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REGULAR ARTICLE

DETERMINANTS OF INFORMAL CREDIT DELINQUENCY AMONG FOOD CROP FARMERS IN RURAL NIGER DELTA OF NIGERIA

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ABSTRACT

The study examined the determinants of informal credit delinquencies among food crop farmers in rural Niger Delta of Nigeria using Akwa Ibom State as a case study. A multi-stage random sampling technique was adopted to select 96 beneficiaries and structured questionnaires as well as personal interview were used to collect data. Probit and logit models were used to analyse the factors influencing credit delinquency among food crop farmers in the state. Result of the descriptive analysis of the socio-economic characteristic of respondents revealed that 93% of male and 72% of female food crop farmers had one form of formal education ranging from primary to tertiary education. Empirical result from the Probit and logit models were similar and showed that borrower's non-farm income, credit amount received, household size, net farm profit and farm size are determinants of credit delinquencies among food crop farmers in Akwa Ibom state. The study also discovered that the probability of food crop farmers being credit delinquent is about 0.427 *ceteris paribus*. It is recommended that food crop farmers should form marketing co-operative societies as a means of generating additional income to augment loan obtained. Furthermore, local government authorities should set up credit programmes that should focus on soft loans to rural farmers at a subsidize interest rate.

Keywords: Credit delinquency, informal credit, food crop farmers, Rural Niger Delta, Akwa Ibom.
JEL: Q 1, Q14, Q140

INTRODUCTION

The prevalence of credit delinquency among small scale farmers in most developing countries especially in Sub-Saharan African countries has been linked to poverty, poor management procedures, loan diversion and unwillingness to repay loans (**Akinwumi, 1988 and Awoke, 2004**). Credit delinquency can be defined as the inability of a borrower to fulfil his or her loan obligation as at when due (**Balogun and Alimi, 1988**). **Bottomley (1983)** outlined causes of credit delinquency among small scale entrepreneurs in developing countries to include; loan size, income variance, borrower's net income, administrative cost of supervision, collection of collateral and debt equity ratio. A high default rate among farmers in sub-Saharan countries is a major concern to policy makers, because of its unintended negative impacts on recycling of loans among farmers. **Ntiamoah *et al*, (2014)** stated that there is a high positive correlation between constructs of loan default rates and profitability of the various micro-finance institutions. As noted by **Baku and Smith (1998)**, the cost of credit delinquencies is felt by both lenders and borrowers. On the lender side, credit delinquency could cause loss of interest charge, aggregated opportunity cost of principal, legal fees and related costs. For the borrower, the decision to be delinquent could hamper the viability of on-going investments. Many factors have been identified as major determinants of credit delinquency. Other critical factors associated with credit delinquencies are: type of the loan; term of the loan; interest rate on the loan; poor credit history; borrowers' income and transaction cost of the loans. **Osakwe and Ojo (1986); Jackelen and Rhyne, (1991)** noted that default rates are generally higher among those who borrow from government sponsored sources than those who borrow from moneylenders and other informal lenders. The inherent risk in agricultural production and the low level of commercialization in farming business add to the high propensity of defaulting among the benefiting farmers of these credit sources **(Binswanger, 1986)**.

In Nigeria, the informal credit sources have played more significant roles in agricultural financing than formal sources since it is closer to the rural farmer. Some of the informal credit sources that are popular in Nigeria are; savings cooperatives, rotating savings and credit associations, lending and gifts from relative and friends, merchants, various clubs, village banks, and money lenders **(Otu 2003; Udoh, 2005, Oni *et al*., 2005 and Ugbomeh *et al.*, 2008)**. Specifically, in Akwa Ibom state the role of informal lenders in financing agricultural activities is huge owing to the fact that more than 80% of farmers in the state operate in small scale basis **(Akpan *et al.*, 2010)**. Farmers could not afford stringent requirements of formal credit sources; and are therefore left with very little access to financial services from the formal financial system **(Udoh, 2005)**. Following the current policy of Akwa Ibom state government on

increased agricultural production and achievement of self-food sufficiency; there is an overwhelming need to increase financial capital into rural agricultural sub-sector in the state. Informal lending institutions provide the best platform for the achievement of this goal since majority of them operate in rural areas. Availability of sufficient and timely credit will help farmers to expand the scope of operation and adoption of new improved technologies.

In spite of the importance of credit in agricultural production, its acquisition and repayment are fraught with a number of problems especially among farmers in the rural communities **(Awoke, 2004; Udoh, 2005; Oladeebo *et al*., 2008)**. Increase in informal credit delinquency among farmers in Akwa Ibom state could negate the state government policy objective on increased agricultural productivity. The sustainability of the informal lending institution which is the closest to the farmers in the state could be in jeopardy with increasing loan default among it beneficiaries. Hence, there is need to assess farmers' specific characteristics that could affect loan repayment to informal lenders in the state. Therefore the study specifically sought to determine farmer's specific factors that promote informal credit delinquency among food crop farmers in Akwa Ibom state. The result is hoped will form a bed rock from which sustainable credit policy could be made on credit repayment in the state.

Udoh (2005) estimated probability of loan default among beneficiaries of Akwa Ibom state owned agricultural loan scheme, and discovered sex, household size, farm size, loan from other sources, primary occupation of the beneficiary, time lapse between loan application and disbursement, total farm expenditure and duration of the granted loans as significant factors influencing probability of loan default among beneficiaries. **Oni *et al.*, (2005)** examined credit delinquencies among poultry farmers in Ogun State, Nigeria. Using probit model, the result revealed that educational level, age, flock size and income were significant factors influencing credit default. **Oladeebo *et al.*, (2008)** examined determinants of loan repayment among smallholder farmers in Ogbomoso Agricultural Zone of Oyo State, Nigeria. Results of multiple regression analysis showed that amount of loan obtained by farmers; years of farming experience with credit use and level of education were the major factors that positively and significantly influence loan repayment. **Ugbomeh *et al*., (2008)** investigated determinants of loan repayment performance among women self-help groups in Bayelsa State, Nigeria. The estimated regression model indicated that women as household heads, interest rate, household size, price stability of farm proceeds, and commitment to self-help groups significantly affected loan repayment of women farmers in self-help groups in the area. **Oboh and Kushwaha (2009)** examined socio-economic determinants of farmers' loan size in Benue State, Nigeria. The result shows that annual income, distance, farm size and previous loan status were significant factors that encouraged larger loan size to farmers. **Henri-Ukoha *et al.*, (2011)** studied determinants of loan acquisition from the financial institutions by small-scale farmers in Ohafia agricultural zone of Abia state, south-East Nigeria. Factors influencing the amount of loan disbursement by financial institutions were age of the farmers, level of education, farming experience and farm size. **Oboh and Ineye (2011)** studied the effect of socio-economic and demographic factors on the rate of credit allocation to the farm sector by arable crop farmers in Benue State, Nigeria. Empirical result reveals factors that affect the rate of credit allocation to the farm include age, education, farm size, household size, length of loan delay and visitation by lenders. The causes of loan default to include; high interest rate, inadequate loan sizes, poor appraisal, lack of monitoring, and improper client selection **(Korankye, 2014)**. Measures to control default were found to include training before and after disbursement, reasonable interest rate, monitoring of clients, and proper loan appraisal **(Korankye, 2014)**.

DATA AND METHODS

Study Area

The study was conducted in Akwa Ibom State of Nigeria. The State consist of 31 local government areas divided into six agricultural zones of Uyo, Ikot Ekpene, Oron, Eket, Abak and Etinan **(Okpongette, 2002)**. The state has a population of about 3.9 million people **(NPC, 2006)**. The main food crops grown in the state are cassava, maize, plantain, cocoyam, okra, fluted pumpkin, water leaf and rice.

Sampling Techniques and Data Collection

A multistage random sampling technique was used in this study. Two Agricultural Zones, Uyo and Abak were randomly selected from the six Agricultural Zones of the State. In the second stage, three local government areas each from the two agricultural zones were randomly selected. The local government areas were: Uruan, Ibesikpo and Uyo in Uyo zone, and Etim Ekpo, Abak and Ukanafun in Abak zone. In the third stage, one Clan each was randomly selected from each of the six local government areas selected. These clans were, Ibiaku Uruan in Uruan, Ibesikpo Asutan in Ibessikpo, Uyo in Uyo, Uruk Ata in Etim Ekpo, Otoro in Abak and Ikot Akpan in Ukanafun local government areas. In the fourth stage, one village was randomly selected from each of the Clans. The villages were Utit Uruan, Nung Udoe, Ikot Akpa Abia, Nkwot, Uruk Uso and Idem villages respectively.

Furthermore, from the six chosen villages, lists of informal credit sources were obtained from the village secretaries who were the key informants. A sample frame of 7 informal credit sources namely; friends relatives and neighbours, money lenders, rotating savings and credit associations, pawn brokers, village cooperatives, family credit association and village thrift were identified. From the sample frame, 4 informal credit sources (village cooperative, family credit association, rotating savings and money lenders) per village were purposively selected due to their organized records and consistency in operation. A scheduled interview was conducted for each of the four informal lenders randomly sample in each of the selected village, their lending records assessed and

three food crop famer's beneficiaries (respondents) randomly picked from their records. A structured questionnaire and personal interview scheduled were used to collect data from beneficiaries. 16 beneficiaries (food crop farmers) were sampled from each village and a total of 96 beneficiaries for the six villages from 24 informal lending institutions.

Empirical Model

Probit and Logit models were used to determined factors affecting credit delinquency among food crop farmers in the study area. The probit model is expressed as:

$$Y = P_i = \beta_0 + \beta_1 X_1 + \ldots + \beta_K X_K + e_1 \quad (1)$$

While the logit model is expressed as:

$$Y = Ln(P_i/1 - P_i) = \alpha_0 + \alpha_1 X_1 + \cdots + \alpha_K X_K + e_1 \quad (2)$$

Where:

Y is dichotomous dependent variable which can be explained as; Y = 1, if farmer is delinquent, Y = 0, if farmers is not delinquent, and X'$_S$ = independent variables defined as follows:

X_1 Credit amount received in Nigerian Naira (₦ - the currency of Nigeria), the total amount the farmer received from informal credit sources;

X_2 Educational level of the farmer. Measured by the total number of years the farmer spent in receiving formal education;

X_3 Non-farm income in Naira (₦). Income of farmer from non-farming activities in the previous year;

X_4 Household size, describing the number of people living with the farmer;

X_5 Interest amount in Naira (₦). This is the total amount the farmer pays as interest charges on money borrowed;

X_6 Net farm Profit (N) acquired the previous year after all cost must have been deducted;

X_7 Farm Size, Total farm size of respondent measured in hectares;

X_8 Farmer's experience in crop farming measured in years.

RESULTS AND DISCUSSION

The descriptive analysis of the socio-economic characteristics of respondent reveal that 91% of male and 95% of female food crop farmers sampled were under the age of 60 years (Table 1). This indicates that majority of farmers that are beneficiaries of informal credit in rural are still in their active years. The study also revealed that about 93% of the male farmers and 72% of female beneficiary farmers have one form of formal education or the other ranging from primary to tertiary education (Table 2). Table 3 shows the frequency distribution of sample lenders and the rate of interest charge on loans. The result reveals that 100% of money lenders sampled charge more than 10%, while 66.7% of ROSCAs (*Etibe*) charge more than 10%. On the other hand, majority of village co-operative (*Mboho nka*) and Family Credit Associations (*Nka Ekpuk*) charged below 10%. On the average, the highest rate of interest (17%) is charged by money lenders (*Obuot Okuk*) whereas the lowest (4%) is charged by family credit associations (*Nka Ekpuk*).

Table 1 Distribution of Sample farmers by age

Age Rang	Male Frequenc	Percentag	Female Frequenc	Percentag
21-30	3	6.3	3	6.2
31-40	10	20.8	19	39.6
41-50	19	39.6	19	39.6
51-60	12	25	5	10.4
> 60	4	25	2	4.2
Total	48	8.3	48	100
Mean	46.3	100	42.2	

Source: Field Survey, 2014

Table 2. Level of Formal Education distribution of sampled farmers

Level of Education	Male Frequency	%	Female Frequency	%
No formal Education	3	6.2	13	27.1
Primary Education	20	41.7	18	37.5
Secondary Education	15	31.3	10	20.8
Tertiary Education	10	20.8	7	14.6
Total	48	100	48	100

Source: Field Survey, 2014

Table 3. Distribution of Lenders based on Credit source and rate of interest charged.

Interest charge (%)	Informal Credit Sources							
	ML		ROSCAs		VCOP		FCA	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%
1-5	0	0	8	33.3	4	16.7	16	66.7
6-10	0	0	8	33.3	20	83.3	8	33.3
11-15	4	16.7	8	33.3	0	0	0	0
>15	20	83.3	0	0	0	0	0	0
Total	24	100	24	100	24	100	24	100
Mean	17.2		8.0		7.2		4.6	

Source: Field survey, 2014: Where ML = Money lenders, ROSCAs = Rotating savings and Credit Associations, VCOP = Village Co-operative, FCA = Family credit Association

This result corroborates Ts huma and Jari (2013) that the informal sector in developing countries not only makes a significant contribution towards gross domestic product, but is a major potential source of entrepreneurship, hence a source of income too, especially for the less educated and less skilled.

Determinants of informal credit delinquency among food crop farmers in Akwa Ibom state

Table 4 report results of binomial Probit and logit regressions analysis for determinants of credit delinquency among food crop farmers in Akwa Ibom state. The diagnostic test shows that the Chi-Square is significant at 1% probability level and this attests to the normality of the regression errors indicating that the inclusion of independent variables significantly predicted the dependent variables in the specified binomial regressions. The value of Akaike information criterion (AIC) for both models reveal that the models are statistically similar. The count R^2 of 0.667 is fairly high and indicates that about 67% of variability in the probability of food crop farmers being credit delinquent in Akwa Ibom state is caused by the specified explanatory variables. The log likelihood values for the models are significant and similar thus confirming the fitness of the models and implies that the independent variables are important explanatory factors of the variations in the probability of credit delinquency among food crop farmers in Akwa Ibom state.

Probit Estimates

The results of the probit model reveal that the coefficient of credit amount received by food crop farmers is significant at 10% probability level and positively related to the probability of credit delinquency. This implies that increase in amount received as loan will lead to increase in probability of being delinquent, *ceteris paribus*. The result is in line with the *a priori* expectation as increased in credit size in the face of multifarious factors affecting agricultural production in the developing economies would likely bring about increased in credit delinquency among beneficiaries. **Oladeebo *et al*., (2008)** in Oyo state; **Oboh and Kushwaha (2009)** in Benue and **Oboh and Ineye (2011)** in Benue state obtained similar results respectively.

The slope coefficient of non-farm income is significant at 10% probability level and negatively correlated to the probability of being credit delinquent among food crop farmers in Akwa Ibom state. This implies that a unit increase in borrower's non-farm income every other things remaining constant, will result in 0.00000476 reductions in the probability of being credit delinquent. The result is as expected **because** as the non-farm income of the borrower's increases, part of the income will be channel to loan repayment or to augment farm income.

The household size coefficient has a significant negative effect at 1% significant level on the probability of food crop farmers being credit delinquent in the state. The result implies that as borrower's family size increases, the ability to repay the credit increases or the likelihood of being credit delinquent decreases. The possible reason for this result could be that most children in the rural areas are engaged in income generating activities such as hire farm labor and hawking to complement income from their parent. The result corroborates the finding of **Ugbomeh *et al*., (2008)** in Bayelsa State, **Oboh and Ineye (2011)** in Benue state and **Awunyo (2012)** in Ghana.

Interest rate charge has a significant positive relationship with the probability of being credit delinquent among food crop farmers in the state. The result agrees with *a priori* expectation as higher interest rate will induce higher the probability of food crop farmers being delinquent on borrowed money. The result could be linked to the urge by informal lenders to incorporate high risk premium and the cost of asymmetric information in the rural credit market. The result is contrary to the finding of **Ugbomeh *et al*., (2008)** in Bayelsa State.

Table 4: Probit and Logit regression estimates of determinants of informal credit delinquency among food crop farmers in Akwa Ibom state.

Variables	Probit function		Logit function		
	Coefficient	t-value	Coefficient	t-value	Odds Estimate
Constant	0.772	1.56	1.245	1.51	3.473
Credit receives	3.056e-007	1.75*	2.83e-007	1.83*	1.000
Education	-0.0121	-0.41	-0.018	-0.37	0.982
Nonfarm income	-4.761e-006	-1.98*	-7.884e-006	-1.84*	1.000
Household size	-0.0067	-3.18***	-0.0118	-2.96***	0.988
Interest charge	2.000e-005	2.18**	3.224e-005	2.06**	1.000
Net farm Profit	-6.661e-006	-3.07***	-1.178e-005	-3.07***	1.000
Farm size	-0.176	-1.85*	-0.288	-1.95*	0.749
Experience	-0.007	-0.45	-0.011	-0.43	0.989
Log Likelihood	-55.289		-55.40		
AIC	128.579		128.81		
Chi Square	22.505(0.0074)***		11.403(0.020)**		
Count R^2	0.667		0.667		
Probability	-		0.427		

Source: Computed from field survey data, 2014, ***, **, * represent significant levels at 1, 5 and 10 percent respectively. Probability was computed at the mean levels of variables.

CONCLUSION

The coefficient of net farm profit of borrower is significant (at 1% level) and negatively related to the probability of being credit delinquent. This means that all things remaining constant, increases in borrower's farm profit decreases the probability of being credit delinquent. The result fulfils *a priori* expectation as farm income above total cost will likely be used for loan repayment or reinvested in the farm business.

The effect of farm size on probability of credit delinquency among food crop farmers in Akwa Ibom state is significant and negatively correlated. This implies that increases in farm size reduce the probability of being credit delinquent. It means that borrowers that have large farms are less credit delinquent than those with small farms. The reason could be that farmers that have large farms are more commercial oriented and most likely to consider farming as a business. Similar result has been reported by **Udoh (2005)** in Akwa Ibom while the opposite of the result have been reported by **Oboh and Kushwaha (2009)** in Benue, **Henri-Ukoha *et al*., (2011)** in Abia state, and **Oboh and Ineye (2011)** in Benue State.

This study determined factors that affect credit delinquency among food crop farmers in Akwa Ibom state. The descriptive analysis of the socio-economic characteristics of respondent reveal that majority of borrowers were under the age of 60 years and have one form of formal education or the other ranging from primary to tertiary education. Empirical evidence from binomial Probit and Logit regressions reveal that the borrower's non-farm income, credit amount received, household size, net farm profit and farm size are determinants of informal credit delinquency among food crop farmers in rural Niger Delta. The study also discovered that the probability of food crop farmers being credit delinquent is about 0.427. The probability is low and could be attributed to the closeness between the informal lenders and the farmers. Considering the magnitude of variable effect on the probability of being credit delinquent, the study discovered that household size and farm size of food crop farmers are two major factors influencing the decision to be delinquent on informal credit.

Based on the results presented in the study, it is recommended that food crop farmers should diversify their production activities to minimized risk especially in income generated. Farming communities should also be encouraged to form marketing co-operative societies as a means of generating additional income to augment credit obtained. Local government authorities should set up credit programmes that should focus on soft loans to rural farmers at a subsidize interest rate.

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