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# An Empirical Study on the Repayment Performance of Credit Availed by Farmers: Insights from a Rural Bank in Assam

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## ABSTRACT

**Background:** In Assam, institutional credit is a crucial source of financing for agricultural production and supporting farmers' livelihoods. However, rising cases of loan defaults have created significant challenges for microfinance institutions and rural banks. The capacity of farmers to repay loans is often limited by low and fluctuating levels of income, risks of agricultural production and market uncertainties. It is, therefore, important to identify the determinants of loan repayment performance to enhance the sustainability of rural credit systems.

**Methods:** A random sampling method was used to select respondents and primary data were accumulated using an interview schedule. Farmers were categorised as regular repayers and irregular repayers. Socio-economic, farming activities and institutional factors were used as explanatory variables. Descriptive statistics, chi-square tests and logistic regression analysis were used to analyse the factors that affect loan repayment performance.

**Result:** The findings show that 86.90 per cent of the sampled farmers are irregular in loan repayment and the major cause is low income. The results indicate that factors such as gender, age, household size, education, livestock ownership, loan amount, annual income and savings influenced loan repayment performance, while marital status had no effect. The study highlights the importance of income stability and institutional support in order to aware the users about the impact of timely repayment, which helps the bank to maximise its loan recovery rates.


**Key words:** Agriculture, Bank, Farmers, Loan, Repayment.

## INTRODUCTION

The growth of the economy of developing countries is largely dependent on the extension of the agricultural sector (Etefa *et al*., 2020). Indian agriculture plays a remarkable role in the country's economy and helps in alleviating poverty (Kumar *et al*., 2011). In India, the largest livelihood provider is the agriculture and allied sector, especially in the rural areas (Rath *et al*., 2020). Out of the total population, 70 per cent earn their livelihood from this sector and out of the total workforce, this sector generates 54.60 per cent employment (Department of Agriculture, 2021). Therefore, agriculture is vital for long-term development and in poverty alleviation (Roy and Hazari, 2023). The crucial elements required for success in agriculture are the proper use of money, management and marketing (Rath *et al*., 2020). Agricultural credit is essential for farmers, especially smallholder farmers. The main aim of agricultural credit is to help farmers obtain essential resources for conducting farming activities, which they cannot obtain on their own. Thus, for the development of agriculture, credit is an important factor. It is an important activity of the government to promote credit for the development of the agricultural sector (Kuye and Edem, 2019). The sources from which farmers can avail the required credit for farming can be formal or informal. Formal sources mainly consist of institutions such as Cooperative Banks, Commercial Banks and Regional Rural Banks, whereas informal sources consist of friends, relatives, moneylenders, self-help groups, mutual assistant groups, *etc*., which provide loans at a higher rate of interest compared to formal sources but with fewer documentation requirements and formalities (Kuye and Edem, 2019).

Prompt repayment of the loan is crucial for both the farmer and the bank. For the farmer, it is essential because repaying loans on time makes them eligible for the next loan of a higher amount compared to the previous one, which will further help them to improve their farming activities. On the other hand, if banks recover loans in a timely manner, they are able to recycle their funds to others who require them the most. However, with the expansion of branches in rural areas, the issue of non-recovery of loans is increasing. For sustainable credit, it is essential to repay loans on time.

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From the empirical literature reviewed, different authors have identified factors influencing loan repayment. (Rathore *et al*., 2017) revealed that, despite using the loan amount, farmers still generate a low level of income and the factors causing them to delay repayment include high consumption expenditure, a high rate of interest, money spent on social ceremonies and insufficient prices received from crop production Etefa *et al*. (2020) showed that variables such as age, farm size, income, education and training have a positive impact on repayment performance, while family size and group size have a negative impact Rath *et al*. (2020) identified that 73 percent of respondents repaid their loans to build trust and to obtain future loans, while the remaining 27 per cent willingly did not repay Sharma and Pathak (2024) highlighted that climate change creates a heavy impact in agriculture due to rising temperatures, inadequate rainfall and various other factors, which lead to reduced crop yields and affect farming activities.

Different studies conclude different factors affecting the repayment performance of farmers Fikirte (2011) referred that factors affecting loan repayment vary from one place to another and change over time. Thus, the result observed in one place may not be applicable in another. The researcher has not found any related and relevant studies in this study area. Understanding the repayment performance of borrowers of Assam Gramin Vikash Bank (AGVB) in Baksa district will provide insights into how rural banks function and help in developing policy measures. Thus, to fill this gap, the present study has been undertaken to identify the repayment status and factors affecting repayment performance of the selected sample in the study area.

## MATERIALS AND METHODS

### Selection of bank and study area

Assam Gramin Vikash Bank (AGVB) is the only rural bank in Assam. Their branches are scattered in all districts of Assam. There are three districts (Baksa, Majuli and West Karbi Anglong) where all the branches of AGVB are rural (Assam Gramin Vikash Bank, 2025). Out of these three districts, the researcher has selected one district randomly, *i.e*., Baksa district. It consists of a total of 7 rural branches of AGVB. For the study purposes, the researcher has taken all the branches and the research was carried out during the period 2024-25.

### Sampling frame and sample size determination

A list of borrowers who obtained agricultural loans from the bank under the kisan credit card scheme (KCC) was taken from the regional office of AGVB. The total population size is 2,830 as per the AGVB regional office's 2025 report. Therefore, the sample size was calculated by using Taro Yamane's formula.

The Taro Yamane formula has been illustrated as follows:

$$N = \frac{N}{1 + N(e)^2}$$

Where,

n= Sample size.

N= Population size.

e= The acceptable sampling error (95% level of confidence).

Therefore, the sample size calculation for population N = 2,830.

$$n = \frac{2,830}{1 + 2,830\ (0.05)^2}$$

$$= \frac{2,830}{1 + 2,830\ (0.0025)}$$

= 350

The total sample size was further distributed among the seven branches equally. Thus, the sample size of 350 was divided by the number of branches, resulting in 50 respondents per branch.

### Data sources and methods of collection

Both primary and secondary data have been used for the study. The primary data are both qualitative and quantitative in nature. These data were collected from the study area by using the interview schedule method. The secondary data were obtained from AGVB Annual Report (2024-25), websites, journals and various other relevant sources related to the study.

### Statistical tools for data analysis

The collected data have been analysed by using descriptive statistics, the Pearson chi-square test and the logistic regression method. For analysing the association between variables and identifying the factors affecting loan repayment performance, the chi-square test and logistic regression model were applied. Repayment of loan is the dependent variable, while the demographic, socio-economic and loan factors such as age, gender, marital status, education, household numbers, land size, source of income, livestock ownership, income, savings and loan size are all independent variables.

For the analysis purpose, the sample farmers based on their repayment behaviour are classified into regular/ non defaulters and irregular/defaulters.

### Regular repayment/non-defaulter farmers

The farmers who repaid their due amounts within the stipulated time period and did not have any overdue amount during the survey period.

### Irregular repayment/defaulter

These are the farmers who have overdue KCC dues beyond the stipulated time period at the time of survey.

### Data preparation

To run the logistic regression model, all categorical variables were converted into dummy variables. Binary variables such as gender were coded as 0 and 1, (Female = 0, male = 1). For variables with more than two categories, k-1 dummy variables were created. The first category of all

the independent variables was treated as the reference group with a code of 0 and the remaining categories were combined as a dummy variable with a code of k-1. Multicollinearity was checked by running collinearity diagnosis. A VIF (Variance inflation factor) of more than 10 or a tolerance value of less than 0.10 would indicate that severe Multi-collinearity is present. All the independent variables of the study have VIF values less than 10, indicating that multicollinearity is mild and has no significant affect on our logistic regression findings.

## RESULTS AND DISCUSSION

The repayment performance of the sampled farmers presented in Table 1 outlines that out of the total 350 respondents, 86.90 per cent were irregular in repaying their agricultural loans, while only 13.10 per cent of the selected farmers were regular re-payers in agricultural loans. This indicatses majority of the respondents experienced difficulty in meeting repayment obligations and a considerable proportion of respondents'maintained repayment performance.

Table 2 shows the reasons behind delay in loan repayment by the borrowers. Among the total irregular repayers (n = 307), the major reason for delaying was insufficient income (27.90 per cent), followed by waiting for loan waiver (20 per cent). Irregular follow-up by bank staff accounted for 18.75 per cent of defaults, while crop failure-related issues contributed 16.11 per cent. 7.56 per cent and 6.25 per cent were attributed to payment of other debts and health expenditure, respectively. A small proportion (10 per cent) was attributed to investment in other business activities. The findings emphasised income instability and a lack of proper awareness regarding timely repayment of loans as the primary reasons for repayment failure which leads to poor credit history. Credit history is the vital criteria the banks use to identify successful loan applicants. (Benjamin *et al.*, 2022). Therefore, the results emphasise the need for improved follow-up procedures and income stabilisation measures to increase loan recovery performance.

**Table 1:** Farmers' repayment status.

| Repayment status | Frequency | Per cent |
|---|---|---|
| Regular | 46 | 13.10 |
| Irregular | 304 | 86.90 |
| Total | 350 | 100.00 |

Source: Survey Result, 2025.

### Gender

Table 3 data show that among males, 88.20 per cent are irregular in repaying the loan amount, while 73.90 per cent are regular repayers. Conversely, in females, 26.10 per cent are regular in repayment, while 11.80 per cent are irregular. This indicates that amongst males, the defaulting rate is higher, whereas among females, the defaulting rate is lower. This is because male farmers usually tend to take more risks and divert the loan amount to non-productive uses. This behaviour aligns with moral hazard theory, where a lack of close supervision by lenders can result in misuse of loans by borrowers. However, the chi-square results show the association between gender and loan repayment is significant as the p-value is 0.011, which is less than the significance level (5.00 per cent or 0.05). This depicts that gender does determine repayment performance.

### Age

From Table 3, it can be seen that the age groups 40-50 and above 50 years have the highest number of defaulters, *i.e*; 35.20 per cent and 34.90 per cent respectively and in these categories, 23.80 per cent and 13.00 per cent are non-defaulters. In the age group 21-30 years, only 2 per cent are defaulters. On the other hand, in the age group 30-40 years, 28.00 per cent are defaulters and 58.70 per cent are non-defaulters. The reason behind higher defaulting in the middle-aged groups is the increased family responsibilities which aligns with lifestyle economic behaviour theory, stating that repayment performance is lower in mid-age groups due to family related financial issues. The chi-square result also shows the presence of significant association between age and loan repayment ($\chi^2$=19.21, p=0.011).

### Marital status

In the above data (Table 3), we observe that among married individuals, the defaulting rate is higher than the non-defaulting rate, while among widows, the defaulting rate is

**Table 2:** Identify the farmers' main reason for delay in repayment.

| Reason | Frequency | Per cent (%) (N = 304) |
|---|---|---|
| Crop failure and low yield | 49 | 16.11 |
| Insufficient income | 85 | 27.90 |
| Unexpected expenses (Medical emergency) | 19 | 6.25 |
| No follow-up from the bank | 57 | 18.75 |
| Payment of other expenses/debts | 23 | 7.56 |
| Waiting for the loan waiver offer | 61 | 20.00 |
| Amount redirected to other business activities | 10 | 3.28 |

Source: Survey Result.

lower than the non-defaulting rate and among singles, there are no defaulters. Statistically, it was found that there is no significant association between marital status and repayment rate. Since the p-value is greater than 5.00 per cent level of significance ($\chi^2$=32.41, p=0.747).

**Education**

As shown in Table 3, under-matric respondents have a defaulting rate of 45.70 per cent, while non-defaulters are 19.60 per cent. Among 10$^{th}$-pass respondents, the defaulting rate is 33.90 per cent and the non-defaulting rate is 28.30 per cent. For 12$^{th}$-pass respondents, the defaulting rate is 12.80 per cent and the non-defaulting rate is 45.70 per cent. Among graduates, defaulters and non-defaulters are 6.60 per cent and 6.50 per cent respectively and among post-graduates, only 1.00 per cent of respondents exist and that respondent is a defaulter. This indicates that the defaulting rate is higher under less literate respondents. Since the p value is less than 0.001 which is smaller than chosen significant level (0.05 or 5.00 per cent), thus, there is a significant association between education level and repayment rates ($\chi^2$=13.616, p<0.001). This result is consistent with the findings of Gebeyehu (2002).

**Household size**

The above statistics show that for households with up to 4 members, the defaulting rate is lower than the non-defaulting rate. For households with more than 4 members, defaulting rate is higher compared to non-defaulters. This indicates having higher number of members will increase consumptions and other exepenses which led

**Table 3:** Factors affecting loan repayment.

| | | Repayment status % | | Pearson's chi square | p value |
|---|---|---|---|---|---|
| | | Regular/non -defaulter | Irregular/ defaulter | | |
| Gender | Female | 26.10 | 11.80 | 6.851 | 0.011, S |
| | Male | 73.90 | 88.20 | | |
| Age | >21 to 30 years | 0.00 | 2.00 | 19.21 | p<0.001, S |
| | >30 to 40 years | 58.70 | 28.00 | | |
| | >40 to 50 years | 28.30 | 35.20 | | |
| | >50 years | 13.00 | 34.90 | | |
| Marital status | Married | 73.90 | 83.90 | 13.616 | 0.747, N.S |
| | Widow/widower | 26.10 | 9.20 | | |
| | Single | 0.00 | 6.90 | | |
| Education | Under matriculation | 19.60 | 45.70 | 32.41 | p<0.001, S |
| | 10$^{th}$ pass | 28.30 | 33.90 | | |
| | 12$^{th}$ pass | 45.70 | 12.80 | | |
| | Graduate | 6.50 | 6.60 | | |
| | Postgraduate | | 1.00 | | |
| Household size | 4 members or fewer | 67.40 | 41.40 | 112.047 | p<0.001, S |
| | More than 4 members | 32.60 | 58.60 | | |
| Livestock owner | Yes | 93.50 | 80.30 | 4.727 | 0.030, S |
| | No | 6.50 | 19.70 | | |
| Loan amount | Less than Rs.25,000 | 6.50 | 14.50 | 16.83 | 0.001, S |
| | 25,000 to <50,000 | 15.20 | 38.50 | | |
| | 50,000 to <1,00,000 | 43.50 | 22.00 | | |
| | 1,00,000 to <1,50,000 | 34.80 | 25.00 | | |
| Annual income | < Rs.50,000 | 0.00 | 15.50 | 56.021 | p<0.001, S |
| | Rs.50,000 to < Rs.1,00,000 | 6.50 | 44.70 | | |
| | Rs.1,00,000 to < Rs. 2,00,000 | 52.20 | 29.90 | | |
| | > Rs.2,00,000 | 41.30 | 9.90 | | |
| Annual savings | Nil | 6.50 | 37.80 | 29.692 | p<0.001, S |
| | Under Rs.5,000 | 0.00 | 4.90 | | |
| | > Rs.5,000 to Rs.10,000 | 0.00 | 6.30 | | |
| | > Rs.10,000 to Rs.20,000 | 13.00 | 8.20 | | |
| | Above Rs.20,000 | 80.40 | 42.80 | | |

Source: Survey result. *5% level of significance.

Note: S (Significant), N.S (Not significant).

loan repayment delay. Since the p value is <.001 (Table 3), this indicates there is a strong association between household size and repayment rate.

**Livestock ownership**

Next to Household size, Livestock is an important asset for rural households. It is used as a source of food and income. The result of the survey shows that among respondents who own livestock, the default rate is lower compared to non-livestock owner. Thus, according to the test result, there is a strong association between livestock ownership and repayment rate ($\chi^2$=112.047, p<0.001).

**Loan amount**

Table 3 data depicted that respondents with loan amounts less than 25,000 have a default rate of 14.50 per cent, while non-defaulters are 6.50 per cent. For loan amounts between 25,000 and 50,000, defaulters are 38.50 per cent and non-defaulters 15.20 per cent. For loan sizes between 50,000 and 1,00,000, defaulters are 22.00 per cent and non-defaulters 43.50 per cent. For loan amounts above 100,000, defaulters are 25.00 per cent and non-defaulters 34.80 per cent. This indicates that loans between 25,000 and 50,000 have the highest default rate, while loans below 25,000 have the lowest default rate. The chi-square test indicated that the association between loan size and repayment is statistically significant ($\chi^2$=16.83, p = 0.001).

**Annual income**

In Table 3, we observed that respondents earning less than 50,000 annually have a default rate of 15.50 per cent. Respondents earning between 50,000 and less than 1,00,000 have a default rate of 44.70 per cent and a non-default rate of 6.50 per cent. Respondents earning between 1,00,000 and less than 2,00,000 have 29.90 per cent defaulters and 52.20 per cent non-defaulters. Those earning more than 2,00,000 annually have 9.90 per cent defaulters and 41.30 per cent non-defaulters. Thus, it represent that earning capacity directly affect repayment performance.The test result also shows that there is association between annual income and repayment performance ($\chi^2$= 56.021, p <0.001). This result is consistent with the findings of (Gudde, 2018).

**Annual savings**

Table 3 highlights that respondents with no savings have a default rate of 37.80 per cent and a non-default rate of 6.50 per cent. Respondents with annual savings below 5,000 have a default rate of 4.90 per cent. Respondents with savings between 5,000 and 10,000 have a default rate of 6.30 per cent. Those with savings between 10,000 and 20,000 have an 8.20 per cent default rate and a 13.00 per cent non-default rate. Respondents saving more than 20,000 annually have a default rate of 42.80 per cent and a non-default rate of 80.40 per cent. Thus, the result shows that there is a statistically significant association between savings and the loan repayment performance of farmers at 5.00 per cent level of significance from Table 3.

In Table 4, Logistic regression analysis was performed to examine the influence of selected socioeconomic variables on loan default. The odds ratios obtained from the result indicate whether a particular category has a higher or lower probability of default compared with the respective reference category.

**Gender and repayment**

The nature of the association between gender and repayment performance was analysed using Logistic Regression as shown in Table 4. Considering 'Females' as the reference category, the odds ratio was found to be 2.627, indicating that the chance of defaulting is 2.627 times higher in males compared to females. This suggests that gender plays an essential role in determining repayment status among borrowers.

**Age and repayment**

The nature of the association between Age and repayment performance was also analysed using Logistic Regression. Considering the Age group '21 to 30' as the reference category, the odds ratio was found to be 2.638, indicating that the chance of defaulting is 2.638 times higher in other categories of age groups mentioned in

**Table 4:** Logistic regression is used to determine default in other categories in comparison to the reference category.

| | Reference category | Odds ratio | Lower CI | Upper CI | Risk of default in the other category/categories in comparison to the reference category |
|---|---|---|---|---|---|
| Gender | Female | 2.627 | 1.248 | 5.531 | Higher |
| Age | > 21 to 30 years | 2.638 | 1.375 | 3.04 | Higher |
| Marital status | Married | 1.074 | 0.695 | 1.662 | Not significant |
| Education | Under matriculation | 0.581 | 0.431 | 0.784 | Lower |
| Household size | 4 members or less | 2.657 | 1.43 | 2.669 | Higher |
| Livestock owner | Yes | 3.525 | 1.057 | 11.749 | Higher |
| Loan amount | Less than Rs. 25,000 | 0.607 | 0.437 | 0.842 | Lower |
| Annual income | < Rs. 50,000 | 0.221 | 0.139 | 0.351 | Lower |
| Annual savings | Nil | 0.516 | 0.382 | 0.695 | Lower |

Table 3. This shows that age significantly influences repayment behaviour.

**Marital status and repayment**

The nature of the association between marital status and repayment performance was assessed using logistic regression. Considering 'Married' as the reference category, the odds ratio was found to be 1.074, which falls within the upper and lower confidence intervals, indicating that there is no significant difference in defaulting in this category.

**Education and repayment**

The nature of the association between education and repayment performance was analysed using logistic regression. Considering 'Under matriculation' as the reference category, the odds ratio was found to be 0.581, indicating that the chance of defaulting is 0.581 times lower in the other education categories mentioned in Table 3. This implies that individuals with lower education levels have a higher likelihood of defaulting on the loan.

**Household size and repayment**

The nature of the association between household size and repayment performance was analysed using Logistic Regression. Considering 'household size of 4 or fewer than 4 members' as the reference category, the odds ratio was found to be 2.657, indicating that the chance of defaulting is 2.657 times higher in larger households as mentioned in Table 3.

**Livestock ownership and repayment**

The nature of the association between livestock ownership and repayment performance was analysed using logistic regression. Considering 'having ownership' as the reference category, the odds ratio was found to be 3.525, indicating that the chance of defaulting is 3.525 times higher among those without livestock ownership.

**Loan amount and repayment**

The nature of the association between loan and repayment performance was analysed using Logistic Regression. Considering 'less than 25,000' as the reference category, the odds ratio was found to be 0.607, indicating that the chance of defaulting is 0.607 times lower in other loan-size categories mentioned in Table 3.

**Annual income and repayment**

The nature of the association between income and repayment performance was analysed using Logistic Regression. Considering '<50,000' as the reference category, the odds ratio was found to be 0.221, indicating that the chance of defaulting is 0.221 times lower in the higher income categories mentioned in Table 3.

**Annual savings and repayment**

The nature of the association between savings and repayment performance was analysed using logistic regression. Considering 'Nil' as the reference category, the odds ratio was found to be 0.516, indicating that the chance of defaulting is 0.516 times lower in the other savings categories mentioned in Table 3. Thus, saving habits play an important role in determining repayment performance.

## CONCLUSION

The results of the study showed that 86.90 per cent of the respondents were irregular repayers of the loan amount. The main reasons cited were insufficient income, followed by an irregular follow-up by bank staff, which delayed repayment. The study highlights the importance of income stability and institutional support in improving loan recovery rates. Timely follow-up is crucial to ensure that farmers properly utilise the credit amount. The findings indicated that factors such as gender, age, household size, education, livestock ownership, loan amount, annual income and savings influenced loan repayment performance, while marital status had no effect. The study also revealed that respondents aged 40 to 50 years, those who studied below the 10$^{th}$ grade and individuals with an annual income between 50,000 and 1,00,000 were more likely to default. The other categories, such as female respondents, smaller family size, owning livestock along with crop cultivation and higher loan amount, have lower default rates. Loan defaults are very common in the agricultural sector. Therefore, the researcher emphasised the need to conduct proper credit counselling sessions and regular recovery camps to raise awareness among defaulters/irregular repayers about the importance of repaying loans during the stipulated period and also highlighted the significance of promoting crop insurance schemes that will protect the farmers from losses in the long run.

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**Conflict of interest**

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