International Journal of Agricultural Management and Development
Available online on: www.ijamad.iaurasht.ac.ir
ISSN: 2159-5852 (Print)
ISSN:2159-5860 (Online)
Research Paper

Loan Repayment and Its Implication on Agricultural Financing in Ghana-The Case of MiDA Agriculture Program

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Received: 19 October 2017,
Accepted: 26 April 2019

Abstract

The study investigated performance of loan repayment among rice farmers under the MiDA agricultural credit programme in the Hohoe Municipality. Primary data was collected from 120 farmers from four beneficiary towns while secondary data was gathered from literatures and various actors. Multistage random sampling technique was used to select the respondents. Obtained data were analyzed using t-test, Tobit regression model. Results from t-test showed statistically significant difference (p<0.001) between the amount of loan applied for and the amount received by farmers. Out of the ten explanatory variables included in the Tobit regression model, five were significant. Significant factors (p<0.001) include: sex, household size, group size, value of output and timeliness of loan disbursement.

Keywords:
Agricultural financing, loan repayment, MiDA, Tobit Regression Model, rice farmers

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INTRODUCTION

According to World Bank (2014), about 70 percent of the world's poor live in rural areas and mostly depend on agriculture as the main source of income and employment. Agriculture remains to be an important economic activity in Ghana contributing more than 22 percent to gross domestic product (GDP) and foreign exchange earnings (CIA World Fact Book, 2014). Again, the agriculture sector remains the main source of livelihood and employment for about 54 percent of the people in the country (Ghana Statistical Service, 2014). In spite of the relevance of the sector, most farmers' find it difficult to save enough capital to establish economically viable agriculture ventures (Olowa, 2011). This is because agriculture cash flows are seasonal in nature (i.e. cash inflows and outflows seldom occur at the same time; therefore, farmers are left with no option than getting external source of funding to meet their expenditures which they do not even get at all or record low yield). Agricultural credit therefore plays short-circuiting role in individual savings process to increase investment in agriculture (Olowa, 2011). Jan et al., (2012) and Sial, et al., (2011) also alluded to the fact that agricultural credit plays crucial role in procuring agricultural equipment's and machineries, purchase of raw materials, payment of wages, acquisition of farm inputs (seeds, fertilizer, pesticides, herbicides) to increase agricultural productivity. Credit is therefore an indispensable tool for achieving socio-economic transformation of rural economies in most developing countries (Duong & Izumida, 2002; Kohansal & Mansoori, 2009).

In view of this, successive government's strategy in Ghana has been on increasing agriculture productivity and economic growth over the years through agricultural programmes (Ministry of Food and Agriculture (MoFA), 2014). Ghana has received several institutional credit schemes from donor countries in the form of agricultural credit and technology to support farmers to increase production and productivity over the years (Owusu-Antwi et al. 2010). The Government has also intervened in the credit market by providing guarantees to banks on loans extended to farmers, imposed quotas on credit, subsidized interest rate on specific forms of loans administered in the agricultural sector (MoFA, 2014). These programmes had not significantly impacted on farmers' level of productivity and standard of living as desired because of the numerous problems identified with such projects ranging from project design through to implementation (Amedi, 2012; Awunyo-vitor, 2012; Aryeetey, 1996). Agricultural credit programmes are in serious difficulties in many developing countries including Ghana because of high loan delinquency and default (Awunyo-vitor, 2012). Awoke (2004) in his study also concluded that, in spite of the importance of credit to agriculture, its repayment is fraught with a number of problems. Some of these problems identified in empirical studies contributing to poor loan repayment performance include but not limited to; poor management procedures, loan diversion, pests and diseases affecting yield, unreliable weather condition, delay in loan delivery, non-profitability of ventures, unwillingness of farmers to repay loan and marketing constraints as reported by (Awoke 2004; Kohansal & Mansoori, 2009). These poor loan repayment performances mentioned earlier had affected effective implementation of so many credit schemes and this has been a major source of worry to lenders, financiers and other stakeholders in the financial sector.

One of the donor institutional credit programmes implemented in Ghana in recent time is the MiDA agricultural credit programme which commenced in 2007. The funding was received from an independent United States foreign aid agency, Millennium Challenge Corporation (MCC). In order to utilize the funds well, the government established the Millennium Development Authority (MiDA) in 2006 to manage the Millennium Challenge Accounts (MCA) to

achieve project goals. The programme has overall goal of raising farmer-household income and reducing poverty through private sector-led and agribusiness development in twenty three (23) selected Districts of Ghana (MiDA, 2011). The programme has two - fold objectives: i) Increase production and productivity of high-value cash and food crops in the intervention zones in Ghana and ii) Enhance the competitiveness of high –value cash and food crops in the local and international markets (MiDA, 2011).

The programme design was assumed to have taken into account the flaws observed from previous agricultural projects in Ghana. However after five years of implementation, evidence available shows that, poor loan repayment problems still exist. This means that, either the credit programme design was not adequate enough to have taken into account all flaws observed in previous studies or there were new emerging factors accounting for the poor loan repayment performance. It could be due to poor implementation and management or other exogenous factors beyond.

Poor loan repayment performance has also become a topic of considerable importance in recent times especially in developing countries including Ghana where farmers are finding it difficult to access credit. Studies by G.S.S. (2014) showed that, the growth rate of investment in agriculture (0.8) is less than other economic sectors though agriculture contributes 25.6 percent to GDP. Leaving this poor loan repayment issue unaddressed in the first place will have consequential effect on agricultural productivity, food security, employment, famine, nutrition, health, poverty reduction, household welfare and national income (Zeller, 1997).

Thirdly, the MiDA agricultural credit programme is a newly implemented credit programme in Ghana, with limited or no empirical studies focusing on loan repayment performance of farmers. Though, there have also been few studies on maize productivity, training effectiveness and adoption of soil and water conservation practices under the MiDA program, loan repayment performance has not been investigated under the project. This paper, therefore intends to fill the knowledge gap by answering the question; what explains the poor loan repayment performance among beneficiaries under the MiDA agricultural credit programme and how could the problem be avoided in the future? Identifying the factors that influence loan repayment performance among beneficiaries would assist in: improving programme designs and operation of agricultural credit schemes, providing useful information to stakeholders in agricultural financing on managing rural financial services projects, providing information to banks on lending, recovering, development of products and managing their loans in a better way.

Theoretical Framework

The capability of borrowers to repay their loans is an important issue that needs attention. Borrowers will either repay their loan or choose to default. Borrower defaults may either be a voluntary one or involuntary (Brehanu & Fufa, 2008). According to Brehanu & Fufa (2008) involuntary defaults of borrowed funds could be caused by unexpected circumstances occurring in the borrower's business that affect their ability to repay the loan. Unexpected circumstances include lower business revenue generated, natural disasters and borrowers' illness.

In contrast, voluntary default is related to morally hazardous behaviour by the borrower. In this category, the borrower has the ability to repay the borrowed funds but refuses to pay because of the low level of enforcement mechanisms used by the institution (Brehanu & Fufa, 2008). Research has shown that, a group lending mechanism is effective in reducing borrower defaults (Amedo, 2000). In group lending, the loan is secured by the co-signature of members within the group. Each member will put pressure on the others in the group to meet the loan repayment schedule.

Objectives of the study were:

To identify socio–demographic characteristics of respondents under the scheme

To determine whether there is a significant difference between loan applied for, and loan received by farmers under the MiDA project.

To determine the factors influencing loan repayment performances of beneficiaries

METHODOLOGY

Study area

The study area is Hohoe Municipality in the Volta Region where rice is grown as a cash crop. The Municipality falls under southern intervention zone, one of the three intervention zones within the MiDA agricultural credit programme. The Municipality is located within longitude 0°15‟E and 0°45‟E and Latitude 6°45‟Nand 7°15‟N at the heart of the Volta Region. The Municipality consist of towns including; Lolobi, Akpafu, Santrokofi, Likpe, Alavanyo, Leklebi, Have, Nyagbo Liati, Afadzato, Ve, Logba, Tafi and has Hohoe as its administrative capital (Ghana Districts, 2011). Hohoe Municipality is located in the centre of the Volta Region. The republic of Togo borders the Municipal area to the east, Kpando District to the west, Jasikan District to the north-west and Ho Municipal to the south. The Municipality falls within the Forest-Savanna transitional ecological zone of Ghana, with the forest part at its southern and eastern parts and tapering into the middle of the Municipality. The Soils are generally sandy with overlying iron pans. The rainfall pattern in this area is bimodal, normally occurring between April through to July for the major season and September through November for the minor season with a mean rainfall of 1,300 mm per annum. (Ghana Districts, 2011). According to the 2000 Population and Housing Census, the Municipal area has population of 144,502 with an annual growth rate of 1.9 percent. Hohoe Municipal covers an area of 117,200 hectares which is 5.6 percent of the Volta Region and represents 0.5 percent of the national land area. About 65 percent of the people in the Municipality are engaged in agriculture, 15 percent in industry and 20 percent in service. Available land suitable for agricultural purpose is 65,000 hectares: that is, 55,085 hectares for crop and 9,962 hectares for livestock production (47 percent and 8.5 percent for crops and livestock respectively). Some important crops cultivated in the Municipal are: Rice, maize, cassava, yam, plantain, vegetables and fruits.

Sample size and sampling technique

Multi-stage sampling technique was used in selecting 120 loan beneficiaries under the MiDA/ACP Scheme in the Hohoe Municipal area. The first stage involved purposive selection of the four (4) FBOs that cultivated rice under the MiDA agricultural credit program. A list of loan beneficiaries was collected from the Banks by the help of the credit officers and this served as the sample frame. In all, 199 individuals coming from 4 FBO's benefited under the programme. Since the membership of the four (4) FBOs were not the same, a proportional sampling technique was employed to decide on the number of members to select per group as well as the number of males and females per group. During the second stage of selection, simple random sampling was used to arrive at the required number of beneficiaries per the four FBOs to make up to the total sample size (120).

Method of data collection

Interviews using structured questionnaire were the main techniques used in the gathering the requisite data. Open and close ended questions were used. Some of the information collected from farmers includes borrower's characteristics such as age, sex, marital status, level of education, household size and farming experience *etc.* The open- ended questions were to bring out understanding of the situation on the ground.

A separate questionnaire was administered to obtain other information from key stakeholders (Banks and MiDA Officials) who financed the project. Some of the information

gathered include: Background information about the banks, cumulative loan repayment, amounts in defaults, poor recovery rate, banks view towards the credit scheme. There were some other informal discussions and personal interviews with bank officials and MiDA Officials to help understand some issues.

Hypothesis

H_0: There is no significant difference between the mean credit applied for and the mean amount of credit granted.

Validation of hypothesis

The above hypothesis was validated using the student t-test statistic. The null hypothesis (H0) is rejected in favour of the alternative hypothesis (Ha) if $t_{cal.} > t_{crit.}$ at specified significance level. On the other hand, we do not reject the null hypothesis if t cal. < t crit

Methods of analyses

In determining whether any significant difference exists between credit applied for and credit granted, t-test was used to test for differences in means of the credit applied and credit granted. The test statistics of the t-distribution within n-1 degrees of freedom is computed using the formula

$$t = \frac{\overline{x_1} - \overline{x_2}}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}} \quad (1)$$

where:

n_1 and n_2 = is the sample size for the credit required and credit granted

X_1 and x_2 = sample means for the credit required and loan amount received

S_1 and S_2 = sample standard deviation for credit required and loans received

Tobit regression model for factors influencing loan repayment performance

The two-limit Tobit model was originally presented by Rossett and Nelson (1975) and discussed in detail by Maddala (1992) and Long (1997). The model derives from an underlying classical normal linear regression model and can be represented as:

$$Y_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \ldots + \beta_n X_n + \varepsilon_i \quad (2)$$

Where: $\varepsilon_i \sim N(0, \sigma^2)$

Such that:

$$Y_i \begin{cases} L(0) & if \ Y_i^* \leq L \\ Y_i^* = X_i\beta_i + \varepsilon_i & if \ 0 < Y_i^* < 1; \\ U(1) & if \ Y_i^* \geq U \end{cases}$$

$$(i = 1, 2 \ldots\ldots\ldots, n) \quad (3)$$

where,

Y_i = Observed dependent variable e.g. Loan repayment ratio (working capital) of the i^{th} borrower. (Ratio of amount repaid to the amount due (Principal+Interest).

Y^*_i = Non- observable latent variable representing (unobserved for values smaller than 0 and greater than 1)

X_i = Vector of independent variables (factors affecting loan repayment and intensity of loan recovery)

β_i = Vector of coefficients

ε_i 's = Residuals that are independently and identically normally distributed with mean zero and a common variance: $\varepsilon_i \sim N(0, \sigma^2)$

L and U = Non- observable threshold/cut-off points, (L=Lower cut-off and U=Upper cut-off points having values of 0 and 1 respectively)

i= 1, 2,……. n (n is number of observations)

By using the two-limit Tobit regression model, the ratio of repayment was regressed on the various factors hypothesized to influence loan repayment performance of smallholder farmers in the study area.

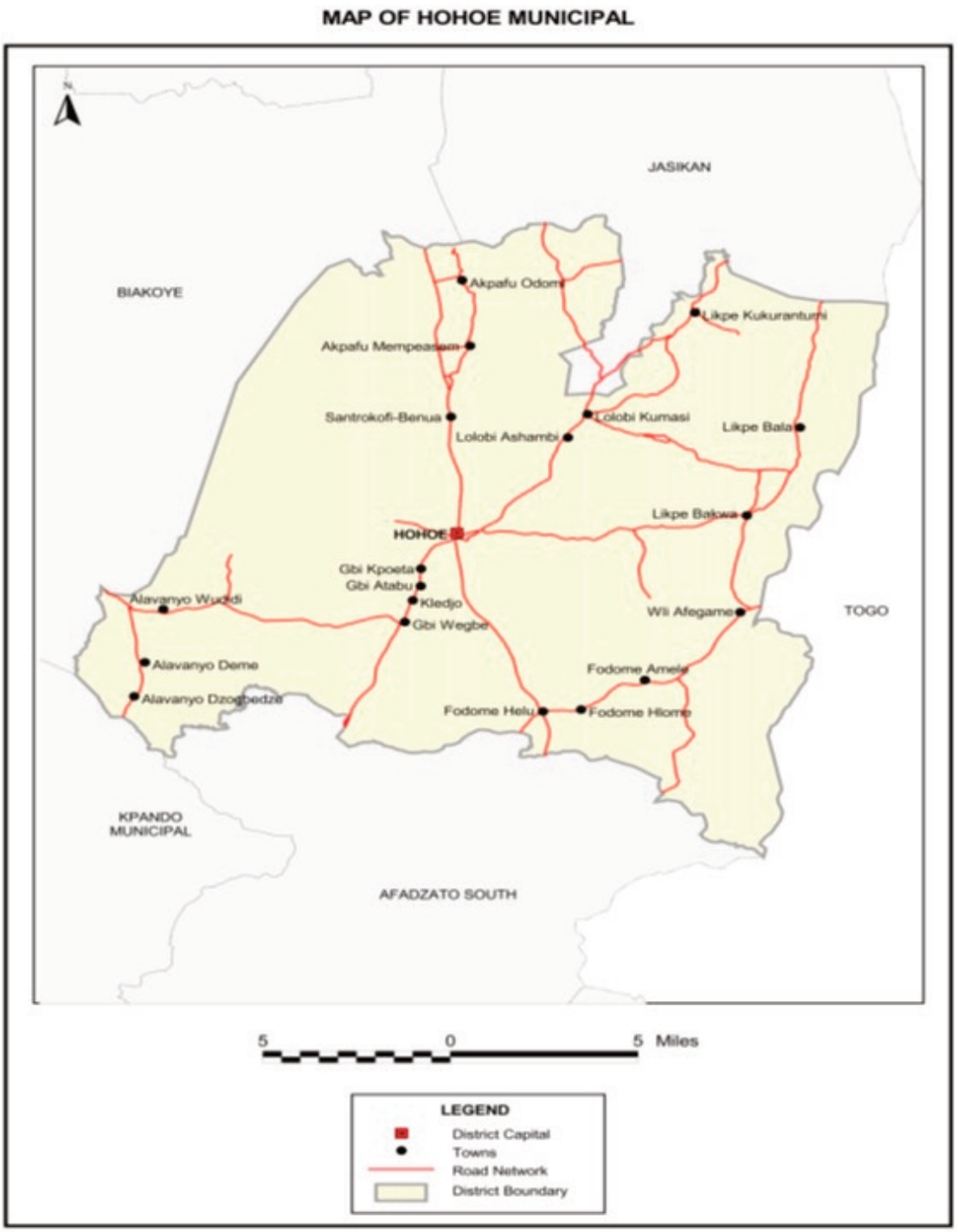

Figure 1. Map of Hohoe Municipal
Source: Ghana Statistical Service, 2014

Table 1
Description of the Variables Used in the Regression Model

Variables	Description	Measurements	*A-piori* expectation
LRR	Loan repayment performance of working capital loan	Ratio of loan repaid to loan due. (0 - 1)	
SEX	Sex of beneficiaries	Male=1 ;female=0	-
AGE	Age of beneficiaries	Years	+/-
HHS	Numbers of people living with the beneficiaries	Numbers	+/-
OF	Off- farm employment	1=Yes 0= otherwise	+
VOUT	Value of output	GHS	+
FRMEXP	Number of years cultivating rice	Years	+
GS	Number of borrowers in a group	Numbers	-
LMON	Monitoring by bank Officials	1= Yes ; 0 = otherwise	+
TDIS	Timeliness of loan disbursement	1=Yes; 0 = otherwise	+
Ext	Access to extension services	1=Yes; 0 = otherwise	+

From Table 1 the *a priori* expectation for each variable is either negative or positive. The positive *a priori* expectation means that with an increase in the variable the loan repayment performance is expected to increase; vice versa for the negative. It is on the basis of these factors that the study modelled our loan repayment equation. Ten variables were modelled as a function of farmer-specific socioeconomic and demographic factors and institutional factors. STATA 10 software was used to estimate the parameters. The expected signs of their coefficients were predicted (*a priori)* based on past studies and economic theories.

LRR (Y) = β0 + β1 SEX + β2AGE +β3 HHS + β4 OF+β5VOUT+ β6FRMEXP + β7GS +β8 LMON +β9TDIS+ β10 Ext+ Ui

Dependent variable

Loan repayment ratio (LRR): The dependent variable is the proportion of loan repaid during the due period. This is calculated as the ratio of the total loan repaid to total loan due. Its value ranges between 0 and 1. Those borrowers who did not repay any amount of money were considered as complete defaulters (i.e., the value of repayment ratio in this case is zero). On the other hand, those farmers who fully repaid the loans they borrowed within the stated time are considered non-defaulters (Abebe, 2011)

Independent variables

Sex (SEX): This has to do with the sex of the borrower. A dummy variable was used to specify the sex of the respondents. A value of 1 was assigned to males and 0 to females. The coefficient of this variable is expected to be negative. This is because, several studies by (Amedo, 2000; Udoh, 2008; Zeller; 1997) showed that the multiplicity of responsibilities of men as breadwinners may require them to divert the proceeds from their farms to pay for domestic financial commitments rather than fulfilling their loan obligations. On the other hand, women may choose less risky projects and exhibit a high sense of responsibility and are more affected by social pressure. So, females have exhibited higher loan repayment than males as in the case of Zeller (1997).

Age (AGE): It is defined as the age of respondent in years. It is a continuous variable measured in whole year. Akpan (2010) noted that with increase in age, it is usually expected that borrowers get stability, a lot of ex-

perience in their farming businesses; therefore, they are able to generate income which leads to higher loan repayment performance. Moreover, as borrowers‟ age accumulates they acquire more wealth and are more responsible for their loan than young borrowers. In view of this, we expect this variable to have a positive impact on repayment performance. On the other hand, as people get older, their ability to effectively use finance and generate income declines, therefore the variable could also have a negative impact leading to low credit repayment performance (Afolabi, 2010).

Household size (HHS): Abebe (2011) defined household size as a group of individuals who reside and eat together from the same compound for at least three months preceding the interview. If the borrower has large household size, a considerable amount of income from the project could be diverted away from loan repayment to household consumption. It is expected that larger household size decrease loan repayment performance of farmers (Ojiako & Ogbukwa 2012; Ugbomeh et al., 2008). Therefore, in this case, the sign is negative. To the contrary, Afolabi (2010) found a positive relationship between family size and loan repayment and attributed it to the respondents‟ extensive utilization of family labour in the farming activities. Therefore, the money the farmer might have used to pay for hired labour could be saved to repay loan (Amedo, 2000). Based on this, families with large labour-force for agricultural purposes would have low probability of defaulting hence carry a positive sign.

Off-farm employment (OF): This is defined as any other economic activity carried out by respondent outside farming. Borrowers who have other sources of income from employment in government or private organizations are expected to have positive contribution towards loan repayment performance (Oke et al., 2007). These economic activities include: tailoring, civil servant, hairdressing, petty trading, handicraft (weaving, blacksmith, and tannery, *etc.*). The Off-farm activities are measured as a dummy; 1 if the respondent participates in off farm activities, and 0 if otherwise. Respondents that participate in off-farm activities are expected to have better loan repayment performance because these additional sources of income would back the farmers up to settle debt even during bad harvesting seasons and when repayment period and agricultural prices are inversely related (Gebeyehu, 2002). Situations where repayment starts immediately after harvest when prices of agricultural products are low, farmers who are engaged in non-farm activities can more easily repay their loan on time than those who are not involved in non-farm activities. It is assumed that the variable has a positive impact on loan repayment.

Value of output (VOUT): This is the total value of output by each respondent measured in Ghana cedis (GHS). This was obtained by multiplying the average market price of the farmer by the output obtained by the farmer. As productivity determines the wealth of the individual, it is expected that value of output will have a positive relationship with loan repayment (Gebeyehu, 2002).

Farming Experience (FRMEXP): Farming experience is defined as the number of years the farmer has been cultivating rice. It is measured in years. Borrowers who acquired extensive experience in rice farming before accessing the loan know how to run a more profitable business than new rice farmers hence could have better repayment record (Afolabi, 2010; Arene, 1992). Thus, a positive sign is expected.

Group size (GS): This represents the number of borrowers in each FBO. The hypothesis is that as the size of the group increases, heterogeneity increases and the more imperfect is the information flow among members, and this can falter repayment because people are coming from different backgrounds to work together. If the group is relatively small (≤15) in size and the members live close to each other, there is less diversion of funds and members can easily monitor their peers to

improve loan repayment (Zeller, 1997). However, if group size is large above 15 it is possible to lead to low repayment performance hence having a negative sign as *a priori* expectation.

Loan monitoring (LMON): For every agricultural project, if credit officers do continuous follow up (effective monitoring) at critical stages of the crops life cycle loan will be utilized well and repayment will improve. This activity makes borrowers to improve the proper utilization of the loan thereby improving repayment performance (Oke et al., 2007). This variable is measured as a dummy where 1 represents effective monitoring and 0 otherwise. This variable is expected to yield a positive relationship with loan repayment.

Timeliness of loan disbursement (TDIS): Credit for land preparation, planting, fertilizer, harvesting labour, etc. must be available at the appropriate time or else the credit scheme as well as the livelihood of borrowers is put in jeopardy. If loan is disbursed in time by banks to farmers (A time when farmers need the loan to carry out specific activities as per their crop calendar) then farmers can make adequate arrangements to purchase farm inputs for production activities. This will prevent farmers from diverting loans to non-intended purposes. This variable is measured as a dummy: 1 if the farmer receives the loan in time to carry out specific farming activity as per crop calendar, and 0 if the farmer does not receive the loan in time. Johnson and Rogaly (1997) noted that timeliness of loan disbursement is important when loans are used for seasonal activities such as farming. They argued that complicated appraisal and approval procedures, which might delay disbursement, influence program of seasonal loans for farmers to purchase inputs. Further, they noted that this could in turn worsen the prospects of repayment by diverting loan to non-intended purpose. However, a positive sign is expected if the loan is disbursed in time. Timely delivery of credit was observed to improve loan recovery significantly (Zeller, 1997).

Access to extension services (Ext): This refers to whether the farmers actually have contacts with agriculture extension agents for advisory services. This is a dummy variable, which takes a value 1 if the farmer receives extension service and 0 otherwise. The variable representing extension service as a source of information has influence on farm households' technology adoption decision (Bezabih, 2000). It is hypothesized that this variable positively influences credit repayment.

RESULTS AND DISCUSSION

Summary of socio–demographic data

The descriptive statistics of socio-demographic profile are presented in Table 2. Age range for farmers was between 26 and 68 years old. The household size of respondents varied from 1 to 19. Average family size was of 4 persons, with an overall dependency ratio of between 0.3 to 1.0. Farm size per household was between 0.81 to 24 ha while farming experience was between 2 to 35 years

Credit applied and credit granted to farmers under the MiDA Project

Summary of loan statistics results of respondents under the MiDA agricultural credit programme in Table 4 formed basis for explaining whether statistical difference exist between credit applied and granted to respondents under the MiDA agricultural credit programme. In all, a total amount of GHS 612,609.24 was applied for, of which an amount of GHS 444,733.05 was disbursed. This represents about 72 percent of the amount. The high standard deviation of the amount of loan applied for and received thus GHS 3,800.55 and GHS 3,706.11, respectively indicates that, loan amounts applied for and received were not the same and the variations in loan amounts could affect farm investment activities. Further analysis in Table 4 to find out the percentage proportion each respondent received showed that, 1percent received 30 percent of loan amount applied

Table 2
Summary of Socio – Demographic

Variables	N	Min.	Max.	Mean	SD
Age (yrs)	120	26	68	41.89	7.31
Household size(No.)	120	1	19	4.05	2.86
Education (yrs)	120	0	16	8.35	4.14
Farm size (Ha)	120	0.81	24.28	3.50	2.40
Farming Experience (yrs)	120	2	35	11.50	5.43
Dependency ratio	120	0.3	1.0	0.733	0.213

for while 3 percent received 100 percent. The result also showed that, majority of respondents representing 38 percent received 80 percent of loan amount while 29 percent received 70 percent.

The distribution of respondents on the basis of loan sizes applied for and received as per the various farm sizes is presented in Table 5. Out of the 120 farmers interviewed, 10 percent applied for GHS 2,000 or less; 43 percent applied for loan between GHS 2,100-GHS 4,000; 19 percent applied for loan between GHS 4,100-GHS 6,000; 28 percent applied for loan more than GHS 6,000. The average loan applied for was GHS 5,105.08.

Looking at the amount received by respondents, 34 percent of the farmers received loan between GHS 2,000 or less; 36 percent received loans between GHS 2,100-GHS 4,000; 16 percent received loans between GHS 4,100- GHS 6,000 and only 15 percent had loan greater than GHS 6,000. The average loan amount received was GHS 3,706.11. From the result in Table 5, there are differences in amounts received by respondents per the same farm size. To conclude, the general result showed that, loan sizes received was far lower than amount applied for.

The result from the paired t-test analysis which aimed at determining whether there is a significant difference between loan amount applied and amount received by farmers under the MiDA agricultural credit programme is shown in Table 5.

The result in Table 4 indicates that, at 1percent level of significance, the mean amount of loan received by the farmers under the MiDA agricultural credit programme was significantly lower than the mean amount applied for and this has limited farmers capacity to optimize farm investment thereby affecting farm output and productivity negatively and lowering farm income necessary to repay loans. This problem of shortfall in amount was as a result of credit rationing and poor loan assessment done by the credit officers. Statistically, the result of 1percent level of significance suggests that the null hypothesis should be rejected in favour of the alternate hypothesis.

The result from Tables 4 and 5 is in agreement with the findings of (Gabriel & Saurina 2004; Oboh, 2008; Von Pischke, 1991) that very small loans may not bring commitment on borrowers to use the loan productively. The two results again support views of Roslan and Karim (2009); Oladeebo and Oladeebo (2008) that appropriate estimation of loan amount/budget is needed to cultivate the land to make good returns from the investment.

Factors influencing loan repayment performance among rice farmers

Results in Table 7 shows the factors influencing loan repayment performance among rice farmers under the MiDA agricultural credit programme in the Hohoe Municipality. The direction of the co- efficient of all the explanatory variables conforms to their a priori

Table 3
Socio-Demographic Characteristics of Respondents

Variables	Totals (%)
Sex	
Male	58
Female	42
Age(yrs)	
≤ 29	
30-39	2
40- 49	38
≥50	12
Marital Status	
Married	75
Never married	15
Divorced	10
Educational	
None	8
Primary	50
Secondary	34
Tertiary	8
Location	
Akpafu Odomi	25
Gbi Godenu	28
Gbi Wegbe	22
SantrokofiBuem	25
Farming Experience(yrs)	
≤5	
6-11	10
12-17	49
18-23	26
≥24	12
Farm size(Ha)	3
< 2.0	
2.1- 4.0	10
4.1- 6.0	70
> 6	7

Table 4

Percentage of Loan Received Compared to Amount Applied For

Percentage of Amt. received to Amt. Applied (%)	Frequency	Percentage (%)
30	1	1
50	17	14
60	11	10
70	35	29
80	46	38
90	6	5
100	4	3
Totals	120	100

Table 5

Distribution of Respondents by Sizes of Loan Applied and Received

Farm Sizes(Ha)	≤2,000	2,100-4,000	4,100-6,000	>6,000	Total
≤ 2.0	0.8% (0.8%)	2.5% (6.7%)	3.3% (0.8%)	4.2% (2.5%)	10.8%
2.1-4.0	5.8% (25.8%)	32.5% (23.3%)	13.3% (12.5%)	17.5% (7.5%)	69.2%
4.1-6.0	1.7% (3.3%)	4.2% (2.5%)	0.0% (0.8%)	1.7% (.8%)	7.5%
>6	1.7% (4.2%)	4.2% (3.3%)	2.5% (1.7%)	4.2% (3.3%)	12.5%
Total	10.0% (34.2%)	43.3% (35.8%)	19.2% (15.8%)	27.5% (14.2%)	100.0%

[a.] *Figures in bracket ( ) represent % of loans received.*

[b.] *Figures not in bracket represent amount applied for.*

Table 6

Paired T –Test Comparison of Credit Applied and Credit Granted

Variables	Individual Mean	Paired differences					*p*-value
		Variance	SD	Std. Error Mean	t	df	
Loan applied	5,105.08	1,398.97	1,311.32	119.71	11.69	119	0.000***
Loan received	3,706.11						

*** $p<0.01$

expectations. The regression coefficient was interpreted as the marginal effect which measured the sensitivity of loan repayment ratio to the various borrower-specific socioeconomic and demographic factors and institutional factors. It measures the changes in the repayment ratio as a result of a unit change in any of the borrower-specific socioeconomic and demographic factors and institutional factors holding all the other factors constant. A total number of 120 farmers were used for the analysis. The Pseudo R^2 value of 0.8296 means that about 82.96 percent of variations in the dependent variable was explained by the independent variables, indicating relatively high explanatory power of the model. In testing the hypothesis that Ho: b1, b2,..., b10 = 0, against the alternate hypothesis Ha: b1, b2... b10 is different from zero, the F statistics was employed.

Table 7
Tobit Regression Result of Factors Influencing Loan Repayment Performance

Variables	Coefficient	RobustStd. Err	t-value	*p*>|t|
Sex	-0.08137 **	0.03393	-2.40	0.018
Age	0.00186	0.00268	0.69	0.490
Hhs	-0.01033*	0.00614	-1.68	0.096
Of	0.01233	0.03461	0.36	0.722
Vout	0.00002 *	7.04006	1.75	0.083
Gs	-0.01013 ***	0.00380	-2.66	0.009
Lmon	0.00645	0.03802	0.17	0.866
Fmexp	0.00063	0.00359	0.18	0.861
Tdis	0.13174*	0.07253	1.82	0.072
Ext	0.02105	0.03580	0.59	0.558
Goodness of fit				
Number of obs= 120	Pseudo R^2= 0.8296			
F (10, 110)= 2.83	Prob > F= 0.0037			

Dependent Variable: Loan repayment ratio (LRR)
*** $p<0.01$, ** $p<0.05$ and * $p<0.1$

The F-value (Prob>F) of 0.0037 implies that the model is significant at 1 percent or is significantly different from the critical value of F at 9 and 111 degrees of freedom for numerator and denominator respectively, at significance level of less than 1 percent. The model output revealed that the null hypothesis is rejected, implying that the model can help estimate the relationship between loan repayment ratio (dependent variable) and the hypothesized explanatory variables. Five of the variables were significant whiles the rest five were not significant. The significant variables include: Sex, household size, value of output, group size and timeliness of disbursement while the insignificant variables include age, off farm income, loan monitoring by credit officers, farm experience and access to extension contact.

The regression results from the model have shown the essence of borrower-specific socioeconomic and demographic factors (borrower's sex, age, household size, off-farm employment, value of output and years of farming experience) and Institutional factors (size of FBO, loan monitoring by bank officials, timely disbursement of loan and effective extension service delivery) to have

influenced loan repayment performance.

Borrower's sex (Sex)

Table 6 shows that, farmers' sex negatively and significantly affects loan repayment performance of farmers at 5 percent significant level. Sex's coefficient of -0.08137 implies that additional male beneficiary is more likely to reduce loan repayment ratio by 0.0813 unit than in females. This suggests that loan repayment ratio increases as female respondent increases. This result met *a priori* expectation and supports the findings of Roslan and Karim (2009); Udoh (2008); Amedo (2000); Zeller (1997) that the multiplicity of responsibilities of men as breadwinners may require them to divert the proceeds from their farms to pay for domestic financial commitments rather than fulfilling their loan obligations. On the other hand, women may choose less risky projects and exhibit a high sense of responsibility and are affected by social pressure.

Household size (Hhs)

Household sizes of loan beneficiaries was significant at 10 percent with a negative sign, which implies that beneficiaries with larger household sizes tend to have lower loan repayment ratio than those whose household sizes are smaller. The coefficient in the estimated model is significant with the expected sign, supporting the hypothesis. The result suggests that the burden imposed by a large family was likely to squeeze agricultural resources from which loan could be repaid. The co-efficient of the variables implies that as household size increases by one person, the proportion of loan repayment performance also decreases by 0.01033 units. This result met *a priori* expectation and corroborated with results of Ojiako and Ogbukwa (2012), Ugbomeh et al. (2008) who in their studies of loan repayment found that larger household sizes decreased loan repayment performance of farmers. The household size did not yield a positive sign because the dependency ratio computed in appendix (3) showed that 86 out of 120 respondents' (72 percent) household recorded dependency ratio above 0.5 which means that there were a larger number of children (<15) and elderly (>64) within the household hence could not contribute to farm labour.

Total value of output (Vout)

The result from the regression shows that total value of output (Vout) has a positive relationship with loan repayment ratio at 10 percent significant level. This implies that a unit increase in the value of output increases loan repayment performance by 0.00002 units. The value of output increases the income of the farmer hence their capacity to repay the loan faster. This implies that most loan beneficiaries are rational in nature are willing to settle their loan facilities all things being equal. This variable conforms to the a priori expectation and supports the argument of Gebeyehu (2002) that as productivity determines the wealth of the individual, value of output will have a positive relationship with loan repayment.

Group size (Gs)

The regression output presented in Table 7 indicates that at 1 percent significant level, group size was negatively associated with loan repayment performance. This implies that as group size was increasing, loan repayment ratio was decreasing. It could also be inferred from the result that for a unit change in the membership of a group, there is 0.01013 decreases in loan repayment ratio. This suggests that the bigger the group size the more imperfect is informational flows between members leading to poor monitoring as well as poor repayment. The result met *a priori* expectation and favourably supports Maru (2007) and Zeller (1997) that as the size of the group increases, heterogeneity increases and the more imperfect is the flow of information among members and repayment can falter because of poor screening and monitoring.

Timeliness of loan disbursement (Tdis)

Timeliness of loan disbursement finally, influenced loan repayment performance positively and significantly at 10 percent level. The result indicates that a unit change of farmers who receive loan on time increased loan repayment ratio by 0.1317 points. This means that an effort aimed at disbursing the loan in good time to carry out specific activity will go a long way to increase the loan repayment ratio by about 13.17 percent. This result met *a priori* expectation and supports findings of Zeller (1997) and Johnson and Rogaly (1997) that timeliness of loan disbursement is important when loans are used for seasonal activities such as agriculture. They also argued that elaborate appraisal and approval procedures delayed disbursement and had poor repayment performance on the program.

CONCLUSION AND RECOMMENDATION

The study examined the loan repayment performance of smallholder farmers under the MiDA agricultural credit program in Hohoe Municipality by looking at the factors that influence poor loan repayment performance and whether statistical difference exist between loan applied for and granted under the project. Findings of the study revealed that, out of the 120 farmers interviewed, 43 percent applied for loan between GHS 2,100-GHS 4,000; meanwhile average loan applied for was GHS 5,105.08. Again, 34 percent of the farmers received loan between GHS 2,000 or less and 36 percent received loans between GHS 2,100-GHS 4,000 as against average loan amount of GHS 3,706.11. To conclude, the general result showed that, loan sizes received by farmers was significantly lower than what was applied for. This might have limited farmers' capacity to optimize farm investment thereby affecting farm output and productivity negatively and lowering farm income necessary to repay loans. Based on the findings it is recommended that, financial institutions should always meet with farmers to carefully negotiate loan amounts based on realistic crop budget to ensure adequacy and build trust.

The results obtained in the study also revealed that household size, sex, and group size are the factors reducing loan repayment performance. On the contrary, value of output and timeliness of disbursement are the factors increasing loan repayment. These factors should guide banks in loan approval to reduce poor repayment. Specifically, smaller group sizes/household sizes of FBOs improved loan repayment and larger group size/ household size *vice versa*. About sex, female respondents performed relatively better than males. Looking at the positive variables, increase in the value of output increased loan repayment performance and those farmers who received loan on time showed increase in loan repayment performance. Based on the findings from the study, it is recommended that, financial institutions use factors found to have significant effects on repayment performance (value of output, timely disbursement, household size, sex, group size) as key requirements to screen and administer loan to farmers. Secondly, Ministry of Agriculture in collaboration with project initiators should help farmers increase output so as to increase income to repay loan. Finally, banks should give credit to farmers on time so as to have good yields and improve upon repayment. Improvement in loan repayment performance will entice financial institution to have interest in agriculture financing.

ACKNOWLEDGEMENTS

The author is very grateful to Dr. George Tsey-Mensah Kwadzo and Dr.Yaw Osei – Asare of Department of Agricultural Economics and Agribusiness, University of Ghana for their comments on this paper.

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How to cite this article:
Amedi, M., Dumayiri, M., & Suhuyini Mohammed, A. (2019). Loan repayment and its implication on agricultural financing in Ghana-The case of MiDA agriculture program. *International Journal of Agricultural Management and Development, 9*(4), 391-408.
URL: http://ijamad.iaurasht.ac.ir/article_667027_0cc485ecfb7991d116021e5628528adf.pdf