IMPACT OF VILLAGE ALIVE DEVELOPMENT INITIATIVE ON FARMING HOUSEHOLDS PRODUCTIVITY IN KWARA STATE: A COMPARATIVE ANALYSIS

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Abstract
The study compares the socio-economic characteristics of the participants and non- participants in Village Alive Development Initiate (VADI); Identify the constraints faced by participants and non-participants in securing the credit and evaluate the impact of the scheme on their crop productivity in the study area. One hundred and eighty-eight farming households were selected in the participating villages in Kwara State, Nigeria. Data were collected by structured questionnaire and administered through personal interview. Analytical tools used were descriptive statistics and Propensity Score matching technique. The result showed that about 71% of the participants were females, 78% are between the ages 30-60, 64% married, 57% had at least primary school education and about 81% had access to market information. Although the participants of VADI programme had other source of credit but the largest part of the funds came from VADI (59.09%). The result of the Likert scale technique used to analyse the constraint faced in credit acquisition showed that possibility of loan default by members ranked 1st followed by lack of collateral and guarantor and then loan rational habit. It was also revealed that VADI programme increased the productivity of participating farming household by 315.55 Kg/ha, hence such initiative on credit acquisition should be encouraged and sustained among farming households in the study area.
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Key words: Credit, VADI, farmers, Productivity

Introduction

The Nigerian agriculture has been experiencing deterioration in agricultural productivity over the years. Many reasons have been indicated for the declining agricultural productivity in Nigeria. One of the factors attributed to the declining productivity of the sector is farmers' limited access to credit facilities (Oruonye and Musa 2012**;** Etonihu, *et al*., 2013).

Access to credit facilities has also been identified as the direct solution to increasing investment in agriculture in the country. Credit is a vital factor in agricultural production and in many cases may be a limiting factor in small-scale agriculture (Salami and Arawomo, 2013). The small-scale farmers dominate the Nigerian agriculture. The small-scale rural farmers' need for credit is more acute because their access to financial resources is lowered by their low productivity and wide spread poverty in the rural farm sector. This low productivity is purely due to the fact that they produce for subsistence consumption and a little marketable surplus (Ijioma and Osondu, 2015). In terms of global best practices, Nigeria's agriculture still has a lot to achieve especially on how to overcome the problem of low productivity. The average yields of major staple crops

produced by the small-scale farmers remain inadequate to remove the aggravating food insecurity in the country. However, modernizing agriculture requires large infusion of credit to finance the use of purchased inputs such as fertilizers, improved seeds, insecticides, additional labour and so on. In this regard, the provision of agricultural credit can be a powerful economic force for development if used to inject appropriate capital for the purchase of agricultural inputs that are not otherwise available to farmers from their own financial, physical and labour resources.

Agricultural credit enhances productivity and promotes standard of living by breaking vicious cycle of poverty among small-scale farmers (Onyeagocha, 2012; Etonihu, *et al*., 2013). Adegeye and Ditto (1985), defined agricultural credit as the process of obtaining control over the use of money, goods and services in the present in exchange for a promise to repay at a future date. Agricultural credit is also described as the amount of investment funds made available for agricultural production from resources outside the farm sector. The crucial role of credit in agricultural production and development can be appraised from the perspective of the quantity of problems emanating from the lack of it. Rashid et al., (2002) found that small scale farmers cultivated less land size due to credit constraint effects. Farmers who do not have access to credit are more likely to grow crops that have fewer climatic risks or require less investment capital and might use less farm inputs. Consequently, both decisions (crop choice, quantity of inputs used) can affect farmers' participation in marketing systems and undermine their ability to earn higher incomes. In addition, poor farmers are usually unable to self-finance and are also unable to obtain credit at a reasonable interest rate due to the need for collateral to secure loan or credit from financial institutions (Asogwa, *et al.,* 2014; Ijioma and Osondu, 2015).

Several programmes have been put in place by the government aimed at utilizing government resources to drive agricultural growth and development. For instance, there was the establishment of the Nigerian Agricultural and Cooperative Bank (N.A.C.B.) in 1973; Rural Banking Programme, 1977; and more recently the Commercial and microfinance banks and Bank of Agriculture (Ugwumba, *et al*., 2009). These formal financial institutions are encouraged by government to extend credit facilities for agricultural activities in order to improve agricultural productivity and output. In addition, effort has been committed as well by other government agricultural agency in order to attain self-reliance in food production as well as improve food security among poor farmers such as the Village Alive Development Initiative.

The Village Alive Development Initiative of Agricultural Rural Management and Training Institute (ARMTI) was designed to encourage saving and portends access to credit among poor farmers. The project is aimed at creating village level opportunities for rural dwellers to alleviate poverty. In addition, it will also allow them to engage in more lucrative farm and nonfarm income activities. The Credit opportunity is not only intended for farming purposes, but also to cover family and consumption expenses; especially during the off season period.

When production credit is made available on suitable terms, this will empower small farmers in adopting profitable technology (Ololade and Olagunju, 2013). Therefore, access to credit brings about optimum performance from production activities. On the other hand, lack of credit incapacitates even a well-motivated farmer in purchasing the necessary inputs such as improved seeds, fertilizers and chemicals. Hence, the small scale farmer generally spends less than 20 percent of what is required on such inputs due to their lack of access to credit disbursement (Ololade and Olagunju, 2013). The farmers require credit for production purposes; for the payment of wages, procurement of inputs and marketing of produce like transportation, storage, processing and other marketing related functions. Therefore, it is pertinent to know the economic potentials of VADI with credit acquisition to poor rural households in improving farmers' productivity and raising their living standards. It is against this background that this study was designed to specifically: Compare the socio-economic characteristics of the participants and non- participants in Village Alive Development Initiate (VADI) and Identify the

constraints faced by participants and non- participants in securing the credit; evaluate the impact of the scheme on their crop productivity in the study area.

Research Methodology

Study Area

The study is conducted in Kwara state. Kwara state is located between latitude 8^0 5" – 10^0 4" N and longitude 4^0 55"-6^0 5" E (NPC, 2006) with a land area of about 35,705km^2. The state has a natural vegetation cover that consists of rainforest in the south and guinea Savannah to the North with two main seasons: wet and dry seasons. The mean annual rainfall of the state is 1,000-1,500mm and average temperature ranges between 27^0 C and 35^0 C (NPC, 2006).

Sampling Technique

A multi-stage sampling technique was employed for the study. The first stage involved a purposive selection of two Local Government Areas (LGAs) with the largest number of participants of the VADI's agricultural credit acquisition in Kwara State obtainable from Agricultural Rural Management and Training Institute (ARMTI). The second stage was a purposive selection of five (5) rural communities (IFELODUN: Elerinjare, Jimba-oja and Igbo-owu; ILORIN SOUTH: Fufu and Ilota,) from the selected LGAs. The third stage involved random selection of 100 participants from the list of participants of the scheme in the five selected rural communities obtained from the VADI's scheme administrators. Twenty (20) control households that met participants' selection criteria but did not participate in the program were also randomly selected from each selected rural communities of the two selected blocks. A total number of 100 participants and 100 non-participants were thus, selected for the study. The data for the study were collected using well-structured questionnaire administered through personal interview. Only one hundred and eighty-eight (188) questionnaires was retrieved and used for the study.

Analytical Technique

The analytical tools used for the study include: Descriptive statistics and Propensity score matching. Descriptive statistics was used to estimate the socioeconomic characteristics through the use of frequency and percentage. A 5-point Likert type scale was used to describe the constraints associated with agricultural credit acquisition confronting participants and non- participants of the scheme in the study area. Lastly, propensity score matching was used to verify the effect of participation in the programme on their productivity

Average Treatment Effect (ATE)

In the statistical analysis of observational data, Propensity score matching is a statistical matching technique that attempts to estimate the effect of a treatment, policy, or other intervention by accounting for the covariates that predict receiving the treatment. In other words, propensity score matching can be used. Rosenbaum and Rubin (1983) proposed propensity score matching as a method to reduce the bias in estimating treatment effects with observational datasets. Propensity score matching is a way to evaluate direct causal effects of programs based on the idea that bias is reduced when the outcomes are compared using treated and control subjects who are as similar as possible (Harris, *et al*., 2015). In literature, one of the most widely used matching method of the propensity score to estimate the ATE is the Nearest-Neighbour Matching. The average treatment effect shows the difference of a unit (person) being assigned to a particular treatment given a set of observed covariates (Pearl, 2009).

In this study Average treatment effect (ATE) method was used to determine the effect of the credit acquisition of the scheme on the participants' productivity. Also, to compare the yield and return on farmland participants and non-participants of the credit acquisition scheme in the study area.

Results and Discussion

Description of Socio-economic Characteristics of Respondents
The result in Table 1 shows that male farmers constitute 70% of non-participants of the scheme and approximately 71% of female farmers were regarded as participants of the scheme. This implies that female farmers benefited more in the scheme than male farmers and this contributed to female dominancy (51%) in the overall distribution of the studied samples. Additional information gathered from the respondents' shows that dominancy was due to the fact that female farmers engage in various farming activities including processing of farm produce. About 78% of the sampled farmers' ages fall between the ages of 30 – 60 years. Likewise, 7% of the farmer ages fall below 30 years which indicates the low interest of youth in agriculture. Also, 64% are married.

Married farmers have more responsibilities which can only be compromised majorly by their farm income unlike single farmers. The result also showed that primary and secondary education (47% and 32% respectively) was the most prevalent qualification among the respondents of the study. The literacy level of the farmers helped in keeping beneficiaries in close proximity to information from VADI's officials. And about 13% and 5% were left as no-formal and tertiary qualification holder. This has an implication on the rate of credit acquisition knowledge of the farmers, adoption of innovation such as their acquisition of loan through VADI and other modern cultural practices. The result also reveals that the ability of the farmers to get involved in the social credit scheme was influenced by their access to market information. This is because 55% of the respondents of the study had access to market information. Nonetheless, all (100%) the participants were found belonging to one form of farm group/organization which was served as one of the criteria for the eligibility of VADI's credit acquisition. Generally, 68% of farmers were found to belong to one farm group or the other.

The Constraints of Households' Credit Acquisition
The ranking techniques was used to identify among various pre-determined constraints of credit acquisition which one, were the most elements of discouraging respondents in securing loan from loan institution? The pre-determined questions which were got from the pilot survey of the study in the study area were responded through questionnaire and analyse them by ordinal scale such as: strongly agree (SA), agree (A), strongly disagree (SD), disagree (D) and don't know (DK).

Table 2 shows the result of the ranking of credit acquisition constraints of the farming households. According to the result, out of 7 pre-determined constraints designed presumably for the credit acquisition constraints, possibility of loan default by member ranked 1st. This implies that the main constraint discouraging households to acquire loan is the loan default possibility among the member of a farm group. This default used to prevent others member from benefiting from credit acquisition.

The constraints such as lack of collateral and guarantor was ranked 2nd. This suggested that some of the respondents did not belong to a group that could have stand for them as a collateral and guarantor. Also, loan rotational habit which ranked 3rd that could result in to delaying other members from benefiting on time was serious constraint hindering farmers from belonging to saving group as well acquiring loan. Other constraints include: high cost of loan, inadequate knowledge of credit acquisition method, short repayment periods and unbearable culture of saving were all ranked 4th, 5th, 6th and 7th respectively. All these constraints mentioned were also severely influenced the respondents in the case of credit acquisition in the study area.

Effect of VADI's Participation on Productivity Status

The results for average treatment effect are given in Table 3 using the nearest neighbour propensity score matching method with 84 treated VADI's participants against 77 controlled non-VADI's participants. The balancing test was satisfied as well as the common support imposed. The Average treatment effect (ATE) shows that participation in the VADI credit acquisition Scheme increases the output of the farmers by 1107.43 Kg and was significant at 1% significant level. The result also shows that participation in the VADI credit acquisition Scheme increases the yield and returns on land of the farmers by 315.55kg/ha and ₦1290.42 respectively and was significant at 1% significant level. Overall, the result shows that the participation in the VADI credit acquisition Scheme has a positive impact on the productivity of the farmers in the study area.

Conclusion and Recommendation

Possibility of loan default by members was the most affected constraint follow by lack of collateral and guarantor to acquire credit by the respondents in the study area. Also, the loan rotational habit causes delay for other members in getting quick access to credit. Others affected constraints to credit acquisition include: high cost of loan, inadequate knowledge of credit acquisition method, short repayment periods and unbearable culture of saving. Participation in the VADI credit acquisition Scheme has a positive impact on the productivity of the farmers in the study area and this will enable participant to be productive than non- participant of the scheme.

The empirical findings of this research have clearly revealed that Nigerian's lingering nutritional backwardness has not only steamed out of low income earning and population pressure but also on the inadequate capital inform of loan to fund to keep their farm activities running smoothly. Appropriate policy measures such as: establishment of agribusiness hubs, creation of efficient production and market infrastructures, improved extension services, establishment of more strong institutions like VADI's scheme to improve farmers' productivity as well as assist farmers in time of inadequacy or loss so that the participants can fully meet up with the continued increase in the cost of living and possibly invest the money in petty trading where they can get more income.

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Table 1: Socio-economic Characteristics of Farmers

Variable	Participants (N= 95)		Non- participants N=93		Pooled N=188	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Gender						
Male	27	28.41	65	69.89	92	48.94
Female	68	71.59	28	30.11	96	51.06
Age bracket						
<30	6	6.36	9	9.68	15	7.98
30-60	75	78.95	72	77.42	147	78.19
60>	14	14.69	12	12.90	26	13.83
Marital status						
Single	34	35.79	25	26.88	59	31.38
Married	61	64.21	68	73.12	129	68.62
Educational level						
No formal education	4	4.21	22	23.66	26	13.83
Primary	55	57.89	35	37.63	90	47.87
Secondary	30	31.58	31	33.33	61	32.45
Tertiary	6	6.32	5	5.38	11	5.85
Market information access						
Yes	77	81.05	28	30.11	105	55.85
No	18	18.95	65	69.89	83	44.15
Farm Organization						
Yes	95	100.00	33	35.48	128	68.09
No	0	0.00	60	64.52	60	31.91

Table 2: The Result of Ranking Analysis for Credit Acquisition Constraints.

Constraint	SA	A	D	SD	DK	Total	Mean	Mean rating
Lack of collateral and guarantor.	60	43	31	22	5	613	3.83	2nd
Loan rotational habit.	48	52	24	30	7	586	3.66	3rd
Inadequate knowledge of credit acquisition method.	29	14	67	42	8	494	3.09	5th
Possibility of Loan default by members.	71	46	13	20	11	628	3.93	1st
Short repayment periods	12	27	69	41	12	468	2.93	6th
High cost of loan.	40	28	51	32	10	538	3.36	4th
Unbearable culture of saving.	6	27	66	44	18	441	2.76	7th

Table 3: Average Treatment Estimation of Productivity of the Households

Variable	Treated	Control	ATE	Standard error	t-statistics
Farmland size (ha)	84	77	0.27	0.0204781	0.62
Farm output (kg)	84	77	1107.43***	0.0000405	3.41
Yield (ha/kg)	84	77	315.55***	0.0000216	5.48
Productivity	84	77	0.18	0.0002211	0.34
Return on land (₦)	84	77	1290.42***	0.0000238	3.95

*** Significant at 1% significant level