

Capital Resource Use and Allocation in Cereal Crop Enterprise: Empirical Evidence from the Cereal Crop Farmers of Benue State, Nigeria

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ABSTRACT Lack of evidence on allocation and use of capital resource among the small-scale cereal crop farmers of Benue State has led to a continuous depression of capital resource flow in the sub-sector. In providing this evidence a singular, convenient and sufficient criteria for appraising the use of credit by the small-scale farmers is explored. Using 370 respondents drawn from 6 Local Government Areas of Benue State which is acclaimed the “Food Basket of the Nation”, their sources and uses of capital resources are explored. Field data were collected using structured questionnaire. The data were analyzed using simple descriptive statistics comprising frequency distribution, percentages and means, as well as multiple Regression analysis. The findings of the study indicated that the cultivated farm size of the surveyed cereal crop farmers ranged between 0.5-10 hectares with a mean of 3.01 hectares. Eighty –four percent of the surveyed farmers utilized their agricultural credits for the purchase of improved seeds, agro-chemicals and hiring of farm labour, while sixteen percent used part of their agricultural credit for family health services and the payment of school fees .These are forms of capital accumulation for future agricultural services.

INTRODUCTION

Capital can be defined as a factor of production that generates a flow of income spread over a period of time. Capital resource allocation and use efficiency are critical factors in determining a society's total production. Increased productivity per worker and man-hour are associated with the quality of resources (inputs) used, as well as their quantity. Increased resource mobilization and efficient use help account for a productivity increase. Given the low income of the small-scale cereal crop farmers in question, only little can be expected from their savings. Similarly, financial institutions are most reluctant to grant credits to the small-scale farmers which form the bulk of rural inhabitants because of the nature of agriculture in Nigeria.

Benue State is one of the middle belt States of Nigeria. It is largely acclaimed the “food basket of the nation” (Nigeria). It is strategically located and produces both root and tuber crops – yam, cassava, cocoyam, and cereal crops, - rice, maize, sorghum which constitute major staples among the populace. Available data show that cereal crop production in Benue State in 2003 was maize 125,340 metric tons, sorghum 190, 680 metric tons and rice 272, 080 metric tons respectively. These figures represent a proportion of national production for Benue as 3.02% for maize, 4.12% for sorghum and 11.49% for rice, (BNARDA 2004).

The demand for credit is high among all categories of Nigerian farmers. The importance of credit lies in the fact that it removes the financial constraint of farmers, thereby increasing the likelihood of their adoption of new technologies which often involves additional expenditure on improved inputs and chemicals. The small-scale farmers are faced with credit problems from both the institutional and non-institutional sources. From the non-institutional front, credit supply is generally scarce and unreliable and consequently very expensive. It is believed that interest rates charged by local lenders are excessive and are often over 100 percent a year (Onu 2003). However, apart from the exorbitant interest rate charged, farmers in some cases who pledge their crops, land or houses have lost them due to their inability to pay the high rate of interest (Onu 2003). Moreover, loans from relatives and friends are generally small and of short duration and may not even be made available to the farmers at the appropriate time as these relatives too, may have their own economic needs. It is believed that local moneylenders appear to be extortionists in behaviour. They nevertheless, perform an important duty to farmers in the rural areas in the absence of any other better alternative sources of credit.

Capital resource use and allocation are vital in agriculture .In terms of the scale economics in credit services, public credit programmes have undoubtedly added to farming efficiency. Accord-

-dingly, public credit programmes were devised, among other things to tap capital supplies in the metropolitan areas and increase the mobility of credit so that its marginal returns could be more nearly equalized in different parts of the country. Abetting of credit mobilization is a feature of the capital market, which should be maintained and extended. Some of our present institutional arrangements tend to work in the opposite direction, however. With an important policy of the Central Bank of Nigeria, (CBN) through Agricultural Credit Guarantee Scheme Fund (ACGSF), Nigerian Agricultural Cooperative and Rural Development Bank (NACRDB), farmers can hope for credit to sustain their farming operations. In addition, the prevalence of informal credit institution in the rural areas is hoped to make up for the deficiency.

In Benue State, cereal crops Rice, Maize, Sorghum constitute major staples among the populace. Over the years small scale farmers have become increasingly unable to finance their farming activities. Therefore, subsidies and credit have been advocated. A few credit institutions have occasionally introduced and implemented some kind of credit advancement to needy farmers as a way of promoting greater agricultural production through empowering farmers to procure essential inputs. Examples include, Nigerian Agricultural Cooperative and Rural Development Bank (NACRDB), Commercial Banks (CB), however, many credit institutions have complained of their seeming inability to recover loans disbursed to farmers. On the other hand, most farmers have complained of inadequate credit availability.

Most of the small-scale cereal crop farmers still perform at a subsistence level, due mainly to lack of capital resource. These group of farmers are defined as those who are characterized by their low status in the economic mainstream and cultivates 0.5 to 10 hectares of land, Egwu (2003), PME (2004). Small-scale farmers engage mostly in mixed cropping in order to obverse steady flow of income and prevent famine. Between 30-80% of their total production is consumed by the family. The small-scale farmers also comprise the bulk of the underfed. It is believed that ability to mobilize and efficiently utilize credit is related to socio-economic characteristics of the farmers. Collateral and interest rate charges are among the major problems the small-scale cereal crop farmers' face.

The policy reform agenda of the present

administration in Nigeria is to address the welfare issues affecting the grass root people. The Government has also enunciated a number of action programmes which are packed into the National Economic Empowerment and Development Strategy (NEEDS). Although NEEDS is an all-embracing strategy of poverty reduction, food security, increasing industrial capacity utilization. One of the NEEDS strategies is to vigorously implement presidential initiatives on cassava, rice vegetable oil, sugar and cereals. Under this initiative, Nigeria hopes to improve very much on its agricultural export earning and food security by the year 2015. Efficient allocation of available capital resource by farmers is key to realizing these objectives. The key question is; to what extent did small-scale cereal crop farmers use the capital resource available to them towards efficient cereal crop production for the food self-sufficiency quest of Nigeria by 2015. Knowledge of this is important for the intended re-design of agricultural micro-credit in Nigeria.

The main objective of this study was to examine the factors and issues relating to capital resource use, allocation and repayment of the small-scale cereal crop farmers of Benue State, Nigeria. Specifically, the study sought to identify the disbursement pattern of credit by institutions and the repayment pattern of the small scale cereal crop farmer borrowers; determine the effect of interest paid on borrowed capital and collateral value on rate of return to investment of small – scale cereal crop farmers; identify the problems facing the small-scale cereal crop farmers in obtaining , using and repayment of loans.

METHODOLOGY

A total of three hundred and seventy-eight farmers were selected using multistage random sampling technique and drawn from six Local Government Areas of Benue State. Structured questionnaire was used for the generation of primary data. Information collected included those on demography, education, primary occupation, cost of production, input prices and agricultural credit from various sources, farm income, sources of credit and uses of credit among the farmers. Both descriptive and inferential statistics were employed for data analysis.

Model Specification

The influence of borrowed capital, interest

charges, and collateral value, annual cost of production, annual crop output and total credit received on rate of return to small-scale cereal crop farmers' investment was analyzed using the multiple linear regression.

$$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + W \dots\dots\dots (1)$$

Where Y = Rate of return to investment (%)

a = Constant factor accounting for rate of return when X_1, X_2, X_3, X_4, X_5 are zero

β_i (i = 1,2,3,4,5) = regression coefficient accounting for the effect of independent variables (X_1, X_2, X_3, X_4, X_5) on the dependent variable (y).

X_1 = Interest charge (in Naira)

X_2 = Collateral value (in Naira)

X_3 = Annual cost of production (in Naira)

X_4 = Annual output (in kg)

X_5 = Total credit received (in Naira)

W = An error term accounting for influences unaccounted for by the independent variables.

Interest charge, collateral value and annual cost of production, are expected to have a negative effect on the rate of return to investment while annual output and total credit received are expected to have a positive effect on the rate of return to investment (Koutsoyiannis 1977).

Rate of return to investment =

Total income – Total cost = Profit

Profit / Investment x 100 = Rate of return (%)

The estimate of the coefficients β_i are the estimates of the effects of the independent variables (interest charge, collateral value, annual cost of production, annual output, total credit received), on changes on return to investment. A positive β_i will be found for variables associated with increased rate of return to investment and negative β_i will be found when a variable is associated with decreased rate of return to investment. Failure to reject the joint hypothesis:

$$\beta_1 = \dots \beta_i = 0$$

Suggest that the change in the rate of return to investment cannot be explained by variation in the independent variables.

RESULT AND DISCUSSION

The following table shows the summary statistics for the variable resources used for production by the small-scale cereal crop farmers surveyed.

The result of the summary statistics (Table1), show a wide variation in production cost of the respondents, ranging between a mean of N 30,653

for rice, N 32,197.56 for maize and N 34,659.35 for sorghum respectively. The wide variation in the production cost of the farmers could be attributed to variation in resource allocation due to difference in allocative efficiency occasioned by difference in the relative access of farmers to credits.

The costs of land, and seed ranged widely with the mean of N2,464.90 for rice, N 2,288.62 for maize and N2,760.98 for sorghum, while cost of seed had the mean of N 3,029.60 for rice, N 2,350.00 for maize and N 3,121.14 for sorghum. The low mean cost of land could be attributed to the fact that most of the farmers used inherited land and did not need to spend much money on land hiring, while the low mean seed cost was due to the fact that most of the farmers preserved all/part of the needed seed for their own use and hence did not need to invest much on seed. In addition, high mean cost of hired labour, fertilizer and agro-chemical were indicative of rising wage rate in the cereal crop production in Benue State. While that of fertilizer and agro-chemical were widely used among the farmers in the study area.

The farm size of the farmers ranged between 0.5 and 10 hectares. This result shows that most of the farmers operated small-scale farms while a few others operated medium scale and large-scale farms. The amount of labour hired ranged widely with a mean of 18.78 man-days for rice, 15.37 man-days for maize and 20.01 man-days for sorghum. This result shows a wide variation in labour hired for production due to difference in farm size.

The study of the cereal crop farmers reveal that their mean annual farm income ranged between N97,170.97 for rice, N101,943.09 for maize and N 88,904.07 for sorghum respectively. The low farm income level is a stage in the vicious cycle of low-investment low-output low-revenue, low-income and low-capital accumulation. A total of 332 respondents (90% of all respondents) cultivated between 1-6 hectares of land. This number is not quite low per their standard, the critical point is that this level of farm cultivation may still give rise to low income and low personal savings; and consequently low investment capital for the upcoming season. This is so because personal saving constitute the largest source of capital investment among the small-scale cereal crop farmers of Benue State.

Most of the small-scale cereal crop farmers (84%) invested their capital resources on their farm enterprise on hiring labour, purchase of seed and fertilizer, and purchase of agro-chemicals

Table 1: Summary Statistics for the Variable Resources Used for Production by Small-Scale Cereal Crop Farmers in Benue State.

Variable	Minimum			Maximum			Mean			Standard Deviation		
	Rice	Maize	Sorghum	Rice	Maize	Sorghum	Rice	Maize	Sorghum	Rice	Maize	Sorghum
Cost of production	6.90	3500	3500	84000	84000	423000	30653.69	32197.56	34659.35	15518.76	16567.14	39516.98
Cost of land	0	0	0	15000	18000	20000	2464.92	2288.62	2760.98	3454.25	3163.06	3918.80
Cost of hired labour	120	400	400	41500	40000	45000	7549.85	11986.99	12335.37	7278.15	8491.92	9661.60
Cost of seed	0	300	250	20000	10000	15000	3029.60	2350	3121.14	3658.61	2022.14	2351.16
Cost of fertilizer	300	400	400	36000	30000	30000	10154.03	8495.12	7904.88	7861.62	5965.06	6216.08
Cost of agrochemical	600	500	500	27000	25000	25000	7293.95	6824.39	6102.44	5947.25	4763.94	4884.24
Farm income	20000	24000	30000	200000	260000	900000	97170.97	101943.09	88904.07	40089.92	45870.50	83371.47
Farm size	1.0	0.5	1	10	10	10	3.91	1.72	3.39	2.68	1.09	2.01
Hired labour quantity	2.00	2	3	90	60	60	18.78	15.37	20.01	16.02	12.62	11.72
Annual output	200	109	100	25000	28000	28000	3581.56	2083.29	2414.35	4628.28	2626.36	3552.54

Source: Field survey 2006

* t-statistics is significant at 5 %

respectively. The fund allocated to the acquisition of labour indicates the acute farm labour shortage within the village setting. Due to poor supply of infrastructure within the village setting large number of young people migrate to the cities where there is improved supply thus bringing about severe labour shortage in the village. The farmers left in the village often compete with each other in attracting the limited labour force hence the large proportion of fund invested in hiring of labour, (Afolabi 1991). The purchase of seed both improved and local, purchase of agro-chemical and the allocation of chemical fertilizer indicate the popularity and the adoption of the inputs among the farmers.

For non-farm use (16%), family maintenance comprising mainly of health maintenance, school fees was also mentioned as one of the areas where loans were used. These two allocations are forms of capital accumulation which are useful in future agricultural production. This finding agrees with the research findings of Belshaw (1969), Afolabi (1991), that some proportion of agricultural credit, if any, not directly utilized in the sector eventually finds its way back into the sector with multiple beneficial multiplier effects (Table 2).

A high percentage (38%) indicated insufficient amount of funds as a problem, late disbursement of funds 18% repayment method too short (21%). Obtaining and repayment of credit from informal lenders appeared somewhat surprising. The frustrating delays often encountered in obtaining loans from Government credit institutions are well known (Kpakol 2002), but local informal sources

Table 2: Distribution of respondents by uses of capital resources.

Type of use	Frequency	Percentage
Farming purpose	196	83.76
Non –farming purpose	38	16.24
Total	234	100.00

Source: Field survey 2006.

Table 3: Distribution of problems faced by small-scale cereal crop farmers of Benue State in obtaining and repayment of agricultural loans.

Factors / Issues	Frequency	Percentage
Insufficient amount of funds	142	38.38
High interest rates	85	22.97
Late disbursement of funds	65	17.57
Repayment period too short	78	21.08
	370	100.00

Source: Field survey 2006

are generally thought to be reasonably prompt in completing loans and not too rigid on repayment conditions. Farmers also indicated high interest rate (23%) as a problem (Table 3).

The farmers sold most of their cereal crops immediately after harvest to enable them to pay back the money borrowed for farm production and to meet family financial obligations. Cash was needed to pay for hired labour, improved seed varieties, chemicals, fertilizers, and other operating inputs. Most of the funds were borrowed from Isusu, cooperative societies and Government Development Banks that carried low interest rates. Though eager, most farmers were unable to obtain loans from Commercial banks or other credit Institutions during the survey year.

The rate of interest on government credit programme is an important policy issue and one which there is much controversy (Kpakol 2002). The rate usually charged by most government agencies is low and therefore those fortunate enough to obtain such loans are the beneficiaries of a substantial subsidy. Low subsidized rates have considerable political appeal and their use has also been debated on other grounds such as encouraging small-scale farmers to use subsidized credit to adopt new technology. This is in line with Ajibefun et al. (1999) and Ajibefun (2000) who in their studies in Ondo State of Nigeria on policy options in small-scale food crops production. It is the view of this study that small-scale cereal crop farmers of Benue State should enjoyed subsidized rates because 84% of the surveyed farmers in this study used their farming credit efficiently in their farming purpose.

The small-scale cereal crop farmers surveyed depended almost entirely on informal, non institutional sources of finance for the credit they used during the 2005 farming season under review. Group saving association (ISUSU) Cooperative Society, Development Banks (NACRDB) and Community Banks were the major credit sources to the small-scale cereal crop farmers surveyed accounting for 41%, 21% 16% and 5% respectively of the total number of loans made, Commercial Banks made only 1.14% of the loan requirements of the farmers, traders 2% friends, 5% money lenders 4% Relatives .76% and Landlords .76% respectively.

The financial institutions did express some concerns in reaching many small-scale farmers directly. Reaching all directly would mean creating offices in the Local Government Areas, increasing their staff strength, building infrastructures and the like. They complained that this would be very expensive and could leave them with little or no fund to advance to the farmers who actually need the money. They devised an on-lending scheme strategy where small-scale farmers who are large in number but scattered, could benefit. The banks' on-lending scheme comprise established institutions like cooperative societies and governmental bodies. This strategy suggests that these bodies are held responsible for recovering the loans from their members.

In evaluating the disbursement pattern of the credit institutions and the repayment methods of the farmers, it was noticed that 83% of the surveyed farmers repaid their loans through cash method, 11% repaid through share crop method,

Table 4: Estimated multiple linear regression analysis of rate of return to investment on interest charges, collateral value, annual cost of production, annual output and total credit received of the small scale cereal crop farmers in Benue State.

Variable	Rice		Maize		Sorghum	
	Coefficient	t-ratio	Coefficient	t-ratio	Coefficient	t-ratio
Constant	-447.533	-0.883	647.487	0.657	1869.333	0.263
Interest charges	1.200	16.145**	1.200	7.553**	0.02359	0.025
Collateral value	0.961	27.950**	1.041	17.930**	1.814	4.942**
Annual cost of production	0.646	8.458**	0.778	3.459**	1.295	0.919
Annual output	1.044	32.733**	1.158	12.602**	0.137	0.216
Total credit received	1.146	25.772**	0.683	5.915**	0.855	0.926
R	0.986		0.962		0.529	
R ²	0.973		0.926		0.280	
R ² adjusted	0.971		0.923		0.249	
F - value	836.962**		293.229**		9.097**	

Source: Field survey 2006.

**t-ratio is significant at 1% level.

**F-value is significant at 1% level.

while 6% repaid through supplying labour to relatives. As the farm business expands, through accumulation of more resources, both gross and net income generally increase, thereby contributing to increased repayment capacity.

The study discovered that the credit institutions that granted credit devised several ways aimed at reaching the farmers, one such means was through direct disbursement 67% while 33% granted their loans through cooperative organizations. Farmers indicated however, that while, there were minimal formal procedures in obtaining loans from private sources, there are often many procedures and lengthy delays between the time of request and receipt of the money from the suppliers.

The result in table 4 shows that an F-test rejects the hypothesis that the coefficients of the variables (interest charges, collateral value, annual cost of production, annual output and total credit received) are jointly equal to zero, indicating that the variables added explanatory power to the model.

The model explains 97.3%, 92.6% and 28% of the variation in the rate of return to investment with respect to rice, maize and sorghum respectively. This implies that 97.3%, 92.6% and 28% of the changes in the rate of return to investment of the sampled farmers with respect to rice, maize and sorghum respectively, are explained by the joint changes in the explanatory variables. Furthermore, the result showed that at 1% level of significance, interest charges, collateral value, annual cost of production, annual output and total credit received had positive and significant effect on the rate of return to investment of the rice and maize producers in Benue State, while only collateral value had positive and significant effect on the rate of return to investment of the sorghum producers in Benue State. The coefficients of interest charges, annual cost of production, annual output and total credit received were not significant at both 1% and 5% level with respect to sorghum enterprise, suggesting that these variables had no significant effect on the rate of return to investment.

This result implies that interest charges, collateral value, annual cost of production, annual output and total credit received are the important determinants of the rate of return to investment of the rice and maize producers in Benue State, while collateral value is the important determinant of the rate of return to investment of the sorghum producers in Benue State.

CONCLUSION

One of the findings of this study is that 84% of the small-scale cereal crop farmers studied utilized their credit in their farm operations. Such agricultural activities are hired labour, purchase of seeds, fertilizer, agro-chemicals and farm implements. This finding has given light to the deep seated notion by some credit institutions and other critics that small-scale farmers mis-use their agricultural credits in non-farm activities. The other 16% utilized part of their credit for the payment of drugs and school fees. These are forms of capital accumulation useful for future agricultural production.

The finding that lending institutions granted 34% of their loans to the small-scale farmers through cooperatives underscores the importance of cooperative formation in the rural areas. This implies that membership of cooperative organization help low capital base smallholders in the acquisition of credit.

The small-scale cereal crop farmers of Benue State are efficient in the use of agricultural credit; increased supply of capital source holds the key to sustained productivity growth in the rural agricultural industry. Government policies that favour the supply of credits to the small-scale cereal crop farmers should be encouraged as they would not lead to wasteful use of capital resources mobilized by the farmers.

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