Measuring efficiency, effectiveness and performance of Tanzanian commercial banks: A two stage analysis

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Abstract

The study intends to evaluate the efficiency, effectiveness and performance of Tanzanian commercial banks, the two stage analysis derived from the DuPont model was used to obtain efficiency and effectiveness components, later on Innovative Data Envelopment analysis was used to obtain Performance estimates. We used the concept of efficiency and effectiveness to obtain performance estimates, since both efficiency and effectiveness are mutually exclusive and influence each other. Our results revealed the lowest performance score experienced through the period of study is 2008 which similar to previous estimates of efficiency scores. Generally our results indicate, the overall performance estimates scores were quite low with respect to efficiency and effectiveness scores. With respect to bank groups, the largest foreign banks (LFB) was more efficient trough the entire period of the study, however the smaller bank's (SB) effectiveness and performance was so quite higher compared   to the rest of the group. The Large Domestic banks (LDB) hold the last position in efficiency, effectiveness and performance. The achievement of LFB is attributed by tremendous expansion in the country, through strategic exploitation of potential business areas, by learning the weakness of LDB which have branches throughout the country, and therefore results in high operating costs. On the hand the correlation matrix between efficiency, effectiveness and performance reveals performance is more related with effectiveness rather than performance.

Key words: DuPont; Data Envelopment Analysis; Efficiency, Effectiveness, Performance

1. Introduction

The Tanzania Banking sector has developed recently since bank reform in early 1990`s. Many commercial banks are currently offering a number of innovative products. Therefore an appropriate performance measurement system   is required to gauge the performance of the banks. In most cases commercial banks in Tanzania put much emphasis on the use of ratio analysis in gauging the efficiency and performance of commercial banks; however more innovative approach is required in measuring the performance of commercial banks. On the other hand the study of effectiveness of commercial banks cannot be ignored, through measuring effectiveness commercial banks can understand whether the goals and objectives were achieved. This study is motivated by the fact that most commercial banks in Tanzania put much emphasis on efficiency and performance and forget about effectiveness. Only handfuls of studies have put much emphasis on the study of efficiency, effectiveness and performances altogether in most cases efficiency and effectiveness were treated as separate entities.

2. Literature Review

2.1 Theoretical Literature

Performance is a function of both efficiency and effectiveness; this is to say efficiency and effectiveness are mutually exclusive. Performance is the product of efficiency and effectiveness, i.e. $OPxy=EESx*EEy$ Where, $OPxy$, represents overall performance; $EESx$ represents efficiency estimates; EEy represents effectiveness estimates. Efficiency and effectiveness have been used for quite a number of years in measuring Performance of revenue generated forms, Mouzas, (2006), some researchers have also been able to distinguish efficiency and effectiveness in simple ways such as efficiency is doing things right while the counterpart effectiveness is doing the right things (Drucker, 1997) similar argument was made by Marciarielllo, (1994). Therefore an efficient organization is not necessarily effective and vice versa, efficiency minimization of resource inputs to obtain an optimum level of output in production is regarded as attaining efficiency level but it does not measure the success of the firm in the market place hence the firm is said to be ineffective. Generally attaining or assessing the overall objective of the organization is called effectiveness. On another hand efficiency and effectiveness are not mutually exclusive they interact each other, this is to say there is interdependence between efficiency and effectiveness, Ozcan, 2008; Gurat, R and Kumar, S, (2010)

Figure 1: Efficiency, effectiveness and performance: Theoretical Framework
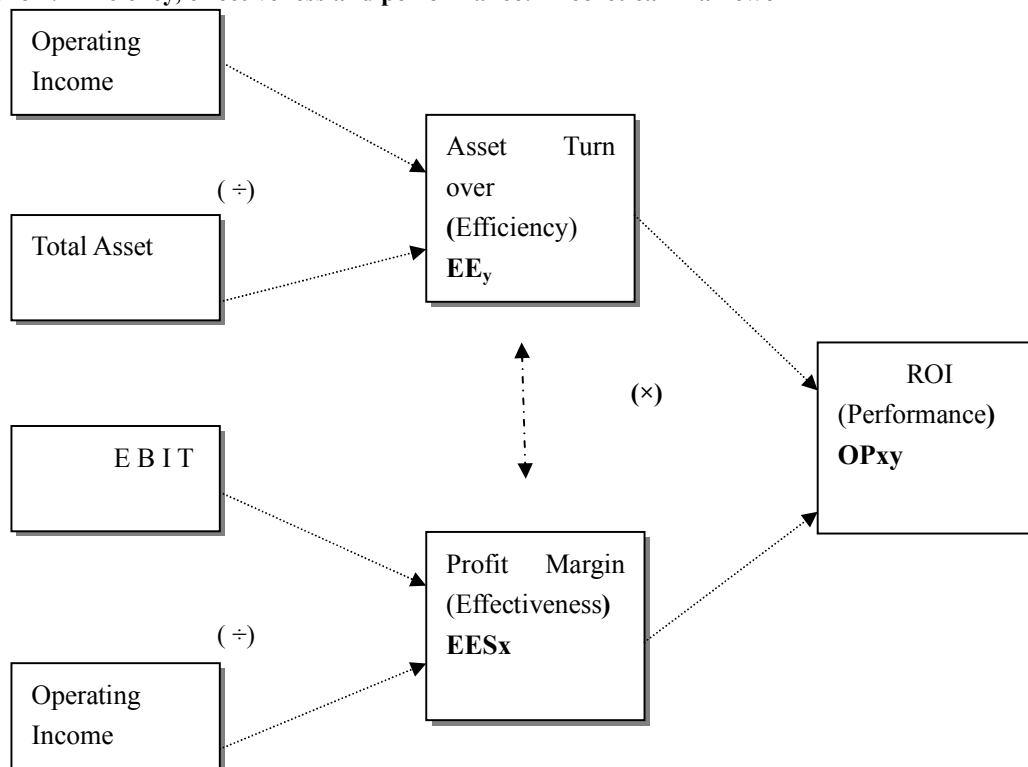
Source: Adopted from, Ozcan (2008).

The weakness of using accounting ratios in measuring firm performance resulted in adoption of new advanced econometric and non econometric approach to measure the performance of the firm. When comparing performance of different firms, financial statement ratios were found to have disadvantages especially on agreeable benchmarking between firms, moreover its simplistic nature stimulated academician to adopt a new approach such as DEA model. The multidimensional system approach can be used to overcome some problems associated with ratios like ROA (Return on Asset) or Return on Investment (ROI), therefore DEA model can be adopted to integrate much information from the financial statements, Chien-Thea Ho, Dauw-Song Zhu, (2004); Gulat, R and Kumar, S, (2010). The ROA ratio from financial statement is decomposed into the efficiency and effectiveness ratio using the DuPont Model. A DuPont model is a framework which decomposes ROA into three parts, this is to say ROA before decomposition is used to measure the overall performance of the firm, all decision units are assessed based on profitability before taxation, and similarly it contains efficiency and effectiveness since the two are mutually exclusive. The total asset turnover is treated as an efficiency ratio since it shows management capability of utilizing its total asset, by enhancing proper utilization of a given level of input resources to achieve the output levels, on another hand profit margin ratio indicates how the management has achieved the expected goals in terms of output generated from operating income, Chien-Thea Ho, Dauw-Song Zhu, (2004); Gurat, R and Kumar, S, (2010)

2.2 Empirical literatures
Many studies are still relying on financial ratios to measure the performance of commercial banks, only handful of studies has extended the idea of integrating financial ratio with a non parametric method to evaluate the performance of the banks, more over many studies have concentrated on measuring efficiency of commercial banks and less weight is put on effectiveness which is also very important in evaluating the achievement of the organization`s objectives. Performance evaluation has been confused with the number of studies with some of studies indicating efficiency as performance and vice versa, however the efficiency and effectiveness should be treated separately although they are

closely related, and performance is the product of the two aspects, Mouzah, 2006, Chien-Thea Ho, Dauw-Song Zhu, (2004). To the best of my knowledge no any research published in any academic journal, explains the efficiency and effectiveness studies in Sub-Saharan Africa and Tanzania in Particular. A number of studies have directed their attention to the studies of efficiency and its determinants. On performance determinants many studies used financial ratios such as ROA, ROE and NIM as dependent variables.

Kumar, S and Gulati (2009) applied Data Envelopment Analysis (DEA) to compute efficiency and effectiveness of the Individual banks scores for the period of one year, (2006/2007), the overall performance scores have been obtained by taking the product of efficiency and effectiveness scores. Using the two stage model the following inputs were used in their analysis, in the first stage the input variables of efficiency were fixed asset, labor and deposit while the output were loaned and advances and investment, however these outputs were used as inputs in the second stage analysis of effectiveness, on the other hand the output of the second stage analysis were net interest income and noninterest income. The findings of this study indicate high efficiency does not stand for high effectiveness in the Indian PBS industry further more positive strong correlation has been observed between effectiveness and performance scores, this is in contrast with the study by Karlaftis, 2004 which indicates that strong positive correlation is between efficiency and effectiveness.

The other study in Taiwan by Chien-Thea Ho, Dauw-Song Zhu, (2004) the study used innovative Data Envelopment Analysis that separate efficiency and effectiveness to obtain the overall performance of 41 listed companies of Banking Corporation. The results of the analysis indicate some companies were efficient in one hand but inefficient on the other hand, this indicates poor correlation between efficiency and effectiveness. However the study

3. Data and Methodology.

This section specifies the two stages DEA, which provides an efficient benchmarking approach in measuring performance of commercial banks. The two stages DEA comes from theory of performance, which describe the performance is the function of efficiency and effectiveness, this is to say the product of the two gives rise to the overall performance of the commercial banks. We follow the approach introduced by Ho and Zhu (2004) to measure the performance of commercial banks by integrating non parametric approach (DEA model) with useful information from the financial statements. Through the DEA financial performance index such as ROA is decomposed using the DuPont Model into the product of both efficiency and effectiveness. Therefore we treat, the ratio of earnings before taxation to total asset (Profit Margin) as the measure of effectiveness, on the other hand we treat Total asset turnover ratio as efficiency measures. Therefore the overall performance is the product of efficiency and effectiveness Ho and Zhu (2004); Neely et al (1995).

Performance = Efficiency X Effectiveness

The profit margin indicates how well the organization has achieved the overall objectives of the firm; therefore in our study we treat as effective measures, in other hand, total asset turnover assesses how well the organization can use its assets to produce a given output, therefore we treat this ratio as an efficiency measure. We use intermediation approach as proposed by Sealey and Lindley (1977) in the two stage model. In the first stage, the efficiency scores of Tanzanian commercial banks are computed using the following inputs, Physical capital, labor and deposit while the outputs are Loan (advances) and investments. In the second stage of the performance evaluation model the outputs of the first stage are used as the inputs of the second stage, therefore the inputs of the second stage are Loan and Investment, while the outputs are net interest income and non Interest income.

Figure 2: A two stage performance evaluation model
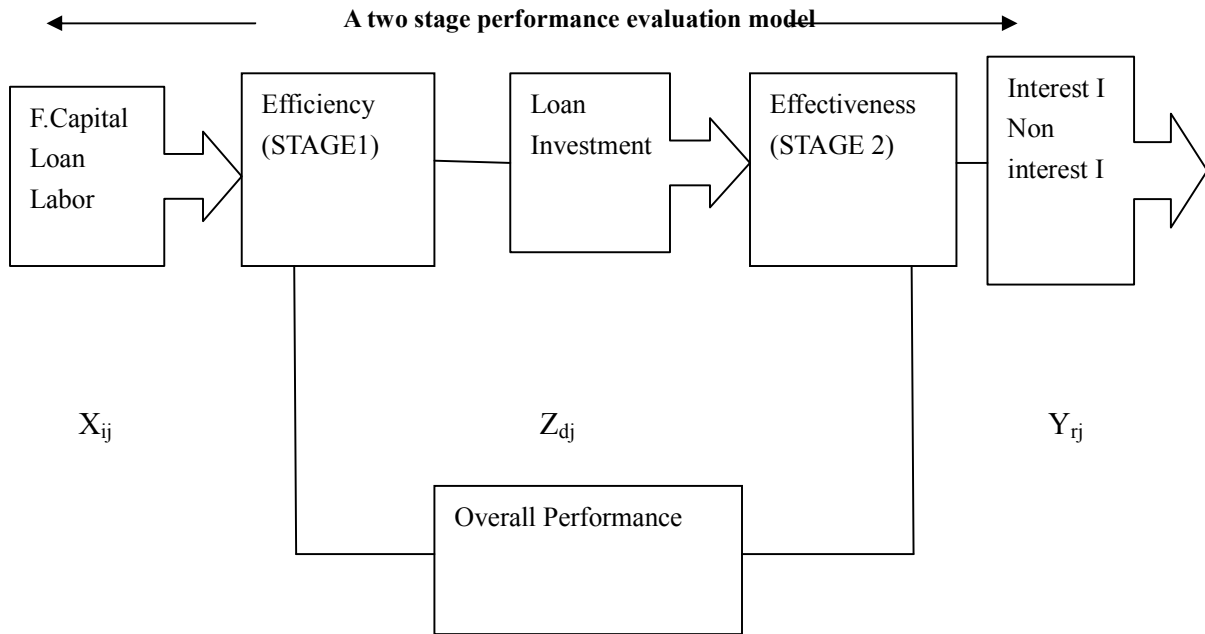
Source: Author`s formulation

We applied CCR and BCC, DEA models to obtain both effectiveness and efficiency scores for commercial banks operating in Tanzania as follows.

Minimize
$$\Phi_0 - \varepsilon\left[\sum_{i=1}^{m} s_i^- + \sum_{r=1}^{s} s_r^+\right] t = 1,2$$

S.t
$$\sum_{j=1}^{n} \lambda_j x_{ij} \leq \theta X_{io} \qquad \text{i=1... m}$$

$$\sum_{j=1}^{n} \lambda_j y_{rj} \geq \theta Y_{ro} \qquad \text{r=1... k and } 1 = \sum_{j=1}^{n} \lambda_j$$

Where t=1 is stage 1, t=2 is stage 2; Xij=the i*th* of the jth DMU; Y*rj*=the r*th* output of the j*th* DMU, ε =the Archimedes value which is very small seat as 10e^{-4}or 10e^{-6}

In this section, we used variables related to efficiency and effectiveness to obtain performance measures, following the approach by Ho and Zhu (2004), we integrated non parametric DEA with selected financial ratios from financial statements. Therefore some inputs and output variables were used in the analysis. In this case we established two DEA models in our analysis, with the first model being related to efficiency while the other one being related to effectiveness. Therefore the inputs and output dimension related to performance were established, by the decomposition of ROA through the DuPont model into the product of both efficiency and effectiveness. Through this approach the output of the first stage DEA is used as input of the second stage DEA. Therefore the following inputs and the output dimension were established for analysis, in the first stage of analysis involved the inputs and outputs

for efficiency, we used   fixed asset, labor, and deposit as inputs and Loan, advances, and investment as the efficiency on the other hand with effectiveness the output of the first stage was used as the inputs of the second stage. Therefore the inputs were Investments as well as Loan and advances and outputs were net interest income and noninterest income

We used the concept of efficiency and effectiveness as described in the above framework of this study to obtain the performance estimates, since both efficiency and effectiveness are mutually exclusive and influence each other, and both of them have an impact on the overall performance of the firm. In our analysis we determine input and outputs in two stages; whereas the output in the first stage is the input in the second stage. In our analysis we used intermediation approach and deposit, fixed capital and employee were use as inputs while loan and investment were used as outputs to obtain efficiency estimates. The tables attached in the appendix indicate the variables used in the first stage of our analysis .The correlation of inputs and outputs used in the first stage of efficiency analysis indicates strong correlation, which indicates the suitability of the variables used in this study

The Appendix 1 to 4   indicate descriptive statistics of variables used in our analysis, where the effectiveness of commercial banks was computed, the input variables were Loan and investment while the output variables were Interest income and no interest income. The correlation results are also shown in appendix3. The choice of inputs and output is influenced by various literatures used in DEA application particularly in commercial banks studies. In this study we follow the approach by Rachita G& Kumar, S (2010) as well as Ho and Zhu (2004) to obtain efficiency, effectiveness and finally the overall performance of Tanzanian commercial banks. However different from above studies which involved analysis of only a single year, this study involves unbalanced panel data from 2005 to 2011.

4. Results

4.1 Results on efficiency, effectiveness and overall performance of commercial banks

We apply the BCC model in stage 1 and stage 2 to obtain the efficiency and effectiveness estimates respectively, the average yearly estimates are shown in the table below. It can be noted from both table and the figure below that the relationship between efficiency, effectiveness and performance differ from one year to another. With efficiency scores exceeds both effectiveness and performance scores. Our trend analysis therefore tells more about efficiency and effectiveness, that an efficiency bank is not necessarily effective. There is no significant correlation between efficiency and effectiveness.

Table: 1 Average estimates of efficiency, effectiveness and overall performance

	Efficiency	Effectiveness	O. Performance
2005	0.819	0.810	0.701
2006	0.916	0.905	0.847
2007	0.643	0.775	0.497
2008	0.747	0.468	0.365
2009	0.883	0.789	0.716
2010	0.888	0.743	0.671
2011	0.879	0.703	0.621

Figure: 3 Trend of efficiency, effectiveness and performance
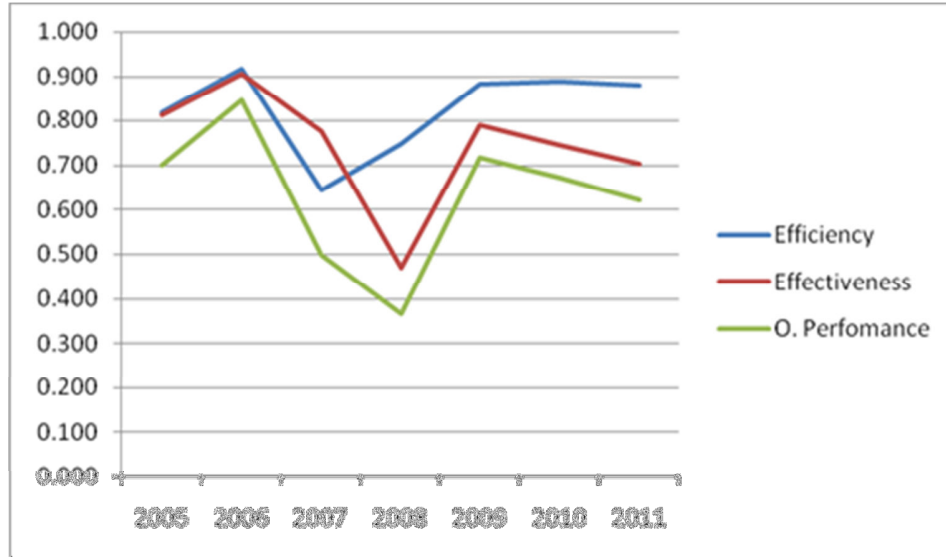
The above figure indicates most commercial banks had lower scores in both effectiveness and performance in the year 2008, thereafter showing an increasing trend in the year 2009 in efficiency, effectiveness and the overall performance. A similar trend was observed in our first analysis of efficiency in the previous chapter. The lowest performance score experienced through the period of study is 2008 (0.365) while the highest performance scores were in 2006 (84.7). Generally our results indicate most commercial banks were efficiency but less effective. According to Marciariello, (1994) to be less effective means that these banks have failed to meet the overall purpose of the organization and fulfilling the genuine nee of the society, however they have managed to meet the needs of constituents. Both effectiveness and efficiency of commercial banks are very important as efficiency is required to motivate hold, and motivate stakeholders in the organization but all have no social purpose, therefore effectiveness is required to fill the void. Moreover the figure above indicates the progressive decline in efficiency, effectiveness and performance of commercial banks from 2009-20011, this requires more attention for the long term prosperity of commercial banks/ because both of them are equally important. We conducted some test, to draw more accurate inference on the relationship between, efficiency, effectiveness and performance of Tanzanian Commercial banks, we computed Pearson correlation coefficients, and the following table 2 indicates the relationship

Table: 2 Relationship between efficiency, effectiveness and performance

	Efficiency	Effectiveness	Performance
Efficiency	1		
Effectiveness	0.2351	1	
Performance	0.6926	0.8352*	1

Note: *Correlation coefficient is significant at the 0.01 level

The above table reveals there is strong significant relationship between performance and effectiveness, on other hand weak significant relationship was observed between efficiency and effectiveness as well as efficiency and performance. This indicates that an effective commercial bank is not necessarily efficient and vice versa. The conclusion can be drawn as Tanzania commercial banks can improve performance by enhancing effectiveness.
6:3:2 Efficiency, effectiveness and performance by types of the banks
We pay much attention on group analysis, which enables us to assess the level of achievement between groups, by

identifying which group among groups of commercial banks has achieved higher and which has lower achievement in efficiency, effectiveness and performance. This is the best way of judging the trend and development in the banking sector. By referring to mutually exclusive group analysis it can be the best way of informing management, regulators and policy makers on efficiency, effectiveness and performance of commercial banks. Through seven year analysis it is very useful and practical to understand how each group of commercial bank performed over the others. We grouped the commercial banks into three groups as we did in the previous section, the large domestic banks (LDB), Large Foreign Banks (LFB) as well as Small Banks (SB). Table 3 presents the annual average of efficiency, effectiveness and performance **Appendix 5** indicates individual banks' efficiency, effectiveness and Performance.

Table 3 Annual average of Efficiency, effectiveness and performance of commercial banks.

		2005	2006	2007	2008	2009	2010	2011
LDB	Efficiency	0.896	0.698	0.527	0.371	0.584	0.585	0.641
	Effectiveness	0.576	0.758	0.530	0.320	0.418	0.415	0.337
	Performance	0.475	0.562	0.277	0.048	0.246	0.240	0.221
LFB	Efficiency	0.969	0.997	0.964	0.815	0.868	0.901	0.998
	Effectiveness	0.990	0.889	0.817	0.650	0.794	0.699	0.426
	Performance	0.959	0.886	0.782	0.529	0.685	0.629	0.425
SB	Efficiency	0.831	0.939	0.585	0.792	0.930	0.697	0.891
	Effectiveness	0.880	0.938	0.811	0.577	0.843	0.599	0.808
	Performance	0.746	0.893	0.467	0.480	0.793	0.555	0.715

With reference to efficiency the lowest efficiency measure recorded was (2008)37.1 percent which is the efficiency score for the large Domestic bank.   While the highest efficiency score is (2011) 99.8 percent, for large foreign banks. This is to say with respect to efficiency estimates the largest foreign banks rank the first, small banks rank the second and the last group is large domestic banks. However the efficiency trend of Small banks declines significantly from 93 percent in the year 2009 to 89.1 percent in 2011. While the efficiency trend of Large Foreign banks increased from 81.5 percent in the year 2008 to 99.8 Percent in the year 2011. The divergence of efficiency of large domestic bank from efficient frontier is quiet higher when compared to the counterparts. The findings are quite similar to Aikaeli (2008).

Coming to the effectiveness of Tanzanian commercial banks, similar trend is observed, the lowest recorded score is 32 percent in the year 2008 from large Domestic banks (LDB) and the highest effectiveness score estimates is 99.0 percent in the year 2005 from Large Foreign banks. However the effectiveness estimates score of commercial banks decline progressively from 2005 to 2011 for all bank groups, but the divergence of effectiveness from the full efficient frontier was comparatively higher by large domestic banks compared to the counterpart LFB and SB.

The overall performance trend of all commercial banks was quite low with respect to efficiency and effectiveness scores. The lowest recorded performance estimates is 4.8 percent from LDB group and the highest recorded score is 95.9 percent from the LFB. Again the performance of commercial banks declines significantly from year to year, this call attention of management regulators and other stakeholder on un welcoming   performance of Tanzanian commercial banks. The following figure 4 ranks the efficiency, effectiveness and performance of commercial banks.

Figure: 4 Annual Average of Efficiency, effectiveness and Performance score by groups
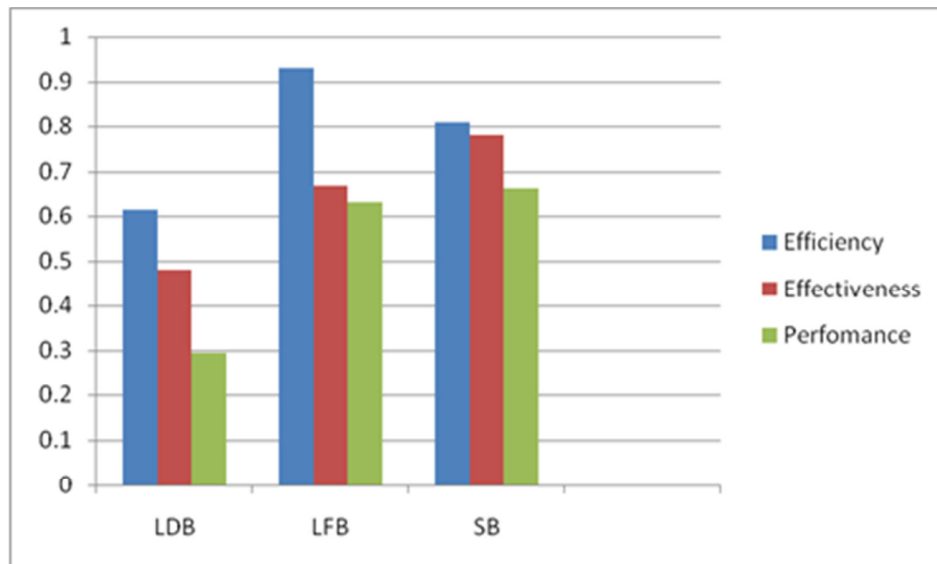
Note: LDB =Large Domestic Bank, LFB=Large foreign Bank, SB =Small banks.

The above charts indicates the large Foreign Banks were more efficient through the entire period of study, however the Small banks   effectiveness and performance was so quite higher compared to the rest of the group. The Large Domestic Banks hold the last position in efficiency, effectiveness and performance. The achievement of foreign banks is attributed by tremendous expansion in the country, trough strategic exploitation of potential business areas, by learning the weakness of Large Domestic banks which have branches throughout the country, and therefore results to high operating costs. By reducing operating expenses and reduce inputs to produce the same levels of outputs eventually large domestic banks can achieve efficiency frontier relative to Large Foreign banks.

5: Conclusion

In this paper we intend to analyze the efficiency, effectiveness and Performance of Tanzania commercial banks. The overall results indicate most commercial banks were more efficient rather than effective; similarly most commercial banks recorded low scores in the performance estimates. On the other hand both efficiency, effectiveness and performance scores were very low in the year 2008, the results are similar to previous studies on efficiency by Gwahula (2012). With respect to bank groups, the large Foreign banks were very efficiency through the entire period of study followed by smaller banks, the findings relate also with previous findings by Aikaeli (2008).

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APPENDIX

Appendix 1 Descriptive of inputs and outputs used in Performance measurement

VAR		2005	2006	2007	2008	2009	2010	2011
DEPO	Mean	8.9E+10	1.3E+11	1.7E+11	2.4E+11	2.8E+11	3.3E+11	3.8E+11
	std.dev	1.4E+11	2.0E+11	2.6E+11	3.6E+11	4.2E+11	5.1E+11	5.7E+11
FA	Mean	5.0E+09	3.2E+09	5.2E+09	6.6E+09	8.7E+09	8.0E+10	2.5E+10
	std.dev	1.1E+10	5.6E+09	9.0E+09	1.2E+10	1.6E+10	2.1E+11	5.3E+10
LB	Mean	2.5E+02	2.6E+02	3.1E+02	3.2E+02	3.3E+02	3.5E+02	3.8E+02
	std.dev	4.0E+02	4.2E+02	4.6E+02	4.9E+02	5.4E+02	5.7E+02	5.8E+02
LOAN	Mean	3.9E+10	8.6E+10	1.2E+11	1.5E+11	1.6E+11	1.9E+11	2.3E+11
	std.dev	4.4E+10	1.1E+11	1.6E+11	2.3E+11	2.3E+11	2.7E+11	3.4E+11
INVEST	Mean	4.7E+10	5.4E+10	6.9E+10	5.8E+10	6.1E+10	8.0E+10	6.7E+10
	std.dev	1.1E+11	1.1E+11	1.1E+11	1.0E+11	1.1E+11	1.4E+11	1.1E+11
NEII	Mean	1.1E+10	1.6E+10	1.4E+15	2.6E+10	2.7E+10	2.9E+10	2.3E+10
	std.dev	1.4E+10	2.3E+10	6.7E+15	4.0E+10	3.9E+10	4.1E+10	3.6E+10
NII	Mean	6.5E+09	7.4E+09	9.1E+09	9.2E+09	1.1E+10	1.5E+10	1.7E+10
	std.dev	8.2E+09	9.1E+09	1.2E+10	1.3E+10	1.6E+10	2.0E+10	3.6E+10

Source: BoT reports; the values are in Million Tsh. The abbreviation above indicates the following DEPO (Deposit); Fixed Asset (FA); LB (Labor); LOAN (loan); INVEST (Investment); NEII (Net interest income); NNI (Non Interest Income)

Appendix 2:   Descriptive statistics of variables used in the first stage of analysis

Variables	Obs	Mean	Std. Dev.	Min	Max
Deposit	183	2.38E+11	3.98E+11	5.00E+08	2.41E+12
Fixed capital	183	2.06E+10	9.02E+10	6305000	1.12E+12
Employee	177	286.9774	468.7764	15	2650
Loan	183	1.42E+11	2.29E+11	1.03E+08	1.43E+12
Investment	183	6.19E+10	1.12E+11	0	6.31E+11

Appendix 3:   Correlation of inputs and output variables

	Deposit	Fixed capital	Employee	Loan	Investment
Deposit	1				
Fixed capital	0.4138	1			
Employee	0.8387	0.2361	1		
Loan	0.9253	0.4101	0.7367	1	
Investment	0.8401	0.2955	0.8954	0.698	1

Similarly the inputs and outputs used in the second stage of our analysis are as follows

Variables	Obs	Mean	Std. Dev.	Min	Max
Loan	183	1.42E+11	2.29E+11	1.03E+08	1.43E+12
Investment	183	6.19E+10	1.12E+11	0	6.31E+11
Interest Income	183	1.77E+14	2.39E+15	1.40E+07	3.23E+16
non Interest Income	183	1.10E+10	1.95E+10	0	1.92E+11

Appendix 4: Correlation Coefficient of inputs and outputs used.

	Loan	Investment	Int Income	Non Int Income
Loan	1			
Investment	0.698	1		
Int Income	0.0066	-0.0023	1	
Non Int Income	0.8743	0.7258	-0.006	1

Appendix 5: Efficiency, Effectiveness and Performance of individual banks (2008-2011)

	2008			2009			2010			2011		
DMU	effi	effe	perf	effi	effe	perf	effi	effe	perf	effi	effe	perf
ABC	1.000	0.939	0.939	1.000	0.965	0.965	0.989	0.654	0.647	0.999	0.688	0.687
AKIBA	0.871	0.752	0.655	0.997	1.000	0.997	0.987	0.776	0.765	0.975	0.587	0.572
AZANIA	0.993	0.951	0.945	0.920	0.602	0.554	0.989	0.406	0.401	0.973	1.000	0.973
BARCLAYS	0.887	0.770	0.683	0.714	0.905	0.646	0.693	0.709	0.491	0.990	0.358	0.355
BOA	0.842	0.432	0.364	0.998	0.994	0.992	0.996	0.794	0.791	0.958	0.852	0.817
CBA	0.879	0.561	0.494	0.971	0.984	0.956	0.985	0.466	0.459	0.999	1.000	0.999
CITIBANK	1.000	0.070	0.070	1.000	1.000	1.000	1.000	0.780	0.780	1.000	0.384	0.384
CRDB	0.491	0.041	0.020	0.628	0.397	0.249	0.689	0.373	0.257	0.724	0.432	0.313
DTB	0.997	0.950	0.947	0.865	0.706	0.610	0.873	0.636	0.556	0.928	0.537	0.498
EXIM	0.718	0.085	0.061	0.636	0.468	0.298	0.675	0.382	0.257	0.727	0.264	0.192
FBME	0.095	1.000	0.095	0.958	0.995	0.953	0.994	0.976	0.970	0.236	0.892	0.210
HABIB	1.000	0.468	0.468	0.786	0.995	0.782	0.850	0.988	0.839	0.852	0.991	0.845
I&M	0.606	0.415	0.251	0.980	0.995	0.975	0.988	0.958	0.947	1.000	0.999	0.999
ICB	1.000	0.352	0.352	0.788	0.995	0.784	0.714	1.000	0.714	0.533	1.000	0.533
KCB	0.934	0.839	0.784	1.000	0.995	0.995	0.999	0.848	0.846	0.920	1.000	0.920
NBC	0.504	0.041	0.021	0.643	0.995	0.639	0.529	0.559	0.296	0.629	0.337	0.212
NIC	1.000	0.771	0.771	1.000	0.995	0.995	1.000	0.992	0.992	1.000	0.999	0.999
NMB	0.119	0.879	0.104	0.481	0.995	0.478	0.537	0.312	0.167	0.570	0.242	0.138
PBZ	0.962	0.461	0.443	0.978	0.995	0.973	0.978	0.999	0.977	0.884	1.000	0.884
STANBIC	0.772	0.075	0.058	0.758	0.995	0.754	0.912	0.707	0.645	1.000	0.532	0.532
STDCHART	1.000	0.058	0.058	1.000	0.995	0.995	1.000	0.601	0.601	1.000	0.429	0.429

Note: effi=Efficiency, Effe=Effectiveness, Perf= Performance