

Determinants of Gender Contribution to Farm Income Decision Making Among Rural Farming Households in Enugu State, Nigeria

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Abstract: *The study was designed to investigate the determinants of gender contribution to farm income decision making among rural farming households in Enugu State, Nigeria. The study adopted a descriptive survey design. Two objectives and one hypothesis guided the study. The sample comprised of 235 respondents and a researcher-developed questionnaire was the instrument for data collection. Data were analysed using multinomial logit model, participation index and chi-square test. The study found that the factors influencing the choice of income sources were sex, age, educational level, farm size, on-farm annual income and access to credit facilities. The participation index of gender in farm decision making showed that men dominated women with a mean score of 2.64 and 2.62 respectively. The result of the hypothesis showed that there was a significant and positive correlation between socio-economic characteristics of rural farmers and their choice of income sources. It was recommended that women should be empowered in agriculture as they are becoming a strong force in the agricultural sector; Young farmers should be encouraged to form youth forums on agriculture and attend seminars and workshops addressing current trends in agriculture.*

Keywords: Gender contribution, farm income, decision making, rural farming households

1. Introduction

Gender refers not only to male and female but to socially constructed roles, behaviors, activities and attributes that a society assigns to men and women. In all cultures, gender determines power and resources for males and females (Othman, Lawal & Iyiola-Tunji, 2017). An understanding of gender contributions to food output in rural households in Nigeria is important in order to ensure effective allocation of production resources within the rural households (Onyemauwa, 2012). Women constitute more than half of the rural labour force and are responsible for most of the household food production in low-income food-deficit countries. Rural development cannot be achieved through efforts that ignore or exclude more than half of the rural population – women. Gender analysis is important because productivity and efficiency are enhanced when interventions are targeted towards the actual users (Thapa, 2008). According to Croppenstedt, Goldstein and Rosas (2013), women make essential contributions to agriculture in developing countries, where they constitute approximately 43 percent of the agricultural labour force. However, female farmers typically have lower output per unit of land and are much less likely to be active in farming than their male counterparts.

Most rural households in developing countries are undergoing the process of diversifying their income sources (Zhao & Barry, 2013). Gomes and Livan (2004) opined that rural households adjust their activities to exploit attractive new productive opportunities. Rural farming households in many different countries have been found to diversify their income sources allowing them to spread risk (Ibrahim, Rahman, Envulus & Oyewole, 2009).

2. Problem Definition

The last few years have witnessed a dramatic increase in global attention to gender, its contribution to agricultural development and inequalities that exist between men and women. Several researchers have tried to address the issue of gender imbalances but very few research have been carried out on the determinants of gender contribution to farm income decision making among rural farming households. Past research has however shown that in many contexts, men and women differ in their productive capabilities and opportunities to land, labour, education, extension, financial services and technology necessary for agricultural sustainability (Kiptot, Franzel & Degrande, 2014). Gender relations are very vital in shaping farm decision making. In some cultures, migratory wage labour is usually men's business that results in transferring to women the whole responsibility for conventional subsistence farming. The researcher's interest here is whether the decisions men and women take is in the best pursuit of improving the general economy and rural economy in particular. Babatunde and Qaim (2009) affirmed that more research is needed to understand what conditions lead to what outcomes in order to identify appropriate policy responses. Hence, the gap this study seeks to fill is to highlight the determinants of gender contribution to farm income decision making among rural farming households in Enugu State, Nigeria. This constitutes the problem of the study.

3. Literature Survey

Warren (2002) maintained that participation in innovative enterprises is often advocated as an important means to promote rural women empowerment and more equitable gender relationships within the household. Women are key

players in the agricultural sector of most developing countries of the world. Despite this major role, however, the men have reportedly continued to dominate farm decision making, even in areas where women are the largest providers of farm labour. This could be counter-productive because there is bound to be conflict when women, as key players, carry out farm tasks without being part of the decision making process, especially when the decisions fail to recognize their other peculiar household responsibilities (Enete & Amusa 2010). Their survey showed that financial contribution from women to farming activities was higher than that of men.

Sabo (2006) found that women contribute between 40 and 65 percent of all hours spent in agricultural production and processing, thus providing more than two thirds of the workforce in agriculture. Barasa (2006) reported that despite the significant role played by women in agricultural production and processing, men have continued to dominate farm decision making, even in areas where women are the largest provider of farm labour. Thapa (2008) found that male managed farms produce more output per hectare with higher command in market input use, obtaining credit, and receiving agricultural extension services than female managed farms. Eze, Onwubuya and Ezeh (2010) maintained that women constitute great apostles in agricultural production, processing, preservation and marketing as well as national economic growth. Amaechina, Nwagbo and Eboh (2010) noted that all of the major farm decisions are performed by the male household heads with tokenistic participation by women and that it naturally derives from the fact that the plots had been allocated to the men. The study carried out by Ajani and Igboke (2013) on 462 rural women in Anambra State reported that majority (93.3%) was literate and 45% had over 19 years farming experience.

4. Objectives of the Study

The specific objectives of the study were to:

- i. determine the factors influencing the choice of farm income sources and
- ii. ascertain the level of gender participation in farm decision making.

Hypothesis of the Study

A null hypothesis was tested in the study.

H₀: Socio-economic characteristics of farmers have no significant effect on their choice of income sources.

5. Theoretical Framework

The theory of choice is applicable to this study. It is a component of the decision theory in economics, which is concerned with identifying the values, uncertainties and other issues relevant in a given decision, its rationality, and the resulting optimal decision. In decision theory, most of the decisions are either normative or prescriptive, that is, they are concerned with identifying the best decision to take, assuming an ideal decision maker who is fully informed, able to compete with perfect accuracy, and fully rational. The practical application of this prescriptive approach (how people ought to make decisions) is called decision analysis,

and aimed at finding tools and methodologies to help people make better decisions. This theory is highly applicable in agricultural production which is full of risks and uncertainties (Ali & Peerlings, 2012).

6. Methodology

The study was carried out in Enugu State. It is made up of 246,542 registered farming households (Growth Enhancement Support Scheme, 2013). The study adopted a descriptive survey design. Multi-stage random sampling technique was used to select the respondents for the study. The study was carried out in three agricultural zones out of six zones in the study area. Two hundred and thirty five (235) farmers formed the sample of the study. A researcher-developed questionnaire comprising of 48 items was validated by three experts and used for data collection. The reliability was established using Cronbach's alpha method which yielded a reliability coefficient of 0.78. The data were analyzed using multinomial logit model and participation index. The hypothesis of the study was tested using chi-square.

7. Model Specification

Multinomial Logit Model

Multinomial Logit (MNL) was employed to determine the factors influencing the choice of income sources. MNL is a choice between three or more alternative responses (Adepoju & Oyewole, 2014). Ying and Warren (2003) stated that it is used to model relationships between a polytomous response variable and a set of regressor variables. It is a widely used model in econometrics to explain the choice of an alternative among a set of exclusive alternatives (Wanyama et al, 2007). The variables adopted were:

Y = Factors influencing the choice of income sources (yes=1, otherwise=0)

X₁ = Sex of the respondent (Male =1, Female = 0)

X₂ = Age (years)

X₃ = Marital status

X₄ = Educational level (years)

X₅ = Household size (number)

X₆ = Farm size (Hectares)

X₇ = On-farm annual income (naira)

X₈ = Access to credit facilities (yes=1, no = 0)

X₉ = Access to extension services (yes = 1, no = 0)

μ = error term

Participation Index

To ascertain the level of gender participation in income diversification decision making, participation index was employed. The index was constructed using a 3-point likert-type scale after Ayoade, Ibrahim and Ibrahim (2009). The 3-point scale was weighted in order of importance.

Never involved: 1 – 1.99

Sometimes involved: 2 – 2.99

Always involved: > 2.99

The rural farming household heads were asked to indicate their level of participation in eight farming activities. The mean score for each of the decision was calculated. The grand mean score of all the decisions was divided by the

number of farming activities to determine the level of gender participation in income diversification decision making. Participation index was used as the endogenous variable in the regression model.

8. Results & Discussion

Objective 1: Factors influencing the choice of income sources

The maximum likelihood estimates of the parameters on the factors influencing the choice of farm income sources are presented in Table 1.

Table 1: Maximum likelihood estimates of income sources

Variables	Coefficient	Standard Error	Wald	Sig
Intercept	-3.287	1.077	9.317	0.002
Sex	0.187	0.292	0.410	0.030**
Age	0.072	0.213	0.115	0.001***
Marital status	-0.121	0.251	0.234	0.629
Educational level	0.020	0.218	0.008	0.093*
Household size	-0.549	0.148	9.624	0.534
Farm size	-0.130	0.134	0.941	0.073*
On-farm annual income	0.366	0.141	6.673	0.000***
Access to credit facilities	0.312	0.391	0.637	0.041**
Access to extension services	-0.747	0.304	6.036	0.520
Pseudo R ² = 0.553				

Source: Field survey, 2014, *, **, *** shows figures significant at 10%, 5% and 1% levels of significance respectively.

The model provides an acceptable fit to the data. Goodness-of-fit statistics with all the variable in the model shows good fit with $p=0.008$ for the deviance criterion and with $p=0.002$ for the Pearson criterion. The chi-square result also shows that the likelihood ratio statistics are highly significant at 1% level suggesting that the model has a strong explanatory power. Table 1 shows that the co-efficient of sex (X_1), age (X_2), educational level (X_4), on-farm annual income (X_7) and access to credit facilities (X_8) were positively signed and statistically significant at 1% (X_2 , X_7), 5% (X_1 , X_8) and 10% (X_4) levels of probability. Farm size (X_6) was negatively signed but statistically significant at 10% level of probability. Sex is an important variable affecting alternative sources of income. Male and female headed households differ significantly in their ability to start up an agricultural business because of major differences between them in terms of education, access to assets and other vital services. This is in line with the argument of Asfaw and Admassie (2004) that male-headed households are often considered to likely get information about new technologies and take risky businesses than female-headed households. Age having a co-efficient of 0.072 implies that a year increase in the age of the household head will lead to a 7% increase in the likelihood of adopting other sources of farm income. This also means older farmers depend on alternative sources of income to meet up with their basic needs of life. This is in line with the findings of Korir, Lagat and Njehia (2012) who explained that older farmers owned approximately twice as much livestock as younger farmers. Educational level is significant showing that the higher the possibility to look for additional sources of farm income to

augment the existing ones. This corresponds to the study of Ijaiya, Ijaiya, Bello, Ijaiya and Ajayi (2009) who noted that education of the household heads is significantly and positively related to the number of income sources. Increase in farm size will generate more source of farm income and encourage the farmer to expand farm activities. Increase in on-farm annual income by one percent will facilitate access to alternative sources of farm income by about 37%. This is similar to the result of Ogwumike and Akinnibosun (2013) who noted that one percent increase in the income will reduce the probability of a farm household being poor by 16%. Access to credit is significant because credit can reduce liquidity, constraints and increase the capacity of farmers to start more farm businesses. Wanyama et al. (2007) affirmed that lack of access to credit will lead to poor capital and make it difficult for farmers to diversify from subsistence agriculture to commercial farming. This result is similar to the findings of Demmisse and Leggess (2013) who found that sex, age and access to credit facilities have a significant influence on the choice of income sources.

Table 1 also shows that the co-efficient of marital status (X_3), household size (X_5) and access to extension services (X_9) were negatively signed and statistically not significant at any level of probability. This result confirms that being single, married or widowed has nothing to do with the farmers alternative sources of income in the study area. The household size is insignificant which did not meet *a priori* expectation that a larger household should be a source of labour for more farm business alternatives. This is comparable to the findings of Korir et al. (2012) who noted that young farmers earned significantly a lower farm income compared to the older farmers but they earned more non-farm income. This result is in contrast with the findings of Demmisse and Leggess (2013) who found that household size has a significant influence on the choice of income sources. The negative and non-significance of access to extension services was not expected because the support given to farmers by extension agents will enable them to establish more alternatives sources of farm income. It may be possible that farmers in the study area are not exposed to some vital information through agricultural programs such as workshops, seminar and group discussions through extension services.

Objective 2: Level of gender participation in farm decision making

The participation index of men and women in farm decision making processes is shown in Table 2 and figure 1 below:

Table 2: Participation index of male and female household heads in farm decision making

Farm decisions	Gender Participation Mean Score	
	Men Mean Score	Women Mean Score
Crop selection	2.96	2.91
Livestock selection	3.00	2.58
Retained output	2.82	2.09
Processing of produce	1.59	3.00
Sales of produce	2.77	2.95
Fertilizer usage	2.08	2.16
Hiring of labour	2.93	2.68
When to carry out an activity	2.96	2.57
Total Score	21.11	20.94
Grand Mean	2.64	2.62

Note: Never involved = 1-1.99, Sometimes involved = 2.0-2.99, Always involved = >2.99.

Table 2 shows that most significant participation for men was in seven (7) activities while the most significant participation for women was in all eight (8) activities. The grand mean of 2.64 and 2.62 for men and women participation respectively implies that men and women in the

study area sometimes participate in all the identified farm decisions but men dominate practically in all the entire processes. However, the narrow disparity of 0.02 in grand mean shows that the women are getting increasingly involved in farm decision making processes.

This result corresponds with the findings of Barasa (2006) and Amaechina et al. (2010).

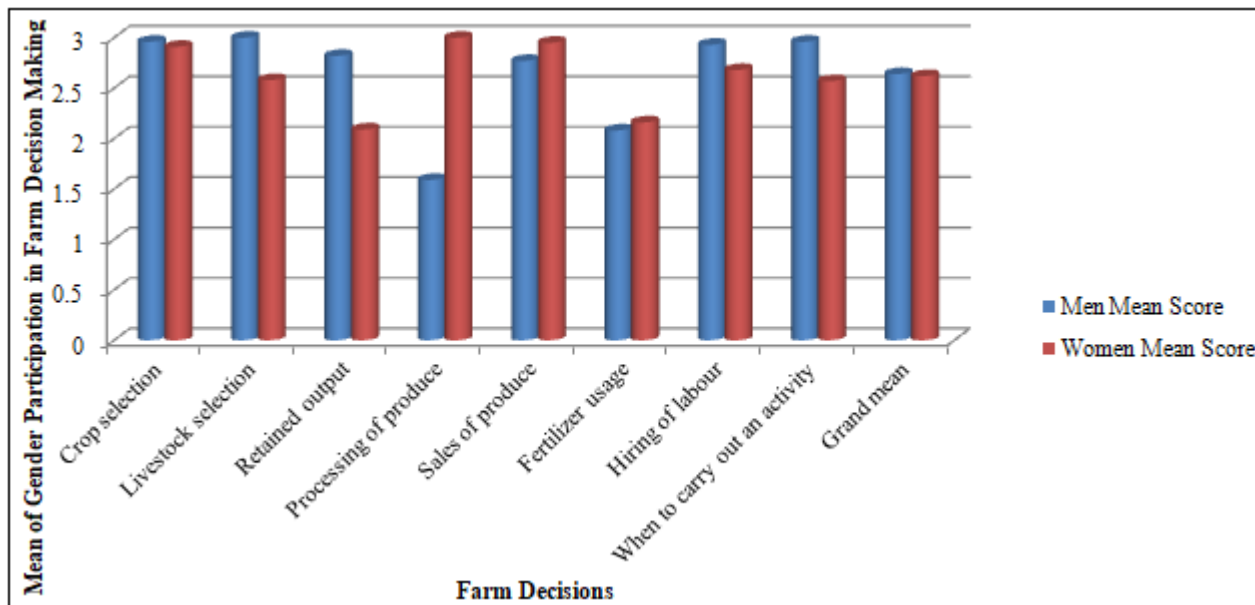


Figure 1: Picture representation of the Participation index of male and female household heads in farm decision making.

Hypothesis Testing: Socio-economic characteristics of farmers have no significant effect on their choice of income sources. The result of hypothesis testing is shown in table 3.

Table 3: Chi-square result showing significant relationship between socio-economic characteristics and choice of income sources

X^{cal}	X^{tab}	Decision Rule	Remark
27.32***	15.507	If $X^{cal} > X^{tab}$, then there is a significant relationship between socio-economic characteristics and choice of income sources.	Reject the null hypothesis and conclude that there is a significant relationship between socio-economic characteristics and choice of income sources.
$V_1 = N - K = 235 - 9 = 226$			
$V_2 = K - 1 = 9 - 1 = 8$			

Source: Field survey, 2014

The result in table 3 shows that Chi-calculated value is 27.32 while chi-tabulated is 15.507 at 5% level of significance. The analysis shows that X^{cal} is greater than X^{tab} at 1% level of significance. Therefore, the null hypothesis was rejected. Hence, socio-economic characteristics of rural farm households have a significant influence on their choice of farm income sources.

9. Conclusion

The findings of the study clearly show that rural farming household heads do not act as one when making farm

decisions. Differences in control of farm decisions have crucial consequences for men and women to contribute positively to agriculture. There is a clear division of labour between males and females with females taking care of household work and being highly involved in farm activities. Gender need to be put into consideration for effective adjustments in agricultural activities to take place. It is recommended that women should be empowered in agriculture as they are becoming a strong force in the agricultural sector. Young farmers should be encouraged to form youth forums on agriculture and attend seminars and workshops addressing current trends in agriculture. Extension services need to be intensified among rural farming households in Enugu State. It is also imperative that the government should design programmes and policies with consideration of the gender of the recipient.

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