Influence of Capital Adequacy on the Loan Performance of Deposit Taking SACCOs in Kenya

Victor M. Wambua[1], Kennedy M. Waweru & John M. Kihoro
The Co-operative University of Kenya, Nairobi
[1]Corresponding authors: vwambua@cuk.ac.ke

Abstract

The financial viability and long-term sustainability of SACCOs is threatened by credit risk that poses a challenge despite growth in the sector. We explore the influence of capital adequacy on loan performance of deposit taking SACCOs in Kenya. Time series cross sectional unbalanced secondary panel data was analyzed from 175 deposit taking SACCOs licensed by SASRA as at December 2017. The data was obtained from audited financial statements submitted to SASRA over a five-year period (2013-2017). The unbalanced panel data was analyzed quantitatively using regression equations. The study adopted capital adequacy as the explanatory variable for the study and we applied both the long run (static) and short run (dynamic) panel models. The long run models assumed that previous period's performance did not affect present period's performance and therefore, no persistence (no lag dependent explanatory variables) in the model. The short run models assumed that immediate previous period performance will lag dependent explanatory variable, thus influenced present period's performance. The Mann-Whitney U test was utilized in testing for robustness to see if the results of the empirical model would hold when subjected to a non-parametric test. Before the administration of multiple regression analysis a number of essential assumptions were checked so as to avoid type I and type II errors that occur during the interpretation stages of the model. These assumptions included testing for heteroscedasticity, autocorrelation, multivariate normality, multi-collinearity and linearity. Results show that capital adequacy significantly influence loan performance of deposit taking SACCOs in Kenya.

Keywords: Credit risk, capital adequacy, core capital, total assets.

AJCDT, Vol. 6 No. 1 (June, 2021), pp. 1 – 10, © 2021 The Co-operative University of Kenya

INTRODUCTION

Donald *et al.* (2006) defines credit risk simply as the potential that a bank borrower or counterpart will fail to meet its obligations in accordance with agreed terms. The Sacco Society Regulatory Authority (SASRA) Supervision report (2017) defined credit risk as the possibility of losing the outstanding loan partially or totally, due to credit events (default risk). Credit extended to borrowers may be at risk of default such that whereas Co-operative Societies extend credit on the understanding that borrowers will repay their loans, some borrowers usually default and, as a result, banks' income decrease due to the need to provision for the loans. Risk management means increasing the likelihood of success, thereby reducing the possibility of failure and limiting the uncertainty of all the overall financial performance. Khan (2013) argued that the purpose of risk management is to prevent an institution from suffering any unacceptable loss, i.e. one which either causes an institution to fail or materially damages its corporate position. Saccos must monitor the ever changing micro- and macro-economic environment to identify the risks therein and find ways of managing these unexpected risks. Capital adequacy is essential to optimizing the loan performance of deposit taking SACCOs.

Saccos are required to meet the following minimum ratios: core capital of not less than Kshs 10 million, core capital of not less than 10% of total assets, Institutional capital of not less than 8% of total capital, and core capital of not less than 8% of total deposits. Challenges of the core capital requirement include: a number of deposit taking SACCOs cannot meet the minimum capital requirements and ratios, some deposit taking SACCOs have not separated Capital from member's deposits, difficulties in comprehending constitution of the core capital and subsequent calculation of the capital ratios. Byrd and Hickman (2012) suggest that a high liquidity cushions financial institutions against possible depositors run which will affect its performance. In addition, a high liquidity level will result in a Saccos lending to other Saccos facing liquidity stress at high return which therefore results in improved performance from the returns. Beasley (2012) observed that there is an indirect relationship between the profit level and the liquidity level. This emanates from the change in asset size and liability in the institution. Capital adequacy is measured by core capital/total assets of the Saccos and core capital to total deposits of the deposit taking Saccos.

A high LDR indicates two things, firstly the bank is issuing out more of its deposits in the form of interest-bearing loans; secondly the bank generates more income. Here the problem is failure in repayment of loan, in such a case the banks liable to repay the deposit money to their customers, so the ratio is too high puts the bank at high risk. Alternatively a very low ratio means bank is at low risk, on the same time it is not using assets to generate income.

Local specific studies on the relationship between credit risk and loan performance include Kisala (2014) in which a strong relationship between loan performance of microfinance institutions with credit risk management was documented and, Mwangi & Muturi (2016) whose findings are in line with assertion of Burns *et al.* (2006) who indicated that organization credit policies are instrumental in the choice of individuals and firms to whom banks advance loans to. Risk identification process has a positive and significant effect on loan repayment performance. Thisika (2017) on the other hand inferred that credit appraisal has a positive and strong relationship with non-performing loans.

Lotto (2016) carried out a study on the efficiency of Capital Adequacy requirements in reducing risk-taking behavior of Tanzanian commercial banks. The study also found a positive relationship between regulatory pressure and capital. This positive impact shows that Tanzania's large commercial banks approaching the minimum capital requirements are inclined to improve their capital base in order to circumvent the penalties which result from infringing the legal requirements of keeping minimum capital ratio. The study further shows a positive and significant association between profitability and bank capital implying that as the profitability of banks increase, they retain more earnings to raise the level of their capital. Hence, improvement in profitability helps banks to increase their capital ratios and prevent them from penalty associated with failure to meet minimum capital requirements.

Hassan & El-Ansary (2015) carried out a study on the influence capital adequacy ratio (CAR) in Egyptian commercial banks. They found that before the period 2008, asset quality, size and profitability were the most significant variables but, after 2008 asset quality, size, liquidity, management quality and credit risk were the most significant variable that explain the variance of Egyptian banks' CAR. Marshal and Onyekachi (2014) carried out an empirical investigation on the effect of credit risk and performance of banks in Nigeria. The study concluded that increase in loan and advances increases banks performance through interest income generated from loan and advance. Poudel (2012) explored various parameters pertinent to credit risk management as it affect banks' financial performance in Nepal. T-test results indicated that there is significant negative relationship between return on assets and independent variable which are default rate and capital adequacy ratio. There are few studies specific to Kenya on the link between capital adequacy and loan performance of deposit taking Saccos. This study, therefore, fills the gaps in the literature.

METHODOLOGY

A descriptive research design was adopted, and Time Series Cross Sectional (TSCS) data was used to show the influence of capital adequacy on the loan performance of deposit taking Saccos in Kenya. A panel design was thus considered which a combination of time series cross sectional observations was and due to this it was considered one of the most effective designs in the study of causation, other than pure random experiment (Stimson, 1985).

Population and Sampling: The target population of study was all the deposit taking Saccos in Kenya regulated by SASRA. As at 31st December, 2017, there were 175 deposit taking Sacco societies licensed to undertake deposit-taking Sacco business in Kenya for the financial year ending December 2017 (SACCO supervision Report, 2017). A census was carried out targeting all the 175-deposit taking SACCOs regulated by SASRA as at 2017. A census technique considers inclusion of all the elements in the sampling frame into the study which eliminates sampling bias. A census was considered in cases where taking smaller samples of the population would not be cost effective. The study used secondary data collected from SASRA for all the SACCOs being studied thus a census was considered adequate and adopted without any additional costs.

The Secondary data was extracted from audited financial statement submitted to SASRA by the deposit taking SACCOs after being registered by Commissioner for Co-operative Development. The data covered a 5-year period from 2013 -2017. The Panel data was collected because it helped study the behavior of each deposit taking Sacco over time and across space (Baltagi, 2005 & Gujarati, 2003). Polit and Beck (2010) also indicated that secondary analysis of existing data is efficient and economical because data collection is typically the most time-consuming and expensive part of a research.

Measurement of Variables: The ratio of Core Capital to Total Assets is a risk sensitive measure of capital (Nasieku *et al.*, 2013). The ratio was used to measure the amount of a Sacco's capital in relation to the amount of its credit exposures. The risk considers the relative riskiness of various types of credit exposures that SACCOs have and incorporates the effect of off-balance sheet contracts on credit risk. Therefore, the higher the ratios SACCOs have, the greater the level of unexpected losses they can absorb before becoming insolvent. The ratio is computed as shown below:

$$Capital\ Adequacy = \frac{Core\ Capital}{Total\ Assets}$$

Loan performance was measured using non-performing loans (NPLs). The efficiency of the loans in the deposit taking Saccos was evaluated by applying NPLs, since it shows that Saccos reinvest earnings to generate future profit. The growth of NPLs also depend on the capitalization of the deposit taking Saccos and the Saccos' operating profit margin. Thus,

$$Loan\ Performance = \frac{Total\ NPLs}{Gross\ Loans}$$

The data structures (panel data) are multilevel with 2 levels of analysis (entity and time). Panel data model specification in this study is based on the existence of heterogeneity and whether existing heterogeneity is correlated to model predictors. Model specification tests was carried out to determine the level of heterogeneity and to inform the appropriate model. A pooled model, also referred to as the population averaged model, assumes that latent heterogeneity has been averaged out as individual effects are not persistent across entities and thus panel effects do not exist.

Model Specification: Objective one was to establish whether capital adequacy influenced the loan performance of the deposit taking Saccos in Kenya. Non-performing Loans was considered as a measure for loan performance and therefore, was used as the dependent variable whereas capital adequacy and loan advance ratio was considered as independent variables. The study assumed that the independent variables and the dependent variable have a general multiplicative Cobb Douglas functional relationship shown in the equation below:

$$L.P = f\ (C.A)$$

Upon linearization and parametization the possible models were specified as:

$$Y_{it} = \beta_0 + \beta_1 X_{it} + \varepsilon_{it} \ldots\ldots \text{Fixed effect model}$$

or

$$Y_{it} = \beta_0 + \beta_1 X_{it} + \mu_{it} + \varepsilon_{it} \ \ldots \text{Random effect model}$$

Y_{it} represented the loan performance of Sacco i at time t, β_0 stands for the model constant or intercept, β_1 stands for the coefficient of the predictor Capital Adequacy. X_{it} stands for capital Adequacy ratio of Sacco i at time t. μ_{it} is the Sacco (entity) specific effect that is assumed to be normally distributed with a constant variance with a constant variance and ε_{it} is the idiosyncratic error term which is assumed to have a normal distribution.

The classical assumptions of linear regression models were tested including the assumptions of homoscedasticity, non-autocorrelation, normality and cross-sectional independence (Cohen *et al*., 2013; Mason & Perreault Jr, 1991). In case of violation of the homoscedasticity, non-serial correlation and/or cross-sectional independence assumptions, a generalized least squares model was considered to incorporate the autocorrelation coefficient and allows for robust heteroscedastic residuals with cross-sectional dependence. In case of violation of the normality assumption on the other hand, a bootstrap was carried out as a resampling technique to cater for the violation.

RESULTS

The researcher collected secondary data using a data collection sheet to measure the independent and dependent variables in of the study. Considering the secondary data used a pilot study and tests for reliability and validity was not necessary as done for primary data. Validity and reliability of secondary data depends on the credibility of the source of the information collected and is referred to as external validity (Dale *et al*., 1988; Glaser, 1962; Smith, 2008).

The ratio of Core Capital to Total Assets was used as a risk sensitive measure of capital. The risk takes into account the relative riskiness of various types of credit exposures that SACCOs have, and incorporates the effect of off-balance sheet contracts on credit risk. Data collected was on the 2 components of capital adequacy as summarized in Table 1. Both the mean core capital and mean total assets were found to have some increasing trends over time. The mean core capital in the industry in year 2013 was 264 million which increased over the years to 601 million in the year 2017. The total assets also increased from 179 million in 2013 to 374 million in 2017. The standard deviations of both were however seen to reduce over the years. The industry tended to be more heterogeneous in the earlier years in terms of both Core capital and Total assets. The results generally show growth in the industry in general as the industry indicated by increasing mean growth which tended to more homogeneous with time implying that all the entities seemed to have growth.

Table 1: Core capital and Total Assets

Year		Core Capital (in millions)		Total Assets (in millions)	
	Obs	Mean	Std. Dev.	Mean	Std. Dev.
2013	135	264	490	1,790	3,230
2014	135	329	515	2,030	3,600
2015	135	379	406	2,240	3,980
2016	135	558	237	3,690	1,850
2017	135	601	251	3,740	1,750

Capital adequacy was generated as a ratio calculated by dividing the core capital by the total assets for each entity in each year as presented in Table 2. The overall mean ratio of capital adequacy is 0.261 across all observations. This ratio being less than 1 implies that on average, the core capitals for the SACCOs are less than their total assets. The overall standard deviation is 0.302 which shows the dispersion/ variation of the capital adequacy ratio. It was also noted that the standard deviation of core capital within groups was larger than that between groups. This shows that the industry is less heterogeneous across the entities as there are more changes in the capital adequacy over time (within groups) than across the industry (between groups).

Loan performance (the dependent variable of the study) was computed for each entity from the total non-performing loans and the total loans. The annual average non-performing loans for the industry were also noted to have an increasing trend over time with the total loans and all the indicators assessed earlier. The overall mean non-performing loans in 2013 were 65 million Kenya shillings which increased annually to 128 million Kenya shilling in 2017 as shown in Table 3. The variation was however found to decrease with time which was the trend also found in the variation of the independent variables which implies that the industry was more heterogeneous in earlier years where the entities tended to have different ways of operations that yielded varying results. With time however, the industry seemed to streamline to more homogeneous operations of the SACCOs yielding similarity in results with low standard deviations.

The measure of loan performance was taken as a ratio of non-performing loans to total loans. The efficiency of the loans in the deposit taking SACCOs was evaluated by applying NPLs, since it shows that SACCOs reinvest its earnings to generate future profit. The ratio was calculated by dividing the NPLs by the total loans. This ratio of performance calculated considering the NPLs as a numerator however tend to have pessimistic (reverse) implication of performance. The higher this ratio is, implies that the firm is faced with a challenge of more non-performing loans in relation to the total loans with is an implication of poor performance. If low, the ratio indicates that the firm has fewer non-performing loans in relation to the total loans thus an implication of good performance. The summary statistics for loan performance was calculated and presented in Table 4. The overall mean loan performance ratio was found to be 0.127 across all observations with a standard deviation of 0.659. It was also noted that the standard deviation of loan performance within groups was larger than that between groups. This shows that the industry is less heterogeneous across the entities compared to the changes over time.

Table 2: Capital Adequacy summary statistics

	Mean	Std. Dev.	Min	Max	Observations		
Overall	0.261289	0.302687	-0.39195	3.87475	N	=	675
Between		0.158824	0.085778	0.988955	n	=	135
Within		0.257962	-0.60428	3.147084	T	=	5

Table 3: Total Non-Performing loans

	Obs	Mean (in millions)	Std. Dev. (in millions)
2013	135	65.1	125
2014	135	74.6	102
2015	135	69.2	99.1
2016	135	129	61.5
2017	135	128	56.1

Table 4: Loan performance ratio summary statistics

	Mean	Std. Dev.	Min	Max	Observations
Overall	0.127	0.659	0.000	14.928	N = 675
Between		0.352	0.005	3.535	n = 135
Within		0.557	-3.380	11.520	T = 5

In order to draw conclusions on the study objectives by testing the hypotheses, we fitted regression models from the data collected. Considering the panel structure of the data collected, the models fitted were based on panel data model specifications. Panel data such as the dataset used in this study has a structure with groups of time series data in each of the entities. The data exhibited a strong balanced panel characteristic as all entities had equal number of 5 time periods (years).

For model specification, panel stationarity tests were carried out on the variables followed by other model specification tests. The Hadri Lagrange multiplier (Hadri LM) stationarity test to was used to assess the stationarity of the dataset which investigated the null hypothesis that all panels exhibit stationarity which is rejected if the P-value of the Hadri LM statistic is less than 0.05. As shown in Table 5, the p-values of the statistic of both variables were greater than 0.05 thus the study failed to reject the hypothesis of panel stationarity and concluded that the panel dataset exhibited panel stationarity.

The objective was to determine the influence of capital adequacy on the loan performance of deposits taking SACCOs in Kenya. A bivariate regression was thus fitted to explore the direct influence as shown in Table 6. Both the model specification LM-BP test for the pooled model and Haussman test for fixed effect model and the random effect model were carried out which flavored the fixed effect model to the random effect or pooled model.

The fixed effect model results for the bivariate model on the influence of capital adequacy on loan performance are shown in Table 7. The results are based on 675 observations from 135 entities. The R-square statistics show that the variation explained by capital adequacy within entities due to variations over time only constitutes of 1.23% of variance in loan performance. However due the cross-entity differences, up to 26.96% of the variation in loan performance is explained by capital adequacy. The Anova F-statistic has a p-value of 0.0098 which is less than 0.05 implying a general significance of the fixed effect model. The Coefficient of Capital adequacy on the model was also found to be a significant estimate of -0.240 with a p-value of 0.01 which is less than 0.05 to imply significance at level 5%. The test of the fixed entity effect shown by the footer F-statistic with a p-value of 0.000 which is also less than 0.05 indicates the existence of significant fixed entity effect.

Table 5: Unit root test for Panel stationarity

Hadri LM test for stationarity		
Ho: All panels are stationary	Number of panels = 135	
Ha: Some panels contain unit roots	Avg. number of periods = 5	
	Statistic	**p-value**
Capital_Adequacy	-4.1828	1.0000
Loan_Performance	1.263	0.1033

Table 6: Bivariate model Haussmann specification; capital adequacy as predictor

	(b) fixed	(B) random	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
capital_adequacy	-0.240	0.095	-0.335	0.039

Chi2(1) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 72.59, Prob>chi2 = 0.000

Table 7: Bivariate Model; Capital Adequacy as predictor

Fixed-effects (within) regression						Group variable: entity code
	R-square					
within	**Between**	**Overall**	**F(1,539)**	**Prob > F**	**Corr(u_i, Xb)**	
0.012	0.270	0.004	6.730	0.010	-0.310	
Loan performance	**Coef.**	**Std. Err.**	**T**	**P>t**	**[95% Conf. Interval]**	
capital_adequacy	-0.240	0.092	-2.590	0.010	-0.421	-0.058
_cons	0.190	0.034	5.580	0.000	0.123	0.256
				F test that all u_i=0:		
sigma_u	0.373			F(134, 539)		1.64
sigma_e	0.619			Prob > F		0.0001
Rho	0.266	(fraction of variance due to u_i)				

The overall implication of the results of this bivariate fixed effect model was that capital adequacy had a significant direct effect on loan performance across entities. The equation generated from the model is given below:

$\hat{Y}_{it} = 0.190 - 0.240X_{it}$

The influence was negative to imply that increasing capital adequacy ratio by a unit would lead to a decrease in the loan performance ratio by 0.240. However, the measure of loan performance being on the reverse with a numerator of non-performance of loans, a further implication was that a cross entity increase in capital adequacy would directly result in a decrease in the ratio of non-performance of loans to the total loans issued.

The fixed effect model was tested and diagnosed for the model assumptions of normality, homoscedasticity, non-serial correlation and cross-sectional independence. The assumption of non-serial correlation tested using the Breusch-Godfrey/ Wooldridge test was found not to have been violated. A Lagrange Multiplier test was used for panel homoscedasticity, the Pesaran Friedman test for cross-sectional independence and the Jarque Bera (JB) test for normality of both levels of the residuals (e_i and u_i) as shown in Table 8. Apart from the non-serial correlation assumption, all the other model assumptions were violated.

Due to the violation of some of the assumptions, the fixed effect model fitted was not deemed adequate for testing study hypotheses. A generalized least squares (GLS) model was fitted which allowed for robust heteroscedastic residuals and cross-sectional dependence. On fitting the GLS model, bootstrapping was carried out due to the violation of the normality assumption. The assumption surrounding serial correlation was not violated thus no autocorrelation lags were fitted and both predictors were retained without omission as they did not exhibit multicollinearity.

Table 8: Summary of Regression Assumptions Diagnostic Tests

Test	Assumption/ Purpose	Test statistic	P-value	Conclusion
Breusch-Godfrey/Wooldridge	Non-Serial correlation	F (1, 134)= 0.107	0.7444	Assumption not violated
Lagrange Multiplier (LM)	Panel Homoscedasticity	Chi2(135) = 1.4e+09	0.000	Assumption violated
Bera-Jarque (JB)	Normality on e	chi2(2) = 8.70	0.028	Assumption violated
Bera-Jarque (JB)	Normality on u	chi2(2) = 4.3e+10	0.000	Assumption violated
Pesaran Friedman test	Cross-sectional independence	Pesaran's Z = 14.133	0.000	Assumption violated

The model was found to be generally significant as shown by the Wald Chi-square statistic of 12.10 with a p-value of 0.0005. Unlike OLS models, GLS model are based on maximum likelihood. The R-squared statistic generated from the GLS sums of squares is not necessarily bounded between zero and one and thus may not truly reflect the percentage of the total variation in the dependent variable that is accounted for by the model. The analysis however included computation of Pseudo R-squares and Pseudo adjusted R-squares using on McFadden's Pseudo R-square formula which is based on the log likelihood statistics. McFadden's Pseudo R-square was adopted as the log likelihood statistics used in the formula also form the basis of parameter estimation in maximum likelihood techniques adopted in GLS models. Unlike other Pseudo R-squares, McFadden's technique also includes possibility of calculating the Adjusted R-square that takes into account the number of predictors in the model. As shown in Table 9, the predictors (capital adequacy) was found to be significant at level 5% as shown by the Z-statistics that had a p-value less than 0.05. The constant term for this model was also found to be significant as shown by the p-value of 0.000 which was less than 0.05. The resulting model was thus given by the equation below:

$$\hat{Y}_{it} = 0.029 + 0.080X_{it}$$

Table 9: Regression Results for Capital Adequacy on Loan Performance

Coefficients: generalized least squares				
Panels: heteroscedastic with cross-sectional correlation				
Correlation: no autocorrelation				
Pseudo R-square	**Adjusted R-square**	**Log likelihood**	Wald chi2(1)	Prob > chi2
0.061	.0592	629.665	12.10	0.0005
	Coefficients.	**Bootstrap Std. Err.**	**Z**	**P>/z/**
Capital_adequacy	0.080	0.023	3.480	0.001
_cons	0.029	0.006	4.850	0.000

The results for this model was used to test the hypothesis and draw conclusions on the objective which was to determine the influence of capital adequacy on the loan performance of deposits taking SACCOs in Kenya.

H_{01}: Capital adequacy has no significant influence on the loan performance of deposit taking SACCOs in Kenya.

From the joint effect GLS model, the coefficient estimate of capital adequacy was found to have a p-value of 0.001 which was less than 0.05. The null hypothesis was thus rejected and a conclusion drawn that capital adequacy had a significant influence on the loan performance of deposit taking SACCOs in Kenya.

DISCUSSION

The results generally show a tendency of growth in the industry which also tended to be more homogeneous with time implying that all the entities reported varying levels of growth. The mean core capital in the industry in year 2013 was Ksh. 264 million which increased over the years to Ksh. 601 million in the year 2017. The total assets also increased from Ksh. 179 million in 2013 to 374 million in 2017. The mean total loans issued in the industry in year 2013 was Ksh1.44 billion which was seen to be on an increasing trend over the years to Ksh. 5.02 billion in the year 2017. The overall mean non-performing loans in 2013 amounted to Ksh. 65 million which increased annually to Ksh. 128 million in 2017. Kisala (2014) carried out a research on the effect of credit risk management practices on loan performance in microfinance institutions in Kenya. The study found that there was strong relationship between loan performance of microfinance institutions with credit risk management, the study further revealed that there was greater variation on loan performance of microfinance as results of change in GDP growth rate, the study further revealed that there was a negative relationship between loan performance of MFIs, interest spread and interest rate charged on loans.

The ratio of observed variables core capital of the SACCO to the total assets was used as the measure of capital adequacy of the DT SACCOs while loan performance was measured as a ratio of non-performing loans to the total loans. The mean loan performance ratio was found to be 0.127 with a standard deviation of 0.659. The standard deviation of loan performance within groups was larger than that between groups which showed that the industry was less heterogeneous across the entities compared to the changes over time. The overall mean capital adequacy ratio was found to be 0.261 with a standard deviation of 0.303. It was also noted that the standard deviation of core capital within groups was larger than that between groups. This showed less heterogeneity across the entities as there are more changes in the capital adequacy over time (within groups) than across the industry (between groups).

The findings from the inferential analysis showed that capital adequacy had a significant relationship with loan performance. The coefficient of capital adequacy in the bivariate regression model was found to be significant (β= -0.240, p-value = 0.010). The results suggest that a percentage increase ratio of capital adequacy was associated with 2.4% increase in the ratio of non-performance of loans. It is expected that with time the entities experience growth in terms of asset base. Growth in assets if experienced alongside further growth in core capital would result into increased capital adequacy which would result into decreased non-performance of loan. Otherwise, entities that only grow their assets without considering increasing their core capital would have a decrease in their capital adequacy ratio resulting into increased non-performance of loans. The findings were consistent with a study carried out by Essendi (2013) on the effect of credit risk management on loans portfolio among Saccos in Kenya. The researcher concluded that most Savings and Credit Co-operatives in Kenya have a loan risk management policy in place. This policy would be crucial in providing guidelines on how to manage the various risks these organizations encounter in their member lending activities. We further concluded that CAMEL rating system plays a critical central role in the assessment of the soundness of the organizations. Capital adequacy, management quality, earnings and liquidity were all found to have positive coefficients in relation to loan allocations in Saccos while asset quality was found to have a negative coefficient.

CONCLUSION

The findings resulted into a rejection of the null hypothesis and a conclusion that capital adequacy significantly influence the loan performance of deposits taking SACCOs in Kenya. The direct influence of capital adequacy showed a negative effect on the ratio of non-performance of loans to total loans. This shows that by increasing capital adequacy would result into a reduction in this non-performance ratio which is an implication of increased performance of the loans. Increasing capital adequacy would increase the total loans being issued in comparison to the non-performing loans thus an indication of better performance.

REFERENCES

Baltagi, B. H. (2005). Econometric Analysis of Panel Data. John Wiley. Retrieved from https://himayatullah.weebly.com /... /baltagi-econometric-analysis-of-panel-data

Hassan & El-Ansary. (2015). The influence capital adequacy ratio (CAR) in the Egyptian commercial banks

Khan, T. & Ahmed, H. (2013) Risk Management*: An Analysis of Issues in Financial Industry IRTI/IDB*. Occasional Paper, No. 5

Kisala, P. (2014). The effect of credit risk management practices on loan performance in microfinance institutions in Nairobi, Kenya.

Lotto (2016). Efficiency of Capital Adequacy requirements in reducing risk-taking behavior of Tanzanian Commercial Banks.

Marshal, I. & Onyekachi, O. (2014). Credit risk and performance of selected deposit money banks in Nigeria: An empirical investigation. *European Journal of Humanities and Social Sciences Vol, 31*(1).

Muriithi, W. & Muturi (2016). The effect of credit risk on financial performance of commercial banks in Kenya

Muturi. (2016). *Effect of credit management practices on loan performance in deposit taking microfinance banks in Kenya.*

Poudel, R. P. S. (2012). The impact of credit risk management on financial performance of commercial banks in Nepal. *International Journal of arts and commerce, 1*(5), 9-15.

Sanders, Lewis & Thornhill. (2007). *Research Methods for Business Students (5th ed.).* London: Pearson Education Limited.

SASRA. (2017). *SACCO Supervision Annual Report 2017. SACCO Societies Regulatory Authority (SASRA).* Retrieved from www.sasra.go.ke

SASRA. (2017). *SACCO Supervision Report: Deposit Taking SACCOs.* SACCO Societies Regulatory Authority (SASRA).