
Analysis of Agricultural Loan Repayment Behaviour among Poultry Farmers in Jos South Local Government Area of Plateau State, Nigeria

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ABSTRACT: This study examined agricultural loan repayment behaviour among poultry farmers in Jos south Local Government Area of Plateau State, Nigeria. In order to conduct the study, 136 poultry farmers were sampled. The study's respondents were chosen using a two-stage sampling technique. Descriptive and inferential statistics were applied to the primary data, which were gathered using a questionnaire and an interview schedule. According to survey results, the majority (65%) of respondents were men with a mean age of 44 years. The majority of respondents (90%) were married, and the average household size was 5 persons. The study also revealed that 1795 birds on average were kept in stock, and that 50% of farmers had tertiary education. Further analysis of the results reveals that 73% of the respondents had no contact with extension services. The outcome also demonstrates a significant level of loan default among farmers with 65% not repaying their loans as agreed. Poultry farmers in the study area obtained financing from both conventional and informal credit institutions. Age, educational attainment, household size and income were shown in the logit regression results to be the important factors influencing loan repayment among poultry farmers. The study recommended funding organizations to support farmers while also educating them on the need for loan repayment. Government and other agricultural stakeholders should make sure that farmers have access to formal education because research results indicate that farmers' educational attainment has a major impact on loan repayment. All the important factors that affected loan repayment should be taken into account when formulating policy. Interest rates on loans from official sources like commercial banks should be reduced. Informal sources should be supported so that farmers in the study area would have wider access to alternative sources of loans.

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INTRODUCTION

Poultry subsector today is unquestionably one of the most alluring investment opportunities in Nigeria's agricultural sector. The growth of Nigeria's economy is significantly influenced by the poultry industry. It serves as a "safety net" by offering money in an emergency. It plays a huge role in ensuring food security and rural livelihoods (Adeyonu *et al.*, 2016). The industry offers the populace employment opportunities, making it a source of income for them. Additionally, it offers an excellent amount of animal protein in the form of meat and eggs, both of which have a high nutritional value (Nasiru *et al.*, 2012). In Nigeria, poultry flesh (chicken) and eggs are delectable and largely acceptable across most cultural and religious divides. Chicken and egg contribute to a nutritious, balanced diet which is especially important for children, pregnant and nursing mothers as well as people who are ill. In Nigeria, poultry meat and eggs are extremely helpful in filling the protein shortfall. The Food and Agriculture Organisation (FAO) has reported that an adult Nigerian's daily minimum requirement for crude protein ranges from 65g to 85g, and that 36g of this minimal requirement should come from animal products (FAO 1992; Lawal and Balogun, 2007). The country's projected daily intake of animal protein per person was 20gm as of late. This suggests that the majority of Nigerians are consuming less animal protein (Iyangbe and Orewa 2009). Given the advantages of the poultry industry over other livestock, many people in Nigeria may rely on this sector to provide affordable animal protein. Therefore, encouraging poultry production in the country will mean giving many low-income households access to animal protein. A rise in poultry output however, cannot be achieved on its own without

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exogenous stimulus such as loans due to the capital-intensive nature of the industry and the high prevalence of poverty among Nigerian farmers. Poultry farming is one of the agribusiness sectors in Nigeria that needs funding in addition to the farmer-owned investment fund. The use of contemporary technology in the administration of the poultry industry is necessary for modern poultry production (Akpan, 2013). For maximum output in this resource-intensive agricultural subsector, the farmer must be in charge of the birds' housing, environment, feeding, and health requirements. Due to the significant functions that poultry production plays, financial support for livestock farmers is essential. One of the most important elements among the key components of agricultural productivity has long been recognised as credit. This is because the majority of agriculture technologies require farmers to buy better inputs before they can be adopted. Few farmers have the financial means to make such substantial purchases, and a lack of credit becomes a significant barrier to the development of agriculture (Akpan et al., 2014). According to Dadson (2012), accelerating economic growth in emerging nations requires investment in productive initiatives, particularly in the agricultural sector, which provides the majority of the population's subsistence. However, at low income levels, it could be challenging to save money. Therefore, in these situations, having access to loans might assist disadvantaged farmers in making investments and raising output. Thus, many governments in developing countries launched credit programmes with the idea that rural smallholder farmers would have access to formal sources of credit in order to increase agricultural productivity, particularly among the rural poor, and to help rural households maintain food security (Dadson, 2012).

Given the amount of money needed to operate a farm profitably, the emphasis on providing debt capital to farmers has become essential (Mejeha *et al.*, 2018). As a result, institutional agencies are now required to provide the farmers with the necessary capital base through credit. Credit has long been a crucial tool for implementing policies that can help in the adoption of cutting-edge technology and a rise in agricultural output. This is clear given that the majority of agricultural improvements inevitably result in farmers needing more money (Okpara *et al.*, 2013; Hosseini *et al.*, 2012; Okwara *et al.*, 2016; Mejeha and Obundike 1998). Additionally, many levels of government have recently emphasized the need to address the most prominent issue in agriculture by giving farmers the financing they require. Credit serves as a social role by enhancing the lives of rural residents in addition to being a tool for increasing farm productivity and revenue (Nwaru, *et al.*, 2011). Credit is essential for reducing poverty, diversifying sources of income, and improving small-scale farmers' business abilities (Ololade and Olagunju, 2013). Theoretically, the availability of credit increases farm income and farmer welfare and can also protect farmers from the predatory practices of informal credit providers, which is the foundation of this financing provided to farmers by government-sponsored credit programmes (Mejeha *et al.*, 2018). Therefore, the significance of agricultural loans cannot be overemphasized. Other than owned sources, the two main sources of loans available to Nigerian farmers are formal and informal sources. Among the informal credit sources are loans and gifts from family members, business partners, close friends, and local moneylenders. The majority of informal sources are non-governmental. The Nigerian Agricultural and Cooperative Bank (NACB), the Commercial and Merchant Bank, the Cooperative institution, and the agricultural development programme are some of the formal institution sources of farm credit in Nigeria. These sources of credit tend to give credit more in kind than in cash (Oni *et al.* 2005). The formal sources are those that are prescribed by law and are subject to the impact of governmental directives. There is no denying that credit plays a significant role in economic growth. According to Nwachukwu *et al.* (2010), credit is a crucial tool for directly enhancing the wellbeing of the poor by reducing their sensitivity to short-term income and smoothing out their spending. It also increases the resource farmers' ability to produce by financing investments in their physical and human capital.

There is no doubt that agricultural economists, planners, policy makers, agribusiness managers, agriculturists, and financial institutions have recently demonstrated a great deal of interest in the need to pay more attention to the credit needs of farmers in Nigeria. However, the payment of a loan usually receives less attention than it deserves. According to Anigbogu (2014), the issue of credit repayment has emerged as a result of the revived interest in enhancing the status of rural resource-poor farmers through credit extension. Credit cannot be received without certain financial costs. The ability of the beneficiary to repay the loan, which is in turn influenced by numerous factors, is one of the elements taken into account before it is made available to the beneficiary. The crucial questions of using the loan for its intended purpose and repayment arise when loans are granted. Loan repayment depends on the farmers' ability and propensity to fulfill their lending obligations as specified in the loan contract structure. Any breach of a loan's repayment obligations is referred to as a default. In its most basic form, default refers to breaking pre-established rules. Loans must be repaid on time in order for money to be recycled for the benefit of other farmers. In developing nations like Nigeria, the repayment of borrowed agricultural funds has been one of the recurrent issues of agricultural development (Nwachukwu *et al.*, 2010). Although lending institutions would hope to fully recover any loans they gave to intended recipients, the limited pool of recipients who could benefit from credit on the market would each have a varied propensity to repay or not independent of the terms of the credit agreement. Numerous studies have documented low loan repayment rates, particularly for small-scale farmers in developing nations. According to Acqnah and Addo's (2011) study on Ghanaian fisherman, the payback percentage was 29.1%. In their study of farmers under the Agricultural Cooperative and Rural Development Bank in Abia State, Nigeria, Onyenucheya and Ukoha recorded a payback percentage of 45% in 2007. According to Udoh (2008), beneficiaries of the Akwa Ibom State Agricultural Loan Board (AKSALB) in Nigeria only repaid an average of 25% of their loans. The main issue with the programme in Akwa Ibom

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State has been the borrower repayment rate (BRR), which is the pace at which the borrower repays his loan. Poor management practises, loan diversion, and unwillingness to repay loans were the main causes of defaults. This condition has a tendency to hamper long-term viability and the availability of cash for lending to new, creditworthy borrowers. This is due to the fact that without the borrowers fully performing their loan payback responsibility, no lending scheme can sustainably manage a revolving loan. According to Poulton *et al.* (1998), defaulting on loan agreements is extremely common, particularly among borrowers who viewed government-sponsored loans more as grants than as obligations that must be paid back. Due to the problem of poor payback, the government's strategy to build institutional credit markets as potential sources of loanable funds for farmers is severely compromised. Due to its significance to policy makers and lending institutions, a study of this kind becomes necessary in order to empirically ascertain why defaults in loan repayment occur. Therefore, the primary goal of this study is to identify the variables impacting loan defaults among poultry producers in order to complement prior research and close the knowledge gap. The study focuses on the socioeconomic position of farmers, the different credit sources that are open to them, the amount of loans accessed, and the variables that affect loan repayment among poultry farmers. Investigating the variables that influence loan repayment, according to Onyeagocha *et al.* (2012), is one strategy to address the difficulties with loan payback.

MATERIALS AND METHODS

The study was conducted in Jos South Local Government Area of Plateau State, Nigeria which is geographically located between latitude 90 300 to 100N and longitude 80 30'E of the Greenwich meridian. It is located in the northwestern part of the state with its headquartered in Bukuru, 15 km from the state capital Jos. The local government consists of four districts: Du, Gyel, Kuru and Vwang. The Local government has a population of 650,835 (National Population Commission (NPC), 2006) with an average land area of 1, 037km². It borders the local governments of Barkin-Ladi to the south, Ryom to the southwest, Jos-Este to the east, and the local government of Bassa to the west. It is known for its cold and rocky nature due to its high altitude of over 1450 meters above sea level. The coldest period is between November and February, with an average daily temperature of 180C while warmer periods occur between March and April. The rains fall between May and October, with a peak in August. The mean annual rainfall varies between 137.75cm and 146.0cm. The Local Government is a semi-urban location but served with vast agricultural land, with mining ponds readily supplying water for irrigation. Common edible crops grown include rice, corn, Irish potatoes, yams, acha, sweet potato, cocoyam, tomatoes, peanuts, and assorted vegetables. Livestock such as cattle, goats, sheep, chicken (Poultry), pigs etc. are reared in the Local Government for both commercial purposes and as meat for home consumption.

Sampling Procedure and sample size

The population for this study consists of registered commercial poultry farmers in all the four district of Jos South Local Government Area of Plateau State. They include: Gyel, Du, kuru, and Vwang districts. A two stage sampling procedure was employed to draw the samples for the study. First, a list of all the registered commercial poultry farmers in the Local Government Area was obtained from the state ADP and the local government office of Poultry Association of Nigeria. This was followed by a purposive selection of poultry farmers who are beneficiaries of agricultural loans from both the formal and informal loan schemes. One hundred and thirty six (136) respondents were sampled and used for the study. Data were elicited through the administration of questionnaires and oral interview on the socio-economic characteristics of the poultry farmers, the source of credit/loan, the volume of credit/loan obtained, loan repayment status and the constraints to loan repayment. Both descriptive and inferential statistics were used to analyze the data. Descriptive statistics such as frequency counts, mean, percentages and Logit regression were used to analyze the data collected.

Model Specification

The logit regression model is a unit or multivariate technique which allows for estimating the probability that an event occurs or not by predicting a binary dependent outcome from a set of independent variables. The logit model is based on cumulative logistic probability function and it is computationally tractable. According to Gujarati and Porter (2009), it is expressed as:

$$P_i = E(Y = 1|X_i) = B_1 + B_2X_2 \dots \dots + B_3X_3 \dots \dots \dots B_nX_n \dots \dots \dots (1)$$

For ease of estimation, equation (1) is further expressed as:

$$P_i = \frac{1}{1 + e^{-z_i}} = \frac{e^{-z}}{1 + e^{-z_i}} \dots \dots \dots (2)$$

Where:

P_i = probability of an event occurring

$$P_i = B_i + B_2 X_i$$

The empirical model of the logistic regression for study assumed that the probability of the farmers' loan repayment is expressed as:

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$$P_i = \frac{e^{b_0 + b_1 X_1 + b_2 X_2 + b_3 X_3 + b_4 X_4 + b_5 X_5 + b_6 X_6 + b_7 X_7 + b_8 X_8 + b_9 X_9}}{1 + e^{b_0 + b_1 X_1 + b_2 X_2 + b_3 X_3 + b_4 X_4 + b_5 X_5 + b_6 X_6 + b_7 X_7 + b_8 X_8 + b_9 X_9}} \dots\dots (3)$$

P_i ranges between zero and one and it is non-linearly related to Z_i . Z_i is the stimulus index which ranges from minus infinity to plus infinity and it is expressed as:

$$Z_i = \ln \left(\frac{P_i}{1 - P_i} \right) = b_0 + b_1 X_1 + b_2 X_2 \dots\dots\dots + b_9 X_9 + u \dots\dots\dots (4)$$

To obtain the value of Z_i , the likelihood of observing the sample was formed by introducing a dichotomous response variable. The explicit logit model was expressed as:

$$Y = b_0 + b_1 X_1 + b_2 X_2 \dots\dots\dots + b_9 X_9 + u \dots\dots\dots (5)$$

Where:

Y = dichotomous response variable (1 if loan is repayed; 0 otherwise)

X_1 = Age of farmers (Years)

X_2 = Sex of farmers (1 if male, 0 if otherwise)

X_3 = Marital status

X_4 = Educational level of farmers (Years of formal education)

X_5 = Household size (number of persons)

X_6 = Farm size (Numbers of birds)

X_7 = Poultry farming experience (Years)

X_8 = Annual income (Naira)

X_9 = Extension contact (1 if yes, 0 if otherwise)

$b_1 - b_9$ = Coefficients to be estimated

b_0 = Constant term

u = error term

RESULTS AND DISCUSSION

Socio-economic characteristics of the sampled poultry farmers

Table 1 displays the results of the respondents' socioeconomic characteristics. According to the respondents' age distribution, 45% of the farmers were between the ages of 41 and 50. 4.0% were between the ages of 21 and 30 while about 31% were between 31 and 40 years. The poultry farmers were 44 years old on average. This shows that the majority of poultry farmers are in their prime of life. Due to their active ages, they would be able to make the best use of the loan they acquired for farm growth and subsequently earn more money to pay off the loans.

The result in Table 1 also reveals that men make up the majority (65%) of poultry farmers in the study area, while women make up 35%. The men dominance may be explained by the fact that raising poultry is a labor-intensive, extremely dangerous business that is frequently only manageable by men. The findings are consistent with those of Babatunde *et al.* (2012) and Babalola (2014), who reported that the majority of Nigerian poultry farmers are male.

According to the respondents' marital status, 90% of them were married and only 10% were unmarried. This merely suggests that the majority of these farmers were dependable and had families to support.

According to Table 1, 60% of the poultry farmers in the study area had households with 4–7 members, 32% had 1-3 members, and 8% had more than 7 members. Five people made up the average household size of respondents in the study area. The small family size may be a result of the farmers' high literacy rates and the country's present economic crisis. The small household size might always be a benefit because it may not be very expensive to maintain the family, which could affect the ability to repay the loan. This study is in consonant with Otunaiya *et al.* (2014) who revealed that the average family size of poultry farmers in Ibadan, Oyo state was five persons.

According to the distribution of poultry farmers by years of farming experience, 26% of the farmers had between 11 and 15 years of farming experience, while 47% had between 6 and 10 years. Additionally, 6% had more than 15 years of expertise raising poultry, compared to 21% who had fewer than 5 years. The average amount of time spent farming was 9 years among the poultry farmers. The outcome suggests that the farmers had a sufficient amount of working experience to have learned from experience about some of the dangers and uncertainties connected with raising chicken. Significant levels of literacy along with farmers' experience in poultry farming are predicted to have a favourable influence on their decision to use agricultural loans as effectively as possible given the significant risks and uncertainties that are associated with the industry.

According to the results, 33% of farmers had flock sizes between 1001 and 2000 birds, 29% had flock sizes between 2001 and 3000 birds, 26% had flock sizes under 1000 birds, and 4% had flock sizes of 4000 or more. The average number of chickens kept by poultry farmers in the research area is 1795, which is a rather low number. Generally speaking, larger farms reflect better managerial

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abilities and maybe scale and scope economies in the use of various risk management techniques. The quantity of birds in the stock is a key factor in determining whether poultry farmers may get agricultural loans.

Table 1: Distribution of Respondents Based on their Socio-economic Characteristics (n=136)

Variable	Frequency	Percentage	Mean
Age (years)			
21- 30	6	4.0	
31- 40	42	31.0	
41 – 50	61	45.0	
50 above	27	20.0	44.0
Sex			
Male	89	65.0	
Female	47	35.0	
Marital status			
Single	123	90.0	
Married	13	10.0	
Educational level			
Primary	16	12.0	
Secondary	26	19.0	
Tertiary	81	59.5	
Non formal education	13	9.5	
Household size (number)			
1-3	43	32.0	
4-7	82	60.0	
>7	11	8.0	5
Stock size (No. of birds)			
< 1000	36	26.0	
1001-2000	45	33.0	
2001-3000	40	29.0	
3001-4000	9	6.6	
>4000	6	4.0	1795
Farming experience (years)			
< 5	28	21.0	
6-10	64	47.0	
11-15	36	26.0	
>15	8	6.0	9
Extension contact			
Yes	37	27.0	
No	99	73.0	

Source: Field survey, 2023

Sources of Agricultural Credit of Respondents

According to entries in Table 2, 38.0% of respondents obtained their credit from microfinance banks, 28.0% from multipurpose cooperative societies, 15% from agricultural banks, 11% from commercial banks, and 8.0% from moneylenders. The remaining respondents obtained their credit from moneylenders. This finding suggests that the respondents obtained their credit from both formal and informal sources, favouring cooperative organizations and microfinance institutions. The fact that both the cooperative societies and the microfinance banks charge a reasonable interest rate on loans may be the cause of the strong preference for the two.

Table 2. Distribution of Respondents based on source of Credit

Source	Frequency	Percentage
Commercial bank	15	11.0
Microfinance bank	51	38.0

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Agricultural bank	21	15.0
Cooperative society	38	28.0
Money lenders	11	8.0

Source: Field survey, 2023

Volume of Credit Received

The amount of credit that farmers have gotten from the various credit sources is displayed in Table 3 below. The results show that 30% of the farmers received between N50,000 and N100,000, 24% received between N101,000 and N200,000, 19% received between N201,000 and N300,000, 13% received between N301,000 and N400,000, 8% received between N401,000 and N500,000, and 6% of the farmers received above N500,000. The average loan amount given to farmers was N219650. It is clear that the money given to farmers by the various sources was insufficient for any worthwhile investment given that the chicken industry is capital-intensive and resource-intensive.

Table 3. Distribution of Respondents based on volume of Credit received

Amount	Frequency	Percentage	Mean
50,000-100,000	41	30.0	
101,000-200,000	33	24.0	
201,000-300,000	26	19.0	
301,000-400,000	17	13.0	
401,000-500,000	11	8.0	
>500,0000	8	6.0	219650

Source: Field survey, 2023

Loan Repayment by Farmers

Results from Table 4 below show that only 35% of farmers did not default on their loan repayments, whereas the majority of farmers (65%) admitted to having done so. The causes for the default may be related to the loan being used for purposes other than the poultry business, such as family needs.

Table 4. Distribution of Respondents based on loan default

Loan repayment	Frequency	Percentage
Repaid	47	35.0
Defaulted	89	65.0

Source: Field survey, 2023

Factors influencing Loan Default among Poultry Farmers

The result of Logit regression showing the factors influencing loan repayment among Poultry farmers is presented in Table 5. With chi-square statistics significant at 1% level of significance, the statistical test revealed that the estimated model suited the data well. At different levels of probability, four out of nine predictors namely; age (3.6930), educational attainment (8.6964), income (1.2366), and household size (-2.0622) were statistically significant.

The co-efficient of age of the farmers was found to be positive and significant at 10% level of probability. This positive relationship indicates a direct relationship between age and probability of loan repayment. This implies that as an increase in the age of the poultry farmer would increase their probability of loan repayment. The findings of Ezeano, *et al.* 2017 disagreed with the above contention; they were of the view that aged farmers have high probability of loan default. The reasons could be that aged farmers are risk averse, decline in manual strength and non-receptive to new innovations/technology, consequently resulting in their being more prone to loan defaults as they experience low farm production and productivity.

Coefficient of educational status of the poultry farmers was found to be positive and significant at 5%. This indicates that there is a direct relationship between educational level and loan repayment. An increase in the educational level will decrease the probability of the farmers defaulting in loan repayment. Studies revealed that people with good educational status are usually the choice of lending agencies as they have testimonial of being less defaulters (Olotomola, 2002). Contrary, Anozie, *et al.* (2014) reported that the preference of educated people to "white collar job" as against farming, could result in low repayment as substantial amount of the credit is diverted into nonagricultural activities that may not be viable enough to produce the necessary dividends to repay the loan promptly.

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The co-efficient of household size of the farmers was found to be negative and significant at 10%. This result indicates an indirect relationship between household size and loan repayment. This implies that an increase in farmers' household size will increase the probability of defaulting in loan repayment. This implies that those beneficiaries with larger household size tend to default more than those whose household size is smaller. This could be due to the responsibility of gathering for the household needs, including both children and adult dependence. Household size that are dominated with dependent population such as elderly, handicapped and children are likely to default in loan repayment as there is increase in per-capita consumption expenditure of farm households, leaving meager credit to be invested into the broiler business. This finding collaborates that of Ume *et al.* (2018) who also reported a negative and significant relationship between household size and loan repayment

Expectedly, the coefficient of annual farm income was statistically significant at 5% and had positive effect on farmers' loan repayment ability. This indicates that there is a direct relationship between farm income and loan repayment. The direct relationship is in agreement with the expected sign. An increase in the income level will decrease the probability of the farmers defaulting in loan repayment. This is expected because more money will be available to repay the loan and still cater for other family needs. Mejeha *et al.* (2018) also reported a positive significant relationship between farm income and loan repayment in a study on determinants of loan repayment by beneficiary farmers under the integrated farmers scheme in Akwa Ibom State.

Table 5: Logit regression estimates of Factors Influencing Loan Default among Poultry Farmers

Variable	Coeff.	Std. Err.	z	P> z
Constant	-.1513	2.6904	-0.06	0.955
Age	3.6930	2.1086	1.75*	0.080
Sex	-2.4467	1.6137	-1.52	0.129
Marital status	3.6509	2.3657	1.54	0.123
Educational status	8.6964	3.4680	2.51**	0.012
Household size	-2.0622	1.2290	-1.68 *	0.093
Farm size	2.5581	1.6822	1.52	0.128
Farming experience	.0107	.5669	0.02	0.985
Annual farm income	1.2366	.4940	2.50**	0.012
Extension contact	-2.0030	1.5779	-1.27	0.204
Log likelihood = -12.3890				
Pseudo R ² = 0.6533				
LR chi2(9) = 24.49				
Prob > chi2 = 0.0000				
No. of Observations = 136				

*and **=Significant at 10% and 5% probability levels respectively

CONCLUSION AND RECOMMENDATIONS

This study examined the variables affecting poultry farmers' ability to repay their agricultural loans in Jos South Local Government Area of Plateau State. Majority of poultry farmers' were in their active working age and are educated, according to the study's findings. The rate of loan default among farmers is very high. Age, educational attainment, income, and household size were variables that influenced loan default among chicken producers. Poultry farmers in the study area obtained loans from both formal and informal lenders, with cooperative organizations and microfinance banks serving as the main sources of credit. The study recommended that financial organizations should support farmers while simultaneously educating them on the need of loan repayment. Government and other agricultural stakeholders should make sure that farmers have access to formal education because it considerably affects their likelihood of defaulting on loan repayment. All the important factors that affected loan repayment should be taken into account when formulating agricultural credit policies. Reduced interest rates on loans from reputable institutions, such as commercial banks, should be implemented to help farmers get loans without hesitation.

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