Full Length Research Paper

Determinants of credit constraints of farming household participating in National Special Programme for Food Security (NSPFS) in Niger State, Nigeria

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Abstract

The study identified factors influencing credit constraints of farming households participating in National Special Programme on Food Security in Niger state. NSPFS has three sites in Niger state namely, Nasarawa, Lioji, and Gidan Mangoro. A multi stage sampling technique was used to select 133 farmers and data for the study was elicited with the aid of pre-tested questionnaire which was administered on the respondents. Data collected were analyzed using descriptive statistics, pseudo-profit function model and Probit Regression model. The results indicated that most of the beneficiaries were found to be small scale farmers, men dominated and mostly married, large household size, and with low level of literacy. The results of the analysis further revealed that majority of the beneficiaries (69.17%) were credit constrained, while the remaining (30.83%) were non-credit constrained. Furthermore, the study revealed that age, household size, farm size and extension contact all significantly influenced credit constraint condition of NSPFS farming households in the study area. Farmers in the study area are faced with certain problems in accessing NSPFS credit, such as problem of untimely credit delivery, inadequate extension contact and administrative procedure. Therefore the study recommends improvement and sufficient credit advancement to farmers especially the constrained ones thereby increasing productivity and thus food security in the study area.

Keywords: NSPFS, credit condition, pseudo-profit function, probit model, Niger state, Nigeria

INTRODUCTION

Credit is one of the components of financial services considered fundamental in all production units. There has been a general awareness of the significance of credit as a tool for agricultural development (Omonona, *et al.*, 2008). Credit for rural smallholders especially in agriculture is assuming increasing importance in many parts of the world in response to the needs of the less privileged entrepreneurs with limited capital base in the

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sector. Hussein (2008), defined credit constraints as the situation where the household cannot avail itself of the credit it desires at the prevailing relevant market conditions and thus classify households into credit constrained and unconstrained households. In Nigeria, the prevalence of credit constraints and their impact on production efficiency has led to low productions on farms. Economics of agricultural production at the micro-levels is to attain the objective of profit maximization through efficient farm allocation of resources over a period of time or by either maximizing output from given resources or minimizing the resources required for producing a given

level of output. A farm household that faces binding credit constraints, ceteris paribus, will misallocate its resources and under invest compared to its unconstrained peer (Hussein and Ohlmer, 2008). Availability of finance and its accessibility crucially affect production start-up and subsequent performances of the farmers. Barriers to access adequate credit will have adverse effect on technical efficiency of the farm household. Credit constraints have both direct and indirect influence on farm production. Directly, it affects the purchasing power of producers to procure farm implements and make farm related investment which they can fall back on help them overcome credit constraints. Indirectly, it affects the risk behavior of producers. Inadequate credit supply is a central problem upon which other production factors exert negative influence on farmers' output and efficiency. The inability of most rural poor to make adequate utilization of capital has heightened the problem low efficiency in production.

Studies have shown that a large percentage of farmers faced with credit constraints have low production efficiencies (Hussein and Ohlmer, 2008, Dorfman and Koop, 2005). The need for a study on the estimation of credit constraints and efficiency of production of farmers cannot be over emphasized. For farmers that are fortunate enough to have access to credit, the problem of low efficiency in production still comes up in situations where there is a wide gap between the amount of credit requested and the amount supplied. For some farmers, an addition of the payment made for the use of capital, cost of inputs and other costs far exceeds the revenue from sales of farm produce. Empirical study on credit constraint condition among farming households are very few and far between. Example of such studies was Oyedele, et al., 2009; with particular attention on south western part of the country and Omonona et al., 2008 with particular attention on financial institutions. In addition, no studies have been documented on credit conditions of farmers participating in National Special Program for Food Security in Niger State. The question however is what affects proper credit utilization of farming households participating in National Special Program for Food Security in Niger Sate? Therefore, this research ought to investigate factors affecting effective credit utilization among NSPFS beneficiaries in Niger state. The National Special Programme on Food Security aims at offering a practical vehicle for piloting and eventually extending the application of innovative low cost approaches both technical and institutional to improving the productivity and sustainability of agricultural system with the ultimate objective of contributing to better livelihoods of farmers participating in the National Special Programme on Food Security on sustainable basis. Credit constraint can be defined as a gap between demand and supply of credit.

Research Objectives: The broad objectives of this research was to determine the factors influencing credit constraint conditions of small holder farmers participating

in National Special Programme for Food Security (NSPFS) in Niger State, and the specific objectives are to:

1. Identify the socio-economic characteristics of the respondents;

2. Estimate the enterprise profitability of the respondents;

3. Determine the factors influencing credit constraint condition of the respondents; and,

4. Identify problems faced by the respondents and make positive solutions.

METHODOLOGY

Study Area

Niger state is a state in the North Central part of Nigeria and the largest state in terms of land mass. The state capital is Minna, and other major cities are Bida. Kotangora, and Suleja. The state lies in the Guinea savannah vegetation of the Country with favourable climatic conditions for crops and livestock production, and falls between latitude 8°35 to 11° 30 on the north and longitude 3°30' to 7°20 on the East, with an estimated population of 3,950,249 and about 85% of the populations are farmers (NPC, 2006). The prevailing climatic condition in the state is subtropical with distinct dry and wet seasons; annual rainfall range between between 1000mm to 1600mm, and temperature hovering around 32°-37° Celsius. The state has estimated 7million hectares of agricultural land, in which 33% is under cultivation; in addition there are 680,000 hectares of irrigable land with only 3.9% currently under irrigation farming (NSADP, 2012).

Sample Procedure and Size

Multi stage sampling technique was employed for the study. Firstly Kuta agricultural zone was conveniently selected out of the three agricultural zones in the state. Secondly, all the NSPFS sites where purposively selected, namely, Nassarawa (Zone I), Gidan Mangoro (Zone II) and Lioji (Zone III). Thirdly, because of population disparity based on the sampling frame provided by Niger State Agricultural Development Project (NSADP), a scale of 10% was used to determine the proportionate representative sample size for each site. Lastly, from the aforementioned three (3) sites, 38, 35 and 40 respondents, respectively were randomly selected through a simple random sampling technique, thus, given a total sample size of 133 respondents.

Method of Data Collection

The data for this study were obtained using both primary and secondary sources. The primary sources for the data were the questionnaires and interview schedules, while

Serial Numbers	NSPFS Sites	Population	Sample size
1.	Nassarawa (Zone I)	550	55
2.	Gidamn mangoro (Zone II)	380	38
3.	Lioji (Zone III)	400	40
Total		1330	133

Source: NSADP, 2012

the secondary sources for the data are the journals, textbooks, internet, archives etc

Method of Data Analysis

Both descriptive and inferential statistics were used to analyze the data collected. Objective one and four were achieved using descriptive statistics such as frequencies, proportions and percentages; objective two was analyzed using pseudo-profit function technique (Gross margin); and, objective three was analyzed using Probit regression model.

Model Specification

Psuedo Profit Function (Farm Budgeting Technique)

A farm budget is a detailed physical and financial plan for the operation of a farm for a certain period of time. The aim of a farm budget is to compare how profitable different kinds of enterprise combination can be (Olukosi and Erhabor, 2008).

The model for estimating Net farm income was represented by the equation below:

NFI = TR-TC Where: NFI = Net Farm Income TR= Total Revenue TC = Total cost

Probit Regression Model

According to Feder et al., (1990), the production behavior of the two groups of farmers is modeled by the reduced form equation specified in the Probit Model as:

P/P-1 = δX+U	1	
$Y = f(X_1, \dots, X_n).$. 2
$Y = \delta + \delta X_1 + \delta X_2 \dots \delta X_n \dots$		3
Where;		
Y= Credit (Constrained=1, unconstrained = 0) X_1 =Age of the Farmers (years)		
X ₂ = Household Size (number)		
X ₃ = Farming Experience (years)		
X ₄ = other sources of credit (yes=1, otherwise= X ₅ =Farm size (hectares)))	
X_6 = Extension contact (yes= 1, otherwise=	0)	

X₇= Proximity (yes=1, otherwise=00

RESULTS AND DISCUSSIONS

Socio-economic Characteristics of the Respondents

The socio-economic characteristics of the respondents is presented in Table 2, with it comprising of age, educational level, household size, farming experience, farm size, gender, marital status and major occupation

Age distribution of the respondents

On the basis of Age, the result indicates that 81.9% of the respondents fall within the age bracket of 20-50 years defined by FAO (2008) as economically productive and active, while remaining (18.1%) falls within the age group classified as dependent. This implies that at least twothird of the respondents was still economically active and at their economically productive stage. Therefore, the present study shows an active, energetic and young farming population.

Educational level distribution of the respondents

Educational level of farmers especially formal is expected to contribute positively to the farmer being non-credit constrained. The educational levels reveal that the majority of the respondents had non-formal (54.9%), while those with one form or the other of formal education account for 45.1%. This percentage of formal education was a surprising outcome as the study area falls between the educationally disadvantaged local government area of the state. It is expected that the more formal education farmers acquire, the more exposed they become and the more the chances of minimizing credit constraints. This agrees with the findings of Sadiq (2012), who reported that rural farmers are characterized by low level of formal education. This suggests that NSPFS should increase sensitization to the farmers on the importance of formal education.

Household size distribution of the respondents

On the basis of household size the beneficiaries have varying household size with about 27.8% of the

Variables	Frequency	nercentage
	Trequency	percentage
	10	12 5
≤ 50	10	10.0
31-40	39	29.3
41-50	52	39.1
51-60	23	17.3
201 Totol	1	0.8
	133	100
Education level	10	
Secondary	13	9.8
Primary	43	32.3
Adult literacy	4	3.0
Illiterate	73	54.9
Total	133	100
Household size		
1-5	37	27.8
6-10	63	47.4
11-15	24	18.0
16-20	5	3.8
≥21	4	3.0
Total	133	100
Farming experience		
≤ 15	6	4.5
16-20	9	6.7
21-25	28	21.1
≥26	90	67.7
Total	133	100
Farm size		
≤ 2.0	55	41.4
2.1-3.0	53	39.8
3.1-4.0	17	12.8
4.1-5.0	6	4.5
≥5.1	2	1.5
Total	133	100
Gender		
Male	100	75.2
Female	33	24.8
Total	133	100
Marital status		
Married	120	90.2
Otherwise	120	0.2
	133	9.0 100
Non-	100	100
Eorming	121	09 5
Failing Non forming	131 2	90.0 1 E
	<u>ک</u>	C.I
Iotal	133	100

Table 2: Socio-economic characteristics of the respondents

Source: Field survey, 2012.

respondents maintaining household size between 1-5 persons, while 72.2% have household size of more than 5 persons. The fewer the household size, the better the standard of living. This results agrees with the findings of Ayoade (2010).

Farming experience distribution of the respondents

On the basis of experience acquisition, the results indicates that majority of the beneficiaries (95.5%) had farming experience between the range of 16-50 years. Farming experience enables the beneficiaries of NSPFS to set realistic targets which will go a long way in reducing the risk of being credit constrained.

Farm size distribution of the respondents

On the basis of farmsize distribution of the respondents, the results indicates large proportion of the respondents (81.2%) maintaining a farm size of less or equal to 3.0 hectares while 18.8 percent had 3-6 hectares, as such it can be inferred that majority of the programme participants are small holder farmers, therefore, NSPFS

Enterprise	Variable costs	Fixed costs	Total cost	Revenue	Gross margin	Net farm
	(N)	income (N)				
Constrained						
Rice	25,150.00	4,279.33	29429.33	53,625.00	28,475.00	24,195.67
Maize	20,070.00	3,261.15	23,331.15	45,882.35	25,812.35	22,551.20
Cowpea	23,709.21	5,031.87	28,741.08	56,684.21	32,975.00	27,943.13
Yam	37,377.77	4,237.10	41,614.87	63,333.33	25,955.56	21,718.46
Total	106,306.98	16,809.45	123,116.43	219,524.89	113,217.91	96408.46
Mean	26,576.75	4202.36	30,779.11	54,881.22	28304.48	24,102.12
Non-constrained						
Rice	21,975.00	2940.16	24,915.16	57,750.00	35,775.00	32,834.84
Maize	21,966.66	3314.03	25,280.69	56,000.00	34,033.34	30,719.31
Cowpea	28,448.57	3841.46	32,290.03	74,571.43	46,122.86	42,281.40
Yam	57,990.00	4282.71	62,272.71	104,200.00	46,210.00	41,927.29
Total	130,380.23	14,378.36	144,758.59	292,521.43	162,141.20	147,762.84
Mean	32,595.06	3,394.59	36,189.65	73,130.36	40,535.30	36,940.71

Table 3: Profit level of constrained and unconstrained beneficiaries

Source: Field survey, 2012

should endeavor to advance more credits to them for the expansion of their farm sizes and scale of production.

Gender distribution of the respondents

On the basis of gender the results shows that about 75.2% of the respondents were male, while the remaining were female (24.8%). This implies that men in the study area are more actively involved in the NSPFS programme when compared to women in the study area, as such; NSPFS extension agents should encourage women to participate in the programme in other to derive and take advantage of benefits which accrue from the programme.

Marital status distribution of the respondents

On the basis of marital status of the respondents, the result revealed that 90.2% of the respondents were married while 9.8% of the sampled populations were not married being either single, divorced or widowed. Early marriage is a common practice in the study area, and it was observed that most of the NSPFS beneficiaries maintain more than one wife for the purpose of having more access to family labour.

Occupational status distribution of the respondents

On the basis of occupational status of the participants, the results revealed that majority (98.5%) of the respondents are full-time farmers, while marginal left over (1.6%) engaged in other form of occupation as their major occupation, as such the programme should enlighten farmers on the importance of enterprise diversification, that is, to go into other more profitable enterprise so as to generate multiple streams of income and also to boost food security in the study area.

Net farm income analysis of NSPFS beneficiaries

The mean net income for all categories of NSPFS credit beneficiaries was ¥30, 521.42. On category basis, the net farm income analysis for rice farmers revealed that the mean net farm income of credit beneficiaries was N28, 515.26. A further disaggregation of the net farm income shows that the non- credit constrained rice farmers had N32, 834.84, while that of the credit constrained were H24, 195.67. For maize credit beneficiaries' farmers, the mean net farm incomes were N26, 635.26. A disaggregation shows that the net farm income for non- constrained beneficiaries were ₩30719.31, while that of the constrained beneficiaries were N22551.20. For cowpea beneficiaries, the mean net farm income were N35, 112.27, and on disaggregation basis the net farm income for non- constrained beneficiaries were N42,281.40, while that of the constrained beneficiaries were N27,941.13. For vam farmers, the mean net farm income for the NSPFS credit beneficiaries was N31, 822.88; while a disaggregation shows that the net farm incomes for the non-constrained farmers were N41927.29 and that of the constrained yam farmers were N21718.46. on the basis of analysis, it is clear that non-credit constrained beneficiaries are more better off in terms of business financial position when compared to the net farm income stream recorded by their counter,. This was consonant with the apriori expectation to record good income stream when credit utilization hitches is zero or near zero.

Determinants of Credit constraints among NSPFS beneficiary households

Probit regression model was used to identify the factors that causes credit constrained condition of NSPFS beneficiaries in the study area. Table 4 reveals the

Variables	Estimates	t- statistics
Age	0.025	2.182**
Household size	0.03	2.5**
Experience	-0.000	-0.073
Other credit sources	-0.010	-0.417
Farm size	-0.230	-4.085***
Extension contact	-0.058	-2.173**
Proximity to market	-0.026	-0.689
Intercept	-2.416	-8.176
Log likelihood	12.35	
LR chi-square (x ²)	404.836***	
Pseudo R ²	0.523	

Table 4: Determinants of Credit constraints a	among NSPFS beneficiary households
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Source: Computer print out

Note: *** ** * Significant at 1 %, 5 % and 10% respectively

Constraints	Frequency	Percentages
Collateral	27	4.3
Inadequate information	63	10.3
Untimely credit delivery	103	16.4
Rejected application	19	3.0
Diseases outbreak	79	12.6
Weather vagaries	65	10.3
Domestic and family problems	24	3.8
Inadequate extension contacts	99	15.7
Market imperfection	39	6.2
Administrative procedure	97	15.4
High interest rate	14	2.0
Total	629	100

Source: Field survey, 2012.

*Multiple responses.

maximum likelihood estimates of the probit model. The significance of the chi-square (x^2) indicates of that the model is fit and appropriate for the equation. Three out of the seven explanatory variables specified in the model were found to be significant in explaining the variation in the credit constraint conditions of NSPFS farming household. Age of the household head positively and significantly (p<0.05) influences the credit constraint condition of the NSPFS credit beneficiaries. The result implies that older farmers are more likely to be credit constrained. The result confirms the earlier findings of Zeller (1994) and the latest findings of Omonona et al. (2010); Oyedele et al (2009). The coefficient of household is positive and significantly (p<0.05) influences credit constrained status of the beneficiaries. This implies that households with large family size have high probability of been credit constrained. This findings is conforms with the finding of Oyedele et al., 2009. The coefficient of farm size is negative and significantly (p<0.01) influences credit constraint condition of households. The result indicates that large landholders (farm size) are less likely to be credit constrained. This result agrees with the findings of Nuryatono et al (2005)

and deviate from the findings of Oyedele *et al* (2009). The coefficient of extension contact is negative and significantly (p<0.05) influences the probability of household being credit constrained. This result implies that households with extension contact are less likely to be credit constrained. The other variables are not significant and need no further discussion.

Problems Associated with Access to Credit

Table 5 indicates a multiple response of problems faced by the respondents in accessing credit with the major problem faced been untimely credit delivery, inadequate extension contact, bureaucratic or administrative procedure bottleneck, disease outbreak as well as weather vagaries, while lesser problems are market imperfection, lack of collateral, high interest rate etc. National Special Programme for Food Security (NSPFS) should therefore improve on credit delivery system and improve on the administrative procedure, by delivering credit to farmers on time, to enable them effectively utilize it in the production process, so as to improve food production and enhance food security in the study area.

CONCLUSION AND RECOMMENDATION

This study reveals that credit constrained condition of farming household with particular emphasis on NSPFS beneficiaries is a militating factor to improved efficiency among other management and socio-economic factors. The result shows that majority of the beneficiaries were males and married. Majority of them were within the active productive age recommended by FAO and take to farming business as their main occupation. Credit constraint condition exists in the study area in the form of quantity constrained, transaction cost constrained and risk factor constrained conditions. These conditions were ascertained through responses on gualitative guestions on their credit demand experiences. Age of the respondents, household size, farm size and extension contact are factors that significantly influence the probability of a household unit being credit constrained at different levels of significance.

Based on these findings a number of policy implications and recommendations are hereby made to ensure improved performance and profitability of the farm business.

• Efforts to ensure sustainable agricultural production should be targeted at the active population who are relatively young to carry out farming business. Therefore, the need for policy support for empowerment and more active involvement of the youth and younger population in the NSPFS, thereby serving as succession arrangement to ensure that there is no generational gap in agricultural production.

• The study recommends the need to improve programmes and policies that will ensure proper family planning, thereby reducing the number of dependents to the number which households can cater for. Furthermore, it also calls for sustained enlightment campaign on the consequences of large family size..

• Owing to the pronounced effect of constrained level on the efficiency of farm business, the government should revisit the NSPFS programme as well as develop a holistic and workable national formal credit policy alongside a credit bureau concerned with the financial information of small and medium scale and agricultural enterprises, that is, the need for policy support to increase the volume of capital available to beneficiaries under the programme.

• Commercial banks should be made to compliment the effort of the scheme and also commit to

agricultural growth and development by way of recommending a minimum percentage of all loans given out to be directed to agricultural investors and ensuring effective implementation.

• Farmers should be encouraged to join or form cooperative societies thereby availing themselves the opportunities of cooperative membership among which is access to credit. Though, government can help facilitate this process of cooperative formation.

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