

EXPENDITURE DETERMINANTS AND PERCEPTION OF POVERTY AMONG GINGER FARMERS IN KADUNA STATE, NIGERIA: GENDER PERSPECTIVES

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Abstract: *This study examines factors determining rural households' expenditure and perception of poverty among ginger farmers in Kaduna State, Nigeria. A multi-stage sampling procedure was used to select 543 respondents; descriptive, Chi-square statistics and regression models were used to analyse the data. The result of the study revealed that marital status, income, and education were the factors determining expenditure in male-headed households. While, household size, income, and age determine expenditures among female-headed households. Results of the study revealed mean scores of $\bar{x} = 4.59$ (male farmers) and $\bar{x} 4.76$ (female farmers) indicating that farmers strongly perceived that access to productive resources has a role to play in poverty reduction. The outcome of the FGD revealed there was a gap in the perception of poverty between male and female farmers. The female farmer strongly agreed with most of the statements which is an indication of women's vulnerability to poverty. Furthermore, there was a direct and strong relationship between male and female-headed households' perception of the impact of poverty. High cost of production and inadequate capital were some of the constraints faced by the farmers. Female-headed households were mostly affected by these constraints. The study recommends that the government and other stakeholders interested in promoting ginger production and alleviating the poverty status of farmers, should intensify efforts to support farmers in ginger production to increase their income.*

Key words: *expenditure, determinants, poverty, farming households, constraints*

INTRODUCTION

Poverty is a global phenomenon that affects continents and nations. It afflicts people in various depths, at different times and is predominantly a rural phenomenon. Over three-quarters of the global extreme poor lived in rural areas in 2022. Rural populations, therefore, need to be the focus of poverty alleviation efforts, especially in Sub-Saharan Africa. [25,29]. The poverty level in Nigeria contradicts the country's immense wealth as over 70% of the people wallow in absolute poverty [25,36,37]. Nigeria possesses a diverse array of natural resources, making it one of the wealthiest nations in natural endowments. It has the largest mangrove forest in Africa and the third largest worldwide [16,20,31]. Rather than recording remarkable progress in socio-economic development, Nigeria's high inflation reached 24.7% annually in 2023, driven by the removal of the petrol subsidy, loose monetary policy, and naira depreciation [29].

Nominal earnings have not kept up with inflation, pushing another 10 million Nigerians into poverty in 2023. Based on World Bank projections, about 40.7% of Nigerians are estimated to live below the international poverty line [36]. Despite various efforts of Governments from independence to date, poverty among the people of Nigeria has been on the increase. This has seriously affected the expenditure of rural households.

Household expenditure is the desired amount incurred to meet their basic needs on the consumption of goods and services used for the direct satisfaction of individuals [1,39]. Expenditure is critical to transforming households in Nigeria, especially farming households. In the agricultural sector, an increase in the productivity of the industry has a

positive linkage with the size of household expenditure, food consumption expenditure and disposable income [34]. A large proportion of the agricultural labor force is engaged in subsistence farming, high level of poverty is observed among them, whose primary source of income is from agricultural activities. Thus, Income is highly needed to finance the day-to-day expenditures [3,19] of ginger farmers.

Ginger (*Zingiber officinale*) is an herbaceous perennial plant belonging to the order Scitamineae and the family Zingiberaceae. Ginger's origin is not well established, though it is generally believed to be a native of Asia, where it was first cultivated. Ginger was introduced to Nigeria in 1927, the crop is cultivated in different parts of Nigeria. However, the southern part of Kaduna State is the largest producer of ginger in Nigeria, with concentrations in Kachia, Jaba, Jama'a and Kagarko Local Government Areas.

The production of ginger in Kaduna State is mostly through the singular efforts of local farmers, who use human labour, a lot of money, and time are invested [14]. Ginger production in Kaduna State is one of the economic activities that could serve as a source of revenue generation and alleviate the poverty status of ginger farmers [11].

Quantitative studies on the poverty status of ginger farmers, such as [3,11,24,38], and not many qualitative studies were conducted, such that poverty was measured using inferential statistics. Qualitative assessment of poverty is equally needed and important in understanding farmers' experience of poverty, to bring the realities of rural people's perspectives on poverty to policymakers. Additionally, there are limited studies conducted on the factors influencing the expenditure of farm households and ginger farmers' perceptions of poverty. Thus, this study seeks to analyse the gender gaps and determine the factors influencing rural households' expenditure among male and female-headed household ginger farmers and qualitatively assess their poverty status.

MATERIALS AND METHODS

The study was conducted in the Southern part of Kaduna State, specifically Jaba, Kagarko and Kachia Local Government Areas (L.G.A.s). The area is situated within the central high plains of Northern Nigeria, located between Latitude 9° 11' and 10° 11' N and Longitudes 7° 10' and 8° 30' E. The climate is generally characterized by alternating dry and wet seasons. Rainfall usually starts in April and ends in early November, while the dry season sets in mid-November and ends in March. Economically, the main income and major occupation of the people are farming, hunting and trading. Of these three, agriculture dominates. Some of the crops cultivated are ginger, groundnuts, maize, millet, rice, and cassava.

Multistage sampling procedures were employed in selecting the respondents for this study. In the first stage, the southern part of Kaduna State was purposively selected based on a priori knowledge that it is a ginger-producing area [14]. Thereafter, three LGAs (Kachia, Kagarko and Jaba) were purposively selected due to the high production of ginger. Secondly, three villages were randomly selected from Kachia, Kagarko and Jaba (Table 1). In the third stage, adopting [8] method to calculate the sample size based on the assumption of a 5% expected margin of error. The formula is expressed as follows:

$$n = N / (1 + N(e)^2) \dots\dots\dots (1)$$

Where: N = the population under study, n = the desired sample, e = the level of tolerable error assumed to be 0.05; while 1 is a constant value.

To determine the sample size for the male farmers, it is computed as follows;

$$n = \frac{860}{1 + 860(0.05)^2}; n = \frac{860}{3.15} = 273$$

$$\frac{273}{860} \times 100 = 32\%$$

For the female farmers;

$$n = \frac{758}{1+758(0.05)^2}; n = \frac{758}{2.895} = 261$$

$$\frac{261}{758} \times 100 = 35\%$$

Thus, 35% of female farmers and 32% of male ginger farmers were randomly selected, to give a sample size of five hundred and forty-three farmers (543) comprising 277 male and 266 female ginger farmers for this study.

Table 1.

Distribution of farmers in selected LGAs

Selected LGAs	Villages	No. of male farmers	Sample size male (32%)	No. of female farmers	Sample size female (35%)
Kachia	Assako	130	42	116	41
	Yarbung 1	68	22	78	27
	Gidan tagwai	95	30	88	31
Jaba	Nok	136	44	103	36
	Kurmin Jatau	86	28	80	28
	Fai	138	44	108	38
Kagarko	Kenyi	83	27	69	24
	Kurmin dangana	65	21	56	20
	Katugal	59	19	60	21
Total	9	860	277	758	266

Source: Authors' compilation from reconnaissance survey

Structured questionnaires were administered to the farmers to collect primary data, Focus Group Discussion was also conducted. A Likert-type scale was used to measure the degree or intensity of agreement by the respondents to a statement (used to determine farmers' perceptions of poverty status). In the questionnaire, farmers were asked to indicate the extent of their agreement on statements using a 5-point Likert scale of Strongly Agreed (SA), Agreed (AG), Undecided (U), Disagreed (DA) and Strongly Disagreed (SD). Weight of 5, 4, 3, 2 and 1 was assigned. For each indicator, a weighted mean was obtained as follows:

$$WM = \frac{[(fSA \times 5) + (fAG \times 4) + (fU \times 3) + (fDA \times 2) + (fSD \times 1)]}{N} \dots\dots\dots(2)$$

Where:

WM= Weighted mean

f = Frequency

Values 5, 4, 3, 2, 1 = Attached weights (SA, AG, U, DA & SD = Perceptions of strongly agree, agree, undecided/ neutral, disagree and strongly disagree); N = Sample size.

Adopting [6] perception analysis, the mean (\bar{x}) for all indicators was then categorized as follows; The mean(s) 1.00-1.49 =Strongly Disagree (SD), 1.50-2.49 =Disagree (DA), 2.50-3.49 = Undecided/Neutral (U/N), 3.50-4.49 = Agree (AG) and 4.50-5.00 = Strongly Agree (SA).

Chi-square statistic was also used to confirm statistical differences in farmer's perception statements on poverty. The formula is expressed as follows:

$$X^2 = \frac{\sum (O - E)^2}{E} \dots\dots\dots(3)$$

χ^2 = chi-square;
 \sum_i = Summation;
O = Observed data;
E = Expected data;

Expected data was calculated using the formula:
 $E = CT \times RT / GT$

Where,
E = expected data;
CT = Column total;
RT = Row total;
GT = Grand total

For this study, if $p \leq 0.01$ is significant at 1%, $p < 0.05$ is significant at 5% and $p < 0.10$ is significant at 10%.

Multiple regression analysis was used to capture the determinants of expenditure among ginger farming households as follows:

$$Y = \alpha_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + U \dots \dots \dots (4)$$

Where:
Y = Household expenditure amount spent monthly (N);
X1 = Level of education (years);
X2 = household size (number of people);
X3 = Marital status (yes or no);
X4 = Age (years);
X5 = Secondary occupation (yes or no);
X6 = Amount of money realized from ginger (N);
U = Error term, which is normally distributed with zero mean and constant variance
 α_0 = Constant term;
 β_1-6 = Regression coefficients.

RESEARCH RESULTS

Factors Influencing Household Expenditure of Male and Female Ginger Farmers

The R-squared values in Table 2 were 0.41 and 0.42 for male and female ginger farmers, respectively. These indicated that 41% and 42% of the variation in the dependent variables was explained by the independent variables included in the model.

The level of education was found to be positive with a coefficient of 532.37 and significantly influenced expenditure among male farmers. The implication of this is that an increase in years of education would give male farmers opportunities for jobs, thereby enhancing their expenditure as well. This result supports the empirical findings of [7] and [33], who reported a positive and significant effect of education on food consumption expenditure. Education is associated with skills enhancement (experience) that ought to contribute positively to their well-being. However, the coefficient (230.949) of education was not significant among the female farmers.

The coefficient of income from ginger farming and household size was found to be significant ($p < 0.01$) and positively influenced male and female farmers' household

expenditure. The implication is that the higher the number of household members, the higher the expenditure level. The income from ginger farming of the household is a function of the number of persons working in the household. The disadvantage of household size would be greatest when members are not working. This result is supported by findings from many studies [22,28,35,39] they opined that there is a causal relationship between income and household size, confirming that income is the major determinant of household expenditure.

The estimated coefficient of marital status (821.72) was positive and significantly influenced the expenditure level of male ginger farmers. This means that married household heads would spend more, which could be as a result of caring for extended family members, as found in African societies. The estimated coefficient of age (-73.157) was found to be negative and significant ($p < 0.01$) among the female ginger farmers. This revealed that the older the women are, the probability to spend less. A decrease in female farmers' age is likely to increase the loss of strength and weaken the women, thereby not being able to farm or easily source income, which negatively affects the amount of money spent on their daily upkeep (expenditure level of the women). Among the male farmers, the coefficient of age was not statistically significant. Studies by [2,18] showed age, household size, gender of the household head, income, education, and employment status determine household expenditure.

Table 2.

Factors determining male and female ginger farmers' household expenditure

Variables	Male		Female	
	Coefficient	t-value	Coefficient	t-value
Constant	4623.22	2.75***	8644.153	7.57***
Education	532.37	2.59**	230.949	1.30
Household size	414.81	4.15***	472.897	4.63***
Marital status	821.72	1.77*	231.102	0.31
Age	-19.28	-0.72	-73.157	-3.12***
Secondary occupation	0.007	1.57	0.0045	1.01
Income	0.024	3.54***	0.036	2.05**
Diagnostic statistics				
R ² Adjusted	0.42		0.41	
F-value	52.37***		50.20***	

Note: *** = $P < 0.01$ ** = $P < 0.05$

Source: Authors' compilation

Farmers' Perception of Poverty among Male and Female Ginger Farmers

The results in Table 3 showed that the farmers strongly expressed that a lack of access to productive resources can lead to poverty. The means ($\bar{x} = 4.59$) and ($\bar{x} = 4.76$) are indications that farmers strongly agreed that access to productive resources has a role to play in poverty reduction. The limited access to productive resources would hinder farm operations, which could lead to poverty. In other words, limited accessibility to productive resources would raise the incidence of poverty among farmers. Similarly, [27] opines that poverty cannot be defined simply in terms of lacking access to sufficient food. It is also closely associated with a person's lack of access to productive assets, services and markets.

Summarily, the farmers' responses indicated that poverty is complex and multifaceted and has no single universally accepted definition. [23], also found in his study that the indigenous rural people distinguish and perceive poverty through diverse perspectives and attributes.

Table 3.

Distribution of male and female ginger farmers' perception of poverty

Farmers' perception of poverty	Gender	Weighted scores					WT	M.S
		SA	A	U	D	SD		
Poverty is a state whereby the poor are not regarded	M	505	524	111	14	1	1155	4.16
	F	940	308	3	0	0	1251	4.70
It is the lack of money to take care of one's needs	M	750	288	3	36	1	1078	3.89
	F	860	376	0	0	0	1236	4.65
Poverty is the inability to meet one's immediate problems	M	740	516	0	0	0	1256	4.53
	F	920	300	21	0	0	1241	4.66
Poverty is a poor source of income	M	675	552	12	0	0	1239	4.47
	F	940	308	3	0	0	1251	4.70
Poverty is a lack of employment	M	720	532	0	0	0	1252	4.51
	F	875	364	0	0	0	1239	4.47
Poverty is when there is no food to eat throughout the day	M	845	432	0	0	0	1277	4.61
	F	1035	232	2	0	0	1269	4.77
Poverty is the situation of constant borrowing of money and begging	M	960	332	6	0	0	1298	4.68
	F	975	252	0	16	0	1243	4.67
Poverty is a lack of access to social and economic * infrastructure	M	750	288	0	0	0	1038	3.74
	F	1080	200	0	0	0	1280	4.81
lack of productive resources can lead to poverty	M	855	400	18	0	0	1273	4.59
	F	1070	168	30	0	0	1268	4.76

Note: *Infrastructure includes education, health, portable water, good roads & sanitation,

M denote Male; F female

Source: Authors' compilation

Statistical Difference of Gender Perception Statement of Poverty

The chi-square statistic was used to confirm statistical differences in perception statements on poverty. The result in Table 4 revealed the Pearson Chi-Square result ($\chi^2 = 5143$, $p = 0.526$), with a strong association of 0.74 between the variables. This result statistically supports the ginger farmers' perception of poverty (Table 3) in the study area.

Table 4.

Chi-square result based on the perception of ginger farmers on poverty

Perception of poverty	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	5.143 ^a	6	0.526
Likelihood Raio	7.075	6	0.314
Linear-by-Linear Association	.035	1	0.852
Nominal by Nominal	Phi	0.74	0.528
	Cramer's V	0.74	0.528

Source: Authors' compilation

Gender Perception of the Impact of Poverty

The results presented in Table 5 showed that male and female farmers' mean $\bar{x} = 4.29$ and $\bar{x} = 4.79$, respectively, indicating the impact of poverty to include powerless and isolation. This result clearly showed that the female farmers strongly ($\bar{x} = 4.79$) felt more helpless due to poverty than the male farmers. According to [21], women-headed households are far more likely than male-headed households to be poorer, and the poverty rate among women is higher than men. Farmers in the study area also agreed (Table 5) that poverty could result in vulnerability to a sudden, dramatic decrease in household expenditure ($\bar{x} = 4.10$; $\bar{x} = 4.71$). The study shows that female-headed households will likely feel the impact ($\bar{x} = 4.71$) of vulnerability to a sudden, dramatic decrease in household expenditure more than male-headed households. Social inferiority and humiliation are all

part of the impact of poverty, as attested by the male farmers ($\bar{x} = 4.04$) and the female farmers strongly agreed ($\bar{x} = 4.91$) with the statement. Ill health and physical weakness also strongly ($\bar{x} = 4.71$) impacted the female farmers. This result is similar to the findings of [17] and [40], who highlighted the link between female-headed households and health issues, indicating a more pronounced increase in expenditure on health care among women than men. Consequently, to cope with these risks, female-headed households incur higher healthcare expenditures, further exacerbating their vulnerability to poverty. The responses from this present study depict the farmers' agreement that the impact of poverty is associated with various states of deprivation or a transitory state of lack.

Table 5

Perception of male and female ginger farmers on the impact of poverty

Items	G	Weighted scores					W.T	M.S.
		SA	A	U	D	SD		
Powerless and isolated	M	805	204	153	28	0	1190	4.29
	F	266	0	0	0	0	1330	5.00
Vulnerability to a sudden, dramatic decrease in consumption level	M	710	304	27	100	0	1141	4.10
	F	1050	224	0	0	0	1274	4.79
Ill health and physical weakness	M	715	292	45	92	0	1144	4.13
	F	950	304	0	0	0	1254	4.71
Social inferiority and humiliation	M	690	276	69	74	10	1119	4.04
	F	1225	72	9	0	0	1306	4.91

Source: Authors' compilation

Statistical Difference of Gender Perception on The Impact of Poverty

The perception results were subjected to Chi-square statistics to confirm statistical differences in perception statements on the impact of poverty (Table 6). The result in Table 6 revealed the Pearson Chi-Square to be significant ($\chi^2 = 5.433$, $p = 0.045$). Hence, there was a statistically significant association between gender and their perception of the impact of poverty at a 5% probability level. Invariably, there was a direct and strong (0.88) relationship between male and female-headed household perceptions on the impact of poverty. This confirms the result in Table 5 above.

Table 6.

Chi-square result based on the perception of ginger farmers on the impact of poverty

Impact of poverty	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	5.433 ^a	4	0.526
Likelihood Ratio	7.075	4	0.314
Linear-by-Linear Association	.035	1	0.852
Nominal by Nominal	Phi	0.88	0.045**
	Cramer's V	0.88	0.045**

Source: Authors' compilation

Additionally, the impact of poverty is felt or experienced differently among male and female-headed households in the study areas as revealed by the study. The result is in tandem with the findings of [21,40] that the gap in poverty rates by sex widens significantly, and women-headed households are particularly vulnerable to poverty than male-headed households.

Production Constraints encountered by Ginger Farmers in the Study area

The results presented in Table 7 and figure 1 showed that only 25.27% of the male and 100% of female farmers identified not having easy access to land as a constraint to

their ginger production. The study by [32] also observed that female-headed households cultivate smaller areas, stating that there is a gap in crop yields. 44.40% of males, while 96.99% of female farmers also reported the unavailability of credit as a constraint. For effective ginger production, the provision of credit is critical in enabling farmers to acquire basic farm inputs such as seeds, agrochemicals and fertilizers that would enhance the efficiency of ginger production. [13], equally found that inadequate credit was one of the most severe constraints faced by the female farmers in their study.

In the same vein, 100% of female farmers and 62.79% of male farmers indicated a high cost of inputs and labour as a constraint. During the planting period there is usually an acute shortage of labour, also demand for labour is normally high and expensive at the time of land clearing, ridging, weeding and harvesting periods, which most female farmers could not easily afford. A high percentage (91.35%) of female and 35.01% of male farmers identified transportation as a constraint in the area. The roads in most places are bad and impassable, especially during the wet season. The lack of good roads and high cost of transportation prevent farmers from transporting their produce on time. These findings conform with those of [4,5,9,15] in separate studies, whereby female-headed households were the most affected by these constraints.

The result in Table 7 revealed that 59.56% and 97.36% of male and female farmers reported poor market prices.

Table 7.

Distribution of ginger farmers based on constraints encountered

Constraints	Male Percentage (F)	Female Percentage (F)
High cost of inputs & labour	62.79 (186)	100 (266)
Access to land	25.27 (70)	100 (266)
Risk of price fluctuation	59.56 (165)	97.36 (259)
Unavailability of credit	44.40 (123)	96.99 (258)
Transportation	35.01 (97)	91.35 (243)

Note: *Multiple responses

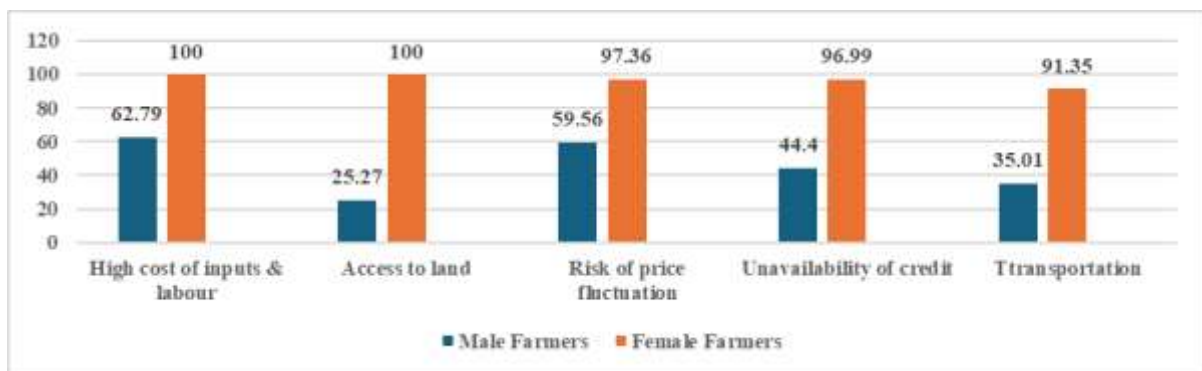


Figure 1: Graphical presentation of constraints encountered by ginger farmers

Source: Authors' compilation

The marketing of ginger is associated with the risk of low prices during the glut period. Low prices during the glut lead to a reduction in cultivation levels in the following planting season. In addition, the farmers cannot keep the produce for long due to the immediate need for cash, so farmers mostly sell at a giveaway price. This result is in agreement with the findings of [11,12,30] who identified similar constraints affecting ginger production in their respective studies.

CONCLUSIONS

The different perceptions of poverty from the farmers reflect a realistic circumstance, expressed by the farmers during the focus group discussion (FGD). The outcome of the FGD revealed there was a gap in the perception of poverty between male and female-headed households. Based on the list of statements used for the FGD, the female farmer strongly agreed with most of the statements, which is an indication of women's vulnerability to poverty. Though the Chi-square result showed that there was no significant association between male and female ginger farmers on the general perception of poverty in Kaduna State. However, there was a direct and strong relationship between male and female-headed households' perceptions of the impact of poverty. Invariably, there is a poverty gap between male-headed households and female-headed households. Generally, one of the most common reasons for being poor is the inability to obtain an adequate return from one's labour, as reported by the farmers in the study area. Household heads who are fully engaged in small-scale agriculture and lack adequate resources tend to be poor and lack infrastructure, which could culminate in a high poverty status.

The determinants of expenditure in ginger farming households were education, household size, age and income. At the same time, the high cost of production, inadequate capital and fluctuating market prices were some of the constraints faced by the farmers in ginger production. However, female-headed households were mostly affected by these constraints in the study area. Thus, understanding poverty and its impact as perceived by the male and female head households, and the constraints encountered by the farmers in production, will greatly assist in the resource distribution, most especially, among the female-headed households. Invariably, this would enhance ginger production and thus improve the expenditure of ginger farming households.

This study clearly shows that female-headed households were severely constrained in the production of ginger in the study area. Thus, it is essential to address these constraints through targeted interventions and support systems, such as improving market infrastructure and stabilizing the selling price of ginger. Female-headed households should be accorded priority in efforts to reduce and eliminate the poverty gap. The government, NGOs, and other stakeholders interested in promoting ginger production and alleviating the poverty status of farmers should intensify efforts to support farmers in ginger production to increase their income, which then translates to improving their household's expenditure (improved level of living). Furthermore, factors such as education, household size, age and income should serve as critical drivers that should be targeted in a bid to enhance farmers' expenditure.

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