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Abstract.

This Study examined how management efficiency affects the credit risk profile of deposit taking SACCOs in Kenya. Management efficiency is the capacity of an organization to leverage its capabilities to achieve the strategic goals and objectives as efficiently and effectively as possible. On the other hand, Credit risk is the probability that counterparty will fail to meet its obligations in accordance with agreed terms. Management efficiency is postulated by the level of earning assets to Total assets while Credit risk is postulated by the level of Non-performing loans to Total assets. A Causal research design was adopted upon a panel of all deposit taking SACCOs in the period 2011-2014. The dependent variable is represented by a change in credit risk, while Management efficiency is represented by quality of Management efficiency. Descriptive and Regression analysis were used to establish the relationship between the variables. The study found out that Management efficiency as measured in terms of earning assets to Total assets has a negative and statistically significant effect on the level of Credit risk of Deposit taking SACCOs in Kenya.

Key Words: *SACCO-Savings and Credit Cooperative Organization, SASRA-SACCO Society Regulatory Authority, Credit risk, Management Efficiency, Earning Asset*

Background of the study

Financial institutions play a vital role in the economy by allocating credit from surplus economic units to deficit economic units in various economic settings, i.e. mobilising savings and allocating resources to productive economic activities (Fukuda and Dahalan, 2012). However, these institutions confront credit risk in the allocative process. This paper claims that, Management efficiency influences credit risk of Deposit taking SACCOs in Kenya.

Management efficiency is the capacity of an organization to leverage its capabilities to achieve the strategic goals and objectives as efficiently and effectively as possible.

On the other hand, the Basel Committee on Banking Supervision (1999) defined credit risk as the probability that a bank borrower or counterparty will fail to meet its obligations in accordance with agreed terms or the possibility of losing the outstanding loan partially or totally due to credit events (BCSB 2001). Heffernan (1996) stressed that credit risk is the risk that an asset or loan becomes irrecoverable, in the case of outright default or the risk of delay in servicing of loans and advances. Thus, when this occurs or becomes persistent, the performance, profitability, or net interest income of banks is affected. Adequate management of credit risk is critical for the survival, growth and development of banks.

Literally Credit risk is the inability of a borrower of a lending organization to meet due repayment terms either in part or in full, and the possibility of disposing the lender to a loss in the process. Deposit taking SACCOs is an emerging niche of the financial sector in Kenya, which has been in the regulatory framework for the last 6 years. Before the enactment of the SACCO Act, 2008 these SACCOs, were under the abstract regulation of the Ministry of industrialization and enterprise development. It is this ministry that procures the registration of all co-operative societies in Kenya, and it is conditionality that before you are licensed as a Deposit taking SACCO, first and foremost a SACCO must be registered with the ministry of Industrialization and Enterprise development. This registration authorizes the new outfit to mobilize savings from the public under certain rules and conditions and lend the same to needy again under certain rules and conditions. This pure mobilization of funds and lending to members is managed through an activity widely referred to as Back office activity. Front office activities are those operations where in addition to pure back office activity a SACCO conducts withdrawals and deposits on the counter. Before the enactment of SACCO Act 2008, both Back office and front office activities were regulated by the ministry of Industrialization and enterprise development. However the govt of the republic of Kenya realized the risk upon which the public funds held by these former SACCOs is exposed to and decided to bring such fund management in to a financial system regulation web. Following these decision on the part of the government, the, SACCO ACT 2008 was enacted which provided for the establishment of a SACCO regulatory authority shortened for SASRA. At the same time the new SACCO outfit was branded, Deposit taking SACCOs.

The main stay of these SACCOs is the Interest and other charges that they charge to their members on loans granted. Credit creation is the main income generating activity for the banks Kargi (2011).

Statement of the problem

As noted elsewhere above Deposit taking SACCOs is an emerging Niche of the financial sector in Kenya. Further, prior to the enactment of SACCO ACT 2008,

these outfits were operating on a system that was not properly regulated and thus the members deposit base which was advanced to other members in form of loans, was at risk of loss. This is because more often than not the loan advanced to the member of the SACCO was secured against his/her deposits, which in most of cases was less than the loan granted. It means that while the SACCO could offset the loan against the member's deposit the amount granted over & above his or her deposit is at risk, if proper management efficiency capabilities are not in place to control default incidences.

It is in this light that this paper aspires to find out the influences of management efficiency on Credit risk for Deposit taking SACCOs in Kenya.

Research Objective

To determine the effect of management efficiency on credit risk in deposit taking SACCOs in Kenya.

Hypothesis development

H01-Management Efficiency has no effect on Credit risk for deposit taking SACCOs in Kenya.

H11-Management Efficiency affects credit risk in Deposit taking SACCOs in K

Literature Review

This chapter reviews theoretical foundations that discuss and explain the relationship between Credit risk and Management efficiency.

Theoretical Review

This section reviews theoretical foundations upon which this study will be anchored and is presented within a theoretical framework.

Bank Risk Management Theory

The study adopted Bank Risk Management Theory. It was developed by David H. Pyle University of California and it was used to study why risk management is needed, and outlines some of the theoretical underpinning of contemporary bank risk management, with an emphasis on market and credit risks. This theory indicates that credit and market risks have an effect directly or indirectly on the banks survival. As applied to this study, this theory holds that, researcher would expect the independent variables credit risk indicators to influence or explain the dependent variable which are banks profitability because without effective and efficient credit risk management, banks profitability, liquidity, solvency are unthinkable (David, 1997).

Conceptual Framework

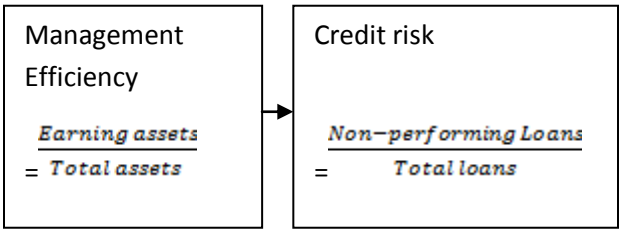

Figure 1-Conceptual Framework.

Empirical Review

Deposit taking SACCOs is an emerging niche of the financial sector in Kenya. With the enactment of SACCO Act, 2008 the Niche fell under the financial sector regulatory framework. In addition to the Act, itself, there are certain prudential regulations that guide the day to day operations of the sub-sector as it were. These regulations to a major extent, replicate those of main stream financial institutions, mainly regulated by the Central Bank of Kenya. While this paper dwells on the management efficiency of Deposit taking SACCOs it will borrow heavily from the mainstream financial sector in both Kenya and other parts of the world that have

similar activities. The literature review that follows is along this context.

Management efficiency

Most researchers have focused on the relationship between efficiency and credit risk, usually proxied by bad loans, problem loans or loan loss provisions. Berger and DeYoung (1997) provide an excellent analysis on the possible relationship between credit risk, efficiency and bank capital, offering four alternative hypotheses, i.e. the 'bad management', the 'bad luck', the 'skimping' and the 'moral hazard' hypotheses They employ Granger-causality techniques to test these four hypotheses and conclude that cost efficiency may be an important indicator of future problem loans and problem banks in the US. They found out that there was a negative relationship between cost efficiency and risk in failed banks. Berger et al. (1997) offered explanations for this negative relationship that inefficient banks, as well as having problems of regulating their internal costs, might have problems in the valuation of the credit risk, so that a bad management of costs goes together with greater credit risk. Williams (2004) undertakes a similar analysis for the European banking industry and finds that the 'bad management' hypothesis prevails for European banks.

Recently, Podpiera and Weill (2008) address the question of the causality between non-performing loans and cost efficiency in a transition country (Czech Republic) so as to examine whether either of these factors is a major determinant of bank failures and find evidence in support of the bad management hypothesis, according to which deteriorations in cost efficiency precede increases in non-performing loans.

Rajaraman and Vasishtha (2002) in an empirical study provided an evidence of significant bivariate relationship between an operating inefficiency indicator and the problem loans of public sector banks. In a similar manner, largely from lenders' perspective, Das and Ghosh (2003) empirically examined non-performing loans of India's public sector banks in terms of various indicators such as asset size, credit growth and macroeconomic condition, and operating efficiency indicators. Sergio (1996) in a study of non-performing loans in Italy found evidence that, an increase in the riskiness of loan assets is rooted in a bank's lending policy adducing to relatively unselective and inadequate assessment of sectoral prospects.

In a study of loan losses of US banks, McGoven (1993) argued that 'character' has historically been a paramount factor of credit and a major determinant in the decision to lend money. Banks have suffered loan losses through relaxed lending standards, unguaranteed credits, the influence of the 1980s culture, and the borrowers' perceptions. It was suggested that bankers should make a fairly accurate personality-morale profile assessment of prospective and current borrowers and guarantors. Besides considering personal interaction, the banker should (i) try to draw some conclusions about staff morale and loyalty, (ii) study the person's personal credit report,
(iii) do trade-credit reference checking, (iv) check references from present and former bankers, and (v) determine how the borrower handles stress. In addition, banks can minimise risks by securing the borrower's guarantee, using Government guaranteed loan programs, and requiring conservative loan-to-value ratios.

Altunbas et al., (2007) follow an approach similar to Kwan and Eisenbeis (1997) and use a static simultaneous equation framework to investigate the relationship between capital, loan provisions and cost efficiency for a sample of European banks over the period 1992-2000. In stark contrast to Williams (2004), Altunbas et al., (2007) do not find a positive relationship between inefficiency and bank risk-taking. Inefficient European banks appear to

hold more capital and take on less risk. Overall, the European studies yield contradictory findings as to the relationships between operating efficiency, capital and bank risk. Epure and Lafuente (2012) examined bank performance in the presence of risk for Costa-Rican banking industry during 1998-2007. The results showed that performance improvements follow regulatory changes and that risk explains differences in banks and non-performing loans negatively affect efficiency and return on assets while the capital adequacy ratio has a positive impact on the net interest margin.

Credit Risk

Credit risk is the risk of loss due to the inability or unwillingness of a counter-party to meet its contractual obligations (Bank of Uganda, 2007). Models proposed by Straka (2000) and Wheaton et al, (2001) have expressed default as the end result of some trigger event, which makes it no longer economically possible for a borrower to continue offsetting a credit obligation. Though there are various definitions of credit risk, one outstanding concept portrayed by almost every definition is the probability of loss due to default. However, a lot of divergences emerge on defining what default is, as this is mainly dependent on the philosophy and/or data available to each model builder. Liquidation, bankruptcy filing, loan loss (or charge off), nonperforming loans (NPLs) or loan delayed in payment obligation, are mainly used at banks as proxies of default risk (Calcagnini et al*.,* 2009; Maudos and Solis, 2009). According to Ahmed and Nizam (2004), Das and Ghosh (2007), and Al-Smadi (2010), credit risk is a dependent variable and is measured by Non-Performing Loans (NPL) as a proxy.

The main goal of every microfinance institution (MFI) is to operate profitably in order to maintain its stability and improve growth and sustainability. However, existence of high levels of loan default problem in microfinance industry negatively affect the level of private investment and constrain the scope of microfinance institution credit to borrowers as MFIs have to compensate for loan default/delinquency losses. The success of individual MFIs in credit risk management is largely reflected in the proportion of delinquency's loans to gross lending. Factors such as credit policies, loan recovery procedures, and loan appraisal process are viewed as critical drivers of loan delinquency occurrence; each of these factors significantly affects loan delinquency performance in MFIs in Kenya. The study used primary data. The study target population compromise 59 MFIs registered by Association of Microfinance Institutions of Kenya (AMFIK). A descriptive survey design was used to carry out a census of 59 microfinance institution in Kenya, this is because of the small size population .The data was collected through a structured questionnaire and administered to MFIs loan officers for response. Multiple regression analysis was used to establish relationship between loan delinquency and credit policies, loan recovery procedures, and initial loan appraisal in MFIs in Kenya. A total of 48 questionnaires were administered of which 45 were adequately respondent to and considered for analysis, this formed 94% response rate. The findings indicated that all the three factors tested had a significant impact on the loan default rate, thus the micro-finance institutions have a cause to worry if they have to reduce the loan default rates by considering the three factors under the study.

Other scholars like Bandyopadhyay (2007) and Avery et al. (2004), have explained credit risk using the creditworthiness parameters like borrower's quality, financial distress and collateral position. They contend that individual borrowers with characteristics such as divorced or separated, having several dependants, with unskilled manual occupation, uneducated, unemployed most of the

year; are prone to defaulting on their credit obligations. This is supported by economic theories, most especially the human capital theory which regard education and training as an investment that can increase the scope of gainful employment and improve net productivity of an individual and hence their incomes.

By far the biggest risk facing banks and financial intermediaries remains credit risk- the risk of customer or counterparty to default (Reserve Bank of Australia, 1997). In Uganda, the 1980s and 1990s saw the banking system coming under severe stress where many banks were riddled by high levels of non-performing assets (credit risk) with some banks going insolvent. By 1995 the non performing loans in the banking sector had accumulated to US$34million (Tumusiime, 2005). Moreover Mugume and Ojwiya (2009) indicated that credit risk peaked during the 1990s and early 2000. Mugume and Ojwiya blame this on the "adverse selection predicament" caused by information asymmetries that makes it hard to select good borrowers from a pool of loan applications.

According to Zakaria (2007), the principle aim of banks is to maximize their client's deposits and this among others means is through lending. However, lending is a risky venture as it may lead to loss of their client's deposits when borrowers fail to pay back the loans. Lenders have to be very careful of the adverse selection, usually this occurs when potential borrowers who are most likely to produce undesirable outcomes (loan default) are the ones who seek out loans.

Research Methodology

This chapter contains the research design that was used to integrate the various components of the study into a coherent form.

Research Design

Causal research design was adopted in this study since the objective is to assess cause and affect relationship. The study elements consist of a panel of all Deposit taking SACCOs in the period 2011-2014. The period 2011-2014 was chosen because, deposit taking SACCOs became part of the financial sector in Kenya in the year 2008, upon promulgation of the SACCO act 2008. Prior to this date the sub-sector was under regulated as there was no competent regulatory authority to oversee the front office services activity (FOSA).

Data

The Data supporting this study was derived from the SACCO societies Regulatory Authority (SASRA), and the audited accounts of each Deposit taking SACCO.

Data Analysis and Econometric model

To test the hypothesis, statistical analyses were carried out using Univariate regression method, with the following general model:

CR,i,t =a,i,t +Σ MGTEFF,I,t +e i,t .

where the *i* subscript denotes the cross-sectional dimension across SACCOs, *t* denotes the time dimension, *CR* is the variable accounting for SACCO's credit risk, *MGTEFF is the Management* efficiency score, while, e, is the random error term. The Model Equation tests if, Management efficiency elements changes precede variations in credit risk for deposit taking SACCOs in Kenya.

Data Analysis

This chapter provided a critical analysis of the study findings and results emerging from an interactive process of Variables. The study used a comprehensive yearly dataset comprised of SACCO-specific variables that spans the period 2011-2014.

General Information

Findings indicate that all SACCOs under study were licensed by Sasra between the years 2010 to 2014,

to conduct the business of Deposit taking as per a new legal framework enshrined in SACCO act 2008. Before this dispensation, virtually all those SACCOs operated unregulated deposit taking business in the name of Front office activity shortened for FOSA. It was not until 2008 that the government of Kenya felt a need to bring in these institutions into a financial system web, in order to control the bonafide members deposits. The date of licensing is critical in the sense that it is from this point onwards that the risk of loss of members deposits was fixed by means of regulatory mechanisms. At the same time, granting of loans to members form the main activity contributing to the SACCO's main stay.

Descriptive Statistical Analysis

(a)- Test for distribution and normality of Variables

The measures of central tendency for the study variables, Credit risk and Management efficiency were done. The statistical manipulation of collected data for these indicators returned a mean value of 0,064 and 0,497, for Credit risk and Management efficiency respectively.

The standard deviation for the variables under study was again, 0.025 and 0.217 for credit risk and Management efficiency respectively. Standard deviation is a measure that tells you how tightly all the various responses are clustered around the mean in a set of data.

Table 1: Two Paired sample test

	Paired Differences					t	Degrees of freedom	p-value Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair :- -Management Efficiency - Credit Risk	-0.433	0.234	0.023	-0.479	-0.387	18.55	100	0.000

Regression Analysis

The objective of the study was to establish the influence of Management efficiency on Credit risk for Deposit taking SACCOs in Kenya.

The study used regression analysis in establishing this relationship. The dependent variable of the study was the Credit risk of the SACCOs, while the independent variables were Management efficiency.

Table 2-Model summary.

The results from the regression analysis are discussed next.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
	0.734	0.539	0.530	0.017	1.980

From the results in Table 2 above, it is clear that the independent variable, i.e, Management efficiency, explain 53.9% of the variance in Credit risk. The balance of 47% is explainable by other factors which are outside the scope of this study.

Test for autocorrelation of residuals

The Durbin-Watson test was used to test if the residuals of the models were auto-correlated ("residuals" is the difference between the observed values of the dependent variable and the predicted values).

Auto-correlated residuals arise either when the scope of the data is not wide enough to give a valid representation of the overall picture, or the test data is not normally distributed. If the residuals are auto-correlated, this would in effect discredit our test for Heteroscedasticity.

Durbin-Watson critical value is between 1.5-2.5. So our value of 1.98 shows that, our model is credible and the residuals are not auto-correlated. Our model's Durbin-Watson value is as shown in the table 2:

Model Coefficients.

Table 3- Overall regression coefficients

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.078	.007		10.434	.000
	Management Efficiency	-.056	.010	-.481	-5.818	.000

a. Dependent Variable: Credit Risk

Table 3, reveals that the coefficient of Credit risk variable is positive and statistically significant for the panel data estimations. The results seem to suggest that for Deposit taking SACCOs, the intensity of explanatory variables (either positively or negatively) influences, their credit risk exposure. Management efficiency has a negative coefficient of -0.056..

Further if the independent variables return a value of zero, then Credit risk will be .078. A regression equation can be developed from the Regression coefficients, with the aim of modeling the effect of explanatory variable upon credit risk. As such therefore, the equation derived from the regression model will take the form of:

CR = 0.078 -0.056Me + 0.010LD+ e. This equation clearly explains the effect of Explanatory variable on Credit risk of Deposit taking SACCOs in Kenya.

Visual representation of the data on a scatter plots.

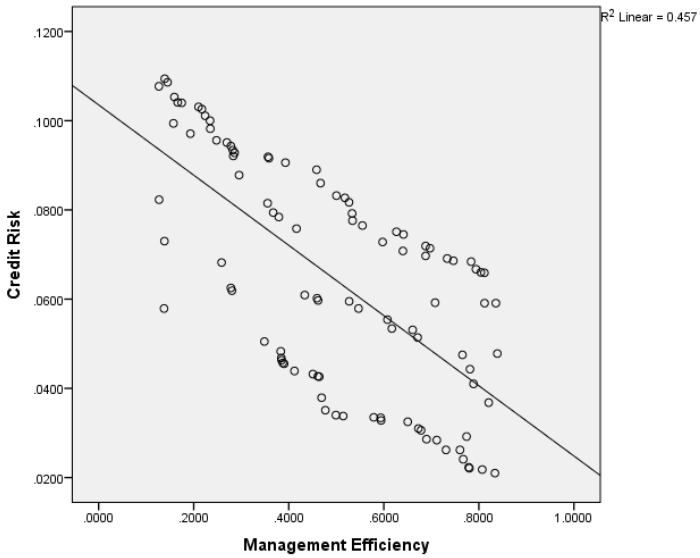

Fig 2: scatter plot credit risk vs. Management efficiency

Discussion

Based on past empirical and theoretical evidences, this section discusses the general result obtained from a statistical modeling of the variables under study based on the underlying objectives.

The result of Management efficiency, including its impact on the level of Credit risk for the SACCOs under study is discussed hereunder as follows.

Management Efficiency

The objective of the study is to examine the effect of Management efficiency on credit risk in Deposit taking SACCOs in Kenya.

To achieve this objective, the null hypothesis that, Management efficiency has no effect on credit risk of Deposit Taking SACCOs in Kenya, was tested,.

According to table, 3 the estimated coefficients and test statistics of Management efficiency was, -0.056 and -5.818 respectively. This reveals Negative and statistically significant impact of Management efficiency on the levels of Credit risk and implies that for one unit change measured in terms of Management efficiency, keeping other thing constant result in 0.056 unit change on the level of Credit risk in the opposite direction.

Secondly, a Two-paired sample test was carried out on the Credit risk indicator and its findings presented in table,2. The hypothesis was tested by checking whether there exists a significant difference in the quality of paired means between the Management efficiency and Credit risk. The test returned a P value of Zero (0) implying that there was a very low probability that the observed difference between the Management efficiency and Credit risk was by chance. The study therefore found a significant difference in the mean responses between Management efficiency and Credit risk. This led to rejection of the null hypothesis that, Management efficiency has no effect on credit risk of Deposit Taking SACCOs in Kenya.

Further, Underpinning the objective, was the need to test existence of any relationship between Management efficiency and credit risk. This is done by checking whether there exists a significant difference in the frequency of responses between the Management efficiency and Credit risk as manifested in their respective ratios.

Measuring the effect of Management efficiency upon Credit risk returned a, P value of zero (0). A *P* value of Zero is interpreted to mean that, there is a very low probability that the established relationship was due to chance. Considering the p value, Management efficiency was found to have a significant effect on Credit risk. Consequently, the null hypothesis that Management efficiency has no effect on credit risk of Deposit Taking SACCOs in Kenya was again rejected. By extension, rejecting the null hypothesis implies that Management

efficiency affects Credit risk in Deposit taking SACCOs in Kenya. To Support this claim further, Figure 4.1 shows the effect of management efficiency on Credit risk for Deposit taking SACCOs in Kenya in a scatter diagram. The scatter diagram depicts a Negative slope which indicates that, the higher the quality of management efficiency the lower is the credit risk exposure.

The findings are consistent with, Angbazo(2007) who asserted that, the earning assets to total assets ratio reflects a bank's management efficiency in managing its assets to earn interest income . He postulated that the higher the ratio the higher would be the management efficiency in generating interest income, and the lower is the credit risk. The findings are also congruent to Ahmed, Akhtar and Usman (2011) who stated that, the credit risk is highly affected by capital adequacy ratio and further that, the asset management quality has a significant negative relationship on credit risk.

Other studies consistent with this study include, Dash & Ghosh(2003), who conducted a study on two types of conventional banking systems, banks in emerging economies and their counterparts in several developed countries . They find that, Management quality, which is a ratio of earning assets to total assets affect credit risk significantly negatively.

Summary, conclusions and recommendations

The previous chapter presented descriptive & regressional analysis of the effects of Management efficiency on the Credit risk of Deposit taking SACCOs in Kenya. The results of the findings and discussion were also made.

This chapter sums up the findings of the study. Accordingly, the first section provides a summarized analysis of the findings; the second section indicates the conclusion, while the third reveals the recommendation arising from the finding. Limitations of the study are in section four and the last section is on direction for further studies.

Summary of findings

Influence of Management efficiency on Credit risk.

The earning assets to total assets ratio reflects a bank's management efficiency in managing its assets to earn interest income (Angbazo, 1997). It is postulated that the higher the ratio the higher would be the management efficiency in generating interest income, and the lower is the credit risk.

In summary, the study found out that Management efficiency measured in terms of earning assets to total assets had a negative and statistically significant effect on the level of Credit risk. This result was expected because; earning power of any financial institution is determined by its ability to deploy its earning assets portfolio, both effectively and efficiently. A higher ratio of the functional resources means that the SACCO did not procure its asset base just for the sake of it but did so in order to leverage its earning capability by turning over the earning assets.

Conclusion

This study investigated the influence of Management efficiency on Credit risk in deposit taking SACCOs in Kenya. Although several studies on credit risk determinants have been conducted in the past, they are mostly confined to post deterministic factors without considering the antecedent indicators. The unique nature of this Niche of the financial sector, and its role in the country's financial system provides the rationale for seeking to identify the antecedent factors behind credit risk in Deposit taking SACCOs in Kenya. The results of this study reveal that the Deposit Taking SACCOs in Kenya have significant credit risk as measured by the size of the non-performing loans and that credit risk is determined by management

efficiency, among other factors. The explanatory factor was tested empirically to reveal its claimed influence. The findings from this study support the claims from empirical evidence , among them, Nor and Mohamed (2007) who found out that, the credit risk in emerging economy banks is higher than that in developed economies and that risk is formed by a larger number of bank-specific factors in emerging economies compared to their counterparts in developed economies.

We find that management efficiency is critical in leveraging the SACCOs ability to mitigate its credit risk exposure. Hence the empirical model was significant. Indeed this study support the findings of Agbazo(1997), that Management efficiency affects Credit risk in commercial banks holding other macro variables constant.

Recommendations

General

While there have been a number of studies on credit risk, studies on antecedent determinants of credits risk in the financial sector and particularly in Deposit taking SACCOS have been limited and therefore this study aspired to address this gap .Based on the study findings, and consistent with the available empirical literature, the following recommendations are worthy considering.

Management Efficiency

The SACCO society's Regulatory authority (SASRA), should tighten the management & governance structures in the SACCO sector to promote efficiency, accountability and transparency in the delivery of its mission and vision.

Management of deposit taking SACCOs should enhance their skills in credit risk management in terms of Loan analysis and administration. Factors such as loan policies, which cover loan recovery procedures, and loan appraisal process should be formulated, as they are critical drivers of loan delinquency occurrences;

The regulatory authority should pay more attention to SACCO compliance with relevant provisions of SACCO act, 2008 and related prudential guidelines.

Deposit Taking SACCOs should hold the bulk of their total assets in earning assets and should as much as possible hold negligible non-core assets, so that they are not tempted to divert member's deposits into non-strategic assets which will not leverage the SACCOs earning capacity.

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