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Evaluation of bank performance measures and proposes a common measure for commercial banks in the East African Community (EAC) countries.

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EVALUATION OF BANK PERFORMANCE MEASURES AND PROPOSES A COMMON MEASURE FOR COMMERCIAL BANKS IN THE EAST AFRICAN COMMUNITY (EAC) COUNTRIES

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ABSTRACT

Purpose: The purpose of this study was to Evaluate bank performance measures and proposes a common measure for commercial banks in the East African Community (EAC) countries

Methodology: The study used cross country data analysis of 100 commercial banks and collected secondary data from annual published audited financial statements for the period 1997-2011

Results: The results indicate that the OPM which combines productivity and profitability captured a high percentage of similar banks when the top 20 commercial banks were ranked; 80% for return on assets, 60% for profit margin and 55% for net interest margin.

Policy recommendation: The study recommended that OPM will enable central banks to assess the performance levels of banks and be able to detect those that are underperforming and take corrective measures to either improve productivity, profitability or both. For policy makers in the EAC secretariat, the measure will enable comparison on the performance of banks in East Africa for subsequent integration to the monetary union.

Keywords: *Evaluation, bank performance measures, commercial banks in the East African Community (EAC) countries*

1.1 INTRODUCTION

Banks are the main part of the financial sector in any economy performing valuable activities on both sides of the balance sheet. A commercial bank is defined by is a financial intermediary that raises funds primarily by issuing checkable deposits (deposits on which checks can be written), savings deposits (deposits that are payable on demand but do not allow the owner to write checks), and time deposits (Mishkin, 2001). The Financial Times (2013) have a similar definition where a commercial bank refers to a financial institution providing services for businesses, organizations and individuals. The study by Diamond and Rajan (2001) highlights the strength of the banking system as an essential requirement to ensure the economic stability and growth. Services include offering current, deposit and saving accounts as well as giving out loans to businesses. On the asset side, they enhance the flow of funds by lending to the cash starved users of funds, whereas they provide liquidity to savers on the liability side. Banks also facilitate the payments and settlement systems and support the smooth transfer of goods and services. They ensure productive investment of capital to stimulate the economic growth. Hence it is this banking system that constitutes the largest part of the financial system in most countries, especially in emerging and developing markets (Beck and Dermiguc-Kunt, 2009).

The European Central Bank (2010) defines bank performance as the capacity to generate sustainable profitability. Kumar and Gulati (2010) define performance in both profit and non-

profit organizations as an appropriate combination of efficiency and effectiveness. Profitability refers to the net gains after deducting all costs and is essential for ongoing activities as well as for its investors to obtain fair returns.

A performance measurement framework as noted by Bigliardi and Bottani (2010) assists in the process of performance measures building, by clarifying measurement boundaries, specifying performance measurement dimensions or views and may also provide initial intuitions into relationships among the dimensions. There are a multitude of measures used to assess bank performance with each group of stakeholders having its own focus of interest. (Rouse and Putterill, 2003)

The ECB (2010) supports the above notion and classifies the large set of performance measures for banks used by academics and practitioners alike, into traditional, economic and market-based measures of performance. The Traditional measures of performance include return on assets (ROA), return on equity (ROE) or cost-to-income ratio and net interest margin (NIM). The economic measures of performance take into account the development of shareholder value creation and aim at assessing, for any given fiscal year, the economic results generated by a company from its economic assets (as part of its balance sheet). These measures mainly focus on efficiency as a central element of performance, but generally have high levels of information requirements. Lastly, the Market-based measures of performance characterize the way the capital markets value the activity of any given company, compared with its estimated accounting or economic value. The most commonly used metrics include: the “total share return” (TSR), the “price-earnings ratio” (P/E), the “price-to-book value” (P/B), which relates the market value of stockholders’ equity to its book value; the “credit default swap” (CDS), which is the cost of insuring an unsecured bond of the institution for a given time period.

The performance of commercial banks has also been influenced by other key macro-levels factors which include markets structure, financial structure and output. The relationship between performance and market structure has been a subject of debate in literature. Market structure refers to the number of participating banks in the market and the market shares of banks, including bank specific factors, such as cost efficiency, scale efficiency, and the risk attitude of banks. Market structure as highlighted by Wong *et al.*, (2007) determines the performance of banks specifically banks’ profits and pricing behaviors. In general, banks profitability and pricing power are hypothesized to be determined by market structure.. Amongst the various approaches, a number of studies have focused on the structure – performance relationship of banks, with the structure-conduct-performance (SCP) hypothesis and the efficient-structure (EFS) hypothesis widely tested.

The SCP paradigm as highlighted by Delis and Papanikolaou (2009) postulates that firms are able to extract higher profits in concentrated markets because they can resort to oligopolistic behavior and collusive arrangements. According to the SCP, a positive correlation between profitability and market concentration indicates that there is not enough competition in the banking market. The EFS hypotheses emphasizes that higher profits are not generated because of an oligopolistic behavior of the big firms but because they are more efficient than other firms in the market, hence the increase in size and the market share.

Review of literature highlighted the important relationship between performance and financial structure. Financial structure refers to the relative development of banks versus markets. Demircuc-Kunt and Huizinga (2000) analysed the influence of financial structure on profits and margins and found evidence that differences in bank and stock market development do

translate into differences in the cost of bank financing for firms. However, they find that financial structure *per se* does not have a significant, independent influence on bank profits and margins. A similar study was also done by Ruiz-Porras (2009) who found the effect of financial structure on bank performance to be significant.

The banking sectors in the East African Community (EAC) countries as noted by Cihak and Podpiera (2005) consist of three main segments – large domestic banks, subsidiary banks or branches of international banks and small (domestic and foreign) banks. Other segments include mortgages, deposit taking microfinance institutions, representative offices of foreign banks, foreign exchange bureaus and credit reference bureaus. The International banks play a key role in each of the countries. The EAC countries have a total of 127 commercial banks comprising Kenya 43; Tanzania 32; Uganda 25; Rwanda 14 and Burundi 13 as at 31 December 2011.

1.2 Statement of the Problem

The worldwide financial crisis in 2008 highlighted the importance of financial systems and their role in supporting economic development. Commercial banks in particular play a critical role as they intermediate funds between savers and investors and hence evaluating their performance is important to depositors, owners, new investors and the central bank. During the financial crisis, a number of banks collapsed and were placed under receivership thus investors lost their savings. Prior to their collapse, the banks had shown favorable performance when measured using the most frequently used measures of return on assets and return on equity which then prompts the questions: ‘How suitable are the current measures being applied?’, ‘Are these measures measuring the same thing?’, ‘Which perspective is comprehensive enough to tell us about overall performance?’. These questions have brought into focus and reignited the debate on applicability of the various measures of bank performance. The various performance measures reflect different perspectives and one does not get a clear view of the overall performance. An attempt has been made to construct a composite measure on productivity (combining efficiency and effectiveness) but this excludes profitability. The review of the literature exposes a research gap whereby there is an absence of a measure that combines productivity and profitability to measure the overall performance of a financial institution.

Previous studies in East Africa have reviewed performance from the financial ratios perspective while others have looked at the aspects of efficiency but neither has considered the effectiveness of banks which is an important aspect of bank performance nor the application of a combined measure.

Performance of financial institutions is also influenced by key macro-level factors which include market structure, financial structure and economic growth. Therefore, there is need to assess the impact of these macro-level factors on commercial banks’ performance, more so, the theoretical relationships between market structure, financial structure, output and performance measures due to the contradicting results from previous studies on these relationships.

This study therefore proposed a common measure that combined the key attributes of productivity and profitability to address this problem and analyzed the theoretical relationships with market structure, financial structure and output.

1.3 Objective of the Study

The objective of the study was to evaluate bank performance measures and proposes a common measure for commercial banks in the East African Community (EAC) countries

2.0 LITERATURE REVIEW

2.1 Theoretical review

2.1.1 Market Structure Theories

The Structure performance relationship of banks has been extensively studied for the US banking industry. Earlier studies as pointed out by Wong *et al.*, (2007) on the structure performance relationship of the banking industry have usually been based on regression analysis in which indicators of bank performance, such as bank profitability and prices, were regressed on indicators of market structure such as the concentration index of the banking industry and market shares of individual banks.

According to Edwards *et al.*, (2006), Market structure conduct and performance (SCP) framework was derived from the neo-classical analysis of markets. The SCP was the brain child of the Harvard school of thought and popularized during the 1940-60 with its empirical work involving the identification of correlations between industry structure and performance. What factors determine the performance of banks in general and how banks' profits and pricing behaviors are affected by market structure in particular, have been extensively studied (Wong *et al.*, 2007). Amongst the various approaches, a number of studies have focused on the structure –performance relationship of banks, with the structure-conduct-performance (SCP) hypothesis and the efficient-structure (EFS) hypothesis widely tested. In general, banks profitability and pricing power are hypothesized to be determined by market structure of the banking industry, such as the number of participating banks in the market and the market shares of banks, and bank specific factors, such as cost efficiency, scale efficiency, and the risk attitude of banks. Macroeconomic factors, such as real GDP growth and unemployment, may also be important determinants.

Similarly, Dietrich and Mattig (2010) review the three profit-structure hypotheses that have emerged in the banking literature to explain the profit-structure relationship. They are the Structure-Conduct-Performance Hypothesis, the Relative Market-Power Hypothesis, and the Scale –Efficiency version of the Efficient –Structure Hypothesis. The Structure-Conduct-Performance Hypothesis states that banks set prices that are less favorable to consumers in more concentrated markets because of an imperfect competition. In all these three approaches, the basic relationship between market structure and performance can be observed both, on country level (macrostructures) as well as from more applied bank-level perspective.

The basic idea of a structure-conduct-performance (SCP) model states that institutions in concentrated market earn excess profits, basically due to collusive power. This would imply that banks that fit this model become less efficient over time and their host countries suffer from a lack of competition. However, we see that often this is not the case. Banks in highly concentrated markets seem to be able to be efficient and their competitive environment seems to prosper with them. The consolidation of banks around the world in recent years is

intensifying public policy debates on the influences of concentration and competition on the performance of banks.

Traditionally, as highlighted by Dietrich and Mattig (2010), the relationship between performance and market structure is analysed from a market power perspective. With respect to the corresponding structure-conduct-performance hypothesis, industry concentration is measured as the market share of the three biggest banks (CR3) in the respective country, acts as a proxy for market power. This argument then presupposes that firms in more concentrated markets should be able to collude and thus to set prices above marginal costs.

Aarma *et al.*, (2004) argue that internationalization, adoption of new banking technologies, deregulation, banking market consolidation and other recent trends in financial intermediation should result in increasing efficiency. On the other hand, since banks are no longer monopoly suppliers of financial services and products and markets are more contestable (increased competition between banks and new competition from non-bank financial institutions and markets), intermediation margins, net interest income and other income should result in decreasing profitability and efficiency. In any case, elimination of inefficiency and reducing costs would be a challenge for banks' survival in the rapidly changing market environment.

According to Dietrich and Mattig (2010), the prediction and measurement of market power has long commanded special attention for the banking industry. The vital role of banks in the economy encompasses their participation in the payment system, the transmission of monetary policy, and the provision of credit. The idea that market structures influence profitability has accordingly become a key concept that competes with views that competition and efficiency create structure.

The relationship between market structure and the profitability of banks is of concern to bank managers and to banking regulators. Particularly, as Brewer *et al.*, (2003) observes, the banking regulators have to weigh the potentially beneficial effects of mergers on the combined banks' profitability and viability against the possible detrimental impact on consumer welfare. For example, increased competition from financial deregulation in the banking sector may force banks to invest into higher yielding assets by increasing their risk exposure beyond a reasonable level.

Empirical evidence, as noted by Wong *et al.*, (2004), finds that market structure, as measured by market concentration and market shares of banks, is either not a significant determinant of banks' performance or, to the extent that market consolidation in recent years have hampered competition and thus enhancing banks' profitability, its adverse effect has been largely offset by regulatory liberalization and technological progress during the same period.

This is supported by Vasiliou and Frangouli (2000) who investigated the impact of financial variables (asset utilization and leverage multiplier) and concentration ratio of the Greek commercial banking market on banks return on equity over the period 1993-1997. The results indicated that financial variables are very important determinants of bank's profitability while market structure is found to have no influence on bank performance.

However, this is contradicted by Wong *et al.*, (2010) who found a positive correlation between banks' performance and market concentration (or market shares). The interpretation of this result varied among the studies: some authors interpreted it as support of the SCP hypothesis, which asserts that banks in a concentrated market are more likely to engage in some form of non-competitive behavior such as collusions, consequently setting less favorable prices to

customers and earning higher profits. Others viewed it as support of the EFS hypothesis, which states that efficient firms increase in size and market share because of their abilities to generate higher profits, which usually leads to increased concentration of markets and higher market shares of individual banks.

As for the structure-performance relationship of banks, Wong *et al.*, (2010)) notes that empirical results have been mixed. In some studies, market structure of the banking sector was found to be one of the main determinants of banks' performance. Specifically, banks profitability was found to be positively related to the level of market concentration. This was interpreted as profitability being enhanced by a higher degree of price coordination which was facilitated by fewer competitors. This suggests that concentration could have an adverse effect on the competitive environment of the industry. Likewise, studies found that banks with larger market shares possessing strong market power could earn supernormal profits, which could hamper competition and could affect the health of other smaller banks. On the other hand, other studies found that the relationship between banks performance and concentration /market power is spurious, with efficiency being the principal determinant of both profitability and market structure. This is particularly so, in view of recent market consolidations resulting in fewer banks and new larger banks, and the fact that larger banks appear to have generally performed better than smaller banks.

Following the literature, in some specifications, a control is often included for banking sector structure and three macroeconomic control variables. *Herfindahl* is a standard index of sector concentration, which is calculated based on bank shares of total deposits. If deposits are concentrated in the hands of few banks, those banks might be able to drive up lending rates, as they control the supply of funds.

Decressin *et al.*, (2003) proposed that recent weak bank profitability in Germany appears to be related with structural factors rather than the macroeconomic cycle. Anecdotal evidence and financial ratio analyses are also presented to support this claim.

According to Allen *et al.*, (2004), some of the recent research on the effects of bank competition allows for the possibility that different sizes of banks may affect competitive conditions differently. A positive relationship between bank size and performance is observed. More specifically, it is suggested that large total assets gives a bank the ability to achieve higher efficiency levels; thus, a merger of two small banks will probably increase their efficiency and competitiveness in the long term.

Fillipaki and Staikouras (2009) investigated whether size or the ownership structure of financial institutions affects profit efficiency. The results show a negative relationship between size and efficiency. Small banks appear to be the most profit efficient, while large credit institutions are the least profit efficient. Regarding the effects of ownership on performance, we find that domestic private banks are, on average, the most profit efficient, followed by state owned banks, while foreign banks are the least efficient.

While the size of private banks appears to have an effect on the efficiency of financial intermediation, bank ownership plays at least as important a role in explaining the relative efficiency of Kenyan banks.

Kenya's vision 2030 seeks to facilitate the transformation of the banking sector to bring in fewer, stronger, and larger banks. The higher capital levels in banks are expected to create a vibrant and globally competitive financial sector.

Researchers have recognized the problems with SCP tests and tried other methods. For example, some studies tested versions of the SCP and ES hypotheses in models of bank profitability. These studies controlled for measures of X-efficiency and scale efficiency and allowed concentration and market share in local US banking markets to be functions of these efficiency measures. Allen *et al.*, (2004) found some evidence favoring both the effects of both market power and efficiency on profitability, but the results were weak and varied by market type.

Summarizing, there is no clear indication that competition is detrimental per se for bank stability or that a more concentrated banking system necessarily implies less competition.

3.0 RESEARCH METHODOLOGY

The study used cross country data analysis of 100 commercial banks and collected secondary data from annual published audited financial statements for the period 1997-2011. This study therefore, employed a quantitative/scientific approach to deal with this ambiguity within the East African region. The target population was 127 commercial banks licensed at the start of every calendar year beginning 1st January 1997 to 1st January 2011 in the five countries namely; Uganda, Kenya, Tanzania, Rwanda and Burundi. However, two countries were excluded namely Rwanda and Burundi due to the unavailability of data for at least three years on their stock exchanges. Burundi does not have a functional stock exchange while Rwanda has a demutualised stock exchange that began full operation in 2010 thus reducing the sample size from 127 to 100 commercial banks. The five countries form the East African Union which has begun the process of integration into a monetary union and hence the special focus on this region. The relationship between the performance scores and the exogenous factors was then analyzed using regression and Analysis of Variance Tests (ANOVA) to assess the strength and fit of the models to bring out trends that will lead to conclusions.

4.0 RESULTS AND DISCUSSIONS

4.1 Performance measurement model

The objective was to evaluate bank performance measures and propose a common measure of performance for commercial banks in the East African Community (EAC). The bank performance measures identified include Return on Equity (RoE), Return on Assets (RoA), Net Interest Margin (NIM), profit margin (PM), efficiency and effectiveness.

4.1.1 Common performance measures

The commonly used profitability ratios include return on equity, return on assets, net interest margin and profit margin. Productivity measures applied include efficiency scores, effectiveness scores and the single measure of performance (which is a combination of the efficiency and effectiveness scores).

4.2.2 Development of overall performance measure

Statistical models are used in research to demonstrate functional relationships that exist among the variables. Specifically, these models enable the researchers to statistically determine the contribution made by the independent variable on the dependent variable.

This study used linear programming techniques and Regression Analysis. Linear programming was applied to formulate efficiency, effectiveness and the proposed overall performance

measure (OPM) while regression analysis tested the relationship between performance measures and economic growth, market structure and financial structure.

$$Y_p = \text{efficiency} \times \text{effectiveness} \times \text{return on equity} \quad (1)$$

Where is Y_p the overall performance measure (OPM)

Where efficiency is:

$$\text{Maximize} \quad \frac{u^T y_0}{v^T x_0} \quad (u, v) \quad (2)$$

Where u is (s x1) vector of output variables

v is the (m x1) vector of input weights

T Is the matrix transpose operator

x is the input vector

y is the output vector

Subject to: $\frac{u^T y_0}{v^T x_0} \leq 1 \quad j = 1, \dots, n \quad u, v \geq 0$

Where effectiveness is:

$$\text{Maximize} \quad \frac{u^T z_0}{v^T w_0} \quad (u, v) \quad (3)$$

Where u is (s x1) vector of output variables

v is the (m x1) vector of input weights

T Is the matrix transpose operator

w is the input vector

z is the output vector

Subject to: $\frac{u^T y_0}{v^T x_0} \leq 1 \quad j = 1, \dots, n \quad u, v \geq 0$

Where profitability is denoted by return on equity (ROE):

$$ROE = \frac{\text{profitbeforetax}}{\text{equity}}$$

The hypothesis (**H1**) that analyses the relationship between bank performance and economic growth is tested by equation 4:

$$Y_p = \alpha_1 + \beta_1 X_1 \quad (4)$$

Where $Y_p = \text{bank performance measure}$

$X_1 = \text{economic growth rate}$

$\alpha_1 = \text{constant}$

$\beta_1 = \text{Coefficient indicating influence of economic growth rate on bank performance.}$

The hypothesis (**H2**) that analyses the relationship between bank performance and market structure is tested by equation 5:

$$Y_p = \alpha_2 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 \quad (5)$$

Where $Y_p = \text{bank performance measure}$

$X_2 = \text{market share}$

$X_3 = \text{concentration}$

$X_4 = \text{size}$

$\alpha_2 = \text{constant}$

$\beta_2 = \text{Coefficient indicating influence of market share on bank performance.}$

$\beta_3 = \text{Coefficient indicating influence of concentration on bank performance.}$

$\beta_4 = \text{Coefficient indicating influence of size of the bank on bank performance.}$

The hypothesis (**H3**) that analyses the relationship between bank performance and financial structure is tested by equation 6:

$$Y_p = \alpha_3 + \beta_5 X_5 + \beta_6 X_6 \quad (6)$$

Where $Y_p = \text{bank performance measure}$

$$X_5 = \ln \left[\frac{\text{Stock valued traded}}{\text{Private credit / GDP}} \right]$$

$$X_6 = \ln \left[\frac{\text{Stock market capitalization}}{\text{Private credit / GDP}} \right]$$

$\alpha_3 = \text{constant}$

$\beta_5 =$ Coefficient indicating influence of activity of stock markets relative to banks on bank performance.

$\beta_6 =$ Coefficient indicating influence of size of stock markets relative to banks on bank performance.

Where $w_1 = \ln \left(\frac{\text{Stock valued traded}}{\text{Private credit / GDP}} \right)$, $w_2 = \ln \left(\frac{\text{Stock market capitalization}}{\text{Private credit / GDP}} \right)$

w_1 Measures the activity of stock markets relative to that of banks while w_2 measures size of stock markets relative to that of banks

The combined measures are lagging indicators as the variables (profit before tax, equity, customer deposits, capital assets, loans, investments, net interest income, non-interest income) used to derive the measure are results obtained at the end of financial year for commercial banks when they release their audited financial statements.

Table 1: Analysis of the sample of commercial banks in EA

Country	Balanced Sampled number of banks	Unbalanced Population of banks	Balanced Percentage of sample (%)	Balanced Percentage of population (%)
Kenya	37	43	59	86
Tanzania	21	32	33	66
Uganda	5	25	8	20
Total	63	100	100	

Table 1 show that commercial banks in Kenya constitute the largest share at 59% of the sample size followed by Tanzania at 33% and lastly Uganda at 8%. In terms of representation against the total population Kenya has the highest at 86%, Tanzania at 66% and Uganda at 20%. The Kenyan banking sector has a high representation due to undertaking banking reforms in 1996 ahead of Uganda (2004) and Tanzania (2006) and this resulted in their faster development and also required disclosures in terms of financial reports. The low percentage in Uganda is brought about by the moratorium on new banks that had been placed by the Ugandan Central bank.

4.4 Bank Performance Measures

The objective was to evaluate bank performance measures and propose a common measure of performance for commercial banks in the East African Community (EAC). The bank performance measures identified include Return on Equity (RoE), Return on Assets (RoA), Net Interest Margin (NIM), profit margin (PM), efficiency and effectiveness.

Descriptive statistics of the mean values of performance is presented in table 2 that the average ROE for Kenya was 21.2%, 12.4% for Tanzania and 30.7% in Uganda. The results for Kenya and Uganda are significantly higher compared to the East African commercial (EAC) banks average of 18.7% while Tanzania is lower. However, the results for EAC is lower than the average mean in Sub-Saharan Africa (SSA) of 28% but higher than for Middle East and North Africa at 19% as reported by Beck *et al.*, (2009).

Table 2: Mean scores for Performance for commercial banks 2006-2011

Country	Performance Measure					
	RoE	RoA	Efficiency	Effectiveness	NIM	PM
Kenya	0.212	0.029	0.544	0.569	0.059	0.339
Tanzania	0.124	0.005	0.560	0.387	0.038	0.142
Uganda	0.307	0.026	0.541	0.632	0.088	0.195
EAC	0.187	0.021	0.503	0.549	0.056	0.253

The average return on Assets (ROA) was 2.9% in Kenya and 2.6 % in Uganda which is significantly higher compared to the East African commercial banks average of 2.1%. However, Tanzania has a lower RoA of 0.5%. This implies that Kenyan and Ugandan commercial banks generate higher profits from the assets compared to their East African counterparts. Chen (2009) reports a higher mean average for SSA countries of 2.4% when compared to the average for the EAC banks of 2.1%.

The average Profit Margin (PM) was 33.9% in Kenya, 14.2% in Tanzania and 19.5% in Uganda. Commercial banks in Kenya recorded a PM score significantly higher than the East African commercial banks average of 25.3% while Tanzania and Uganda were lower. McKinsey (2012) highlight mean PM's of 19% for Asian countries, 27.33% for Western Europe and 28% for Northern Europe.

The average net interest margin was 5.9% in Kenya, 3.8% in Tanzania and 8.8% in Uganda. Tanzania and Uganda have NIM scores higher than the East African commercial banks average of 5.6% while Kenya scored lower. The average NIM for SSA countries is 6% while for Middle East and North Africa was 3% respectively as reported by Beck *et al.*, (2009).

The efficiency scores were highest in Tanzania at 56% followed by Kenya at 54.4% and Uganda at 54.1% and which were all higher than the EA combined score of 50.3%. This is an indication that over the study period 2006-2011, banks have been able to maximize their inputs (capital and deposits) to maximize their outputs (loans and investments).

The effectiveness scores were highest in Uganda 63.2% followed by Kenya at 56.9% and Tanzania at 38.7%. Tanzania is the only country that scored less than the EA combined score of 54.9%. This indicates that in Uganda and Kenya, banks have been able to maximize their inputs (loans and investments) to maximize their outputs (net interest and non-interest income).

Table 3: Pearson’s correlation for Performance measures

		ROA	ROE	NIM	effectiveness	efficiency	PM
ROA	Pearson Correlation	1	.714**	.320*	.296*	.156	.695**
	Sig. (2-tailed)		.000	.011	.019	.222	.000
	N	63	63	63	63	63	63
ROE	Pearson Correlation	.714**	1	.343**	.234	.082	.615**
	Sig. (2-tailed)	.000		.006	.065	.523	.000
	N	63	63	63	63	63	63
NIM	Pearson Correlation	.320*	.343**	1	.651**	-.200	.143
	Sig. (2-tailed)	.011	.006		.000	.115	.263
	N	63	63	63	63	63	63
Effectiveness	Pearson Correlation	.296*	.234	.651**	1	-.073	.050
	Sig. (2-tailed)	.019	.065	.000		.570	.697
	N	63	63	63	63	63	63
Efficiency	Pearson Correlation	.156	.082	-.200	-.073	1	.154
	Sig. (2-tailed)	.222	.523	.115	.570		.228
	N	63	63	63	63	63	63
PM	Pearson Correlation	.695**	.615**	.143	.050	.154	1
	Sig. (2-tailed)	.000	.000	.263	.697	.228	
	N	63	63	63	63	63	63

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

The correlation analysis reveals that there is a negative and statistically insignificant (-.073) correlation between efficiency and effectiveness for banks in the EAC. However, effectiveness had a positive and significant correlation with NIM (0.651) and ROA (0.296) but insignificant for ROE (0.234) and PM (0.05). Efficiency had a positive but insignificant correlation when compared to ROA (.156), ROE (.082), and PM (0.154). The relationship was negative and insignificant for NIM (-.200).

Due to the low correlation between efficiency and effectiveness and adopting the same methodology applied by Ho and Zhu (2004) and Kumar and Gulati (2010) the study combined the efficiency and effectiveness measures into the proposed single performance measure

(SPM). The results for the 63 commercial banks were analyzed for the period (2006-2011) and for the calendar year 2011 individually.

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusion

The objective of this study was aimed at evaluating bank performance measures and proposing a common measure of performance. The purpose was driven by the collapse of banks during the global financial crisis yet they had been shown to be performing when using the key measures of return on equity and return on assets measured. The study derived a single performance measure (SPM) that combined efficiency and effectiveness using data envelopment analysis which applies linear programming. The results showed that the banks appearing best on efficiency front do not always stand best on effectiveness front, and vice-versa. The banks can therefore enhance their performance by increasing their efficiency (that is, their ability to produce advances and investments using physical capital and loanable funds). This conforms to previous studies and explicitly indicates that there is no apparent correlation between efficiency and effectiveness measures. It is therefore significant to note that commercial banks in EA can improve their performance either by improving their efficiency or effectiveness or both. The study also developed the overall performance measure (OPM) which was a product of SPM and ROE. When the top 20 banks were ranked using the OPM as the base indicator, the results showed that 12 banks (60%) are in the top 20 when compared against the profit margin (PM), 16 banks (80%) for return on assets and 11 banks (55%) for NIM. This indicates that OPM compares relatively well with the key measures of SPM, PM, ROA, ROE and NIM and can be considered as a robust performance measure.

5.2 Recommendations

From the empirical evidence and major conclusions drawn from the analysis of bank performance, the following policy implications are highlighted:

The common measure proposed under objective 1 has been shown to be a robust measure as it combines both productivity and profitability and can be used by the regulators (Central banks) and bank managers to assess bank performance. Its ability to classify the efficiency and effectiveness separately will enable the bank regulator to identify banks that are inefficient and ineffective in their use of resources.

5.3 Future research areas

The study looked only at commercial banks in Kenya, Tanzania and Uganda. There is need for a review of other financial institutions namely community banks, microfinance institutions and co-operative societies which also intermediate funds.

The population of the commercial banks was drawn from Kenya, Uganda and Tanzania. Future studies can use larger samples of commercial banks and more countries in the context of the African perspective.

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