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Credit Risk Management and Profitability of Rural Banks in the Brong Ahafo Region of Ghana

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Abstract
Credit risk management in rural and community banks has become more important not only because of the financial crisis that the world is experiencing currently, but also as a crucial concept which determines banks' survival, growth and profitability. Because credit granting is one of the key sources of income generating activity in rural banks, the management of the risk related to credit affects the profitability of the banks.
This study examines the impact of credit risk management on the profitability of rural and community banks in the Brong Ahafo Region of Ghana. We used the annual financial statements of ten rural banks from the period of 2006 to 2010 (five years) for our analysis. The panel regression model was employed for the estimation. In the model, definition of Return on Equity (ROE) and Return on Asset (ROA) were used as profitability indicators while Non-Performing Loans (NLP) and Capital Adequacy Ratio (CAR) as credit risk management indicators.
The findings indicate a significant positive relationship between non-performing loans and rural banks' profitability revealing that, there are higher loan losses but banks still earn profit. This indicates that, rural banks do not have sound and effective credit risk management practices. Theoretically, non-performing loans reduce the profit levels of rural banks but in a situation where non-performing loans are increasing proportionately to profitability, then it means that rural banks do not have effective institutional measures to deal with credit risk management. What the banks do is that they shift the cost on loan default to other customers in the form of higher interest rate on loans.
Higher interest margin charged on loan by rural banks due to weak credit risk management practices prevent microenterprises from accessing loans. Such a situation prevents business expansion and rural industrialization which are essential for poverty reduction.
Most studies in this area tend to focus on the big commercial banks, thus this study with its focus on rural banks, contributes a lot to literature concerning credit risk management in small banks such as rural and community banks.
In terms of policy directions, the Bank of Ghana will have to tighten its control mechanisms of on rural banks to stop this unfortunate trend in the rural banking industry.
Key Words: Rural Banks, Credit Risk, Profitability, Ghana
Type of Study: Research

1 Introduction

The proper management of credit risk in financial institutions is critical for the survival and growth of financial institutions. In the case of rural banks, the issue of credit risk is of greater concern because of the higher levels of perceived risk resulting from some of the characteristics of their clients and business conditions that they find themselves in. Credit risk management is a structured approach to managing uncertainties through risk assessment, development of strategies to manage it and mitigation of risk using managerial resources. The strategies include transferring to another party, avoiding the risk, reducing the negative effects of the risk, and accepting some or all of the consequences of a particular risk.
Hull (2007) explains that one of the basic formation of every organization, most importantly a banker is to understand the portfolio of risk it faces currently and the risk it plans to take in future. Oldfield and Santomero (1997) posited that risks facing all financial institutions can be segmented into three separate types from a

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management perspective. These are (i) risk that can be eliminated or avoided by simple business practises (ii) risk that can be transferred to other participants and (iii) risk that must be actively managed at the firm level.
In the review of Sinkey (2002), modern risk management in the banking industry can be highlighted by five active verbs and these are; identify, measure, price, monitor and control. This process of risk management is very much important to the rural banking industry since most of their clients are susceptible to co-variant risk, market risk and credit risk.
RCBs were established to institutionalize financial intermediation in the rural areas, mobilize rural savings for onward lending to agricultural firms and microenterprises and to create the culture of banking among the rural population. This study seeks to analyse vigorously the credit risk management of rural banks and to determine the quality levels of their loans portfolios. Specifically, we are interested in establishing the empirical association between the profitability of Ghanaian RCBs on one hand and non-performing loans as well as capital adequacy ratios on the other.
The rest of the paper is structured as follows: section two gives an overview of the rural and community banking industry in Ghana; section three discusses the literature underlying the study; section four describes the methodology employed; while sections five and six discuss the empirical findings and policy implications of the study respectively.

2 Overview of the Rural and Community Banking Industry in Ghana

The Bank of Ghana adopted the concept of rural banking from the Philippines in 1960, integrated it into the formal banking system and made it legally operational in 1976. In Ghana, rural and community banks (RCBs) are owned and managed by members of a local community preferably a district. Although they operate as commercial banks, RCBs are not permitted to open fully fledged branches in other communities (Aboagye and Otieku, 2010). RCBs are tasked by law to provide formalized financial intermediation to rural communities (mobilization of rural savings from surplus units and channel them as credit facilities to deficit unites, mostly microenterprises); creation of the culture of formal banking among rural dwellers and to facilitate rural industrialization (BOG, 2006).
As at July 2012, the ARB Apex Bank had a network of about 133 independent RCBs with about 564 branches and 548 service delivery locations spread throughout Ghana (www.arbapexbank.com). Table 1 presents the regional distribution of the RCBs in Ghana. The regions with more than twenty (20) RCBs are Ashanti, Brong Ahafo, Central and Eastern.

Table 1: Regional Distribution of RCBs and Branches

SN	REGION	NUMBER OF RCBs	NUMBER OF BRANCHES
1	Ashanti	24	111
2	Brong Ahafo	20	69
3	Central	21	68
4	Eastern	22	85
5	Greater Accra	6	13
6	Northern	6	3
7	Upper East	5	10
8	Upper West	4	3
9	Volta	12	22
10	Western	13	55
	TOTAL	**133**	**439**
	HEAD OFFICE + BRANCHES = 564		

Source: ARB Apex Bank, 2012

According to IFAD (2008) RCBs constitute about 50% of the total banking outlets in Ghana and are the largest providers of formal financial services to rural dwellers. As at 2008, all the RCBs had mobilized GHC343.9 million deposits, advanced GHC224.7 million loans, delivered GHC63.3 million domestic money transfers, GHC9.3 million international money transfers and facilitated cheques clearance worth GHC993.7 million (Nair and Fissha, 2010). Their consolidated profit and net worth for 2008 stood at GHC15.6 million and GHC622.3 million respectively.

However, a comparison of their performance against that of deposits money banks (DMBs) as given in table 2 indicates that the proportion of total deposits mobilized by RCBs averaged only 7%, 4% for loans and 6% for total asset (Aboagye and Otieku, 2010).

Table 2: Deposit Mobilization, Loans and Total Assets of RCBs versus DMBs

	DEPOSITS			LOANS			TOTAL ASSETS		
YEARS	DMBs	RCBs	%RCBs[2]	DMBs	RCBs	%RCBs	DMBs	RCBs	%RCBs
2000	4,668	200	4	5,064	69	1	11948	268	2
2001	7232	316	4	6234	122	2	15651	432	3
2002	10767	1201	11	6914	527	8	19236	1590	8
2003	14917	1357	9	10493	529	5	24847	1791	7
2004	19481	1684	9	13319	716	5	31224	2259	7
2005	23041	1684	7	17938	716	4	37430	2259	6
2006	32473	2245	7	25285	1072	4	51030	2967	6
Mean			**7%**			**4%**			**6%**

Source: Bank of Ghana, 2006; Aboagye and Otieku, 2010

This performance is very low given the fact that RCBs are currently more than DMBs, - (133 versus 26) - and the fact that RCBs have 70% of the population as their target market. As a result of this performance of RCBs, Aboagye and Otieku (2010) expressed fears that mobilizing savings and advancing loans at such low levels may not lead to the desired socio-economic transformation of local communities which rural banks are expected to bring about. Similarly, Bashin and Akpalu (2001) recommended that RCBs must do much more to raise their scope because the level of loans and advances given are too low.

The Central Bank has graded the financial performance of 17 out of the 133 RCBs in operation as mediocre, and others as financially distressed. Among the 17 mediocre RCBs, 6 have negative net worth (Nair and Fissha, 2010).

Aboagye and Otieku (2010) conducted a study on 30 RCBs to among others evaluate the financial performance of RCBs in Ghana. Nine variables indicating various dimensions of financial performance such as total assets, total deposits, total loans, non-performing loans, and interest expenses ratio were evaluated. Their result indicated that there are neither any excellent nor marginal performing rural banks. Rather all RCBs are either satisfactory performers (44%) or fair performers (50%).

The poor performance of some RCBs has resulted in the closure of 23 by the BOG as at June 2007. The Bank of Ghana (2001) identified the cause of failed RCBs as management incompetence , fraud, embezzlement, negligence or ineffective board of directors, improper accounting records, non-compliance with regulations in granting insider credit, persistent operational losses, poor loan recovering and corruption, poor deposit mobilization, use of unqualified staff, non-submission of prudential returns, unearning assets and non-performing credit portfolios.

[2] The percentage of RCBs deposits is given as [RCBs deposits/sum of RCBs and DMBs deposits]. Total assets and loans were calculated in the same way.

3 Literature Review

According to Abor (2005) risk management has received extensive attention from both the corporate world and the academia, because, as Shimpi (2001) puts it, it is the life blood of every organization and corporate officers deal with it decisively wherever it appears. Risk management is an orderly process for the identification and assessment of pure loss exposure faced by an entity and the adoption of the most appropriate technique to cater for such exposure (Redja 2008). Schmist and Roth (1990) also defined risk management as coherent activities which are undertaken to minimize the negative impact of uncertainty regarding possible losses. From the forgone, the process of risk management includes identification, measurement, administration of selected techniques and control.

Various researchers such as Akotey and Abor, (forthcoming); Stulz, (1984); Smith *et al.*, (1990); Froot, (1993); Fatemi and Glaum, (2000), have emphasized the reasons why managers should take keen interest in risk management. This is because risk management is intended to help an organization meet its objectives such as the minimization of foreign exchange losses, reduction in the volatilities of cash flow, protection of earnings against fluctuations, (Fatemi and Glaum, 2000) and to promote the survival of the firm through growth and profitability.

The risk associated with the business of banking can be grouped into credit risk, market risk (which consists of foreign exchange risk, liquidity risk and interest rate risk), operational risk which sometimes includes legal risk and most recently strategic risk (Asare-Bekoe, 2010; Yussif, 2003, Cooperman *et al*., 2000). This paper makes an attempt to contribute to the analysis, measurement and management of credit risk in rural and community banks in Ghana. In particular, we are interested in establishing whether there is an association between the financial performance of Ghanaian RCBs on one hand, and their credit risk management systems as well as capital adequacy ratios.

Credit risk is the likelihood that a borrower will not pay its debt on time or fail to make repayment at all (Sinkey 2002; Coyle 2000). It is the possibility that the actual return on a loan portfolio will deviate from the expected return (Conford, 2000). That is loan delinquency and default by borrowers. While loan delinquencies indicate delay in repayments, default denotes non-payment, and the former if unchecked, leads to the latter (Padmanabhan, 1988). With regards to the business of rural banking, credit risk refers to the delay of repayment on loan contract or the inability of a borrower to pay its debts, which can cause cash flow problems and affect a bank's liquidity position. Credit risk management is the identification, measurement, monitoring and control of risk arising from the possibility of default payment on a loan contract (Early, 1996; Coyle, 2000).

Credit risk in the banking industry is mostly caused by adverse selection and moral hazards due to information asymmetry. The credit risk situation of a bank can be exacerbated by inadequate institutional capacity, inefficient credit guidelines, inefficient board of directors, low capital adequacy ratios, compulsory quota-lending as a result of government interference and lack of proper supervision by the central bank (Sandstorm, 2009; Laker, 2007; Bank Supervision Annual Report, 2006; Kithinji, 2010).

The basic principles underlying credit risk management have been outlined by various authors like Santomero and Babbel (1997), Dowel *et al*. (2008), and Lindergren (1987) as (i) the establishment of a clear risk policy and a reporting structure; (ii) underwriting authority and loans limit; (iii) allocation of responsibility and accountability; (iv) prioritization of the lending process and systems; and (v) the timely communication of risk information to top management. According to Santomero and Babbel (1997:5) these principles are set up "to measure risk exposures, define procedures to manage these exposures, limit exposures to acceptable levels and encourage decision-makers to manage risk in a manner consistent with the firm's goals and objectives".

Theoretical and empirical evidence elsewhere suggest that credit risk management is a predictor of bank`s performance. For instance non-performing loans, an indicator of credit risk can reduce the value of a bank and destabilizes the credit system. As Padmanabham (1998) and Agu (1998) put it loan default reduces the resource base of a bank for further lending, weakens staff morale and affects the borrower's confidence. The cost of managing overdue loans tends to be very high and this can reduce banks' profitability levels. In some cases the cost on unpaid loans are shifted to other customers or borrowers in the form of higher interest margin charged on loans.

Nair and Fissha (2010) indicated in a similar study of the Ghanaian rural banking industry that, the degree of loan delinquencies or impaired loans in an RCB's loan portfolio is often considered the best leading indicator of the institution`s financial performance. Nair and Fissha further revealed that the percentage of loan portfolio that was in default (among the sampled banks) for more than one month was 16 percent. This is too high and unacceptable given the global average of 3 percent for the worldwide micro-banking industry (MIX, 2008).

In addition the proportion of loans in default for more than one year was 3.5 percent, compared with 1.5 percent for the global micro banking industry. This according to Nair and Fissha is an indicator of large loan losses which may never be paid back. In a study of the Kenyan banking industry, Kithinji (2010) showed that there is an indirect relationship between non-performing loans and profitability.

Other empirical studies outside Africa have established a strong significant relationship between credit risk and banks performance. For example in Qatar, Achou and Tengue (2008) showed that better credit risk management result in better bank performance. They concluded that, "it is thus of crucial importance for banks to practise prudent credit risk management to safeguard the asset of the bank and protect investors interest". Achou and Tengue further indicated that banks with strong credit risk management policies tend to incur lower loan default (impaired loans). A similar study conducted by Hosna et al (2009) in Sweden lends supports to the findings of Achou and Tengue (2008).

4 Methodology

4.1 Sources of Data

In order to investigate the relationship between credit risk and RCBs' profitability, information from the annual financial statements of 10 out of the 20 rural banks in the Brong Ahafo Region covering the period of 2006 to 2010 were used. These banks were selected because their financial statements were readily available. With the five year financial reports of the 10 selected rural banks, we had a total of 50 (5 multiplied by10) observations for the analysis. From the financial reports information concerning profit after tax, total equity, total asset and non-performing loans (NPL) were extracted for the analysis. On the annual financial statement NPL amount has been presented using different names, such as bad debts, impaired loans, problem loans, doubtful claims and bad loans.

4.2 Analysis of the Data

Panel data analysis approach was employed in determining the relationship between credit risk management and profitability of rural banks. A panel data is a longitudinal or cross-sectional data in which economic entities are observed across time (Sayrs, 1989). This approach has been used in similar studies that cover different banks and years (eg. Buyinza et al, 2010; Hassan and Bashir, 2003; Haron, 2004) and thus makes it suitable for this study. Additionally, the econometric styles of Keiko (2006), Samy (2003), Saira (2011) and Panayiotis (2005) with few modifications were adopted for the study. The regression outputs were obtained through the use of STATA (statistical data analysis software). A panel regression model takes the form of:

$$X_{it} = F(Y_{it}, Z_{it}) + U_t$$

Where X_{it} represent profit of rural bank i at time t. Y_{it} is a vector of variables characteristic of bank i at time t. Z_{it} represents features of the RCBs industry. U_{it} is the error term.

4.3 Specification of the Empirical Model

The empirical framework for the investigation of the link between credit risk management practices and rural banks' profitability is given as follows:

$$X_{it} = \beta_0 + \beta_1 NPL_{it} + \beta_1 CAR_{it} + U_{it}$$

The meanings of the variables in the empirical model have been explained in the table below.

Table 3: Meanings of the Research Variables

ABBREVIATION	VARIABLE	MEANING OF VARIABLES
X_{it}	ROE (Return on equity)	ROE is profit after tax divided by equity. It measures the profitability of rural bank i at time t.
NPL_{it}	NPL (Non- Performing Loan)	NPL is the total loan losses of rural bank i at time t.
CAR_{it}	CAR (Capital Adequacy Ratio)	CAR is regulatory capital requirement which is measured as shareholders' fund divided by total assets.

Source: Authors' own calculation

4.4 Justification of the Research Variables

Return on Equity (ROE): This is a dependent variable and it measures the return on shareholders' investment in the bank. ROE was used as an indicator of the profitability in the regression analysis because ROE along with

ROA has been widely used in earlier research (Ara et al , 2009). It shows the effectiveness of management in the utilization of the funds contributed by shareholders of a rural bank.

Non- Performing Loans (NPL): This is an independent variable and it is chosen because it is an indicator of credit risk management. NPL, in particular, indicates how banks manage their credit risk because it defines the proportion of loan losses amount in relation to total loan amount (Hosna et al, 2009). We expect non- performing loans to have an adverse relationship with RCBs performance.

Capital Adequacy Ratio (CAR): This is also an independent variable and is chosen because it is the core measure of a bank's financial strength from a regulator's point of view. It consists of the types of financial capital considered the most reliable and liquid, primarily shareholders' equity. Banks with good capital adequacy ratio have good profitability. With good capital requirement rural banks are able to absorb loans that have gone bad.

5 Result and Discussions

5.1 Descriptive statistics

The table below gives a descriptive summary of net profit, non- performing loans (NPL) and capital adequacy ratio (CAR) of the ten sampled rural banks covering a 5 -year period.

Table 4: Descriptive Statistics

variables	Observation	Mean	Standard Deviation	Minimum	Maximum
Net profit	50	301578	332550.5	-147205.3	1740459
NPL	50	25669.99	28104.31	478.9081	130915.8
CAR	50	0.24	0.23	-0.29	0.54

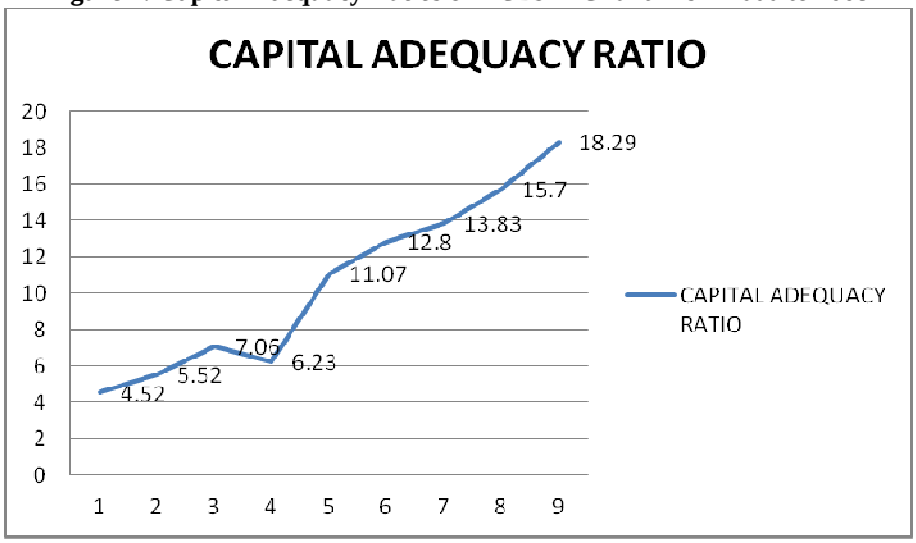
Source: *Results was generated from STATA*

From the table it is revealed that, over the 5- year period, NPL has a minimum value of GHC478.9081 and a maximum of GHC130915.8 with an average (mean) of GHC25669.99 indicating huge loan default by customers. NPL has a percentage change of 27236.31 % (130915.8 - 478.9081/ 478.9081 x 100). The underlying cause of these huge loan losses by rural banks is poor credit risk management. That is the high level of the NPLs is a reflection of the weak credit risk management of the banks.

Capital adequacy is very essential for the solvency and profitability of banks. This is because the business of banking is risky due to the possibility that loans may not be paid back leading to financial losses to the bank. Banks are therefore required to have adequate capital, not only to remain solvent, but to avoid the failure of the financial system. The BOG requires RCBs to maintain a 10% capital adequacy ratio.

Our findings show that, CAR has a negative minimum value of -0.29 and a maximum value of 0.54 with an average (mean) of 0.24. This indicates that most rural banks in Brong Ahafo are financed by approximately 24% equity. Although this is above the 10% statutory requirement it indicates that the RCBs are highly geared. That is, they rely more on the funds from long term liabilities to finance their assets. Such a situation may lead to bankruptcy in the rural banking industry. It is therefore not surprising that one of the sampled banks for this study has been liquidated. The capital adequacy ratio of the nationwide network of RCBs from 2000 to 2008 is presented in figure 1.

Figure 1: Capital Adequacy Ratios of RCBs in Ghana from 2000 to 2008



Source: ARB Apex Bank Annual Reports, 2008; Nair and Fissha, (2010)

Nair and Fissha (2010) discovered that seven of the nationwide RCBs were insolvent and that five had negative net worth in excess of 10%. It is however encouraging to note that the number of RCBs with very low capital or net worth have declined quite remarkably from 26 in 2001 to 16 in 2003 (Nair and Fissha, 2010).

5.2 Result of the Panel Data Regression

In panel data analysis two main models are normally estimated: Fixed effect and Random effect. Fixed effects model is used when you want to control omitted variables that differ between cases but are constant over time (Sayrs, 1989). This helps to track changes in the variables over time to estimate the effect of independent variables on dependent variables.

The fixed effect is the most widely used technique for the analysis of panel data. Statistically, fixed effects are always a reasonable thing to do with panel data because they give consistent result but may not be the most efficient model to run (Sayrs, 1989).

The random effect is used where some omitted variables may be constant over time but vary between cases, others may be fixed between cases but vary over time.

To determine between fixed effect and random effect the Hausman test is used. Hausman Test compares fixed effect with random effect in STATA. Running a Hausman specification test at five (5) percent level enables the researcher to choose between fixed and random models.

The Hausman Test evaluates the Null hypothesis that the coefficient estimated by the random effect estimator is the same as the ones estimated by the constant fixed effect estimator. If the Hausman test is insignificant (Prob > Chi2 greater than .05), then the fixed effects model will be used (Torres-Reyna, 2007).

In this study, both the fixed and random effects gave the same result and thus the fixed effect was used in the analysis.

Table 5: Panel Regression Results (Fixed Effect)

Net profit	**Coefficient**	**standard Error**	**t**	**P>|t|**
NPL	9521.82	.8011396	8.74	0.000
CAR	7.0048	90125.3	1.06	0.294
CONS	99239.06	34477.84	2.88	0.007
Prob>F=0.000	Within=0.6733	Between= 0.3440	Overall= 0.4543	

Source: Authors' own calculation through STATA

5.3 Non-Performing Loans (NPLs) and Rural Banks Profitability

Non–performing loans are used to measure the fitness of a bank's credit risk management. Surprisingly, NPL is positive and statistically significant at 1 percent significance level. This finding is unusual because, theoretically NPL is expected to have an inverse relationship with a bank's profitability. Our result however, shows a strong positive association between non-performing loans and RCBs' profitability.

The positive relationship between non-performing loans and the profitability of rural banks indicates that, even though there is huge loan default, non-performing loans are increasing proportionately to profitability. This implies that, rural banks do not have effective institutional measures to deal with credit risk management. What the banks do is that they shift the cost on loan default to other customers in the form of higher interest rate on loans.

Higher interest margin charged on loans by rural banks due to weak credit risk management practices prevent microenterprises from accessing loans. Such a situation prevents business expansion and rural industrialization which underpins the establishment of rural and community banks.

The result lends support to a similar study by Hosna *et al* (2009). They indicated that since each bank has different characteristics and risk management policies, credit risk management affect profitability on different levels in each bank. NPL fairly affect profitability of some banks and this is as a result of shifting cost on loan default to other customers. Nair and Fissha (2010) also discovered high levels of non-performing loans among RCBs and indicated the danger that this posses to the industry. However, our result contradicts the findings of Chou and Tenguh (2008).

5.4 Capital Adequacy Ratio (CAR) and Rural Banks Profitability

Theoretically, banks with good capital adequacy ratio have a good profitability. A bank with a strong capital adequacy is also able to absorb possible loan losses and thus avoids bank 'run', insolvency and failure. Our result indicates that, although capital adequacy ratio is positive, it is not significant. The insignificant impact of the level of CAR on rural banks' profitability seems to confirm the directive of the Bank of Ghana (BOG) to rural banks to recapitalize to GHC150000.

5.5 The Predictive Power of the Model

Econometrically, when the overall probability (P) value (Prob>F) is between 0 and 0.05 then the model is strong and has high predictive power and that significant results will be achieved when used in other studies. The model used for the analysis of this study has a high predictive power of 0.00 (i.e Prob>F = 0.00). Thus, the explanatory variables all together explain the dependent variable very well. This model can therefore be used in similar studies to predict the relationship between credit risk management and rural banks' financial performance.

6 Conclusions and Policy Implications

The study has examined the credit risk management of selected rural banks in Ghana and has discovered that credit risk management plays a significant and dynamic role in the business of rural banking. The findings indicate that the sampled RCBs have poor credit risk management practices; hence the high levels of the non-performing loans in their loans portfolios. Despite the high levels of the NPLs, their profit levels keep rising; an indication of the transfer of the loan losses to other customers in the form of large interest margins.

The charging of higher interest rates is likely to discourage microenterprises and rural farmers from accessing loans from RCBs. Those who are able to take up such loans may also find it very difficult to repay because of the exorbitant interest rates. This situation has the tendency of creating *'loan-losses; higher-interest cycle'* phenomenon. RCBs are thus recommended to establish sound and competent credit risk management units which are run by best practices in risk management such as the institution of a clear loan policy and the adherence to underwriting authority and limits. Staff of RCBs credit units such as project and advance managers, credit/loan officers and field officers performs a range of functions from project appraisals through credit disbursement, loan monitoring to loans collection. Thus issues pertaining to their selection, training, placement, job evaluation, discipline, and remuneration need to be tackled effectively.

Opinion leaders, local authorities and government interferences such as quota-lending should be eliminated from the lending operations of RCBs. Rather, the respective boards of directors or top management of RCBs should be allowed to operate independently. As Aboagye and Otieku (2010) concluded "Laws and codes of conduct recently designed to guide the conduct of RCBs' business should be allowed to work and that RCBs should pay attention to developing the competencies of their boards and senior management".

The study also revealed that rural banks with higher capital adequacy ratios can better advance more loans and absorb credit losses whenever they crop up and therefore record better profitability. This finding supports the new directive of the BOG for the re-capitalization of rural and community banks.

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