 0.75 (sustainable)	31	8.40

Results in Table 2 revealed the level of economic sustainability of agricultural activities of rural women. The mean value recorded for daily per capita calorie intake was 1059.63kcal while the mean value recorded for the daily per capita protein intake was 26.69g. Eighty-nine percent of the rural women's households had calorie and protein intake indicator that were less than the daily per capita recommended calorie (2470kcal) and (65g) protein intake. This shows that the majority of the rural women did not meet up to the minimum requirement of calorie and protein which is the first category for the food security indicator.

Forty-five percent of the rural women made income of not more than ₦100,000 from the sales of their production output. About 60 percent of the rural women had a per capita daily income of less than 20 percent with a mean score of 31.40 percent being recorded for income per capita indicator. This shows that the amount of minimum income requirement that can be obtained from the revenue generated from the crop production, livestock and processing activities was low. Consequently, majority (78%) of the rural women had a per capita income indicator that was less than 33.33 percent which is the first category for the income indicator. About 75 percent, 17 percent and 8 percent of the agricultural activities of the rural women were unsustainable, moderately sustainable and sustainable respectively.

Perceived Constraints to Economic Sustainability of Agricultural Livelihood Activities among the Women

This section presents the identified perceived constraints to economic sustainability of agricultural livelihood activities encountered by the women. Some of the constraints encountered are inadequate credit facilities, cattle invasion, inadequate transportation facilities, inadequate inputs, high cost of labour, use of technology, inadequate storage facilities, inadequate extension services, inadequate water supply and poor yield.

Table 3: Distribution of Rural Women in Kwara State according to perceived constraints to economic sustainability of agricultural livelihood activities

Constraints	Extremely serious	Very serious	Moderately Serious	Mildly serious	Not Serious	WS	MS	MPS	R
Inadequate credit facilities	198 (53.66)	71 (19.24)	29 (7.86)	17 (4.61)	54 (14.63)	1449	3.92	78.53	1st
Cattle invasion	93 (25.20)	88 (23.85)	70(18.97)	67 (18.16)	51 (13.82)	1212	3.28	65.69	2nd
Inadequate Transportation	65 (17.62)	130 (35.2)	67(18.16)	54 (14.63)	53 (14.36)	1207	3.27	65.42	3rd
Inadequate inputs	71 (19.24)	96 (26.02)	125(33.88)	14 (3.79)	63 (17.07)	1205	3.26	65.31	4th
High cost of Labour	56 (15.18)	86 (23.31)	113 (30.62)	71 (19.24)	43 (11.65)	1148	3.11	62.22	5th
Use of technology	66 (17.89)	83 (22.49)	58 (15.72)	93 (25.21)	69 (18.69)	1091	2.96	59.13	6th
Inadequate storage facilities	65 (17.62)	56 (15.18)	85 (23.04)	94 (25.47)	69 (18.69)	1062	2.87	57.57	7th
Pests &disease	55 (14.91)	85 (23.04)	59 (15.99)	80 (21.68)	90 (24.39)	1042	2.82	56.48	8th
Inadequate extension services	8 (2.17)	19 (5.15)	77 (20.87)	86 (23.31)	179 (48.51)	1002	2.71	54.31	9th
Short supply of Water	11 (2.98)	50 (13.55)	90(24.39)	78 (21.14)	140 (37.94)	978	2.65	53.01	10th
Poor yield	37 (10.03)	57 (15.45)	83(22.49)	89 (24.12)	103 (27.91)	943	2.56	51.11	11th

Source: Data Analysis, 2018

WS -Weighted Score, MS - Mean Score, MPS -Mean Percent Score and R-Rank. Figures in parenthesis are percentages

Table 3 shows the ranking of different perceived constraints of the rural women, the mean scores were within 2.56 and 3.92 while the average mean score was 3. The constraints that had a mean score of greater than or exactly 3 which is the average mean score for the study are discussed. The unavailability of credit ranked 1st with a MPS of 78.53 percent with about 54 percent of the rural women considering this as extremely serious while the menace of cattle invasion ranked 2nd with a mean value of 3.28. These findings are similar to those of Fabiyi et al. (2007); Adedayo and Tunde (2013) which noted that unavailability of credit and cattle invasion were also among constraints rural women encounter. Poor transportation, high cost of labour and inadequate input were the major perceived constraints that were considered to be severe, probably as a result of government not paying adequate attention to the state of infrastructure and availability of resources. Addressing these challenges would reduce the costs expended in the course of carrying out their agricultural livelihood activities.

CONCLUSION AND RECOMMENDATIONS

The findings of the study revealed that the majority of the rural women did not meet up with the minimum requirement of calorie and protein as eighty-nine percent of the rural women's households had calorie and protein intake indicators that were less than 2470kcal and 65g respectively. The income indicator also showed that majority (78%) of the rural women had per capita income indicator that was less than 33.33 percent. Consequently, the agricultural activities of the rural women were not able to meet their food security and income needs. The study therefore concluded that agricultural activities of the majority (75%) of rural women were economically unsustainable. The perceived constraints to economic sustainability of agricultural activities identified were unavailability of credit, cattle invasion, inadequate transportation facilities, inadequate input and high cost of labour.

It is therefore recommended that measures such as provision of credit facilities and improved technology should be taken by the government to ensure economic sustainability of agricultural activities among rural women in Kwara State, Nigeria. The rural women could also leverage on their group membership to access productive resources needed for their agricultural livelihood activities. Non-governmental Organizations could also assist rural women by creating awareness on their plight and linking them to organizations that support women in agriculture.

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