

Probit Analysis of Women's Access to Agricultural Inputs in Bosso Local Government Area, Niger State, Nigeria

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Abstract

The title of the study is Probit analysis of women's access to agricultural inputs in Bosso Local Government Area of Niger State, Nigeria. The specific objectives are to identify the socio-economic characteristics of the women farmers and examine their sources of agricultural inputs as well as their accessibility to these inputs, including problems they faced in accessing the inputs. To achieve these, a total of 140 women farmers were purposively selected from 10 wards of the LGA. Validated Interview Schedule with reliability coefficient of 0.87 was used to collect relevant data from the respondents. Findings revealed that majority of the women farmers were within active productive age of between 21 and 50 years, mostly without formal education (64.3%) and married(81.4%).Also, most of the women engaged in farming either as a full or part time farmers. Similarly, few women had regular access to credit facilities and fertilizer .The problem adduced by the women farmers were discrimination against them and poor rural roads. Furthermore, probit analysis showed that 64% variation in the adequacy of inputs purchased by the women farmers was significantly explained by their access to labour, fertilizer, agro-chemicals and distance between individual farms and points of sales of agricultural inputs .It is recommended that women farmers should be encouraged to form co-operative groups in order to enhance their access to relevant inputs. Similarly, the Local Government Authority should try and rehabilitate the existing rural roads in addition to the construction of other roads with a view to linking the various villages and towns for easy transportation.

INTRODUCTION

The issue of gender sensitivity cannot be over emphasized in the development of agriculture, especially in relation to division of labour according to task and varieties of crops grown (Ayieko, 1986). Generally, women play a crucial role in farming and it is estimated that about 60 to 80 percent of all agricultural production activities are carried out by women in the continent of Africa. According to Ochoon (1993), women combine domestic works with subsistence farming, including fishing, processing and sales of agricultural produce and products.

Furthermore, Nigerian women have been found to contribute 60 percent of labour force, produce 80 percent of food, earn 10 percent of monetary income and own one percent of farm assets. However, women's substantial contributions to agriculture continue to be systematically marginalized and underestimated in commercial agriculture, economic analyses and policies. Similarly, women do not receive equitable opportunities or decision-making privileges as men, and they often encounter more difficulties than men in gaining access to or control over land, credit facilities, technical information and commercial market outlets (Jiggins *et al* , 1984).

Similarly, Akande and Igbi,(1984) reported that only few female benefited from formal credit facilities given out to farmers for larger scale agricultural production, and concluded that access to credit facilities promote high productivity.

Regardless of these observations and the immense contributions of women to economic advancement of both household and national economies, women are constantly faced with diverse socio-economic, political and cultural factors which have continued to hinder the realization of their potentials in agricultural production. These factors had resulted in their poor and inadequate access to production resources and services (Gabriel, 1993). Moreover, the problems of inputs availability at the required period and at reasonable costs have continued to affect the optimal increase in agricultural production by women farmers.

Therefore, the general objective of this study is to examine women's access to agricultural inputs using Probit analysis.

Specific objectives are to;

- (i) identify the socio – economic characteristics of the women farmers,
- (ii) examine sources and accessibility of women farmers to agricultural inputs and
- (iii) ascertain problems being faced by women farmers in accessing agricultural inputs.

Hypothesis

1. There is no significant difference between women's access to various agricultural Inputs and the adequacy of inputs acquired for their agricultural productions

METHODOLOGY

The study was conducted in Bosso Local Government Area of Niger State, Nigeria.

Different numbers of women farmers were purposively selected from each of the ten wards of the LGA to give a total of 140 respondents (that is, Bosso Central1= 13, Bosso Central 2 = 13, Beji = 14, Maikunkele = 15, Maitunbi = 14, Kampala = 15, Kodo = 13, Chanchaga = 13, Garatu = 15 and Shatta= 15 respondents).The instrument used for data collection was Interview Schedule. This was subjected to both validity and reliability tests, (Test-retest method, $r = 0.87$).Subsequently, data collected were analyzed using descriptive (frequency, percentages and means) and inferential statistics (Probit Analysis) at 5% significant level.

Measurement of variables

Age was measured in years, farm size (Ha), access to land, labour, credit facilities, fertilizer and agro-chemicals were measured on 2-point Likert Scale (Regularly = 2points, Occasionally= 1 point), while rate of gender discrimination against women and distance from points of inputs purchase to individual locations were on 3-point Likert Scale (Always = 3,

Occasionally = 2 and None = 1 point) and (very far = 1, far = 2 and not far= 3points) respectively.

Probit analysis equation is expressed in Exponential explicit model form;

$$\ln Y = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + b_7X_7 + b_8X_8 + b_9X_9 + U$$

where

\ln = natural logarithm

b_0 = constant

U = error term

X_1 = age

X_2 = access to labour

X_3 = access to land

X_4 = farm size holding

X_5 = access to credit facilities

X_6 = rate of gender discrimination against women in the sales of inputs to farmers

X_7 = distance from points of inputs purchase to individual locations

X_8 = access to fertilizers

X_9 = access to agro – chemicals

Dep.Var. (Y) = adequacy of inputs purchased for agricultural production (dummy)

X_1 to X_9 = Independent Variables

RESULTS AND DISCUSSION

Socio – economic characteristics of the women farmers

Findings in Table 1 showed that majority of the sampled women farmers were within the productive age of between 21 and 50 years, while only few of them were above 50 years old(8.6%). It implies that young women participate in agricultural activities than the old women. Similarly, most of the women farmers did not have formal education (65%) and this may adversely affect their abilities to access relevant information and opportunities relating to inputs acquisition. In addition to this, 81.4% of the sampled women farmers were married and this may have positive effect on their access to farm land and family labour, especially through their husbands and children respectively.

TABLE 1: Socio – Economic Characteristics of Women Farmers

Variables	Frequency	Percentage
Age (Years)		
Below 21	23	16.4
21 – 40	65	46.42
41 - 50	40	28.6
51 and above	12	8.6
Total	140	100.0
Highest educational level attainment		
Islamic education	50	35.7
Formal education	49	35.0
Adult education	41	29.3
Total	140	100.0
Marital status		
Married	114	81.4
Single	9	6.4
Widow	17	12.1
Total	140	100.0
Occupation		
Farming / other economic activities	68	48.5
Farming / business	29	20.7
Farming / civil servant	43	30.7
Total	140	100.0

Source: Field Survey

Sources and accessibility to agricultural inputs by women farmers

This section presents findings on various sources of agricultural inputs and women relative access to them. The resources under study include land, labour, credit facilities, fertilizer and agro – chemicals as well as the adequacy of acquired inputs for their farming activities.

Findings in Table 2 revealed that the sampled women farmers had access to farm land but their control over this land in terms of frequency of access and size of holding had limitations because not every one of them had regular access. For instance, 89.3% of women farmers had regular access and others did not. Also, majority of the women did not have more than 3 hectares of farm land and all these may hinder their desires to cultivate larger farm land.

TABLE 2: Women's Access to Land

Variable	Frequency	Percentage
Frequency of access		
Regularly	125	89.3
Occasionally	15	10.7
Total	140	100.0
Source		
Through purchase	43	30.7
Inheritance	66	47.1
Gift	22	15.7
No response	9	6.4
Total	140	100.0
Size of farm holding (Ha)		
1 Ha and below	58	41.4
2 – 3	75	53.6
4 – 5	7	5.0
Total	140	100.0

Source: Field survey

Moreover, Findings in Table 3 indicated that only 22.2percent of the sampled women had regular access to credit facilities ,with formal lending institutions and government (Local government) giving financial support to only 10.7 and 25.7 percent of women farmers respectively . The inability of women farmers to access credit facilities through lending institutions might be due to administrative bureaucracy which usually characterized these institutions. It was further revealed that major source of labour for farm works rested, to a greater extent on the family members as indicated by 71.4 percent of the women farmers. This suggests that farming by the women is largely characterized by stress and drudgery which can hardly bring about desired maximum productivity and corresponding incomes.

TABLE 3: Women's Access to Capital and Labour

Variable	Frequency	Percentage
Frequency of access to capital		
Regularly	31	22.1
Occasionally	109	77.9
Total	140	100.0
Major source of capital		
Bank	15	10.7
Co-operative	24	17.1
Husband	49	35.0
Local money lender	6	4.2
Local government	36	25.7
None	10	7.1
Total	140	100.0
Frequency of access to labour		
Regularly	70	50.0
Occasionally	70	50.0
Total	140	100.0
Major source of labour		
Personal	40	28.5
Family	100	71.4
Total	140	100.0

Source: Field survey

In case of access to fertilizer and other agro – chemicals, it was found out that most of the women farmers acquired fertilizers from open markets, usually as member of a group because individual effort was not yielding adequate results. On the other hand, most women acquired their agro-chemicals through the State Agricultural Development Project and the advantage is that farmers are likely to have genuine products and positive results when compared with open markets where adulterated products may abound. In all 30 and 73.6 percents of the women farmers had regular access to fertilizers and relevant agro -chemicals respectively (Table 4). However, over one half (57.1%) of the women farmers sampled complained of inadequate farm production resources and this may be due to some fundamental problems as revealed in this study. These problems include discrimination against women and distance from farm to points of sales. Based on observations, even those that were close to points of sales might also experience high cost of transportation due to poor access roads among others thereby increasing production cost.

TABLE 4: Women Farmers Access to Fertilizer and Agro – Chemicals

Variable	Frequency	Percentage
Major source of fertilizer		
Open market	119	85.0
Gift	21	15.0
Total	140	100.0
Method of acquisition		
As an individual	40	28.6
As member of a group	70	50.0
Both	30	21.4
Total	140	100.0
Frequency of access to fertilizer		
Regularly	98	70.0
Occasionally	42	30.0
Total	140	100.0
Major source of agro – chemical		
Open market	40	28.5
State ADP	80	57.1
Gift	20	14.2
Total	140	100.0
Frequency of access to agro – chemicals		
Regularly	103	73.6
Occasionally	37	26.4
Total	140	100.0
Problems of acquiring agro – chemicals and fertilizers		
Distance		
Far	90	64.3
Very far	20	14.3
Not far	30	21.4
Total	140	100.0
Adequacy of inputs for agricultural production		
Very adequate	8	5.7
Adequate	52	37.1
Inadequate	80	57.1
Total	140	100.0
Gender discrimination against women		
Always	98	70.0
Occasionally	25	17.9
None	17	12.1
Total	140	100.0

Source: Field survey

Probit analysis result of women’s access to agricultural inputs

The variables considered include the adequacy of inputs purchased for their desired farming activities(dependent variable), while the independent variables include age of the women farmers, their access to land, size of farm holding, access to labour, credit facilities, fertilizer, agro – chemicals, distance to points of purchase and rate of discrimination against women.

Based on the significant F-value, R² value and number of significant independent variables, the Exponential regression model was selected for the probit analysis.

The result in Table 5 showed a significant F -value at 5% significant level, (F = 2.398, P < 0.05).

It was also revealed that only 64% of the variation in the dependent variable was explained by the independent variables. Similarly, variables like access to labour (t = 2.528, P < 0.05), access to fertilizer (t = 0.785,P < 0.05), access to agro – chemicals (t=1.525, P < 0.05) and distance from farm to points of inputs purchased (t=-2.969, P < 0.05) made significant contributions to the observed variation in the adequacy of inputs purchased for agricultural production. Specifically, the farther the distance from farm to points of sales inputs, the lower the adequacy of these inputs for agricultural production, which may be due to high cost of transportation and poor infrastructure in the rural areas.

TABLE 5: Probit Analysis Result

R value = 0.61

R Square = 0.64

Adjusted R Square = 0.52

F-value = 2.398 , P < 0.05

Variable	Beta coefficient	t-value	P- value	Decision
Age	.094	.984	.33	NS
Labour	.266	2.528	.01	S
Land	.002	.026	.98	NS
Farm size	.056	.589	.56	NS
Capital	-.075	-.889	.38	NS
Discrimination	.012	-.138	.89	NS
Distance	-.255	-2.969	.00	S
Fertilizer	.116	.785	.00	S
Agro - chemical	.154	1.525	.00	S

NS=Not sig, S= sig at 5% sig. level

CONCLUSION

It can be concluded that access to labour, fertilizer, agro – chemicals and distance between individual farms to points of inputs purchased contributed significantly to the quantity of inputs acquired. It is recommended that women should organize themselves into groups to facilitate their access to agricultural inputs

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