Determinants of institutional credit repayment performance among farmers in Afikpo North LGA of Ebonyi state, Nigeria

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Abstract. Utilization and repayment of borrowed agricultural funds has been one of the numerous of agricultural development in the developing world and Nigeria is no exception. As such, this study delved into the determinants of loan repayment performance among farmers in Afikpo North Local Government Area (LGA) of Ebonyi State, Nigeria. The study employed purposive sampling technique in the selection of location and respondents. A sample of 100 small holder agricultural loan beneficiaries from Nigeria Agricultural Cooperative and Rural Development Bank (NACRDB) served as respondents for the study. A set of pretested and structured questionnaire was used to elicit data and information from the respondents. Data were analyzed using discriminant analysis. The discriminant function analysis result showed that 72% of the beneficiaries were operating performing loans while 28% were non-performing loan beneficiaries. On the basis of the results, the study suggested extensive loan periods and adoption of income support measures as panacea for efficient credit delivery and utilization among farmers.
Keywords: Institutional credit, discriminant analysis, performance farmers.

Resumé. L'utilisation et le remboursement de fonds agricoles empruntés ont été un des nombreux de développement agricole dans le monde et Nigéria en voie de développement n'est pas d'exception. Comme tel, cette étude a fouillé dans les déterminants d'exécution de remboursement d'emprunt parmi les agriculteurs dans Afikpo le Secteur de Gouvernement de Local du nord d'Etat d'Ebonyi, Nigéria. L'étude a employé la technique d'échantillonnage de téléologique dans la sélection d'emplacement et de répondants. Un échantillon de 100 petit support bénéficiaires d'emprunt agricoles de Nigéria Banque de Développement Agricole, Coopératif et Rural (NACRDB) a servi des répondants pour l'étude. Une série de prétesté et le questionnaire structuré a été utilisé pour provoquer des données et des informations des répondants. Les données ont été analysées utilisant l'analyse de discriminant. Le résultat d'analyse de fonction de discriminant a montré que 72% des bénéficiaires fonctionnait des emprunts exécuter pendant que 28% était les bénéficiaires d'emprunt non-exécutant. En se basant sur les résultats, l'étude a suggéré les périodes d'emprunt vastes et l'adoption de mesures de soutien de revenu comme la panacée pour la livraison de crédit efficace et l'utilisation parmi les agriculteurs.
Mots-clés: Le crédit institutionnel, l'analyse de discriminant, les agriculteurs d'exécution.

Introduction. One of the reasons for the decline in the contribution of agriculture to the economy of Nigeria is the lack of a stable national credit policy and paucity of credit institutions which can assist farmers (Afolabi 2008). Credit is an important instrument for improving the welfare of the poor directly through consumption smoothening that reduces their vulnerability to short term income. It also enhances the production capacity of the poor resource farmers through financing investment in their human and physical capital. There is no doubt that in recent times, considerable interest has been shown by agricultural economists, planners, policy makers,

agribusiness managers, agriculturists, and financial institutions on the need to pay more attention to farmers in Nigeria. This deserved attention is a call from the conviction that in the short-run, Nigeria can rely on farmers to supply the bulk of the food and raw materials for our industries to feed the rapid growing population in Nigeria (Ezeh 2003).

One of the main objectives of any government is to strive to become self reliant in food production. In pursuance of this, credit schemes are put in place to increase the access of small scale farmers to credit facilities so that food and cash crop production would be increased.

According to Ojo (1998), one of the problems confronting small-scale enterprises including farmers in Nigeria is inadequate capital despite the fact that small-scale farmers produce the bulk of the food consumed locally and some export crops which generate foreign exchange to the country. This situation has attracted attention of Nigerian Government and this has led the federal government of Nigeria into the creation of specialized institutions such as the Nigeria Agricultural Cooperative Bank (NACB) which later translated into the Nigeria Agricultural Cooperative and Rural Development Bank (NACRDB) to cater for credit needs in the agricultural sector (Oladebo 2008). Government had also mandated the commercial banks in Nigeria to earmark a chunk of their profit as credit facilities to the agricultural sector of the country.

Despite the contribution of farmers to the country's economy, majority of them in Nigeria are considered credit unworthy by most formal credit institutions and still deny the farmers access to their services. This posture is premised on the feeling that most farmers are low income earners and cannot pay for collaterals; their low saving capacity; illiteracy among others. On the part of the farmers, loans are not disbursed timely; high interest rate and complex application procedure are most recurrent (Adegbite 2009).

Generally, studies have shown that small holder loan schemes are constrained by poor loan repayment and this has been attributed by many factors, one of which is "attitudinal" as smallholder farmers regard government – funded credit as their own share of the "national cake" and are always reluctant to repay loans. Other factors are high incidence of loan diversion and occurrence of natural hazards. As such, every effort which encourages loan default among borrowers ought to be reversed because of its adverse affects. (Adegbite 2009). On the basis of emerging scenario, the need to examine the determinants of institutional credit repayment performance among farmers becomes imperative.

Material and Method. The study area was Afikpo North Local Government Area of Ebonyi State, Nigeria. Ebonyi is one of the southeastern states of Nigeria with Abakaliki as capital. It is located on latitude 6^0 20' N and longitude 8^0 06' N and characterized by evenly distributed rainfall with relative humidity that favours rice, cassava, yam, palm oil, and palm kernel production. It has a population of over 300, 000 people who are predominantly rural farmers and is seriously disadvantaged in terms of social and economic development.

The study employed purposive sampling technique which was applied after collecting a list of beneficiaries of the credit from Nigerian Agricultural Cooperative and Rural Development Bank. Primary data were used and collected with the use of a set of pre-tested and structured questionnaire. The total number of respondents was 100 which formed the sample size for the study.

Data collected were analyzed using discriminant analysis. The discriminant analysis was used to assess loan repayment performance while factors influencing the borrowed funds were evaluated with the multiple regression models. Discriminant function analysis was used to categorize the socio-economic characteristics of

beneficiaries into performing loan beneficiaries and non – performing loan beneficiaries and this was based on their repayment rate i.e.

U ≥ 50% Group 1: Performing loan beneficiaries
U ≥ 50% Group 2: Non - Performing loan beneficiaries.

The discriminant function for the study is specified thus:

$$Z = d_1x_1 + d_2x_2 + d_3x_3 + d_4x_4 + d_5x_5 + d_6x_6 + d_7x_7 + d_8x_8 + d_9x_9 + d_{10}x_{10}...(1)$$

Where Z   =   Total score on the discriminant function
X_1 =   Age (years)
X_2 =   Education (years)
X_3 =   Gender (male = 1, female = 0)
X_4 =   Farming experience (years)
X_5 =   Household size (Number)
X_6 =   Loan period (years)
X_7 =   Income (Naira)
X_8 =   Distance between homestead and Bank (km)
X_9 =   Farm size (ha)
X_{10} =   Amount borrowed (Naira)

The assessment of importance of the derived discriminant function for the study was done using Wilks' Lambda which measures goodness of fit; the group centroids which calculates the cut score or cut off point; and the standardized canonical discriminant function coefficient with the associated f- ratio.

Results and Discussion. In estimating loan repayment performance of the beneficiaries, the linear discriminant function analysis was employed and the result presented in Table 1. It could be observed that the variables made varied contribution to the loan repayment performance. Education, gender, farming experience, household size, loan period, income, amount borrowed and distance made positive contribution to the total discriminant score while age and farm size contributed negatively.

By implication, the chances of the beneficiaries to belong to the group of performing loan category are enhanced by the variables with positive signs. This is consistent with previous studies (Afolabi 2008, Onyenucheya & Ukoha, 2007). In terms of magnitude of contribution as shown in Table 1, amount borrowed and income made the most significant contributions to the total discriminant score to the tune of 79% and 21% respectively.

The implication is that they stand out as the most valuable variables in determining loan repayment performance in the study area. With respect to group contribution vis-à-vis the regressors, the cut – off point was taken as the mid-point of total discriminant score for each of the groups because discriminant function model assumes equal cost of misclassification (Green & Tull 1975; Frank et al 1965).

The estimated group centroid for performing loan beneficiaries was 0.629 while that of non-performing loan beneficiaries was – 1.617. From the two, the cut score was calculated (-0.494). On the basis of the cut score, the variables influencing each category of beneficiaries where identified. Given that education, gender, farming experience, household size, income, loan period, distance and farm size coefficients were above the cut score (-0.494), they influence the performing loan beneficiaries while amount borrowed and age exert their influence on non-performing loan beneficiaries.

It may be surprising that loan supervision and interest rate were not among the test variables. This is because all the beneficiaries of the bank were supervised across board and interest rate was the same (8%).

Table 1

Calculation of individual variables contribution to the discriminant score

Variable	Performing loan mean	Non-performing loan mean	Mean difference	Coefficient	Product	Contribution %
Age (X_1)	46.611	43.714	2.897	-1.541	-4.464	-0.033
Education (X_2)	12.139	12.000	0.139	0.205	0.028	0.000205
Gender (X_3)	1.000	0.714	0.286	0.688	0.197	0.00144
F/experience(X_4)	17.014	15.000	2.014	1.027	2.068	0.01515
H/hold size(X_5)	10.069	8.429	1.640	0.215	0.353	0.00259
Loan period (X_6)	3.083	3.714	-0.631	-0.675	0.426	0.00312
Income (X_7)	112387.777	103428.577	8959.200	0.325	2911.740	21.329
Distance (X_8)	13.250	8.857	4.393	0.951	4.178	0.0306
Farm size (X_9)	2.104	2.214	-0.110	0.091	-0.010	-0.0000733
Amt borrowed(X_{10})	150,138.88	251,428.566	-101,289.6	-0.106	10736.700	78.650

Group Centroids: Performing loan potentials   = 0.629
Non-performing loan potentials = -1.617
Cut-off point   = -0.494
Source: Computed from Field Survey Data, 2009.

Table 2

Statistical test of significance for the discriminant function coefficient

Canonical correlation	0.714
Wilks' Lambda	0.491
Chi-Square	66.198
D.F	10

Source: Computed From Field Survey Data, 2009

From Table 2, the statistical test of significance of the estimated function reveals a relatively high canonical correlation coefficient of 0.714 and in Wilks' Lambda of about 0.5. The impact of the Canonical correlation is the high significant amount of information required for determining loan repayment performance was provided for the study. Its significance level was shown by the chi-square statistic of 66.198 while Wilks' Lambda shows that the model is a good fit for the data to the tune of 0.5.

Table 3

Classification performance of the estimated discriminant function

Actual Group	No of Cases	Predicted Group 1	Group membership 2
Group 1 Performing Loan Potentials	72	68 (94.4%)	4 (5.6%)
Group 2 Non – performing loan potentials	28	4 (14.3%)	24 (85.7%)

Source: Computed from Field Survey, 2009

Table 3 shows how well the function performed in classifying the loan beneficiaries. The function was predicted using a sample of 100 loan beneficiaries. Given that the power of the model lays in its capacity to classify correctly, then the higher the rate, the better its, predictive power of the function.

With respect to the repayment rate, it was originally found that 72 borrowers were operating performing loans while 28 were found to be non-performing loan borrowers. On the application of the models, the same 72 and 28 borrowers for performing loan and non performing loan beneficiaries respectively were realized. This result is in contrast with the findings of Ezeh (2003) and Onyenucheya & Ukoha (2007) that had a different prediction of group membership after the application of the model.

In predicting group membership, misclassification error of 14.3% and 5.6% were made for performing loan and non-performing loan beneficiaries respectively. Misclassification errors may lead eventually to loan shrinkage, ineffectiveness and liquidation. The classification performance of the function was 92.00% which is very sufficient when compared with 75% obtained by Baver & Jordan (1971); 75.6% recorded by Onyenucheya & Ukoha (2007).

Conclusions. Having assessed the determinants of institutional credit repayment performance using discriminant analysis, it could be infer that more loan beneficiaries can be made to improve on their repayment performance by extending loan periods and adoption of income support measures which would serve as panacea to the aforementioned problems identified by the analysis.

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