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An Assessment of Farmers' Ability to Determine their Agricultural Extension Needs in Kwara State, Nigeria

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Abstract:

The ability of farmers to determine their agricultural extension needs is important for the success of the much lauded participatory approach to agricultural extensions service. This study assessed the ability of farmers in Kwara State, Nigeria to determine their extension needs. It also evaluated the factors that affect this ability. Using a well structured questionnaire, a two stage random sampling technique was employed to collect data from 261 farmers across the four agro-ecological zones in the state. Descriptive statistics and the multiple regression model were the analytical tools used in the study. The result of the analysis revealed that farmers possess a fair ability to determine their extension needs. Farmers' age, total income, level of education, years of farming experience and the number of extension contact were found to influence farmers' ability to determine their extension needs at one percent level of significance. Access to training was found significant at ten percent level of significance. The study therefore recommends regular training of farmers on extension needs identification with particular emphasis on the older and often more experienced farmers. Adult learning programs should be made available to, and promoted among farmers in addition to ensuring adequate extension contacts for all farmers.

Keywords: Farmers' Ability, Extension Needs Identification, Multiple Regression Model, Kwara State

1. Introduction

The Nigerian agricultural sector, though dominated by small-scale resource poor farmers, holds huge potentials and opportunities for the nation's economic development. Agricultural extension has a unique role to play in revolutionizing this sector. Sustained high levels of agricultural productivity are possible with an effective agricultural extension system supported by meaningful agricultural research that is relevant to farmers' needs [3]. However, accurate identification or determination of what farmers' needs are, is a major challenge of the extension system in the country. The Training and Visit (T & V) extension delivery method which characterized the World Bank intervention package and which provided the bedrock upon which extension service delivery is built in Nigeria has been severely criticized [1]. Its top-bottom orientation created a situation in which the responsibility for the determination of farmers' extension needs rests with the agricultural extension agencies with adverse effects on farmers' commitment to and participation in extension activities. It also left the average farmer in a perpetual state of expecting to be told what to do [10]. These criticisms of the T & V extension method and other failures of the public extension systems have prompted a global movement for reforming national agricultural extension systems [11]. The need for a more participatory approach to extension and a renewed focus on farmers as "subjects" rather than "objects" of the extension process are integral parts of almost every extension reform effort. Farmers are increasingly recognized as being capable of determining and expressing their needs often with minimal or no facilitation from extension officers (World Bank, 2004). In addition, one of the features of a truly demand-driven approach to agricultural extension is that farmers must determine their extension needs[7]. The small-scale and fragmented nature of agricultural production in Nigeria makes individual farmers' needs determination unrealistic and hence makes a case for the group approach to agricultural extension service.

There is a renewed attention on institutions of collective action such as farmer-groups as an

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important and efficient grass root mechanism for enhancing small holder farmers' income through the reduced transaction costs made possible by economics of scale [8]. Furthermore, it is opined that there are possibilities of farmer-groups becoming extension service providers themselves [13]. Giving this relatively new trend with focus on farmers in groups, the nature of needs identification and determination therefore involves group decision making. However, Kolbe, the joint nature of decision making in groups makes decision making less straightforward and far from being ideal [4]. This is because individual group members must integrate their knowledge, opinions and preferences into a common decision. As challenging as this may seem, it is imperative that farmers in their groups, be able to identify what their needs are, consider alternatives and available resources to emerge with jointly selected courses of action.

Opinions differ among extension experts in Nigeria on the ability of Nigerian farmers to articulate their agricultural extension needs. It is opined by some that most farmer-groups in the country are ad-hoc groups lacking the organization required to co-ordinate a meaningful needs identification process. In spite of its importance in policy decision making, there is dearth of literature on Nigerian rural farmers' capacity and mechanism to adequately identify and articulate their agricultural extension needs. It is also possible that some socio-economic characteristics influence farmers' ability to determine their needs. It is against this backdrop that this study:

1. analysed the socio-economic characteristics of farmers in the study area;
2. examined the ability of farmers to determine their agricultural extension needs and
3. identified the socio-economic characteristics of farmer-groups that affect the ability of farmers to determine their agricultural extension needs.

1. Methodology

The study was carried out in Kwara State, Nigeria. The state is located in the North-central zone of the country lying between latitudes $7^{o}45^{'}$N and $9^{o}30^{'}$N and longitudes $2^{o}30^{'}$E and $6^{o}25^{'}$E [12]. The average daily temperature of between 21^{o}C and 33^{o}C, annual rainfall of between 1,000 and 1,500mm and large expanse of arable land supports the cultivation of a wide range of crops. The state is largely agrarian with an estimated 203,833 farm families [5]. As obtainable in every state in the country, agricultural extension in the state is largely public and administered by the state ministry of agriculture. There are over 700 registered farmer-groups in the state, majority of which are economic interest groups. The groups are segregated into various crop farming groups, processors, farmers engaged in various forms of animal husbandry as well as economically disadvantaged groups.

The population for the study comprised of all crop based farmer-groups in the study area. The study focused on crop based farmer-groups in order to maintain homogeneity in nature of activities of the respondents. A two-stage random sampling technique was employed in the study. The first stage involved the random selection of 20 percent of the crop based farmer-groups across the four agro-ecological zones in the state. Secondly, three members were randomly selected from each of the selected groups. In all, 261 respondents were selected from 87 farmer-groups in the study area.

Data for the study were collected by the use of structured interview schedule. The data were subjected to descriptive statistics (frequency counts, percentages, and means). A five point likert scale was used to elicit information on the ability of the farmers as groups, to identify their needs. Statements which depict level of involvement of the farmers in the process of needs identification and determination were posed at the respondents. The respondents rated on a scale of 1 to 5, the extent to which they agree or disagree with the statements. The mean score of the respondents was adopted as a measure of their groups' ability to identify their needs. The scale was graduated as follows;

Strongly disagree=1, disagree=2, indifferent =3, agree=4 and strongly agree=5

The multiple regression analysis using the Ordinary Least Square (OLS) method was used in determining the factors influencing farmers' ability to determine their needs. The choice of this model was based on its proven adequacy in situations when there is the need to predict the value of a variable (the dependent variable) based on the value of two or more other variables called the independent variable [2]. The explicit form of the multiple regression model is given by:

$$Y = f(X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8 X_9 X_{10} X_{11} X_{12}) \quad (1)$$

where:

Y = is the ability of farmers' to determine their agricultural extension needs;

X_1 =Age of the respondents measured in years

X_2 =Gender measured as a dummy variable 1 for male, 0 for female

X_3 = Marital Status measured as a dummy variable 1 if married, 0 otherwise

X_4 =Total Income measured in naira as the addition of farm income, non farm income and available income from other household members

X_5 =Highest Educational Attainment measured as a dummy variable No formal education 0, Quranic education 1, Adult literacy 2, Primary education 3, Secondary education 4, Tertiary education 5

X_6 =Land Tenure measured as a dummy variable 1 for owned, 0 otherwise

X_7 = Farm Size measured in hectares

X_8 = Farming Experience measured as number of years spent in farming

X_9 = Number of extension contact measured as the number of extension contact in the past 12 months

X_{10} = membership of other farmers' groups Measured as a dummy variable 1 if yes, 0 otherwise.

X_{11} =Access to farm credit measured as a dummy variable, 1 if yes 0 otherwise

X_{12} =Access to training measured as a dummy variable, 1 if yes 0 otherwise

2. Results and Discussions

Socio-economic Characteristics of Respondents

This section presents selected socio-economic characteristics of the respondents. Table 1 presents the socio-economic characteristics of interest to the study. Age is an important socio-economic factor in farmer surveys because it is key in assessing the productivity of a farmer, and hence his income, savings and investment [9]. Table 1 reveals that the modal age of the farmers is between 31 and 50 years with 62.9 percent of the respondents' age falling within the range. While 35.6percent of the respondents are over 50 years of age, only 1.5 percent are thirty years old and below. This analysis and the mean age of 51.03 suggests that although majority of the respondents are likely to still be active enough to make meaningful contributions to agricultural production, the level of youth involvement in agricultural production is rather poor and may have negative implications for the future of agriculture in the study area. Being married is often associated with social stability particularly in rural settings. Majority of the respondents (92.7%) are married. The mean annual total income of the respondents was N290, 416.86 with close to 30 percent recording below the stated minimum wage of N 216,000 stipulated by the Federal Government of Nigeria. About 27 percent of the respondents have no formal education while 47.6 percent had a minimum of primary school education. Majority of the respondents (77.4%) carry out farming activities on rented farmlands. The mean farm size was 2.05ha with about 68 percent cultivation not more than 2ha of farmland. The mean number of years of farming experience recorded as 21.37 suggests that the farmers are largely experienced farmers. Most of the respondents (86.6%) have enjoyed extension contact over the past year with majority having between 1 and 20 contacts. Only 34.5 percent of the respondents are members of other farmer groups, 47.9 percent had access to farm credit over the past year. More than half of the respondents (56.0%) had access to training over the past year. Majority (87.4%) were male suggesting a rather low performance of women in crop farming in the study area. This may be due to their dominance of crop processing. It may however also be a reflection of the level of participation of women in famer-groups in the study area.

Farmers 'Ability to determine their Agricultural Extension Needs

The findings of the study on the ability of farmers to determine their extension needs are discussed in this section. Table 2 presents a summary of respondents' score and the means scores on the likert items used to measure farmers' ability to determine their needs.

Table 2 reveals that 10 statements were used in the scale. Giving that the Likert scale is graduated from one (strongly disagree) to five (strongly agree), the highest score obtainable by a respondent on any likert statement is five while the highest mean score obtainable on any likert statement is also five. For the purpose of this analysis, a minimum mean score of four is accepted to depict that the respondents are in agreement with any given statement. The respondents did not agree that needs are determined by members giving the mean score of below four. They are also of the opinion that extension officers do more than moderate the needs identification process. The mean score of 3.3 indicates that extension officers influence the needs selection process and that needs are sometimes imposed on the farmers (3.6). The table also reveals that with a mean score of 3.2, the fact that the executive members of farmer-groups also influence the needs determination process.

Table 1: Socio-economic Characteristics of Respondents

Socio-economic Characteristics	Frequency	Percentage	Mean
Age of Respondents			
≤ 30	4	1.5	
31-50	164	62.9	
>50	93	35.6	**51.03**
Marital Status			
Married	242	92.7	
Single/Widowed/Divorced	19	7.3	
Total Income (N)			
≤200,000	76	29.1	
200,001-600,000	178	68.2	
>600,000	7	2.7	**290,416.86**
Educational Level			
No Formal Education	70	26.8	
Adult	15	5.7	
Primary	38	14.6	
Quranic	52	19.9	
Secondary	53	20.3	
Tertiary	33	12.7	
Land Ownership pattern			
Rented	202	77.4	
Owned	59	22.6	
Farm Size			
≤ 1.0	80	30.7	
1.1-2.0	97	37.1	
2.1-3.0	64	24.6	
>3.0	20	7.6	**2.05**
Farming Experience (Years)			
1-10	49	18.8	
11-20	103	39.5	
21-30	73	28.0	
>30	36	13.7	**21.37**
No of Extension Contact			
0	35	13.4	
1-20	186	71.3	
>20	40	15.3	
Membership of Other Farmer-groups			
No	171	65.5	
Yes	90	34.5	
Access to Credit			
No	136	52.1	
Yes	125	47.9	
Access to Training			
No	115	44.0	
Yes	146	56.0	
Gender			
Female	33	12.6	
Male	228	87.4	

Source: Field Survey, 2013

Table 2: Distribution of Respondents from Kwara State by Response on Needs Determination in Farmer-groups

Likert Items	SA	A	U	D	SD	Average
Needs are determined by members	50(19.2)	136(52.1)	12(4.6)	59(22.6)	4(1.5)	3.6
A list of needs are drawn	59(22.6)	178(68.2)	13(5.0)	10(3.8)	1(0.4)	4.1
Needs are prioritized	121(46.4)	96(36.8)	33(12.6)	11(4.2)	0(0.0)	4.3
Extension officers only moderate the process	37(14.2)	145(55.6)	28(10.7)	4(1.5)	47(18.0)	3.5
Most appropriate needs often selected	77(29.5)	126(48.3)	38(14.6)	16(6.1)	4(1.5)	4.0
Extension officers do not influence the selection	25(9.6)	124(47.5)	41(15.7)	55(21.1)	16(6.1)	3.3
Needs are not imposed on members	60(23.0)	107(41.0)	25(9.6)	55(21.1)	14(5.4)	3.6
Executive members do not influence the decision	49(18.8)	59(22.6)	60(23.0)	84(32.2)	9(3.4)	3.2
Members have received training on needs identification	60(23.0)	125(47.9)	10(3.8)	55(21.1)	11(4.2)	3.6
Process is democratized	49(18.8)	104(39.8)	21(8.0)	51(19.5)	36(13.8)	3.3

Source: Field Survey, 2013

Note: SA= Strongly Agree, A=Agree, U=Undecided, D=Disagree and SD= Strongly Disagree

The insufficiency of training on needs identification is revealed with the mean score of 3.6. Overall, the respondents are not in agreement that the whole process is truly democratized (3.3). On the other hand, as shown in the table, the respondents agree that in arriving at a course of action, a list of all needs are drawn and prioritized. They also agree that in spite of the afore mentioned inadequacies, their needs identification process often results in the selection of the most appropriate needs (4.0).

Factors Affecting Farmers Ability to Determine their Agricultural Extension Needs

Twelve socio-economic characteristics of the respondents were examined for possible effect of farmers' ability to determine their needs. The result of the multiple regression analysis is presented in Table 3.

The multiple regression model with twelve predictors produced $R^2 = .194$, $F(12, 248) = 4.963$, $P < 0.01$. Although the R^2 figure is low, it has been opined that studies in fields that attempts to predict human behavior may present low R^2 values as humans are harder to predict than physical processes [6]. The significant variables in the model were; age of respondents, total income, level of education, years of farming experience , number of extension contact and access to training.

As shown in Table 3, ability to determine needs among Kwara State farmers decline with their age. This implies that younger farmers have better ability to determine their needs as revealed by the negative coefficient. The fact that older farmers may have gotten very used to the top bottom extension approach of the T& V system which has been in existence over the years may be an explanation for this trend. This is because under the T & V system, the responsibility for needs identification and determination rests on the extension organization and its agents while farmers gratefully accepted whatever was decided.

Total income also negatively influenced farmers' ability to determine their needs ($p< 0.01$). In effect ability to determine group needs declined with increased total income. It is possible that the total income, which includes income from other sources outside farming activities, may also connote a conflict of interest between agricultural activities and the activities involved in the other sources of income.

At $p< 0.01$, the level of education positively influenced farmers' ability to determine their needs. Education has been linked to widened intellectual horizons, awareness, exposure, and to predispose farmers to new ideas. It is therefore understandable that from the study, the more educated the farmers are, the higher their ability to determine their needs.

At one percent level of significance, years of farming experience was found to have a negative effect on farmers' ability to identify their needs. This may be expected as the experienced farmers are likely to be the older farmers who must have gotten used to their

needs being determined by extension organizations with little or no recourse to then

Extension contact (at p<.01) and access to training (at p<0.1) positively affected the ability of farmers to determine their needs. Ability to determine needs among Kwara State farmers increased with the levels of extension contact and also with access to training. This is most likely attributable to the change in knowledge, skill and attitude arising from extension contacts and training.

Table 3: Result of Regression Analysis to Investigate the Factors affecting Farmers' Ability to Determine their Need

	Unstandardized Coefficients			
Variables	**B**	**Std. Error**	**t**	**Sig.**
(Constant)	45.109	2.549	17.694	.000
Age	-.154***	.048	-3.216	.001
Marital Status	.788	1.641	.480	.631
Total Income	-.398***	.101	-3.921	.000
Education	.630***	.198	3.178	.002
Land Ownership	.407	.804	.506	.613
Farm Size	-.153	.406	-.376	.707
Farming Experience	-.180***	.048	-3.730	.000
No of Extension Contact	.068***	.024	2.853	.005
Membership of Other Groups	-.069	.762	-.091	.928
Access to Credit	-1.157	.777	-1.490	.138
Access to Training	1.377*	.767	1.795	.074
Gender	.998	1.256	.794	.428
R^2=.194				
F (12, 248) = 4.963, P < 0.01				

*** 1%, *10%

3. Conclusion and Recommendations

The study assessed the ability of farmers to determine their agricultural extension needs. It also examined the socio-economic factors affecting this ability. The study concluded that farmers' ability to determine their needs was fair. Farmers' age, total income, level of education, number of years of farming experience and number of extension contact influenced farmers' ability at one percent level of significant. At P < 0.10, access to training also affected the farmers' ability to determine their agricultural extension needs.

The study therefore recommends regular training of farmers on extension needs identification with particular emphasis on the older and often more experienced farmers. Adult learning programs should be made available to, and promoted among farmers in addition to ensuring adequate extension contacts for all farmers.

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