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COCOA FARMERS CREDIT DEFAULT AND ITS IMPLICATIONS FOR RURAL AGRICULTURAL FINANCING IN GHANA

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Abstract

The role played by rural and community banks (RCBs) in financial intermediation in the cocoa sector is commendable, however, their full potential is not realized due to the high level of credit default by farmers. Among 95 credit takers for the 2018 to 2019 farming season, the study revealed that 68.4% of farmers defaulted, producing a loan recovery rate of 45.76% and default rate of 54.23%. The surveyed banks value the use of collateral security (47%) and fixed income guarantee (26%) as a prerequisite for accessing credit. Selected RCBs' predicaments of lending to farmers are the misappropriation of funds, high default rate, and high illiteracy rate. Averagely, farmers used 44.66% of the accessed credit amount for cocoa farming, and 55.34% on non-farm-related activities, indicating the misappropriation of funds. Defaulters' reason for delinquency is classified into; causes due to the borrower (24.60%), causes due to the lender (32.04%), and causes due to nature (43.36%). Moreover, RCBs' perception of the causes of loan delinquency includes misappropriation of funds, unwillingness to pay, risk in cocoa farming, and high-interest rate. Finally, probit model results indicated that farmers' repayment abilities were positively influenced by their engagement in secondary occupation, attainment of formal education, and loan terms, and negatively influenced by household size, loan amount received, interest rate, and distance to rural banks. The study recommends RCBs to enact stringent borrowing policies aimed at reducing loan delinquency among cocoa farmers in Ghana.

Key words**:** *credit default, cocoa, rural and community bank, smallholders*

INTRODUCTION

According to [14], almost 7.4 million Ghanaians depend on cocoa for sustenance. Apart from the 50 countries in the inter-tropical zones reported to be highly engaged in cocoa bean cultivation, Indonesia (13.5%), Ghana (20.7%), and Cote d'Ivoire (39%) have dominated total world production. Approximately, 70% of the world's total cocoa production originates from West Africa [1, 30, 40] and this region is seriously confronted with a 3% annual decline in production. Currently, Ghana produces an average of 400 $kgha^{-1}$ which is almost 50% below the world's highest producer, Cote d'Ivoire, with an average output of 800 $kgha^{-1}$ [40, 24, 10]. The lack of institutional credit has been identified as the main factor affecting cocoa farmers in Ghana. Globally, studies on the importance of credit assert that the inaccessibility of credit by rural farmers has retarded the progress of agriculture growth [28, 16]. Significant literature exists on the positive impact of credit in improving the household income of small business holdings, and the productivity of smallholder farmers [32, 17, 9, 11]. Due to the inherent credit problems facing cocoa farmers in Ghana, rural and community banks (RCBs) were established in the cocoa-growing regions and were mandated to allocate 50% of their credit portfolio to farmers. Nevertheless, the positive benefits of credits have been cut short by many inherent problems existing in the rural financial system. Among such problems is the issue of credit default prevalent among rural borrowers in many financial institutions globally. The definition of credit default is not based on the kind and proper use of the credit

but rather on the untimeliness of meeting the repayment schedule mandated by the credit institution. The solvency of rural banks in the country is the number one aim of their governing body- Apex Bank and the Bank of Ghana. Though several factors may be responsible, it is the impact of credit default that has caused many farmer credit schemes to be stopped in Africa. In this regard, several objectives of the credit program are not achieved due to farmers spending too little money on the farm or diverting the majority to non-agricultural-related activities. The practice of diverting agricultural credit to other uses is popularly referred to as credit fungibility. As asserted by [34, 35], credit fungibility exists at all levels of the rural financial system- the culprits are farmers, rural banks, and central banks. Several factors have been associated with the cause of credit default among rural farmers [31, 3, 15]. It is a known fact that many credit programs are well-financed by governments such that disbursing institutions are tasked with satisfying the needs of farmers under a set of political directives rather than considering farmers' repayment history. In Ghana, especially in cocoa-growing communities, the resultant effect of credit default is the current downward trend achieved in the agricultural sector, and the subsequent increase in rural poverty among farming communities because RCBs are reluctant to offer credit to the farmers. Best to our knowledge, no primary study exists on the level of credit default among Ghanaian cocoa farmers utilizing RCBs credits. Many studies evaluated the importance of credit on farmers' productivity, while others determined the causes of credit default in the agricultural sector in general. A plethora of evidence exists on the importance of rural banks' credits for supporting rural cocoa farmers, but nothing is available on the problems rural banks have to encounter before redeeming credit already disbursed. Issues such as the use of credit, farming constraints, and awareness to increase government support for rural farmers have been the centerpiece of many publications. With the surge in the amount of rural credit disbursed, it is pertinent to understand the circumstances surrounding the credit repayment abilities of farmers in cocoa-growing regions in Ghana, since this will adequately inform the government, Bank of Ghana, donor agencies, and the Apex Bank about improving financial incentives to the sector. Finally, the output of this study will serve as a blueprint for RCBs and other financial institutions (operating farmer-credit schemes) in developing comprehensive credit monitoring tools that seek to minimize the rate of credit default among all groups of farmers.

MATERIALS AND METHODS

Study Area

The study was conducted in the Bodi District, one of the nine districts in the Western North Region in Ghana. It is located between latitude 6°6' N and 7°0' N, and longitude 2°40'W and 3°, 15W. The district covers an estimated surface area of 678.1 kilometers squares. It has a population of 65,748, and a population density of 97 kilometers square. Sefwi-Bodi is the district capital. The district forms part of the country's wet semi-equatorial climatic zone. It is characterized by two rainfall patterns with mean annual figures between 1,260-2,000mm. Regarding economic activity, 84% of the population above the age of 15 years are actively engaged in agriculture, forestry, and fishery. The remaining 5.5% are engaged in service and sales, and 4.3% practice craft and trade-related works. Subsistence agriculture is predominant in the district and serves as means of survival during the mean lean season. Cocoa is grown in almost all communities in the district contributing 15% of the total cocoa output in the region. Agricultural activities in the district are supervised by the district director of agriculture legitimately appointed by the Ministry of Food and Agriculture (MOFA). Under the auspices of MOFA, the agricultural communities in the district are classified as operational areas for ease of monitoring and evaluation of government programs. Currently, there are seven operational areas engaged in intensive cocoa cultivation in the district. The district has two well-functioning

rural and community banks namely Bia Torya Community Bank Limited and Sefwiman Rural Bank Limited. These banks serve as a source of financial aid to all categories of farmers operating in the district. Famers unable to secure farming credit from the two RCBs have to rely on local money lenders, family and friends, personal income, and non-governmental organizations for sponsoring their farming activities.

Data Sources

The study used secondary data for cocoa farmers with access to institutional credit from the two rural banks in the district. The credit takers list was provided by the rural banks containing credit disbursed to cocoa farmers for the 2018 to 2019 farming season. The list includes farmers' details such as telephone numbers, amount of loan taken, loan repayment history, etc. Table 1 below indicates farmer distribution across operational areas concerning the credit secured from the two RCBs. Moreover, 51 and 44 farmers representing 53%, and 47% secured credit from the two selected RCBs.

Table 1. Rural Bank Credit Takers

Rural Bank	Operational Area	No. of Farmers	Percentage (%)	Cumulative %
Bia Torya Community Bank Ltd.	Bodi	15	29.4	29.4
	Afere	8	15.6	45.0
	Suiano	7	13.8	58.8
	Kwafuka	9	17.6	76.4
	Amoaya	12	23.6	100
Sefwiman Rural Bank Ltd.	Bodi	17	38.6	38.6
	Datano	3	6.8	45.4
	Afere	11	25.0	70.4
	Ahibenso	8	18.2	88.6
	Amoaya	5	11.4	100

Source: Author's survey data.

Data Collection Procedure

With the help of credit officers, selected farmers on the credit takers list were contacted by telephone numbers to seek their concerns and willingness to participate in the study. Few farmers were not happy about the bank's disclosure of their confidential information to us but later changed their position to participate after several hours of active engagement and explanations. A total of 95 credit takers from seven operational areas participated in the study. Cross-sectional data was collected from credit takers and RCBs using structured questionnaires. The questionnaires were pretested on 10 participants to correct for order bias and possible misinterpretation of the questions. Five data enumerators (MOFA's extension agents) were trained about the procedure, particularly in considering the existing language barriers since the majority of farmers are illiterates. The explanatory variables were classified as socioeconomic factors, farming characteristics, and institutional factors. Information sourced includes farmers' credit use, RCBs prerequisites before granting credit, banks' predicaments of lending to cocoa farmers, credit recovery rate, and banks' perception of the causes of loan default. The research was conducted from 3rd to 28th November 2019.

Model Specification

The study adopted the probit model because of its ability to solve the problem of heteroscedasticity and the dependent variable can be in binary form and mutually exclusive. As adopted by [26], the probit model adopted is specified as:

$$P_i = P(y_i^* < y_i) \quad (1)$$

$$P_i = P\left(y_i^* < \beta_0 + \beta_{ij} x_{ij}\right) = f(y_i) \quad (2)$$

$$P_i = f(y_i) = \frac{1}{\sqrt{2\pi}} \int_{-\infty}^{z_i} e \frac{s^2}{2} \, ds \quad (3)$$

where:

P_i represents the choice of a particular farmer or the probability that a farmer will default his loan or non-default. $\boldsymbol{S}$ is a random variable

normally distributed with a meanzero and unit variance y_i is the binary dependent variable. Also, y_i^* is the threshold value of the dependent variable. The estimate of index Z_i, the inverse of the cumulative function is represented as:

$$y_i = F^{-1}(P_i) = \beta_0 + \beta_i x_i + \mu_1 \quad (4)$$

The β_0 and β_i of the probit model gives inadequate information about the impact of changes in the independent variable and the probability of default. Hence the effect of each independent variable on the likelihood that a farmer will default on a loan is given as:

$$\frac{\partial P_i}{\partial x_{ij}} = \beta_i * f(Z_i) \quad (5)$$

Where P_i is the mean dependent variable whose value is given in the probit as:

$$f(Z_i) = F^{-1}(P_i) \quad (6)$$

Similar to the study of [21, 29], socio-economic attributes were identified and hypothesis constructed regarding farmers' loan default. The final model is represented as:

$$Y=\beta_0+\beta_1 gen+\beta_2 age+\beta_3 hsesize+\beta_4 educ+\beta_5 offIncome+\beta_6 lamount+\beta_7 lterm+\beta_8 dist+\beta_9 fmsize+\beta_{10} disas+\beta_{11} fmage+\beta_{12} inrate+e_i \quad (7)$$

where:

Y is the dependent variable of Loan default =1, Non-default = 0, β values are coefficients to be estimated, (i =1, 2….,12), β_0 is the intercept and e_i is the error term. gen denotes gender of farmer, age denotes the age of cocoa farmer, hsesize denotes family size, educ denotes educational status of farmer, offincome denotes off-farm income activities, lamount denotes loan amount, lterm denotes loan term or repayment period, dist denotes distance from farmer's house to the rural bank, fmsize denotes farm size, disas denotes any form of disaster that has affected the farm, fmage denotes age of cocoa farm trees, inrate denotes interest rate charged by rural banks on loans. The five-point Likert scale was used to determine RCB's predicament of lending to farmers, as well as bank's perception of the causes of loan default.

Descriptive statistics were used for determining credit recovery rate, causes of credit delinquency from farmers' perspective, and RCBs prerequisites for credit access, whilst multiple response analysis was adopted for assessing farmers' credit use. Table 2 show the priori expectations which indicates the possible direction of influence of these variables on the outcome variable. The positive determinants or signs are perceived to improve the credit repayment abilities of farmers while the negatives reduce the probability of repayment consequently causing a default.

Table 2. A Priori Expectations of Explanatory Variables.

Explanatory Variables	**Short Description**	**Expectation**
Gender	Sex of farmer	+
Age of farmer	Age of farmer	+
Household size	Size of family	+/-
Education	Education level of farmer	+
Off-farm Income	A farmer engaged in off-farm economic activity	+/-
Distance to bank	Distance from farmers houses to the rural bank	+
Farm Size	Size of farm	+
Age of farm	Age of the trees on the farm	+/-
Disaster	Any form of farm disaster	-
Credit amount received	Amount of money received from the bank	+
Credit terms	Credit repayment period	+/-
Interest rate	Interest rate charged on loans	+/-

Source: Author's survey data.

RESULTS AND DISCUSSIONS

Descriptive Statistics

The list of variables used is presented in Table 3. The mean cocoa yield for the district was 305.23 kg/ha indicating a lower production potential for farmers. This result is inconsistent with the findings of [10] that the mean yield of most Ghanaian farms is approximated at 400 $kgha^{-1}$.

Table 3. Descriptive statistics of sampled farmers

Description of Variables	Mean	Std. Dev.	Min.	Max.
Dependent variables				
Cocoa yield ($kgha^{-1}$)	305.23	35.32	102.21	410.23
Credit default (1=yes, 0=no)	0.65	0.21	0.00	1.00
Explanatory variables				
Socio-economic characteristics				
Gender (1=male, 0=female)	0.90	0.23	0.00	1.00
Age (years)	37.5	2.13	21.00	59.00
Household size (count)	4.01	0.12	3.00	8.00
Education (1=yes, 0=no)	0.37	0.12	0.00	1.00
Off-farm income (1=yes, 0=no)	0.90	0.23	0.00	1.00
Distance to bank (km)	13.50	3.70	2.54	28.23
Farming characteristics				
Farm size (ha)	2.43	0.18	1.79	6.45
Age of farm (years)	11.05	1.32	5.05	20.07
Disaster (1=yes, 0=no)	0.74	0.21	0.00	1.00
Institutional factors				
Credit amount received (Gh¢)	2,000.00	193.43	500.00	3,500.00
Credit terms (months)	8.00	1.02	3.00	13.00
Interest rate (%)	25.00	7.54	15.00	30.00

Source: Author's survey data.

From the table, 90% of the sample were males, the credit default rate was 65% suggesting that majority of credit-takers have defaulted. [21, 7] reported more than 50% loan defaults among agriculture credit recipients. The mean age of farmers was 37.5 years, while the minimum and maximum of 21 and 59 years respectively. The mean household size of 4 and a maximum size of 8 people attest to the fact that the majority of farmers have larger family sizes which are sometimes advantageous in substituting for paid farm labor. Formal education is needed for reading and interpreting basic prescriptions, performing banking transactions, and methodologies to help farmers in areas such as loan applications, chemical applications, equipment manipulation, and farm record keeping [22]. Only 37% of farmers having access to basic education contradicts the previous findings of [8]. Besides cocoa farming, 90% of farmers' were engaged in secondary occupations. This was important because of its sustainability during the lean season especially when the income of most farmers plummets. The mean distance from a farmer's farm to rural banks premises was 13.50 km, with a maximum of 28.23km, all indicating how far most rural farmers are from the banking institutions. Adversely, this has affected many farming decisions such as attending field demonstrations, applying for rural banks' credit schemes, and active engagement in farmer registrations needed for budgetary allocation for subsidy programs. The mean farm size was 2.43 ha supporting the finding of [6] that the majority of Ghanaian cocoa farmers are operating on a small scale basis with land sizes less than 3 ha. The age of farm which intrinsically represents the age of trees on the farm was 11.05 years indicating the majority of the farmers were operating older farms. As high as 74% of farmers reported the incidence of pests and diseases, bush fires, and drought as major problems in the region. Participants in the credit program received a mean amount of 2,000 Gh¢, with a minimum and maximum of 500 Gh¢ and 3,500 Gh¢ to be repaid over an average of 5 months period. Finally, the

average interest rate charged on most loans by rural banks was 25% per annum and has a maximum of 30% per annum. This is critical for the survival of most farming enterprises because higher interest rates in the face of high farming risks and inflation encourage unprecedented loan defaults.

Rural Banks Pre-requisites for Credit Access

The information obtained from the RCBs concerning what they value most before granting loans to farmers is displayed in Table 4. The credit appraisal systems in most rural banks in Ghana have evolved over the years, thus introducing several structural and security measures that seek to reduce the number of bad loans that banks accumulate over the years. It is deemed necessary for all loan applicants to fully satisfy application requirements before being considered for further processing and subsequent granting of loans.

Table 4. Important RCBs Considerations in Granting Credits

Factors	Percentage (%)	No. of Banks
1. Collateral security	47.0	2
2. Average deposit required	11.0	2
3. Fixed income guarantees	26.0	2
4. Up-to-date farm records	3.0	2
5. Size of loan facility	9.0	2
6. Duration of loan facility	4.0	2

Source: Author's survey data.

The most important factors considered by the banks before granting loans to farmers were ranked in the order 1 being least important, 2 important, 3 very important, and 4 extremely important. From the results, banks consider collateral security (47%) as the single extremely important factor before granting loans. Consistent with this finding is that of [28, 19, 20] which comprehensively deal with the issues of collateral security used as the most important prerequisites by financial institutions. An in-depth discussion with the selected bank staff revealed some intriguing information about the kind of collateral security demanded. Fixed assets such as registered lands, both private and commercial buildings, and registered company assets are the most preferred because of their high commercial values. The reason is simply to liquidate these productive asserts in times of loan default. The most important observation from this study is that while rural banks regard collateral security as the most important evaluation criteria for granting loans, rural farmers also think it's the most difficult condition they can satisfy before accessing loans hence, it derails their initial attempt to apply for rural banks loans. The study also discovered that average deposits by farmers can be used as determining factor to grant loans. This condition for accessing loans might be introduced due to the inability of rural farmers to provide collateral security. Banks have designed it as a substitute for collateral security, and also to encourage regular savings habits among rural farmers. Irrespective of how banks have lessened the burden of collateral security, regular savings by farmers cannot be possible because they have to stay poor for several months before harvest. Otherwise, to satisfy this condition, farmers must forcibly liquidate their assets which ultimately results in higher household risks. Also, the idea of regular savings demanded will not be feasible in the context of the Ghanaian banking sector where the inflation rate is always higher than the interest rates of all banks' savings. Fixed income guarantee was the second preferred condition borrowers must satisfy before assessing credits. Banks needed farmers to be earning regular income certified by employers where loan deductions can be easily made or the appropriate institution can be contacted in terms of farmers' breach of contract. This does not play well with farmers because most are self-employed and lack fixed incomes in the sense that the only time of receiving regular earnings is after the harvesting period. The size of the loan facility (9%) is also

considered by selected rural banks before approval, however, interviewed bank staff revealed that this criterion is used for huge sums of monies mostly requested by bigger business individuals. Duration of loan facilities was also mentioned, however, 4% of rural banks claimed it is not a priority but they sometimes must adapt it, especially for high-risk borrowers and a large sum of monies.

Rural Banks' Predicaments in Supporting Rural Cocoa Farmers

The main idea of establishing rural banks in many farming communities in Ghana is to provide financial incentives to farmers which will consequently contribute to production efficiency. However, many factors have derailed the positive working condition of rural banks in the country. In determining the most influential factors framing rural banks from further offering credit to cocoa farmers, we relied on a five-point Likert scale which is considered an interval scale. The variables were scored in the range; 1=strongly disagree, 2= disagree, 3=neutral, 4=agree, and 5=strongly agree.

Table 5. Rural Banks' Predicaments of Issuing Credits to Farmers

Variables	N	Minimum	Maximum	Mean	Std. Deviation	Skewness
Misappropriation of funds	10	4.00	5.00	4.60	0.516	-0.484
High default rate	10	4.00	5.00	4.60	0.516	-0.484
High illiteracy rate	10	4.00	5.00	4.30	0.483	1.035
Lack of collateral security	10	1.00	5.00	3.90	1.595	-1.441
Risk in cocoa farming	10	2.00	5.00	3.80	0.918	-0.601
Death of borrower	10	2.00	4.00	2.90	0.737	0.166

Source: Author's survey data.

While the generated mean is considered to be very significant, the criteria for evaluation stipulate that from 1 to 1.8 suggests strongly disagree, 1.81 to 2.60 suggests disagree, 2.61 to 3.40 holds for neutral, 3.41 to 4.20 for agree, and from 4.21 to 5 simply implies strongly agree. The results from Table 5 suggest that majority of the bank respondents strongly agree that misappropriation of funds and high default rate among farmers is the critical factor inhibiting them from financially supporting the agricultural sector. Misappropriation of funds is very common among rural farmers. The majority of farmers intentionally divert agricultural credit to non-agricultural activities such as buying commercial vehicles for business, building houses for renting, organizing a funeral for dead relatives, etc. However, without properly evaluating these investment options, many farmers run into serious debts which consequently result in loan defaults. Many studies have also reported the instances of farmers diverting agricultural loans to non-agricultural uses and its effect on their loan repayments abilities [28, 19, 20]. The high illiteracy rate among farmers having a mean value of 4.30 suggests that banks strongly agree to it as a major problem whenever dealing with farmers. All financial transactions are executed formally hence requiring all parties involved to write and understand the contract terms and conditions before appending their signatures. Sadly, the majority of cocoa farms are illiterate and can hardly understand the conditions explained to them. The issue of collateral security with a mean of 3.90 agreed as another potential factor many farmers grapple with upon being requested by many banks. Farmers have grieved with this requirement but nothing can be done about it since rural banks have to find suitable means to recover disbursed loans in times of default. Banks agree to the fact that cocoa farming is a risky business that ultimately depends on several factors besides farmers' accessibility to suitable farming credits. Surveyed banks were neutral about the death of borrowers since it was a non-recurring problem.

Credit Recipients Credit Use

The proper use of credit will eventually reflect the repayment abilities of farmers. Many financial institutions have gone defunct due to the inability of rural farmers' to fulfill their loan repayment obligations. Table 4 indicates

the uses of loans by farmers from the selected RCBs. From the results, 51.04 % and 38.3% of funds received from the two RCBs were used for farming purposes. Averagely, the selected farmers invested 44.6% of their funds in cocoa cultivating activities. Non-farm uses of credit for the 95 recipients which include spending on school fees, trade expansion, and building of houses recorded a mean value of 25.02% of the credit amount received. The use of loans for the purchase of items for consumption, and durable goods accounted for 25.43% and 35.22% of the total amount borrowed from the RCBs. The purchase of food items constituted a larger proposition of this spending. The findings suggest that some farmers are abusing agricultural credit, and further support the assertion that although most entrepreneurs state lack of finance as a hurdle to farm set-up and commercialization, it is not a grantee that they will use it productively when granted [39, 4]. The present findings on the issue of credit default among farmers are in line with these studies [31, 3].

Table 6. Use of Credit from Rural Banks

Credit Use	**Bia Torya Bank**		**Sefwiman Rural Bank**		**Grand Total**	
	Number of farmers reporting use	**Percent of funds**	**Number of farmers reporting use**	**Percent of funds**	**Number of farmers reporting use**	**Percent of funds (Mean)**
Farm Use						
Hired Labour	37	21.7	22	14.8	59	18.25
Farmland	21	1.09	12	0.82	33	0.95
Seed/seedling	14	9.06	15	2.54	29	5.80
Farm Implement	17	7.34	11	8.93	28	8.14
Fertilizer	47	9.54	17	9.65	64	9.59
Others	9	2.31	11	1.54	20	1.93
Total		**51.04**		**38.28**		**44.66**
Non-Farm Use						
School fees	7	4.71	6	3.43	13	4.07
Trade expansion	5	9.35	13	12.43	18	10.89
Building / Repairing house	8	7.21	6	7.81	14	7.51
As loans to relatives	3	0.78	2	0.98	5	0.88
As loans to farmers	2	0.94	2	0.91	4	0.93
Others	2	0.54	4	0.94	6	0.74
Total		**23.53**		**26.50**		**25.02**
Consumption/ Durable Goods						
Food	51	15.73	44	21.45	95	18.59
Clothes	9	0.91	12	0.72	21	0.82
Festivals/ Ceremonies	15	2.34	11	4.75	26	3.54
Durable goods	13	3.20	29	4.21	42	3.71
Hospital	29	1.74	11	2.14	40	1.94
Dowries	3	0.95	5	1.59	8	1.27
Others	2	0.56	3	0.36	5	0.45
Total		**25.43**		**35.22**		**30.32**

Source: Author's survey data.

Loan Delinquency

The inability of farmers to meet the repayment deadline requested by RCBs usually results in farmers' loan defaults. The mean amount of loan received by the recipients was 2,000 Ghana cedis (GH¢), with a minimum and maximum amount of 500 and 3,500 Gh¢ respectively. In literature, loan delinquency which is synonymous with default is accounted for as (1) the number of

people who defaulted and (2) the amount of credit delinquent. It was discovered that out of 95 credit takers, 65 were delinquent in repayment, which produces a delinquency rate of 68.4%. In total, a sum of 850,000 Gh¢ was loaned out to cocoa farmers by the two rural banks. From this amount, only 389,000 Gh¢ was recovered which gives a repayment/ recovery rate of 45.76% and a delinquency rate of 54.23%. The causes of delinquency then become an important topic in this study and must be unveiled. The causes of credit default are mostly attributed to smallholder farmers, however, since all categories of farmers can default, default cannot be assumed to be a function of poverty. If it were to be, then, most financial institutions would have found the solution and achieved a 100% recovery rate.

Table 7. Causes of Credit Delinquency (n=62)

Causes of Delinquency	**Percentage (%)**
Causes due to the borrower	
I don't have a feeling of obligation to repay	0.45
Unwillingness to liquidate farm assets to meet repayment obligation	15.90
Credit corporation is government-owned, so no need to repay its loan	0.95
My share of the national cake	1.75
Credit corporation's repayment could be delayed until I have money to repay	4.65
Non-serious attitude of some group members/chairman	0.90
Sub-total	**24.60**
Causes due to the lender	
Unavailability of the credit package input at the season when the loan was approved	2.78
Credit package input arrived too late for use at the season when the loan was approved	5.74
Credit corporation officials usually arrive without prior notification to collect the loan repayment	3.87
Credit corporation officials promised to buy farm produce resulting from the use of credit but failed	2.45
Credit approval delayed	6.75
Improper supervisor of loans use by bank staff	10.45
Sub-total	**32.04**
Causes due to nature	
Low returns on investment made with the loan	2.45
Low crop yield due to bad weather	12.20
The outbreak of disease on the farm	11.75
Farmer's sickness during the farming season	0.90
Financial problems in the family	5.54
Bush fire due to extreme temperature regimes	9.90
Litigation on the land due to government projects	0.62
Sub-total	**43.36**

Source: Author's survey data.

Since the willingness to pay and the attitude of borrowers are key determinants of their repayment abilities, trying to find a single reason for loan default becomes difficult. Following the study of [31] and in table 7, the causes of delinquency are classified into three. The first, delinquency resulting from the farmer's activity termed as "causes due to the borrower" was 24.60 %. Issues such as farmers' unwillingness to liquid their farm assets to repay loans during default was the highest (15.90%), forcing a delay in repayment periods given by banks (4.65%), and share of national cake (1.75%). The second which is a cause emanating from the activities of the lender termed "causes due to lender" was 32.04%. The majority (10.45%) of farmers asserted that rural banks were operating credit schemes with weak monitoring systems causing loan diversion among farmers. The delay in approving credits due to bureaucratic procedures was another problem faced by farmers. This has caused a delay in purchasing farming inputs resulting in the late application of fertilizers, insecticides, and weedicides ultimately

contributing to lower yields. The third which is beyond farmers' control because it's a cause by nature was 43.36%. Farming-related problems such as bush fires, uncertain weather conditions, litigation cases, and low return on investment were among the topmost concerns. Studies exist on the effects of pests and diseases causing annual cocoa yields losses in Ghana [12, 5]; the importance of good weather in agriculture systems [33]; delays in loan repayments by farmers [41, 23]; lack of farming credits [38]; and delays and bureaucratic processes involved in loan processing [21].

RCBs' Perception of the Causes of Loan Delinquency

Table 8 critically examines the most influential causes of loan default among farmers from RCB's perspective. Rural banks operate within a constrained framework of budgetary allocation hence, a large amount of non-performing loans will automatically render the bank defunct. Nevertheless, many RCBs have stringent lending policies that seek to continuously identify and eliminate the delinquent behavior of farmers. In determining the most influential factors considered by RCBs in causing loan default rates among farmers, we relied on a five-point Likert scale. The variables were scored in the range; 1=strongly disagree, 2= disagree, 3=neutral, 4=agree, and 5=strongly agree.

Table 8. Banks' Perception of the Causes of Loan Default

Variables	N	Minimum	Maximum	Mean	Std. Dev.	Skewness
Death of borrower	2	2.00	5.00	3.40	0.96	-0.11
Misappropriation of funds	2	4.00	5.00	4.70	0.48	-1.03
Unwillingness to pay	2	4.00	5.00	4.10	0.31	3.16
Risk in cocoa farming	2	3.00	5.00	4.20	0.63	-0.13
High interest rate	2	4.00	5.00	4.60	0.51	-0.48
Delay in loan processing	2	1.00	4.00	2.40	1.07	0.32
Inadequate loan amount	2	1.00	4.00	2.60	1.17	-0.04
Excessive loan amount	2	1.00	2.00	1.50	0.52	0.00

Source: Author's survey data.

While the generated mean is considered to be very significant, the criteria for evaluation stipulate that from 1 to 1.8 suggests strongly disagree, 1.81 to 2.60 suggests disagree, 2.61 to 3.40 holds for neutral, 3.41 to 4.20 for agree, and from 4.21 to 5 implies strongly agree. From the empirical results, the misappropriation of funds by farmers with a mean of 4.70 was selected as the most influential cause of the sprawling loan default among farmers. According to [37, 18], the intentional diversion of loans to non-productive activities which preclude borrowers' chances of loan repayments needs to be addressed by all financial institutions before granting loans. High-interest rates charged on loans with a mean of 4.60 indicate a strong agreement. Currently, the 30% per annum interest rate charged by RCBs on most agricultural loans subjects farmers to poverty forcing them to liquidate their productive assets to settle their debts. Moreover, the issue of high-interest rates charged on loans causing major repayment problems for borrowers has been reported in many studies [41, 23]. Risk in cocoa farming with a mean of 4.20 suggests an agreement by banks for its causal effect on loan default among farmers. [13, 27] have attested to this finding and recommend proper insurance policies be enacted for farmers. The unwillingness on the part of some farmers to repay loans (4.10) is another critical factor hindering the active financial performance of RCBs in rural communities. Rural farmers are of the view that RCBs sponsorship directly emerges from the Bank of Ghana, hence, without fulfilling their loan obligations will be taken as a piece of cake. Bank staff held a neutral view on the death of loan takers leading to default because they suggested that living relatives can sell the deceased's farm stocks after harvest to settle any outstanding loans. Delay in loan processing and the inadequate loan amount was disagreed to be causing agent for loan default. Moreover, banks strongly disagree with giving rural farmers excessive loans causing significant repayment problems.

Factors Influencing Farmers' Credit Repayment

Since personal characteristics, household, economic situations, and other relevant farming factors vary, the 95 loan takers will not be expected to behave in similar ways when the issue of repayment is at stake. From Table 9, model diagnostics indicate the coefficient of determination to be 0.670. Practically suggests that 67% of the variations in the loan repayment abilities of farmers are appropriately represented by the explanatory variables used.

Table 9. Determinants of Loan Repayment of Farmers

Variable	Coefficient	Standard errors	Z-stats.
Constant	-2.157***	0.289	-7.435
Age of household head	-0.143	0.114	-1.254
Gender of household head	0.112	0.321	0.348
Secondary occupation	0.241***	0.017	14.176
Farm age	0.014	0.132	0.106
Formal education	0.046**	0.012	3.433
Household size	-0.214*	0.101	-2.195
Farm size	0.121	0.103	1.174
Loan amount	-0.213*	0.101	-2.709
Loan terms	0.613**	0.204	3.007
Interest rate	-0.428**	0.123	-3.479
Distance to banks	-3.076*	1.071	-2.187
Model Diagnostics			
LR Chi^2	29.71		
Pseudo R^2	0.670		
Prob > Chi^2	0.000		
Wald Chi^2	27.42***		
Observations	95		

***, **, * denote significance at 1, 5 and 10%.
Source: Author's survey data.

From the results, farmers' repayment abilities were been determined by secondary occupation, attainment of formal education, household size, loan amount received, loan terms, interest rate, and distance to rural banks' premises. Specifically, age and gender of the household head did not show any important implication for determining the loan repayment abilities of farmers. This aligns with the findings of [7, 2]. Secondary occupation was a positive determinant of repayment because farmers can generate secondary sources of income to meet rural bank's payment deadlines. However, this finding is opposite to that of [7] that off-farm income activities negatively influence the loan repayment abilities of farmers. The positive and significant coefficient of educational attainment suggests that it improves farmers' chances of repayment by 4.6% compared to their non-educated counterparts. The current findings agree with that of [31, 3]. Household size with significant and negative coefficient suggests that farmers with larger family sizes are likely to be loan defaulters due to fund diversion to meet household needs. The amount of loan received, and the loan term also known as the payment period are significant determinants of the repayment ability of farmers. The negative coefficient of loan amount suggests that farmers who are earning loans that are not commensurate with their farming needs will incur debt. [36, 25] postulated that larger loans and longer loan terms improve the repayment abilities of borrowers. Interest rate was a negative determinant of farmers' repayment abilities because, at higher interest, farm profits sometimes fall short of investments. Finally, distance to the bank with its negative coefficient indicates that farmers distanced from RCBs are likely not to meet repayment deadlines.

CONCLUSIONS

This study aimed at identifying the causes of loan default among cocoa farmers who accessed credit from the two major rural and community banks in the Bodi district in Ghana. The probit model, five-point Likert scale, and descriptive statistics were used for data analysis. Results indicated that out of 95 farmers who accessed credit from the two RCBs, 65 defaulted in repayment. The RCBs value the use of collateral as the single most important factor before granting credit to farmers. Rural banks' predicaments of issuing credits to farmers include misappropriation of funds, high default rate, and high illiteracy rate of farmers. The loan use of credit takers which can accurately predict their repayment ability was investigated under three user categories namely (i) farm use, (ii) non-farm use (iii) consumables/ durable goods. Averagely, farmers invested 44.6% of their funds in cocoa cultivating activities- farm use. Non-farm uses of credit absorb a mean of 25.02% of funds and include spending on school fees, trade expansion, and the building of houses. The loan spent on consumption, and durable goods accounted for 30.32% of the amount borrowed. In total, a sum of Gh¢ 850,000 was loaned to farmers, and Gh¢ 389,000 was recovered producing a recovery rate of 45.76% and a delinquency rate of 54.23%. Investigating the causes of delinquency among the 65 defaulters, 24.60% of the causes were attributed to the borrower, 32.04% causes due to the lender, and 43.36% of causes due to nature. RCBs perceived causes of loan default among farmers include misappropriation of funds, unwillingness to pay, the risky nature of cocoa farming, and the high-interest rate charged on loans. From Probit estimation, farmers' repayment abilities were influenced by secondary occupation, formal education, household size, loan amount received, loan terms, interest rate, and distance to the bank. With the above findings, we recommend that RCBs develop a comprehensive loan monitoring system that seeks to reduce cocoa farmers' loan diversion to non-agricultural-related activities.

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