

Asset Quality and Efficiency of Deposit Taking Savings and Credit Cooperative Societies in Kenya

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Abstract

The deposits taking Savings and Credit Cooperative Societies have continued to play a critical role in Kenya's financial sector in terms of access, savings mobilization and wealth creation. Given the importance of the sector in economic growth, there has been considerable interest in their efficiency. In Kenya, DTS have been reported to have low efficiency, with the average efficiency being less than one. There is limited empirical literature to explain the inefficiency of DTS. In view of this, the study sought to establish the effect of asset quality on efficiency. The study was anchored on Asymmetric Information Theory. The study adopted positivist philosophy and explanatory research design. The target population comprised 110 DTS as at 2017. The study used secondary data that was collected from the audited financial statements for the period 2012-2016. Data was collected using a document review guide. Data Envelopment Analysis methodology was used to generate efficiency scores. Both descriptive analysis and inferential statistics which included panel Tobit regression was done and was aided by stata version 11. Descriptive analysis indicates that the mean of asset quality is above the required maximum by the regulator. In addition, asset quality had a statistically significant effect on efficiency. The study concluded that: increase in non-performing loans reduces efficiency. The study recommends that DTS Societies should develop credit administration strategies that reduce the amount of non-performing loans; a policy for credit information sharing to make it compulsory for Deposit Taking Savings and credit Cooperative Societies to share credit information.

Keywords: Efficiency, Asset quality, Efficiency, non-performing loans, efficiency score

1.1 Background of the Study

To maximize shareholders' value, all profit making enterprises seek to be efficient. Notwithstanding that Deposit taking Savings and credit cooperative (DTS) societies while not being purely profit making businesses, they seek to maximize the economic wellbeing of their members. They do so mostly through provision of loans for provident and development purposes (Ochola, 2016). DTS are also keen to pay interest on members' deposits as well as dividends on shares; hence their efficiency becomes a key issue. Society's welfare and the economic growth slows down if DTS operate with waste and inefficiency (Adegbaaju & Olokoyo, 2008). According to Beck and Polit (2003), DTS that are efficient in resource generation and allocation contributes more to productivity and economic growth.

From both micro and macro level, it is vital to study efficiency of financial institutions. According to Pessarossi and Weill (2013), the issue of inefficient financial system is critical from the microeconomic perspective. This is due to the developments in the supervisory, institutional and regulatory framework and growing competition. From the macroeconomic perspective, the stability of financial market is influenced by efficiency as well as the cost of financial intermediation (Berger & Mester 1997). Efficiency entails how well a DTS is allocating inputs to produce maximum output (Bassem, 2008). Knowledge about efficiency is key in assessing continuity of financial services (Burki & Niazi, 2010).

Given that DTS work mainly with high risk and poor clients, it is vital to know their efficiency in order to ensure effective management and responsive policy decisions. During intermediation process efficient DTS are expected to mobilize savings and provide loans to members by decreasing unnecessary expenditures (Marwa & Aziakpono, 2014). In particular, DTS particularly have continued to play an indispensable role in financial intermediation; they have continuously grown to compete with commercial banks. DTS differ from commercial banks in two key ways. First, they seek to collect savings to provide loans to members; on their part commercial banks seek to maximize shareholder's wealth (Owen, 2007). Secondly, the owners of DTS are the customers; customers are predominantly non-owners in commercial banks.

Asset quality indicates the risk exposure from loans granted by a financial institution (Dardac & Barbu, 2005). According to Grier (2007), the major cause of failure in financial institutions failure is poor asset quality. In the financial sector, asset quality is considered extremely important. There are twenty-five core principles according to the Basle Committee on banking supervision which regulators of the banking industry use. Out of these, seven are tailored towards addressing the asset quality and credit risk management of the institution (Pan, 2010). Therefore, the financial supervisory authorities worldwide are concerned with the asset quality of financial institutions because it is one of the key areas in establishing the overall condition of the financial institutions (Ochola, 2016).

A sizeable amount of non-performing loans (NPL) must exist before a financial institution can be declared bankrupt; hence asset quality is a key issue in financial sector (Cole & Wu, 2009). The primary factor affecting overall asset quality is the loan portfolio and the credit administration program (De Bock & Demyanets, 2012). According to Mishkin (2006), a financial institution's rating downgrades and it becomes difficult to earn depositors' trust as a result of bad asset quality. Therefore, such institution can only get more deposits by rewarding depositors or attaching a higher deposit rate on deposits.

1.2 Statement of the Problem

Efficiency is important to members of DTS; efficient DTS offer better quality services, better loan and deposit rates and have lower service charges (Limam, 2001). Efficiency is also important for promoting access to financial services as well as soundness of the DTS as an integral component of the financial system (Kamau, 2011; Nasieku, 2014). Given that there is increase in competition in the industry, there has been considerable interest in their efficiency. DTS in Kenya have reportedly registered low efficiency. Mwangi (2014) found that the average efficiency score was 0.775 for the period 2009-2013. Ochola (2016) indicated that the average efficiency score in Kenya was 0.683 for the period 2011-2013. Kariuki (2017) observed that the industry efficiency score in Kenya was 0.677 for the period 2011-2014, an indicator of inefficiency. From the statistics of efficiency it is evident that there is declining efficiency of DTS in Kenya. In view of the above, there is limited empirical literature to explain the declining efficiency among DTS in Kenya.

Abdi Karim, Sok and Hassan (2010) investigated the relationship between NPL and efficiency of banks in Malaysia and Singapore and concluded that asset quality has a negative relationship with efficiency.

Burki and Niazi (2010) studied the impact of financial reforms on efficiency of state-owned, private and foreign banks in Pakistan. They found that NPL adversely affected efficiency. The study by Harris, Huerta and Ngo (2013) was based on the impact of troubled asset relief program on bank efficiency. The study findings attributed the decrease in the operating efficiency of troubled asset relief. Most of the aforementioned studies have reported mixed results; they are from developed countries and different contexts, hence their findings cannot be generalized in Kenya, a developing country. Similarly, the studies did not focus on the relationship between asset quality and efficiency in regulated SACCOS, hence the need to address the conceptual gap.

2.1 Asymmetric Information Theory

The proponents of Asymmetric Information Theory (AIT) are Akerlof 1970; Spence 1973; Rothschild and Stiglitz 1976. The theory explains that in an economic transaction, the party that has more information on the specific product to be transacted is in a position to negotiate optimal terms for the transaction than the other party (Auronen, 2003). According to Wangai (2004), a right or a wrong decision concerning a transaction can be made by the party that knows less about the same specific item to be transacted. In a lending transaction, asymmetry information makes it difficult to differentiate between a good and a bad borrower (Bofondi and Gobbi, 2003), hence leading to accumulation of NPL as a result of adverse selection and moral hazard (Ochola, 2016). Adverse selection problem can be reduced through information sharing, whereby DTS share credit information of applicants with other financial institutions.

Moral hazard refers to the risk in which a party to a transaction provides misleading information about its assets liabilities or credit capacity (Wangai, 2014). Moral hazard occurs when a borrower takes unusual risk in order to gather profits (Mishkin & Eakins, 2006). DTS with low capital may respond to moral hazard by increasing the riskiness in the loan portfolio resulting in turn to NPL. This theory underpins the study because it explains the relationship between asset quality and efficiency. The DTS with high NPL spends more resources in collecting NPL. The net effect is increased operating costs, hence decreasing efficiency.

2.2 Empirical Review

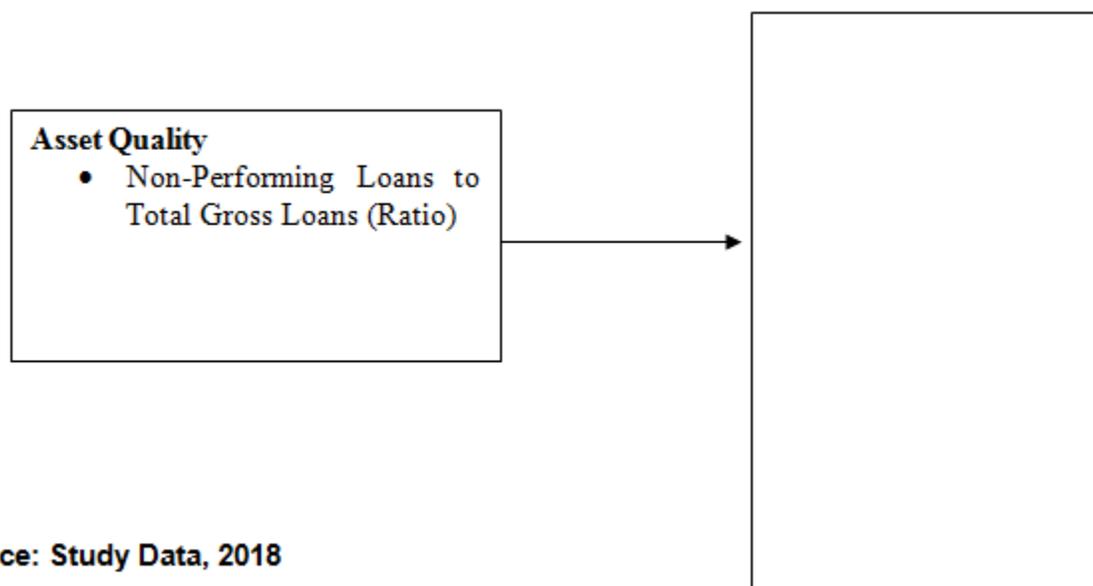
Karim, Sok and Hassan (2010) investigated the relationship between NPL and efficiency of banks in Malaysia and Singapore. This study focused on the cost efficiency and used the Stochastic Frontier Approach (SFA) to generate the efficiency scores. The study found that the banks in Singapore had high efficiency scores compared to the ones in Malaysia. However, the difference was not significant.

In addition, the study found that the relationship between NPL and efficiency was negative and significant. This study used the SFA to generate the efficiency scores and only focused on one dimension of efficiency that is cost efficiency. The current study used DEA to generate the efficiency scores and focused on the technical efficiency.

Khalid (2012) investigated the relationship between asset quality and profitability of private banks in India. The study used ROA to measure profitability. Panel data for the period 2006-2007 to 2010-2011 was used. Multiple Regression models were used to analyze data. The study found that a bad asset ratio has a negative relationship with bank performance. This study focused on NPL and left out other measures of asset quality and also focused on commercial banks. The results of this study contradicts what Adeolu (2014) observed hence forming basis of the current study. Ochola (2016) studied the relationship between loans, deposits and advances and efficiency of SACCOS in Kenya. The study found that SACCOS in Kenya have not achieved efficiency. Further, loan and advances had a negative relationship with efficiency, and the relationship is statistically significant, indicating that an increase in loans and advances is obstructed efficiency. This study did not focus on indicators of financial soundness. Rather it focused on the relationship between loans and efficiency. The current study investigated the effect of financial soundness on efficiency of DTS in Kenya.

2.3 Conceptual Framework

The conceptual framework is the researcher's conceptualization of the relationship between the variables under study



Source: Study Data, 2018

3.0 Research design

In this study explanatory non-experimental design was found to be most suitable. Kerlinger and Lee (2000) supports this design especially when the variables to be studied are not manipulated during the research. The choice of this design is justifiable since the study sought to explain factors that cause change and explicitly clarify how some phenomenon operates. This design is further suitable to establishing the causal relationship between study variables against the occurrence of a problem. The study sought give description of certain groups, without manipulation of independent variables and hence the adoption of explanatory non-experimental designs (Were & Wambua, 2014).

3.1 Target Population

According to Borg *et al.*, (2007), the whole set of individuals, events or a thing that the researcher anticipates to investigate is the target population. The target population for the study comprised one hundred and ten DTS societies in Kenya that were in existence from period 2012-2016

3.1.1 Research Hypotheses

The study sought to test the following null hypothesis: Asset quality does not have a significant effect on efficiency of Deposit Taking SACCOs in Kenya.

3.2 Empirical Model

In this study Data Envelopment Analysis (DEA) was used in the first stage analysis. DEA yields efficiency scores that vary from 0 to 1 which implies that the dependent variable is limited hence in the second stage of analysis Tobit regression analysis was considered appropriate.

$$E_{it} = \beta_0 + \beta_1 AQ_{it} + \varepsilon_{it}$$

Where:

E_{it} = Efficiency of SACCO i at time t

β 's = are coefficients of explanatory variables

AQ_{it} = Asset Quality of DTS i at time t

ε_{it} - Error Term

3.3 Data Collection Instrument

This study predominantly relied on quantitative secondary data. The data was obtained from DTS financial statements, DTS supervision reports from SASRA. The duration for this study was between 2012 and 2016 and the document review guide.

4.0 Results and Discussion

This section provides the descriptive results, DEA results and the Tobit results

4.1 Efficiency

This section presents the technical and scale efficiency of DTS generated from the DEA model and the bias corrected efficiency scores generated after curing the inherent dependency of the scores generated by DEA model.

4.1.1 Technical and Scale Efficiency

Table 4.4 summarizes results per year from the DEA model on technical efficiency as measured by constant return to scale (CRSTE) and variable return to scale (VRSTE) and scale efficiency for period 2012 to 2016 as shown in Appendix IV. If a unit operates under constant return to scale, it indicates that an increase in inputs results in a proportionate increase in the output levels. If a DMU operates under variable return to scale, it indicates that an increase in output does not reflect a proportionate increase in input. This study adopted the variable return to scale because of its assumption which applies to the DTS. However, it is important to calculate the efficiency scores under CRSTE and VRSTE because it helps in explaining the efficiency level.

Table 4.1 Technical and Scale Efficiency

YEAR	VRSTE	CRSTE	SCALE
2012	0.579	0.770	0.753
2013	0.766	0.833	0.916
2014	0.676	0.789	0.865
2015	0.788	0.860	0.917
2016	0.803	0.868	0.927
MEAN	0.722	0.824	0.876

Source: Study Data, 2018

Table 4.4 indicates the technical efficiency as measured under constant and variable returns to scale. On average, the mean efficiency scores for five year period were 72.2% for VRSTE and 82.4% for CRSTE reflecting that the firms are inefficient since they have not achieved a score of 1. VRSTE the DTS are required to decrease inputs (Staff cost, other operating expenses, total deposits and interest on deposit) by 27.8% in order to achieve efficiency or increase outputs (total loans, interest income and other income) by 27.8% without any additional increase in input to achieve efficiency. The minimum score over the same period were 57.9% in the year 2012 for VRSTE and 77.0 % for CRSTE, the same year.

There has been improvement in efficiency over the five-year period. This can be attributed to regulatory compliance; as more and more DTS becomes compliant the efficiency is improved. This corroborates the study of Mwangi (2014) which found that the average efficiency score for DTS was 0.775 for the period 2009-2013. Ochola (2016) established that the average efficiency score in Kenya was 0.683 for the period 2011-2013. Kariuki (2017) observed that industry efficiency score in Kenya was 0.677 for the period 2011-2014. The technical efficiency divergence from the efficient point is 22.8% and 17.6% respectively under the VRSTE and CRSTE. This indicates that they could produce the same amount of outputs with approximately 22.8% fewer resources under variable returns and 17.6% fewer resources under constant returns than they actually employed. This finding reveals that the overall inefficiency would be attributed to the technical inefficiency rather than scale inefficiency.

4.1.2 Bias Corrected Efficiency Scores

In the second stage of analysis, efficiency scores are regressed on the financial soundness. Scores generated by DEA model are dependent on each other (Simar & Wilson 1998). The presence of dependency among the efficiency scores implies that assumption of independence within the sample is violated. To cure this inherent dependency, bootstrap is done. Bootstrap is a procedure of drawing with replacement, producing multiple estimates which can be used for statistical inference. Simar and Wilson (1998) proposed a homogenous bootstrap algorithm. The algorithm based on the bootstrap approach and attributed to Efron (1979), stresses on repeatedly simulating the data generating process and applying the original estimator in each simulated sample. Then the empirical distribution of resampled estimates can be used to generate the bootstrap confidence interval to give the bias corrected efficiency scores. In this study, the efficiency estimation process was implemented in R version 3.1 using the FEAR programme. Table 4.6 below presents a summary of the bias corrected efficiency scores for year 2012 to 2016.

Table 4.2 Bias Corrected Efficiency Scores

Year	VRSTE	Mean of Bias Corrected VRSTE
2012	0.579	0.468
2013	0.766	0.609
2014	0.676	0.523
2015	0.788	0.675
2016	0.803	0.631
Mean	0.722	0.581

Source: Study Data, 2018

4.2 Descriptive Analysis

	N	Minimum	Maximum	Mean	Std. Deviation
Bias corrected efficiency scores	485	.00	1.00	.5819	.21281
Asset quality	485	.01	2.84	.1125	.18747
Valid N (list wise)	485				

Source: Study Data, 2018

Table 4.7 indicates that the mean of bias corrected efficiency scores was 0.5819, with a standard deviation of 0.21281 and a minimum of 0 and a maximum of 1 respectively, an indication that the dependent variable is censored. The mean of bias corrected efficiency scores demonstrates that the DTS have not achieved efficiency; they need to increase inputs by 32% in order to achieve the same. The mean of asset quality is 0.1125. This ratio is above the 5% recommended maximum by the World Council of Credit Unions (WOCCU) and far much higher than 3% SASRA recommends. Loans remain the key asset hence emphasis should be on how to improve the credit strategies to reduce the ratio to below 3%.

4.3 Tobit regression results

Variable	Coefficient.	Std. Err.	P -Value
Asset Quality	0.1251659	0.0629762	0.047
LR Chi square(5)	14.39		
Prob>Chi square	0.0062		

Source: Study Data, 2018

The findings in Table 4.15 indicate that the likelihood ratio chi square is 14.39 (d.f 4) with a p-value of 0.0062. This is less than the significance level of 0.05. It demonstrates that the Tobit Model was fit to the dependent variable, using a constant term and all the four variables. To establish the relationship between asset quality and efficiency, a null hypothesis that asset quality has no significant effect on efficiency was tested. Table 4.15 indicates that the p-value of asset quality was 0.047. This is less than the significance level of 0.05. This indicates a statistically significant relationship between asset quality and efficiency. Therefore, the null hypothesis that asset quality does not have a significant effect on efficiency was rejected and concluded that asset quality affect efficiency. The findings are consistent with empirical work by Ocholla (2016) and Karim, Hassan and Sok (2010). Further, the finding contradicts with the empirical studies by Khalid (2012) whose findings were asset quality have a negative insignificant relationship with efficiency.

4.3.1 Marginal effects after Tobit

Variable	dy/dx	Std.Error	P-Value
Asset quality	-0.1046883	0.05269	0.047
Cons	0.72866481		

Source: Study Data, 2018

The coefficient of asset quality was at $\beta = -0.1046883$ which indicates a negative and statistically significant relationship between asset quality measured by non-performing loans and efficiency. The regression coefficient indicates that a unit increase in non-performing loans leads to a decrease in efficiency by 0.1046883 units all else held constant. This indicates that as asset quality improves efficiency improves. These findings are consistent with the Asymmetric information theory (1970) which argues that asset quality has a negative relationship with efficiency. As pointed out by Berger and Young (1997), the negative relationship exists because the DTS will incur additional operating costs such as costs of collecting non-performing loans. The efficient DTS are better at managing their credit risk which leads to lower NPL.

5.0 Conclusion

The study found that asset quality has a negative and significant effect on efficiency. This finding is supported by several empirical studies though it also contradicts other studies. Hence, the study concludes that as non-performing loans increases more costs are incurred in collecting the debts, resulting in higher costs hence reducing efficiency. Further, the increase in asset quality increases the provisions. In so doing it limits the DTS from making investments. This in turn decreases the revenue translating into decreased efficiency.

5.1 Recommendations

Based on the findings of the study, SASRA should come up with credit administration strategies that will help reduce the amount of NPL. This includes amendment of the Sacco Societies Act (SSA) making it compulsory for DTS to share credit information of their members with other credit service providers

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