



Constraints to women involvement in household farming decisions in north-central Nigeria: the application of factor analysis model

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ABSTRACT

The study assessed the level of gender involvement in household farming decisions and identified constraints to women involvement in household farming decisions in Lafia Local Government Area, North-central Nigeria. Data were collected through structured questionnaire administered on sixty (60) farming households randomly selected for the study. Data were analyzed using descriptive statistics and factor analysis. The results showed that men dominated (with involvement rate of 79% on grand average) all aspects of household farming decisions (such as selection of farm enterprise, procurement of farm inputs, allocation of farm inputs, selling and storage of excess farm produce) except for household decisions concerning processing and consumption of farm produce dominated (73.5% on grand average) by females members of farm households. Poor personal linkages to socio-economic institutions, land holding constraint, women farming skill, household violence, traditional and cultural belief were constraints to women involvement in household farming decisions. It is recommended that extension activities be expanded to include sensitizing male household heads on need to involve their women in the household farming decisions for greater productivity and to enhance household food security.

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Introduction

In Nigeria, women make a significant contribution to the food production and processing of foodstuff. They provide some 60-80% of agricultural labour and are responsible for 80% of food production (Ingawa, 1999; Mgbada, 2002; Rahman and Usman, 2004). Food and Agriculture Organization (1998) observed that women produced between 60-80% of the food in most of Sub-Saharan African countries and are responsible for half of the world's food production.

Farmers make decisions on a number of pre-harvest and post-harvest activities such as what to produce, input use, harvest and post-harvest issues, which according to William (2003) affect production, processing, distribution and prices of farm produce. Farming decisions are made to maximize farm objectives subject to available material and human resources.

Men have continued to dominate farm decision making, despite the significant role played by women in agricultural production, processing and marketing in Nigeria even in areas where women are the largest providers of farm labour (Amaechina, 2002). This is as a result of traditional gender-based subordination and disparity between men and women in the size of land holding and other agricultural resources in farm production. However, the productivity of women depends on the rate of their involvement in farm decision making (Rahman et al; 2005). As noted by Adebayo (2003), any household targeted measures aimed at improving food security and poverty reduction need to include women in planning and execution. This is because the women folk constitute a formidable and significant part of Nigeria's rural primary producers. Also, to ensure increased agricultural production, the women who constitute the majority of the poor, the underdeveloped,

economically and socially disadvantaged in many societies must be consulted and actively involved in development process and the primacy of women in farm production and processing must be recognized (Babatunde et al; 2007). It is indeed a counter-productive, women as key players carry out farm tasks without being part of the decision process, especially when the decisions fail to recognize their peculiar household responsibilities.

In view of the pitfalls of the past, gender issues are becoming increasingly indispensable in Nigeria's agriculture owing to overwhelming evidence of significant contribution of women to agriculture, household maintenance, stability and food security amidst formidable economic adversity (Umar et al; 2007). Therefore, this study is aimed at identifying a wide range of factors hindering women involvement in household farming decisions. Specifically, the objectives of the study were to: determine gender-based rate of involvement in the household farming decisions; and, identify constraints to women contribution to household farming decisions.

Methodology

The study was conducted in Lafia Local Government Area of Nasarawa State, North-central Nigeria. The Local Government Area has a population of about 330,712 people (mostly farmers) and occupies the geographical landmarks of 2,737 square kilometers.

It is located between latitude 70 – 90N, Longitude 70 – 90E and altitude 181.5m above sea level. The average annual rainfall is approximately 1,288mm and annual mean temperature ranges from 22.70C – 36.80C. The soil texture is predominantly sandy-loam. Sorghum, cowpea, rice, maize, sesame, groundnut, cassava and yam are the main crops grown in the area. The area is made up of six (6) Districts which include; Akunza, Agyaragu

Tofa, Lafia Central, Lafia East, Lafia North and Lafia West districts.

A multi-stage sampling technique was used to select target respondents. In the first stage, four districts were randomly selected from six districts that make up the local government area. In the second stage of sampling, three communities were randomly selected from each of the four districts sampled. This amounted to 12 communities selected for the study. Finally, five farming households were randomly selected from each of the twelve (12) sampled communities in the area. From each of the sixty (60) farming households selected, a male and a female member of each household were selected as respondents for the study. Thus, sixty (60) females and sixty (60) males members of farming households were selected.

Primary data used for the study were generated with the aid of structured questionnaire administered to both male and female in each of the farming households. Data were collected on age, income level, household size, farm size, land ownership type or acquisition etc. Other sources of the data collected were level of involvement in the farm decision making, and the constraints to women contribution to household farming decisions.

Descriptive statistics (percentage, mean, coefficient of variation and standard deviation) and exploratory factor analysis were used to analyze the data collected. Five-point scale rating was used to estimate the level of gender involvement in household farming decisions such as not involved (1), less involved (2), involved (3), more involved (4), and, exclusively involved (5). Therefore the rate of involvement in any item for decision making is given as $X/5 \times 100$, where, X= Scale (1 to 5). Hence, the classification of the rate of involvement of respondents in the household farming decisions is given as follows: 0-20% (not involved); 21-40% (less involved); 41-60% (involved); 61-80% (more involved); and, 81-100% (exclusively involved).

The responses of women to the question of constraints to household farming decision were based on the four-point scale rating such as not serious (1), not very serious (2), serious (3), and, very serious (4). Exploratory Factor Analysis (EFA) was employed to identify underlying constraints militating against women contribution to household farming decisions. To group these identified underlying constraints, the principal component analysis with iteration and varimax rotation was used. The cut off point for constraints loading was 0.40 and above. Variables that loaded more than one factors were discarded (Ashley et al; 2006). Other factors considered for extracting constraints loading were high communality value and eigenvalue of not less than one. The model is given below:

$$Y_1 = a_{11} X_1 + a_{12} X_2 + \dots + a_{1n} X_n$$

$$Y_2 = a_{21} X_1 + a_{22} X_2 + \dots + a_{2n} X_n$$

$$Y_3 = a_{31} X_1 + a_{32} X_2 + \dots + a_{3n} X_n$$

$$Y_n = a_{n1} X_1 + a_{n2} X_2 + \dots + a_{nn} X_n$$

$Y_1 \dots Y_n$ = observed variables/constraints to women contribution to household farming decisions.

$a_1 \dots a_n$ = Factor loading.

$x_1 \dots x_n$ = Unobserved underlying factors constraining women from contributing to household farming decisions.

Results and Discussion

Socio-economic Characteristics of Women in the Farming Households:

The socio-economic features of the women in the farming households are presented in Table 1. The Table shows that the

average age of women in the farming households was 27 years. This signifies that the women in the farming households were within their economically active age range. On the average, women had experience of up to 14 years in farming with coefficient of variation of 64.3 percent indicating the variability among them in term of experience in farming. The women educational status as measured by years of schooling was on the average, 3 years. This shows that most of the women barely attended formal educational institutions. The mean of the cooperative participation was 1.6 years. However, the high value of coefficient of variation (323%) indicated that majority of respondents did not participate in cooperative associations. The respondents' annual income ranges between N5, 000 (minimum) and N650,000 (maximum) with average of N54,933 per annum. This shows that majority of the respondents were poor. Table 1 also shows that the maximum sum of credit obtained by the respondents was N200, 000 while the average amount of credit obtained within the year of the study was N5717. However, the magnitude of coefficient of variation (476.8 %) shows clearly that the majority of the respondents did not have access to credit. This study agrees with that of Yisehak (2008) who observed that women are rarely considered credit worthy because they have no collateral.

Gender Based Level of Involvement in the Household Farming Decisions: Table 2 shows that men were more involved (77% on the average) in decision making towards enterprise selection, selling of produce and storage of harvested produce in the farming households. On the other hand, women were less involved in decision making concerning the kind of farming enterprise to be undertaken by the household and decisions pertaining to the sale and storage of harvested farm produce in the study area. The Table also shows that household decision making regarding input procurements and input allocation for farming enterprises were exclusively (83% on the average) made by men in the farming households. This implies that women were either not consulted or involved in decision making concerning the kind of inputs to be procured and allocation of procured inputs among the household farming enterprises in the study area. However, women were more involved (74%, on the average) in decision making process concerning the processing and consumption of farm produce among the farming households.

Principal Component Analysis: Table 3 shows suitability of data set for this analysis as can be judged from significant value of Bartlett's test of sphericity (Approx. chi-square = 576.148; degree of freedom=136 and significant=0.000) and Kaiser-Meyer – Olkin's value of 0.733 and low partial correlation and adequate correlation from correlation matrices (Anzaku and Umar,2010). Table 3 shows that there are six underlying constraints hindering women contribution to household farming decisions. Only variables that carry factor loading of 0.40 and above and high communalities were considered although Enete and Amusa (2010) and Madukwe (2004) considered variables that carry factor loadings of less than 0.40. Each constraint was given a denomination that best describes the set of variables contained in it (Kessler, 2006). Therefore, the variables grouped under the six constraints were named as (1) poor personal linkages to socio-economic institutions (comprising illiteracy, lack of access to extension agents, lack of access of credit institutions, poor participation in cooperative organization, lack of access to NGO, involvement in off-farm jobs and non participation in agricultural intervention programme); (2) land

holding constraint (consisting of poor access to farmland and small size of household farmland); (3) women farming skill (such as the age of women farmers and inefficient farming experience); (4) traditional belief like women should not own farmland; (5) cultural constraint like belief that household decision making is exclusively right of men; and, (6) household violence. The variables that carried more than one constraint loadings were not considered such as poor income and multiple domestic responsibilities of farm women.

Conclusion and Recommendation

The household farming decisions on issues such as selection of farm enterprises, farm inputs procurement, allocation of farm inputs, selling of harvested farm produce and storage of excess produce were dominated by men. However, women dominated decisions concerning households' processing and consumption of farm produce. The constraints to women involvement in the household farming decisions were poor personal linkages to socio-economic institutions, land holding constraints, women farming skill, household violence and traditional/cultural belief. Since the productivity of women depends on the rate of their involvement in farm decision making (Rahman et al 2005), extension activities should be expanded to include sensitizing male household heads on the need to involve their women in the household farming decisions for greater productivity and to enhance household food security.

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Table 1: Socio-Economic Characteristics of Women in the Farming Households.

Variables	Maximum	Minimum	Mean	Standard deviation	Coefficient of variation(%)
Age (yrs)	50	15	27	8.7	32.2
Years of farming experience (yrs)					
	40	2	14	9.0	64.3
Educational status (yrs)	14	1	3	3.8	126.7
Years of participation in cooperative					
	25	0	1.6	5.0	312.5
annual income (₦)	650,000	5,000	54,933	87,632	159.5
Credit obtained (₦)	200,000	0	5,717	27,261	476.8

Source: Field survey, 2010.

Table 2: The Gender based Involvement in Household Farming Decisions

Items	Rate of Male Involvement (%)					Rate of Women Involvement (%)				
	Max	Min	Mean	SD	CV (%)	Max	Min	Mean	SD	CV (%)
Selection of Enterprise	100	60	78	16.2	21.0	60	20	42	16.2	36
Input Procurement	100	60	83	15	18.7	60	20	37	15.0	41
Input Allocation	100	60	83	15	18.7	60	20	37	15.0	41
Selling of produce	100	40	75	17	22.7	80	20	45	17.0	38
Storage of Produce	100	40	77	18	23.4	80	20	43	18.0	42
Processing	100	20	45	20	44.4	100	20	74	19.0	26
Consumption	80	20	46	17	37.0	100	40	73	16.0	22

Source: Field Survey (2010)

Max= Maximum; Min= Minimum; SD= Standard deviation; and, .CV= Coefficient of variation.

Table 3: Varimax Rotated Factors/Variables Constraining Women from Making Contributions to Household Farming Decisions

Constraint variables	Constraint Loadings						Communalities
	1	2	3	4	5	6	
* Poor income	0.534	0.495	0.257	0.266	0.220	0.262	0.784
* Poor access to farmland	0.153	0.898	0.181	0.067	0.068	0.184	0.906
* Illiteracy	0.623	0.114	0.084	0.339	-0.282	-0.092	0.611
* The size of household farmland	0.039	0.880	0.002	-0.039	-0.075	-0.101	0.794
* Lack of access to Credit institutions	0.771	0.236	0.086	0.066	0.352	0.185	0.820
* Age of the Farm women	0.120	0.171	0.752	0.315	-0.205	-0.118	0.764
* Inefficient farm Experience	0.056	0.048	0.867	-0.251	0.024	-0.050	0.824
* Lack of access to extension agents	0.878	0.032	0.274	0.000	-0.070	0.074	0.857
* Poor Participation in cooperative organization	0.853	-0.018	0.178	-0.098	0.094	-0.053	0.781
* Lack of access to NGO	0.862	0.044	-0.127	0.126	0.140	-0.054	0.779
* Belief that Women should not own farmland	-0.026	0.015	-0.069	0.815	0.069	0.010	0.674
* Belief that women are subordinate to men	0.247	0.393	-0.016	-0.445	-0.270	-0.511	0.748
* Belief that household decision making is exclusively right of men	0.102	0.016	-0.091	0.056	0.913	-0.064	0.859
* Multiple domestic Responsibilities of farm women	0.513	0.108	0.197	0.505	-0.405	-0.078	0.739
* Involvement in off-farm jobs	0.709	0.328	-0.071	-0.101	0.060	0.241	0.688
* Non participation in agricultural intervention programme	0.879	0.050	-0.052	-0.093	-0.194	0.003	0.825
* Household violence	0.154	0.128	-0.140	-0.053	-0.103	0.891	0.866
* Eigen value	5.186	2.223	1.633	1.524	1.465	1.306	-
* Percentage of variances	30.509	13.075	9.606	8.966	8.619	7.680	-
* Cumulative Percentage	30.509	43.583	53.189	62.156	70.774	78.455	-

Source: Field Survey, 2010