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Case Study

Assessment of loan size and repayment performance of oil palm borrowers in Abia State, Nigeria

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This study was designed to investigate the loan size and repayment performance of smallholder oil palm producers and processors in Nigeria using Abia State as a case study. Ninety respondents, comprising 54 producers and 36 processors, were randomly selected and interviewed. Ordinary Least Square technique was used in analyzing the data and drawing conclusions. The analysis of data revealed that loan size by oil palm processors was significantly determined by processing experience, gross annual income and interest rate. For the farmer-borrowers, the major determinants of loan size were educational level and interest rate all of which fell in line with a priori expectations as indicated by the signs of the coefficients of relevant variables. On loan repayment rate and credit worthiness rating, results of data analysis showed that loan-asset ratio and distance between home and source of loan were significant determinants of loan repayment rate.

Key words: Loan size, oil palm producers, agriculture, credit rating, interest rate, OLS.

INTRODUCTION

Robust economic growth and diversification of activities in the agricultural sector cannot be achieved without putting in place well focused programmes to empower the people by increasing their access to factors of production especially credit. The latent capacity of the people for entrepreneurship in relation to opportunities and resources available to them will be enhanced through the provision of credit services. This will enable them engage in economic activities and be more self reliant, increase employment opportunities, enhance household income and create wealth (CBN, 2005).

Consequently, various governments at both the Federal and State levels have in various ways attempted to diversify their revenue bases through influencing the level of agricultural productivity to attain some developmental objectives using agricultural credit as a stimulus. For example, Abia State - an oil palm growing belt of Nigeria - has intensified efforts in harnessing the enormous potentials of oil palm to achieve the following objectives: to generate higher revenues from the sub-sector so as to cope with the high levels of internally generated revenue required in the development process; and sustained increase in raw material supplies that will match the needs of the fast growing industrial sector through the backward and forward linkages of the oil-palm sub-sector.

Abia State under its State Economic Empowerment and Development Strategy (ABSEEDS) has embarked on wide scale reforms aimed at re-orienting values, reducing poverty, creating wealth and generating employment (ABSEEDS, 2004). The promotion of small and medium enterprises (which includes oil palm farming and

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processing) has been the cornerstone of its policies. However, as strategic as oil palm farming and processing are, especially for the state, there are many challenges inhibiting the ability of the sub-sector to take the pride of place as the engine of economic growth and social upliftment. The current problem of agricultural credit is that of providing capital for the various requirements of an industry that has become quite complex (Elhiraika, 1996). The complexity of structure leads to the need for greater flexibility in any financial arrangement that provides credit to farmers.

There seems to be a near consensus that though, there are various forms of funding available for agricultural enterprises, accessing them has become a major challenge arising from various issues including integrity, absence of acceptable collaterals and lack of financial and performance track records (Emilio, 2005; Adam and Sayeed, 1998). Poor information on borrowers due to accounting weaknesses are compounded by the absence of reliable and well functioning credit rating system. Such information while checking the menace of credit defaulters who source facilities from one credit provider to another at the same time will also play a major role in rating the particular borrower. This factor would ultimately affect the interest rate and other terms of the loan. Thus some borrowers can be classified as good or bad credit risks. In such a situation, different interest rates using risk-based pricing with the data provided using a scoring index could be applied. That is a form of price discrimination based on the different expected risk levels of different borrowers. These are set out in each applicant's credit rating. Those with poor credit repayment scores or index will pay a higher interest rate than those with better credit rating.

This paper aims to examine the determinants of loan size and repayment performance of oil palm borrowers in Nigeria, a case study of Abia State. After this study's introduction, a review was done on related literature, after which the research methodology was discussed. This is followed by analyses of the empirical result before the summary and conclusion was given.

LITERATURE REVIEW

Using a modified 5-scale Likert's response pattern, Cookery and Ohale (2007) identified the following as factors that contribute to agricultural loan default: late release of funds (3.04), lack of corporate factors and facilities (3.0), unfavorable repayment schedule (2.95), amount granted too small for meaningful impact (2.56), inadequate loan monitoring and supervision (2.63), diversion of funds (2.73), and unwillingness to repay (National cake mentality) (3.45).

The aforementioned study shows clearly that providing credit to small farmers will by itself accomplish little in increasing food production and raising farmers' income. The result emphasized extension, profitable technology and markets with credit at the appropriate time.

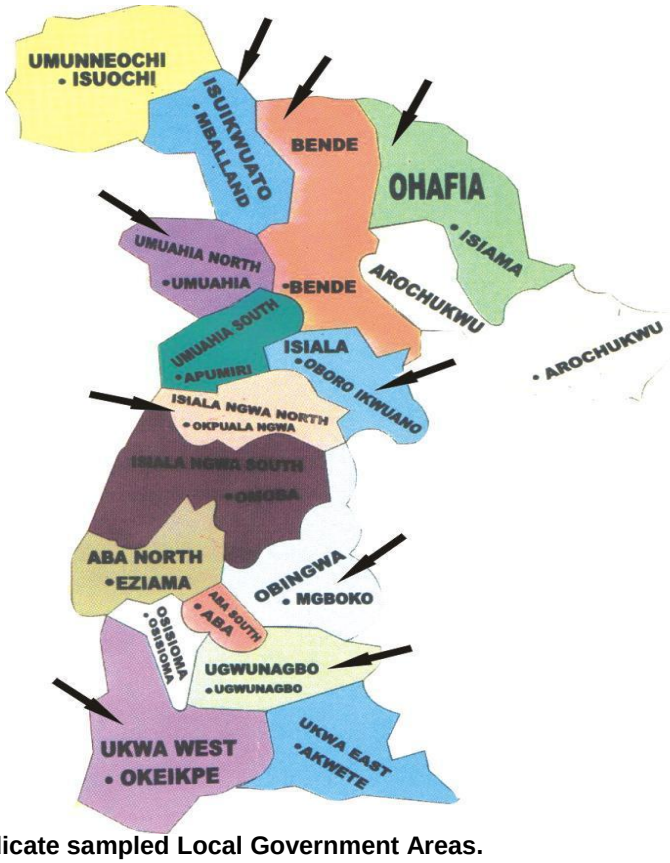
It is therefore strongly believed that availability of credit will go a long way to alleviating farmers' problems. In addition, credit helps people to smooth out consumption pattern during the lean periods of the year (Binswanger and Khandker, 1995; Nwanna, 1995) by so doing, credit maintains the productive capacity of the poor rural households (Heidhues, 1995).

Since the significance of credit rests on how farmers use it, Nweze (1990) reported that paying hired labor constituted the largest single use to which agricultural credits were put. According to him, 39.7% of borrowers used their borrowed sum for this purpose. About 4.4% spent part of theirs on seeds and 1.5% used part of theirs on fertilizer purchase. The report indicated that 16.2% and 30.9% spent part of their loans on children's school fees and hospital bills respectively. Ceremonies/festivals and marriage expenses received 11.8 and 14.7% respectively. The high percentage use in non-farm activities points to the critical need for measures to check loan diversion and misappropriations.

On their part, Mejeha and Obunadike (1998) reported that farmers spent more on adoption of innovation with credit than without credit. This is because the availability of credit afforded farmers the opportunity to access more farm inputs. The result showed a positive correlation between credit and adoption of innovation. They noted that the rate of adoption of new technology by farmers is generally high if the probability of a change over to new technology, the economic position of the farmers and the effectiveness of the extension agents are high. This emphasizes the fact that the provision of credit should be with support services needed to make the credit facility work.

Dodson (1997) observed that over the short term, demand for agricultural credit would be influenced by incomes and the need to replace capital stock. On the other hand, over the long term, the outlook for farm credit is likely to be influenced by the structure of agriculture and financial institution. The demand for farm credit has been on the rise in recent years and according to Koenig and Doye (2004), credit worthy farmers generally experience competitive edge in the lending markets. They observed that modern agricultural systems are capital intensive, and as such a large portion of capital used in farming is borrowed.

Unfortunately, credit is rarely available to the poor at reasonable rates of interest. Nwaru (2004) quoting Hossain (1988), on the study of socio-economic environment and the role of credit, reported that average rate of interest charged on informal credits was 125% per annum as compared with 14.6% per annum on formal credits. He observed that high interest rate severely limits the production activities that can be undertaken with the loans. Therefore, high-interest credit from non-institutional sources basically finances consumption, for which the poor are forced to take when their physical



MAP OF ABIA STATE

Arrows indicate sampled Local Government Areas.

Figure 1. Map of Abia State. Arrows indicate sampled Local Government Areas.

existence are at stake.

Cookey and Ohale (2007) examined impediments to the flow of credit to small holder farmers in Abia and Rivers States and found that lack of regular monitoring and supervision are important contributory factors. On their part, Njoku and Odii (1991) evaluated repayment performance in Imo State where they found repayment performance to be only 27%. The factors which significantly influenced loan repayment were amount borrowed, years of farming experience, major occupation of the borrower, years of formal education, household size, loan period, farm size, farm output, value of assets and interest on loan.

In a similar study, Njoku and Obasi (1991) evaluated loan repayment under the Agricultural Credit Guarantee Scheme Fund (ACGSF) in Imo State. Their result showed that loan repayment was generally poor with only 33.7% of the total value of loans paid. The amount of loan received, rate of interests charged on loans and household size were three major determinants of loan repayment.

The repayment of agricultural credit has a profound effect on the attitude of lenders toward financing smallholder-farming activities (Banda, 1991). Most of the credit schemes by the state had poor recovery records. World Bank (2002) identified poor administration of credit, which emphasized the disbursement of funds rather than the effective use of loans and problems connected with loan recovery as major culprits. However, high repayment records tend to be associated with single market cash crops and credit programmes based on communal sanction. Lending programmes that have no specialized technical services and rely on third parties to recover loans tend to have low repayment rates.

RESEARCH METHODOLOGY

Study area

The study area is Abia State where oil palm farming and processing are undertaken extensively. The state is located in the Southeastern part of Nigeria and lies between longitudes 04° 45^1, and 06° 17^1 North, and latitude 07° 00^1 and 08° 10^1 East, and occupies an area of 7620 km^2 with Umuahia as the capital The map of the state is shown in Figure 1 in appendix 4. According to the National Population Commission (NPC, 2006), Abia State is populated by 1,913,917 persons made up of 933,030 males and 971,878 females. With estimated annual population growth rate of 2.0%, the present population is

Table 1. Agricultural zones and sampled local government areas.

S/N	Zone	LGAs selected
1	Ohafia	Bende, Isuikwuato and Ohafia
2	Umuahia	Umuahia North, Ikwuano and Isiala Ngwa North
3	Aba	Obingwa, Ugwunagbo and Ukwa West

about 2,368,574 consisting of 1,160,141 males and 1,208,433 females. This population consists of people in all walks of life with about 65% of them engaged in agricultural production (ASPC, 2008).

The state is located in the tropical rainforest zone of Nigeria, where oil palm and other crops thrive extensively. The most prominent and important economic tree of the state is the oil palm, which in past years has been and no doubt will long continue to be Abia State's most valuable asset. In the past three decades, the World Bank oil palm rehabilitation scheme has converted many hectares of land holding to oil palm plantation under the small-holder scheme. Major agricultural and allied activities include the cultivation and processing of cassava, maize, palm wine and palm fruit into garri, maize flour, local dry gin and oil palm produce, respectively. Rainfall is often heavy averaging about 1200 mm annually and distributed fairly throughout the year. Abia State is divided into 17 local government areas. These are grouped into three agricultural zones namely: Aba, Umuahia and Ohafia zones.

Sampling technique

The population of this study consists of small holder oil palm producers in the Ohafia, Umuahia and Aba agricultural zones of Abia State. The local government areas selected in the zones are shown in Table 1.

A multi stage sampling technique was used in this study. The state was stratified into three according to the agricultural zones. In the first stage, local government areas were selected by simple random sampling (SRS) technique. In the second stage, small-holder oil farmers and processor borrowers were randomly selected with names of borrowers from each local government area of 350 producers and 155 processors were obtained from the Oil Palm Growers Association of Nigeria, Abia State Chapter. In all, nine local government areas were selected. Ninety respondents made up of 54 oil palm farmers and 36 processors (six and four respectively for each selected local government area) were chosen for detailed study.

Data collection

Data for this study were collected from primary and secondary sources. The primary source involved participants - interviews. The secondary sources involved extraction of relevant information from reports, journals, yearbooks, previous research works, annual reports and periodicals. The interviews were done with the aid of structured questionnaires. They were used to interview the borrowers. Efforts to elicit information from the participating banks and the State Agricultural Credit Loans Board were unsuccessful. The investigator and some hired agents from Abia State Planning Commission and Abia ADP enumerators, including field level officers of relevant government agencies were trained on the requirements of each question. Respondent farmers/processors were interviewed at their sites by the investigator and / or the paid agents and information collected on a single visit. Data collection was done in the last quarter of 2008. Data were collected on socio-economic characteristics of the respondents, farm input and output and credit information. Questionnaires filled out were handled in strict confidentiality.

Analytical techniques

Multiple regression analysis was used to evaluate the determinants of loan size and loan repayment performance of small holder oil palm borrowers in Abia State. Nine independent variables were used in the model to determine the factors that determine loan size and repayment in Nigeria.

Model specification

The loan size determinants equation is given as:

$$LS = f(AG, LH, AST, EXP, HHS, EDU, GAI, DHS, INT) \quad \ldots \quad (1)$$

The functional form is explicitly presented here under:

$$LS = f(AG, FE, LH, HHS, EDU, GAI, DHS, INT) \quad \ldots \quad (2)$$

$$LS = a_0 + a_1 (AG) + a_2 (FE) + a_3 (LH) + a_4 (HHS) + a_5 (EDU) + a_6 (GAI) + a_7 (DHS) + a_8 (INT) + e_i \quad \ldots \quad (3)$$

Where in equations 1, 2, and 3, a_0 is the constant; a_1, a_2 ….. a_8 are the coefficients of the explanatory variables respectively; and e_1 = the stochastic error term.

LS_F = loan size/volume (₦) (this measures the total amount lent to each oil palm farmer beneficiary). AG = Age of beneficiary (years). EXP = Experience (years). LH

Table 2. Results of the multiple regression analysis of the determinants of loan size of small holder oil palm processors.

Variable	Linear	
	Coefficient	**t-ratio**
Constant	324.032	30.625
Age of processors (AG)	-1.814	-2.143***
Processing experience (PE)	2.994	3.024***
Interest rate (INT)	-11.152	-2.836***
Household size (HHS)	-3.200	-1.705
Educational level (EDU)	0.592	-0.434
Assets holding (AST)	0.142	5.060***
Gross annual income (GAI)	0.611	5.602***
Distance between home and source of loan (DHS)	-0.500	-0.693
Coefficient of multiple determination (R^2)	0.977	
F-ratio		146.370***
N	36	

Source: Computer analysis of the field survey data (2008) using SPSS. * = 10% level of significance; ** = 5% level of significance; *** = 1% level of significance.

= Land holding (Hectares). HHS = Household size (Number). EDU = Educational level (years). GAI = Gross Annual Income (₦). DHS = Distance between home and source of credit (kilometres), INT = Interest rate (%).

For Loan Repayment Rate (LRR) equation:

LRR = (IER, LAR, LAC, INT, HHS, FE/PE, EDU, AG,

DHS) … (4)

The functional form for the farmers is presented as follows:

LRR = f (IER, LAR, LAC, INT, HHS, EXP, EDU, AG, DHS) … (5)

$$LRR = \beta_0 + \beta_1(IER) + \beta_2(LAR) + \beta_3(LAC) + \beta_4(INT) + \beta_5(HHS) + \beta_6(EXP) + \beta_7(EDU) + \beta_8(AG) + \beta_9(DHS) + e_i \quad \ldots \quad (6)$$

where in equations 4, 5 and 6, β_0 is the constant; β_1, β_2,…, β_9 are the coefficients of the explanatory variables respectively.

LRR = Loan repayment rate (ratio) of small- holder oil palm borrowers in Abia State (this is derived from the ratio of the amount repaid over the amount borrowed). HHS = Household size (number). INT = Interest (%). LAC = Loan Acquisition Cost (₦). LAR = Loan Asset Ratio. EXP = Experience (years). IER = Income-Expenditure ratio. EDU = Educational level (years).

The repayment rate employed in this study is equivalent to the model developed by Okerenta and Orebiyi (2005) as:

$$\%LRP = \frac{TACR}{TACO + IC} \times \frac{100}{1}$$

Where: % LRP = percentage repayment performance. TACR = Total amount of credit repaid. TACO = Total amount of credit obtained. IC = Interest charge.

EMPIRICAL RESULTS AND DISCUSSION

The field data for the oil palm borrowers were analyzed to determine the factors that affect demand for loan size of oil palm borrowers. The result of the analysis is presented in Table 2.

The coefficient of the age of processors, processor's experience, interest rate, asset holding and gross annual income were all significant at 1% level and hence found to be determinants of loan size. However, the coefficients of house hold size, educational level, distance between home and source of loan were not statistically significant at any level and hence were ignored.

The coefficient of age (AG) of processors was significant at 1% but negatively signed indicating that age has an inverse relationship with loan size. As a processor gets older, the smaller is the loan he would get. This may be as they get old, in that they take less risk and invest less but think or concentrate more on their daily consumption activities without thinking of collecting loans.

The interest rate coefficient (INT) had negative influence on the size of loan of oil palm processors. This is explained by the known effect of high interest charges

Table 3. Results of the multiple regression analysis of the determinants of loan size of oil palm farmers.

Variable	Linear	
	Coefficient	**t-ratio**
Constant	725.44	4.107
Age of farmers (AG)	-0.817	-0.808
Farming experience (FE)	1.347	1.952**
Land holding (LH)	11.096	2.311**
Household size (HHS)	0.403	0.305**
Educational level (EDU)	10.641	5.45***
Gross annual income (GAI)	3.576E-02	1.002
Interest rate (INT)	-39.632	-10.698***
Distance between home and source of loan (DHS)	0.472	0.824
Co-efficient of multiple determination (R^2)	0.964	
F-ratio		133.209***
N	54	

Source: Computer analysis of the field survey data (2008) using SPSS. * = 10% level of significance; ** = 5% level of significance; *** = 1% level of significance.

On the profitability of any given enterprise. This negative effect of high interest rate will discourage the processors from acquiring more loans which implies lower loan size and vice versa.

Processing Experience (PE) coefficient is also significant at 1% and positively signed. This means that an oil palm processor with higher processing experience stands a better chance of acquiring more loan than his colleague with lower processing experience. The reason for this may be attributed to improvement in managerial skill which makes for higher profitability which in turn induces the need for more financial resources to further enhance profitability.

The coefficient of assets holding (AST) was also significant and positively signed. This indicates a direct relationship between size of loan and asset holding. Asset holding creates opportunity for efficiency in production and marketing. For example, an oil mill with motorized components will bring about increase in productivity and profitability. Asset holding is also a positive sign of credit worthiness.

The coefficient of the gross annual income (GAI) was significant at 1% and positively signed. This means that increase in annual income will be an encouragement for expansion in oil palm processing which, invariably leads to higher demand for loan and hence increase in loan size of an oil palm processor. This is also in conformity with the theoretical a priori expectation.

The value of the coefficient of multiple determination (R^2) was found to be 0.977 implying that the included variables were able to explain about 97.7% of the changes or variations in the loan size of oil palm processors in Abia State. The F-ratio was 147.360 and the significance was at 1% level implying that the joint effect of all included variables was significant.

Table 3 presents the results of the multiple regression analysis of the determinants of loan size of the small holder oil palm farmers. Out of the nine investigated regressors, only the educational level and interest rate were highly significant at 1% while farming experience and land holding were significant at 5%.

The educational level coefficient (EDU) had a positive sign indicating that education has direct relationship to the size of loan. As noted by Nwaru (2000), the level of education of a farmer enhances his ability to access, evaluate and understand new production techniques. This underpins the assertion that educated oil palm farmers are more amenable to risk taking and change than the non-educated ones. The result of this study showed that the higher the literacy level of the farmer, the higher will likely be the loan size. This confirmed the findings of Grant and Vella (1994) and Nagarajan et al. (1995) that credit demand is positively influenced by educational level.

The interest rate coefficient (INT) is statistically significant and maintains the right a priori negative sign with loan size. Interest rate is the cost of borrowing and as the price increases, the demand for credit decreases and vice versa.

The coefficient of farming experience (FE) has the a priori positive sign. The number of years an oil palm farmer has been involved in the enterprise gives an indication of the practice knowledge he has gained on how to overcome operational problems at minimal cost leading to high level of profitability. This will impact positively on his ability to secure more loans as he will be less prone to default.

The coefficient of land holding (LH) is statistically significant and has the right a priori positive sign. Size of land holding is very important in oil palm farming. Large

Table 4. Results of the multiple regression analysis of the determinants of loan repayment rate of oil palm borrowers in Abia State.

Variable	Linear	
	Coefficient	**t-ratio**
Constant	1.753	5.435
Income-expenditure ratio (IER)	0.009	0.322
Loan-assets ratio (LAR)	-0.430	-2.680***
Loan acquisition cost (LAC)	0.001	0.405
Interest rate (INT)	-0.050	-3.171***
Household size (HHS)	0.0001	0.064
Years of experience (Exp)	0.012	3.139***
Educational level (EDU)	-0.006	-0.687
Age (AG)	-0.007	-2.117**
Distance between home and source of loan (DHS)	0.007	2.164**
Coefficient of multiple determination (R^2)	0.750	
F-ratio		10.843***

Source: Computer analysis of the field survey data (2008) using SPSS. *** = 1% level of significance; ** = 5% level of significance; * = 10% level of significance.

holdings would have placed the farmer on a very sound pedestal for higher realms of activities that would warrant more credit. Therefore, the positive co-efficient of land holding means that acquiring more land by an oil palm farmer will require additional capital which may necessitate additional loans resulting from the need to expand production.

The findings in the foregoing may be compared with those of similar studies such as Nwaru (2004), Adam and Sayeed (1998), and Desai and Mellor (1993). In these studies, loan demand was found to be responsive to the interest rate as well as economic and demographic factors such as: farm size, and household size. For example, Nagarajan et al. (1995) provided evidence that loan demand in the Philipines is negatively influenced by the rate of interest, but the coefficient of the variable is only marginally significant. In their regression result, both farm size and asset holding have positive and significant coefficients.

The value of the coefficient to multiple determination (R^2) was 0.965 implying that the joint effect of all the included variables were able to explain about 96.5% of the variations in the loan size (dependent variable) obtained by the oil palm producers (farmers) in the state. The F-ratio was 133.29, which was found to be significant at 1% level implying that the joint effect of all the included variables was significant (Table 4).

Out of the nine investigated regressors, age of the beneficiaries (AG) and the distance between home and source of loan (DHS) were significant at 5% level, while loan-asset ratio (LAR), interest rate (INT), and years of experience (EXP) were significant at 1% level.

The loan-asset ratio co-efficient (LAR) is statistically significant and maintained the right a prior negative sign with the loan repayment rate. Leverage ratio is a key determent of the ability of a borrower to repay loans.

Leverage ratio is defined as the borrower's total debt obligations relative to his equity funds. The higher the leverage ratio, the higher the probability of a beneficiary not repaying his loan. Beneficiaries with low loan-asset ratio present lower risk in terms of payment. This therefore, by existent means that high gearing (leverage ratio) has an inverse relationship with credit worthiness of the beneficiaries.

The relationship between the interest rate and repayment rate is of particular interest. Interest rates are related to the price of capital. In this study, the co-efficient of interest rate (INT) is highly significant and has the a priori negative sign - the lower the interest rate, the higher the repayment rates of the oil palm borrowers in Abia State. The implication is that a higher interest rate increases cost function, which affects their level of mark-up and thereby reduces the ability to repay borrowed fund. This is in conformity with theoretical a priori expectation.

The years of experience coefficient (EXP) is significant and has the a priori positive sign. The number of years a borrower has been in the business of oil palm farming and processing gives an indication of the practical knowledge he has gained on how to overcome operational difficulties at minimal cost. This will reflect in his profitability level and enhance his ability to reply loan.

The age coefficient (AG) is statistically significant but has a negative sign. This means that the younger the beneficiary, the higher the ability to repay loan. This result is an important signal because the risk bearing abilities of an oil palm farmer or processor, his mental capacity to cope with operational challenges and demands of oil palm enterprise decrease with age. Generally, oil palm farming and processing require considerable physical

exertion which the aged farmers lack. The sign of the age coefficient is in conformity with the theoretical a priori expectation.

The coefficient of the distance between home and source of loan is statistically significant. Contrary to a priori expectations, it is positively signed. This suggests that the longer the distance, the more the ability to repay loans by the respondents. This could be explained in terms of beneficiaries who are close to source of fund which may have personal relationships with the officials that encourage them not to pay.

The value of the coefficient of multiple determination (R^2) was found to be 0.750 implying that the included variables were able to explain about 75% of the changes or variations in loan repayment rate (LRR). The F-ratio was 10.843 and is significant at 1%. Since F-ratio (10.843) is greater than F-tabulated (2.66), we therefore reject the null hypothesis (H0), that loan repayment rate is not related to the stated variables. It is therefore concluded that loan repayment rate (LRR) depends on loan asset ratio (LAR), interest rate (INT), years of experience (EXP), age of beneficiaries (AG) and distance between home and source of loan (DHS).

The results of the estimates in this study can be compared with those of similar studies. Ahmed and Sayeed (1993) identified three regressors that affect repayment ability of borrowers in Sudan. They mentioned land quality measured as net return per unit of land, value of physical assets and family labour endowment proxied by household size.

Nwaru (2004) reported socio- economic associations, household size, interest payable on the borrowed money, loan application cost, farming experience and gross income as major determinants of loan repayment. In the case of Njoku and Obasi (1991), they reported that the amount of loan received, rate of interest charged on loans and household size as major determinants of loan repayment. The same variables were reported by Njoku and Odii (1991).

SUMMARY OF FINDINGS AND RECOMMENDATIONS

The results of the multiple regression analysis on size of loan showed that among the independent variables hypothesized as having effects on the size of loan extended to the beneficiaries, we had the following: For the oil palm processor-borrowers, processing experience, asset holding, gross annual income and interest rates were strong determinants of the size of loan while for the farmers, the major determinants were educational level and interest rate.

The result of the regression analysis on loan repayment rate (LRR) performance revealed the following: for the oil palm-farmer borrowers, among the independent variables hypothesized as having effects on rate/level of repayment, only loan asset ratio (LAR), interest rate (INT) and distance between home and source of loan (DHS) were significant in determining repayment rates with coefficient of multiple of determination (R^2) of above 0.60.

For the processors, loan – asset ratio (LAR), interest rate (INT) and age of processors (AG) were significant at 5% level of significance with a coefficient of multiple determination of 0.70.

For the pooled data, age of beneficiaries (AG) and distance between home and source of loan (DHS) were significant at 5% level of significance, while loan asset ratio (LAR), interest rate (INT) and years of experience (FE/PE) were significant at 1% level of significance. The coefficient of multiple determinations was 0.750.

Considering the immense benefits derivable from a well-administered credit programme and the place of oil palm industries in the emerging global trend of bio-fuel, some recommendations based on the findings of this study are necessary. This is to improve the repayment performance of the beneficiaries of such schemes:

- The study has indicated the critical influence of asset holding as a determinant of loan size received by the respondents. To enhance access to credit by small-holder oil palm farmers and processors, efforts should be made to improve their assets holding capacity. One strategic way of achieving this is by co-operativization of beneficiaries into farming and production cooperatives. There is the added advantage that certain activities could be undertaken with some group efforts. This will reduce the cost of production and improve their profits which will in turn enhance their ability to repay borrowed funds. With improved assets holding capacity through group ownership, repayment will also be enhanced as a result of peer / membership pressure. This is in line with Stiglitz (1990) observation that each member of the group turns out to be a monitor to ensure that beneficiaries do not default.

- Interest rate remains a critical factor in securing credit and repaying same. The negative coefficient of interest rate shows that the higher the interest rate, the lower the repayment rate. It should be noted that interest rate performs dual function of rationing credit and regulating the risk composition of the credit provider (Hoff and Stiglitz, 1993). High interest rate impacts negatively on the credit worthiness of beneficiaries and attracts only riskier businesses. To ensure high repayment rate and high level of credit worthiness of beneficiaries, optimal interest rate policies that make for optimal credit provisioning and minimize the risk composition of the credit provider should be pursued.

- Educational level and farming / processing experience are seen as complimentary variables in credit acquisition and repayment performance in this study. Education as an important determinant of credit worthiness deserves attention in positioning farmers for credit programmes. Therefore, designing appropriate educational programmes, both formal and informal are essential in improving access to loan, credit worthiness and repayment

performance. Processing / farming experience remained significant in all the models. Therefore, practical training programmes on oil palm cultivation, maintenance and processing is recommended for practitioners in this sub-sector of the agriculture industry. Again, education as a critical factor in the adoption of improved technology will raise farm income which from this study is a major determinant of credit worthiness.

- Based on the outcome of this study, loan should be given to people who have stable source of income, low loan-asset ratio, large hectares of land. The use of scoring method applied in this study will eliminate the complicated, cumbersome and time consuming procedures which result in delays in approval and in loans not being made available when required. Again deserving ones will have access to credit under fair and just conditions without having their operations negatively affected by red-tape and excessive interest charges. In addition, adequate regulatory standards must be in place to protect credit providers and borrowers alike. A serious environment of repayment discipline must be instilled through credit scoring of applicants. This will ensure that applicants receive loan on merit.

- The results of the estimates serve as pointer for policy directions. Credit worthiness, loan acquisition, and repayment were significantly affected by the age variable. The younger the beneficiaries, the better the expected outcome. Therefore, policies that would make credit facilities more youth friendly, attracting the youths to live in the rural areas and take up oil palm farming and processing as a means of livelihood should be put in place. A good example would be the youth in oil palm production and the re-invigoration of the young farmers' club (dedicated to oil palm production) as being currently championed by PZ industries Plc.

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Appendix 1. Grouping of small holder oil palm farmers and processors in Abia State (farmers and processes) in Abia State.

S/N	LS (N'000)	OIR	LAR	LAC (1000)	INT (%)	HHS (N)	FE/PE (YPS)	EDU (YPS)	AGE (YRS)	DHS (KM)	RR	GRP
1	350	2.5	0.47	20	15	4	15	12	40	10	0.86	1
2	500	2.67	0.57	23	13	15	18	15	39	30	1.0	1
3	250	1.67	0.50	19	16.5	4	12	11	48	10	0.60	1
4	150	1.24	0.70	25	19	12	11	9	48	12	0.33	0
5	100	1.25	0.63	15	19	4	20	8	54	12	0.20	0
6	400	3.0	0.36	18	13	10	15	12	41	15	0.88	1
7	200	1.88	0.49	25	16.5	7	13	10	41	10	0.38	0
8	400	4.0	0.33	20	13	7	15	12	40	20	1.0	1
9	300	3.0	0.43	15	15	8	13	10	50	20	0.67	1
10	100	1.40	0.63	8	19	8	10	6	53	25	0.0	0
11	250	2.67	0.42	15	15	6	14	9	45	3	0.80	1
12	500	3.0	0.36	18	13	4	20	17	43	10	0.9	1
13	350	4.0	0.35	16	13	10	18	14	50	10	0.0	1
14	200	2.0	0.57	19	16.5	8	40	8	50	10	0.50	1
15	300	2.86	0.33	18	15	4	20	12	47	5	0.1	1
16	150	2.50	0.88	10	19	11	30	10	60	5	0.46	1
17	350	2.22	0.50	18	15	12	15	14	40	10	0.71	0
18	250	2.0	0.57	12	16.5	9	15	12	42	20	0.67	1
19	450	3.0	0.38	20	13	6	20	15	48	5	1.0	1
20	150	2.67	0.47	19	19	10	10	9	50	20	0.8	1
21	100	1.88	0.63	17	19	4	8	6	45	30	0.3	0
22	500	1.0	0.37	23	13	11	30	14	50	5	1.0	1
23	300	2.5	0.50	25	15	16	20	12	60	7	0.5	1
24	250	1.88	0.60	24	16.5	6	25	10	65	16	0.4	0
25	400	3.0	0.38	20	13	7	13	12	48	10	0.88	1
26	350	3.0	0.39	22	13	10	9	12	35	7	0.85	1
27	200	1.94	0.67	18	16.5	5	15	8	46	3	0.45	0
28	400	2.5	0.39	16	13	12	10	12	42	5	0.88	1
29	500	3.0	0.34	23	13	15	20	17	47	2	0.0	1
30	75	1.88	0.75	10	19	5	15	6	48	20	0.33	0
31	100	1.92	0.80	15	19	9	18	6	50	25	0.40	0
32	50	1.67	0.83	8	19	12	10	6	50	10	0.20	0
33	70	1.67	0.73	9	19	10	25	7	60	20	0.40	0
34	200	1.77	0.36	6	16.5	15	25	10	65	30	0.38	0
35	50	1.15	0.63	5	19	10	15	6	48	50	0.0	0
36	65	2.0	0.39	10	19	8	10	6	38	20	0.77	1
37	100	1.67	0.83	9	19	9	12	9	46	5	0.20	0
38	50	1.11	0.83	8	19	13	10	6	42	5	0.20	0
39	75	1.25	0.83	9	19	12	15	0.0	47	10	0.26	0
40	200	2.20	0.44	30	16.5	9	10	12	42	3	0.60	1
41	120	1.67	0.40	6	19	15	15	9	50	7	0.50	1
42	100	1.15	0.63	10	19	10	20	6	65	10	0.40	0
43	50	1.88	0.71	5	19	7	18	0	48	5	0.10	0
44	350	2.0	0.35	12	15	9	15	13	45	10	0.71	1
45	500	2.0	0.33	10	13	5	20	17	39	8	0.96	1
46	100	2.5	0.59	8	19	10	25	6	60	20	0.38	0
47	400	1.71	0.34	11	13	4	10	15	40	5	1.0	1
48	75	2.50	0.83	8	19	12	18	6	58	15	0.13	0
49	120	1.25	0.80	6	19	15	25	9	65	7	0.17	0
50	50	1.67	0.40	10	19	13	20	0.0	63	30	1.00	1

Appendix 1 Contd.

51	500	3.64	0.34	15	13	4	25	15	47	.8	0.8	1
52	400	2.33	0.36	18	13	5	10	12	38	10	0.75	1
53	200	1.67	0.40	19	16.5	7	15	10	48	15	0.75	1
54	70	1.15		10	19	3	20	6	60	18	0	0

Appendix 2. Grouping of small holder oil palm processors in Abia State.

S/N	LSP (₦'000)	OIR	LAR	LAC (₦'000)	INT (%)	HHS (N)	PE (YRS)	EDU (YRS)	AG (YRS)	DHS	RR	GRP
1	100	4.50	0.63	25	19	10	25	12	65	10	0.50	1
2	150	5.0	0.65	35	16.5	6	9	6	48	20	0.5	1
3	200	4.20	0.50	23	15	7	15	10	47	10	0.87	1
4	300	3.13	0.67	20	15	5	20	9	45	10	0.83	1
5	100	1.85	0.70	25	16.5	9	9	13	55	30	0.70	1
6	75	1.25	0.65	10	19	10	19	6	60	25	0.0	0
7	200	3.33	0.36	20	15	10	15	9	50	10	1.0	1
8	100	2.0	o.67	5	19	8	15	17	60	15	0.33	0
9	300	1.74	0.35	15	15	7	20	6	38	7	0.86	1
10	500	5.85	0.29	20	13	4	2	11	35	5	1.0	1
11	100	1.41	0.95	15	16.5	6	9	6	65	20	0.0	0
12	75	1.20	0.75	10	16.5	10	18	11	61	15	0.0	0
13	400	3.13	0.36	40	13	4	25	12	48	10	0.75	1
14	100	1.20	0.77	23	19	12	9	6	60	15	0.20	0
15	200	2.50	0.91	25	15	9	10	5	53	0	0.7	0
16	75	1.25	0.63	5	16.5	15	1	7	60	25	0.0	0
17	500	4.0	0.45	15	13	4	18	12	33	5	0.70	1
18	150	3.0	0.25	7	16.5	8	10	11	55	10	0.66	1
19	300	2.08	0.67	30	16.5	7	20	8	48	3	0.50	1
20	100	2.50	0.18	20	19	15	9	12	50	5	0.33	0
21	200	2.0	0.74	15	16.5	10	11	9	48	10	0.38	0
22	400	4.67	0.36	25	13	5	15	12	45	5	0.70	1
23	150	3.0	0.39	10	16.5	12	9	14	60	10	0.66	1
24	350	3.33	0.38	30	15	5	20	13	48	5	0.87	1
25	50	2.5	0.45	9	19	15	11	9	60	10	0.20	0
26	120	1.85	0.75	10	16.5	10	9	8	55	15	0.41	0
27	75	2.22	0.68	7	19	12	10	6	50	8	0.13	0
28	500	5.0	0.31	20	13	4	20	17	48	12	1.0	1
29	200	2.44	0.44	15	16.5	8	18	14	50	5	0.75	1
30	350	2.13	0.41	13	15	7	2	15	48	20	0.86	1
31	200	2.08	0.34	15	15	9	15	13	55	15	0.5	1
32	200	2.08	0.50	9	15	10	15	12	50	10	0.75	1
33	100	2.4	0.53	12	16.5	15	9	9	48	10	0.55	1
34	350	4.0	0.44	25	13	8	19	14	35	8	1.0	1
35	75	1.25	0.63	15	19	15	13	6	65	12	0.0	0
36	100	1.71	0.63	13	16.5	12	9	6	60	20	0.20	0

Appendix 3. Grouping of small holder oil palm farmers in Abia State.

S/N	LSP (N'000)	OIR	LAR	LAC (N'000)	INT	HHS	FP (YRS)	EDU (YRS)	AG (YRS)	DHS	RR	GRP
1	100	4.5	0.63	25	19	10	25	12	65	10	0.5	1
2	150	5.0	0.65	35	16.5	6	9	6	48	20	0.5	1
3	200	4.2	0.50	23	15	7	15	10	47	10	0.87	1
4	300	3.13	0.61	20	15	5	20	9	45	10	0.83	1
5	100	1.85	0.70	25	16.5	9	9	13	55	30	0.70	1
6	75	1.25	0.65	10	19	10	19	6	60	25	0	0
7	200	2.33	0.36	20	15	10	15	9	50	10	1.0	1
8	100	2.0	0 .67	5	19	8	15	17	60	15	0.33	0
9	300	1.74	0 .35	15	15	7	20	6	38	7	0.86	1
10	500	5.83	0.29	20	13	4	23	11	35	5	1	1
11	100	1.41	0.95	15	16.5	6	9	6	65	20	0.0	0
12	75	1.20	0.75	10	16.5	10	18	11	61	15	0.0	0
13	400	3.13	0.36	40	13	4	25	12	48	10	0.75	1
14	100	1.20	0.77	23	19	12	9	6	60	12	0.20	0
15	200	2.50	0.91	25	15	9	10	5	53	30	0.17	0
16	75	1.25	0 .63	5	16.5	15	13	7	60	25	0.0	0
17	500	4.0	0 .45	15	13	4	18	12	33	5	0.70	1
18	150	3.0	0.25	7	16.5	8	10	11	55	10	0.66	1
19	300	2.68	0.67	30	16.5	7	20	8	48	3	0.50	1
20	100	2.50	0.18	20	19	15	9	12	50	5	0.33	0
21	200	2.0	0.74	15	16.5	10	11	9	48	10	0.38	0
22	400	4.67	0.36	25	13	5	15	12	45	5	0.70	1
23	150	3.0	0.39	10	16.5	12	9	14	60	10	0.66	1
24	350	3.33	0.38	30	15	5	20	13	48	5	0.87	1
25	50	2.5	0.45	9	19	15	11	9	60	10	0.20	0
26	120	1.85	0.75	10	16.5	10	9	8	55	15	0.41	0
27	75	2.22	0.68	7	19	12	10	6	50	8	0.13	0
28	500	5.0	0.31	20	13	4	20	17	48	12	1.0	1
29	200	2.44	0.44	15	16.5	8	18	14	50	5	0.75	1
30	350	2.13	0.41	13	15	7	23	15	48	20	0.86	1
31	200	2.08	0.34	15	15	9	15	13	55	15	0.5	1
32	200	2.08	0.50	9	15	10	15	12	50	10	0.95	1
33	100	2.4	0.53	12	16.5	15	9	9	48	10	0.55	1
34	350	4.0	0.44	25	13	8	19	14	35	8	1.0	1
34	75	1.25	0.63	15	19	15	13	6	65	12	0.00	0
35	100	1.71	0.63	13	16.5	12	9	6	60	20	0.20	0