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What Determines Gender Roles in the Allocation and Investment Decisions of Farm Households in Nigeria?

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ABSTRACT

Background: Gender roles in agricultural decision-making significantly influence resource allocation, productivity, and household welfare in rural communities. This study examined gender-specific roles in allocation and investment decisions among agricultural households in Nsukka Local Government Area, Enugu State, Nigeria. It aimed to understand the models of household decision-making and the socio-economic factors shaping these dynamics.

Methods: A multistage random sampling technique was used to select 60 agricultural households. Data were collected using well-structured questionnaires and analyzed using descriptive statistics (frequencies, percentages, and means) and Multinomial Logistic Regression. The study identified household socio-economic attributes, types of decision-making models, gender roles in decision-making and factors influencing model selection.

Result: Findings revealed that women, particularly adult females, are largely excluded from critical agricultural production decisions, though they are involved in labor-related decisions. Additionally, membership in farmer organizations or social groups had a statistically significant ($p>0.01$) and inverse relationship with the type of decision-making model adopted. The study recommends encouraging farmers to form and actively participate in cooperatives to improve their socio-economic standing and reduce dependence on government support for household and community development.

Key words: Agricultural investment, Decision making, Farm households, Gender roles, Intrahousehold dynamics.

INTRODUCTION

Agriculture is a catalyst for economic growth and poverty eradication, especially in nations where it is the main occupation of the poor. However, agriculture in many developing countries is not effectively optimized owing to the fact that women who are important stakeholders in agriculture face more extreme constraints in accessing productive resources (Team and Doss, 2011). Efforts must be made by national governments and development partners to build on the contributions that women make and eliminate those limitations they face if agricultural development must be achieved (Team and Doss, 2011).

Gender equality has become a major goal of development policy (Seebens, 2011). Over the past many decades, development policymakers have recognized the importance of gender issues for an effective development programs. International efforts to tackle gender inequality are evidenced in the Millennium Development Goals: the reduction of gender inequality is set as a long-term goal 3. Economists believe that the process of decision-making in a family is due to the deliberate preferences of each of the partners and the power of each partner in making decisions is dependent on the financial and non-financial variables.

In Agriculture, gender inequality can be traced to these five dimensions: productive resources, land rights, employment, unpaid work and decision making (Sexsmith *et al.,* 2017). Notable studies have been done to tackle gender issues in agricultural productions. Examples of such studies include women empowerment (Seebens, 2011), large agricultural investments and their benefits to women (Giroud and Huaman, 2019), government establishing laws that allow women to own land, education or enlightenment programs for women, policies directing finances to women based on the belief that ladies are better managers; asking questions like “who is concerned in decision making, labour or returns control” rather than who owns it (Galiè *et al.,* 2015). The main message from research on gender has shown that many core developments depend on women’s good bargaining ability in terms of intra-household allocation of resources. However, few studies have been done in identifying gender roles in agricultural household decision-making as well as in examining the socio-economic factors influencing the type of decision-making model used by agricultural households in their allocation and investment decisions.

The concept of gender roles according to GLOPP (2008) refers to those activities ascribed to men and women on the basis of their perceived differences. The

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roles that men and women play and the power dynamics between them are referred to as gender or gender roles. These factors always have a significant impact on how natural resources are used and managed. They are founded on the expectations that people, groups and communities have of people according to their sex as well as the gender values and beliefs of each community (Blackstone, 2017). It also refers to the roles and obligations that men and women are expected to play in our families, communities and cultures. One characteristic of these roles and responsibilities is that they are learned (UNESCO, 2003). The place of gender is a critical factor that influences how men and women make decisions in the household with reference to any function but here more specific as it relates to agricultural production and the factors responsible for the authorities that husbands and wives exert in the family ascertain the track of the decision making of the entity (Deb, 2015).

The family is the unit in an agricultural household system making interrelated decisions concerning (investments in) creation and utilization of the outcomes *via* the farm of the household (Morduch, 2005). It is obvious that each member of the family has his/her own satisfaction function with differing preferences and differing capabilities to force results (Alderman *et al.,* 2003; Doss and Meinzen-Dick, 2015). If there be variations in preferences, there will be bargaining between family members and the extent of each family member in the decisions of production and consumption will be a function of his/her negotiating power, power over assets, labour and other resources (Agarwal, 1997; Doss, 2013; Quisumbing, 2003) all cited in (Lecoutere and Jassogne, 2016). Furthermore, assumptions and facts on intra-household negotiations show that women's negotiating power affects the products of household decisions (Doss and Meinzen-Dick, 2015). The constrained negotiating power of women results in sub-optimal allocation of labour or men taking into custody benefits from latest agronomic techniques (Doss, 2013). Agarwal (1997) claims that when women participate more effectively in intra-household decision-making; the level of unbalanced outcomes is less likely.

Studies from different regions further underscore the complexity of household decision-making in agriculture. Ainuddin, Seema and Suhasini (2019) observed that both price and non-price factors significantly influence production choices among groundnut farmers in Karnataka, indicating the multifaceted nature of decision-making. Similarly, Deepanka *et al.* (2021) emphasized that women entrepreneurs involved in dairy farming demonstrated substantial agency in business and financial decisions, challenging traditional gender roles. Moreover, Puryantoro *et al.* (2024) found that access to credit within farmer groups in Indonesia significantly enhanced collaborative decision-making among smallholders, highlighting the role of institutional support in promoting inclusivity.

In this study, we explore the type of decision-making model implored by household and how those models impact on agricultural productivity. When members of the household, particularly couples, collaborate and discuss matters pertaining to production (investment), resource distribution and consumption in the home farm, intra-household decision making is considered participatory. According to the Common Pool Resources (CPR) idea, more cooperative results would result in household farming systems that are more egalitarian, efficient and sustainable (Agrawal, 2001; Ostrom, 1992). The unitary decision-making model refers to that of decision making that begins with the husband and wife, jointly making decisions about investment and time allocation giving the husband the sole right to have the final say in judging the matters at hand. We begin our analysis by first, exploring the various decisions making models adopted by agricultural households in the allocation and investment decisions and the gender roles in the household decision making. Then, emploring inferential statistics, we assess the socio-economic factors influencing the decision-making model adopted by agricultural households in the allocation and investment decisions?

In terms of policy implications, understanding intra-household gender allocation of resources and the prevailing power relations within the household is vital when analyzing policy to avoid its failures. Most of the policy failures, such as in the adoption of new technologies, are a result of the misunderstanding regarding the position of gender in the allocation and investment decisions. For instance, when formulating and implementing appropriate policies in developing countries targeting poverty alle*via*tion and improving the welfare of the household, a key issue would be associated with the comprehension of the intra-household power relations from a gender viewpoint and managing it well. This study will, therefore, be important for policymakers and development partners in the formulation of responsive and efficient policies to tackle gender role disparities in the allocation and investment decisions of households in agriculture. Additionally, the study will contribute to the body of knowledge in this subject matter, particularly bridging the knowledge gap in this area of study. This in the long run will enhance productivity and efficiency in the management of resources in the households.

MATERIALS AND METHODS

Area of study

The study area is Nsukka Local Government Area of Enugu State, Nigeria. It is situated in the derived savannah climate belt of Enugu State Nigeria, which lies between latitude 6°50′ 34.5912″N and longitude 7°22′23.7576″E of Greenwich meridian. The mean temperature falls between 27°C and 28°C; there are predominantly two major climatic seasons in the area, the rainy season (from April to October) and the dry season (from November to March) (Dimelu, 2014).

Rainfall distribution is between 168 mm-1700 mm. The people in this area are predominantly farmers, though they also engage in trading, civil service, tapping, brickwork, *etc.*

Nsukka agricultural zone is made up of seven (7) Local Government Areas. It has a total population of 1,117,570 out of 3,257,298 of the total population of Enugu State (NPC, 2006). Their primary source of income is farming. Nonetheless, there are more petty traders and civil servants in some metropolitan areas, like as Nsukka town. Cassava, maize, cocoyam, yam, vegetables and economic fruits are the main crops they cultivate. On dispersed farmlands that are mostly inherited, these farmers engage in shifting cultivation, crop rotation and mixed cropping. In certain places, family labour is occasionally used and hired labour is another source of employment in the area. Tenure is mostly secured by pledging or leasing. Because of land fragmentation and system of tenure which ranges from individual holding, family holding and communal holdings, commercial farming production is rarely practiced in the area. Nsukka local government is active and a rich agricultural zone. The people of Nsukka are mainly Igbo speaking although there are few traces of Idoma and Igala people (Nnaji, 2005).

Sampling and data collection

A multistage sampling procedure was employed in selecting the respondents. The first stage involved a random selection of three communities from the 16 Communities that make up Nsukka L.G.A. namely (Obukpa, Nru and Ede-Oballa communities). The second stage involved random selection of twenty (20) respondents from each of the three communities. This gave a total of sixty (60) respondents for the study

Data collections for the study were obtained from primary source. The primary data was obtained by the use of well-structured questionnaires, oral interviews and personal observations. The data was collected around June 2021 and information on their socio-economic characteristics as well as the roles played by the agricultural household members in the decision makings concerning allocation and investments of agricultural resources.

Data analysis

Multinomial logit (MNL) was employed to determine the factors influencing the type of decision-making model used by agricultural households in their allocation and investment decisions. MNL is a preference that exists between three or more options (Adepoju and Oyewole, 2014). It is a model broadly used in econometrics to explain the preference of an option amid an outlay of selected options (Onyenekwe *et al.,* 2023). The variables adopted were:

$$Y = B_0 + B_1X_1 + B_2X_2 + B_3X_3 + B_4X_4 + \mu$$

Y = Type of decision-making model used by agricultural households in their allocation and investment decisions.
X_1 = Membership in a social group (Yes= 1, No = 0).
X_2 = Household size (number).
X_3 = Labour used (family labour =1, hired labour =0).
X_4 = Years of experience in farming (years).
μ = Error term.

RESULTS AND DISCUSSION

Types of decision-making models used by agricultural households

A bar chart describing the types of decision-making model used by agricultural households is presented in Fig 1.

From the pie chart, it is shown that majority (81.7%) of the farmers practiced a cooperative decision-making model where both the husband and wife make decisions regarding allocation and investments jointly. This is followed by 13.3% who practiced the unitary model of decision-making meaning that the husband supersedes the decision makings of the farm households' decisions as it relates to allocation and investments of resources. The pie chart also showed that 3.3% practiced a non-cooperative decision-making model where individual members of the household make their decision individually.

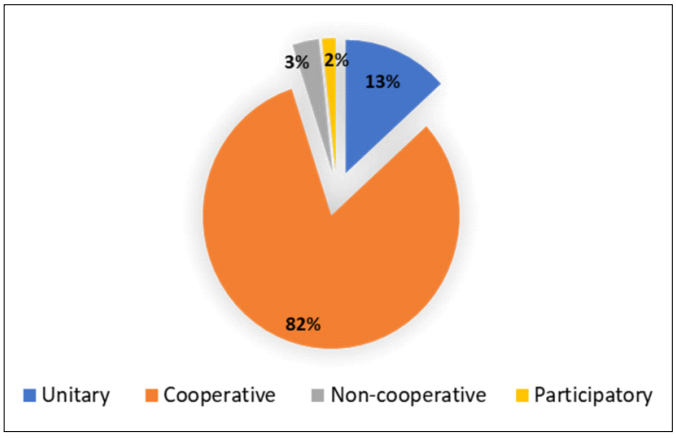


Fig 1: Distribution of decision-making models used by agricultural households.

This could be due to information asymmetries, non-homogeneity among spouses, different education levels, as well as disparities in income among others.

The participatory decision-making model has a 1.7% of the total respondents. When members of the household, particularly spouses, confer and work together on matters

Table 1: Gender roles in production, investment, innovation, marketing and income decisions.

Production decision on:	Type of crop to plant		Type of animal to rear		Type of labour to use	
	Freq	%	Freq	%	Freq	%
Husband only	8	13.3	22	36.7	11	18.3
Wife	4	6.7	5	8.3	12	20.0
Both husband and wife	34	56.7	26	43.3	30	50.0
Adult males	2	3.3	2	3.3	2	3.3
Adult females	9	15.0	1	1.7		
Everyone	1	1.7	2	3.3	3	5.0
Everyone on his or her own	2	3.3	1	1.7	2	3.3
We have rules guiding it	9	15.0	1	1.7		
Total	60	100	60	100	60	100
An investment decision on:	**How production inputs are allocated**		**Whether to expand production or not**			
Husband only	27	45.0	20	33.3		
Wife	5	8.3	7	11.7		
Both husband and wife	22	36.7	25	41.7		
Adult males	3	5.0	3	5.0		
Adult females	2	3.3	2	3.3		
Everyone	1	1.7	1	1.7		
Everyone on his or her own			1	1.7		
We have rules guiding it	60	100.0	60	100		
Total						
Marketing decisions on:	**Which market produce should be sold**		**Which market inputs should be purchased**			
Husband only	13	21.7	13	21.7		
Wife	17	28.3	22	36.7		
Both husband and wife	25	41.7	21	35.0		
Adult males	2	3.3	2	3.3		
Adult females			1	1.7		
Everyone	1	1.7	1	1.7		
Everyone on his or her own	2	3.3				
We have rules guiding it						
Total	60	100.0	60	100		
Innovation/Capacity building decisions on	**The purchase of new farm machines**		**On whether to buy high yield seed variety or to stay with another one**		**On what type of information or training the household needs**	
Husband only	29	48.3	13	21.7	21	35.0
Wife	5	8.3	15	25.0	4	6.7
Both husband and wife	21	35.0	25	41.7	28	46.7
Adult males	2	3.3	3	5.0	4	6.7
Adult females						
Everyone			1	1.7	1	1.7
Everyone on his or her own	2	3.3	1	1.7	2	3.3
We have rules guiding it	1	1.7	2	3.3		
Total	60	100	60	100	60	100

Source: Field survey, 2021.

pertaining to production, resource distribution and investment choices in the home farm, intra-household decision-making is seen as participatory. This model is to enhance the outcome of cooperative actions.

Gender roles in the household decision making

The gender roles in the allocation, investment, innovation, production and marketing decisions are presented in Table 1. From the survey, it can be found that decisions about production resources were majorly (56.7%) done by "both husband and wife" followed by the "husband only" (36.7%). The result shows that "husband only" and "both husband and wife" (45.0% and 36.7% respectively) dominate in decision making with the adult males and females having minimal contributions (5.85% and 3.3% respectively); "husband only" majorly decides on the expansion or reduction of production (41.7%). The survey reveals that "both husband and wife" majorly partake when it comes to decisions on the marketing of agricultural household resources. This is followed by the "wife only". This confirms the statements by most of the men interviewed who affirms that women are more into the selling, purchasing and marketing of most agricultural crop inputs and produce. The finding revealed that "both husband and wife" chiefly make decisions (53.3%) on matters concerning how the incomes from the farm are distributed among family members' needs. Innovation refers to the introduction of something new. From the results, it can be seen that "husband only" dominates in decisions regarding buying and use of new farm machines (48.3%). Decisions are jointly made by both spouses when it comes to buying high-yielding seeds (41.7%).

Socio-economic factors influencing the different types of decision-making models adopted

The results of the regression analysis showing the socio-economic factors influencing the different types of decision-making models adopted by farmers are presented in Table 2. The effect of membership in farmer organizations on the use of the unitary decision-making model was negative and significant ($p<0.001$). This implies that there is an indirect relationship between membership of any farmer organization and the use of the unitary decision-making model. This means that being a member of a farmer organization decreases the probability of adopting the unitary decision-making model by 49.9%.

The study examined gender roles in the allocation and investment decisions of agricultural households in Nsukka Local Government Area of Enugu State, Nigeria. One of the major driving forces of this study is the fact that most of the policy failures like not adopting new technologies are a result of the misunderstanding regarding the position of gender in the allocation and investment decisions. The result also showed that 81.7% out of the 60 respondents interviewed in the farming households use the cooperative decision-making model, while just 1.7% used the participatory model. The latter shows that there is a very minimal outcome in improving the Pareto efficiency of the farm households in resource allocation, consumption and investment decisions as the case may be.

Considering gender roles in household decision-making, it is revealed that major decisions on resources concerning production, investment, marketing, income distributions and innovation are majorly dominated by either "both husband and wife" or "husband only". The "female adults" are virtually excluded in most decisions but the "male adults" are always involved no matter how minimally. Gender inequalities have been a global challenge to many developmental initiatives, especially in agriculture when it comes to allocation and investment decisions. The farmers in Nsukka Local Government Area were found to practice mainly cooperative model of decision-making model which has been reported to lead to greater productivity in relation to the unitary and non-cooperative models. From the study, it is evident that major decisions on investment, production, innovation, marketing and distribution of income resources virtually exclude adult females. It is mostly done by both spouses and involvement of the male adults no matter how small it might seem in comparison with that of the

Table 2: Determinants of decision- making model adopted by farming households.

Variable	Unitary			Cooperative			Non-cooperative		
	Coeff	Std. error	p-value	Coeff	Std. error	p-value	Coeff	Std. error	p-value
Member of farmer organization	-17.0	1.00	.00*	-15.2	.00	.	-.50	.3614	1.0
Household size	.23	.43	.60	.194	.42	.64	.21	.49	.67
Labour type	-14.7	1501.1	.99	-14.2	1501.1	.99	-14.55	.1501	.92
Years of experience	.14	.402	.73	.205	.398	.61	.02	.46	.96
Intercept	76.68	4503.3	.99	74.05	4503.3	.99	43.09	.0125	1.0
R-square (R^2)	0.147			0.147			0.147		
Likelihood ratio tests	0.654			0.654			0.654		
Total number of observation, N	60			60			60		

Note: The base category is participatory. *Indicates significance level of 5%.

Source: Field survey, 2021.

spouses and the husband alone. In general, the results show that the farmers interviewed rarely practiced a non-cooperative model of decision making but mainly excluded the female adults when it comes to major decisions pertaining to agricultural production. This though is not the case when the decision is on the type of labour to be used. Also, there exist disparity in gender role in the decision making as no decision made in the household excludes the male adults (at least they are involved in all the decision making despite how minimal it might look in terms of the percent), unlike the adult females who are practically excluded in some decision making such as marketing and distribution of income, Investment and Innovation.

Also, the study found that membership in farmers or any social organization is statistically significant in the use of unitary decision-making models by agricultural households. Consequently, it could safely be concluded that joining farmers' organizations decreases the likelihood of adopting a unitary decision-making model. However, the study showed that the majority of the farm households do not belong to farmer organizations. This has hindered the benefits the farmers can get from forming agricultural cooperative societies. Farmers are therefore encouraged to form and belong to cooperative organizations for self-help and improvement of their socio-economic status instead of depending on the government for most of their self and community growth and developmental needs.

CONCLUSION

This study highlights the significant influence of gender roles on allocation and investment decisions within agricultural households in Nsukka, Nigeria. The findings reveal a dominance of cooperative decision-making models, though women-particularly adult females-are often excluded from key production and investment decisions. Membership in farmer organizations was found to reduce the likelihood of unitary decision-making, underscoring the importance of social networks in promoting inclusive governance within households. To improve productivity and gender equity, policies should promote cooperative group formation and support gender-sensitive interventions that empower all household members in agricultural decision-making.

Conflict of interest

The authors declare that there is no conflict of interest regarding the publication of this paper.

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