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RESEARCH ARTICLE

Performance of Banks: A comparative Study of State Owned versus Private sector Banks in Pakistan: Using CAMEL Approach

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ABSTRACT

Economic condition of any country is somehow wholly or solely depends on soundness and accuracy of banking system therefore; its importance in current economic situation cannot be denied. Banking sector is basically works to give fuel to engine the progress of an economy. Therefore any kind of disruption or problem to banking sector would definitely show a drastic affect on the economic growth. Process of performance evaluation is necessary for the betterment of financial growth, Keeping in mind the importance of performance evaluation process current research study is based on comparative analysis of performance of two major banking sectors of Pakistan (public sector & private sector) using the CAMEL MODEL for the time period of 2006 to 2014. Performance is taken as dependent variable whereas parameters of CAMEL model are taken as independent variables. Regression model is used to find out the impact and relationship among regressor and regressand and for finding any difference in the mean of performance of these two sector banks we use two sample t-test. Result of regression model shows that all the variables have significant impact on performance except Capital Adequacy ratio. Similarly result of two sample t test shows that no statistical difference found in means of both groups in case of Capital Adequacy ratio, Management Efficiency and Earning Quality whereas Asset quality and Liquidity shows difference among means of these two groups.

Key words: *Commercial Banks, Financial Performance, Capital adequacy Ratio, Asset Quality, Management efficiency, Earning quality and Liquid*

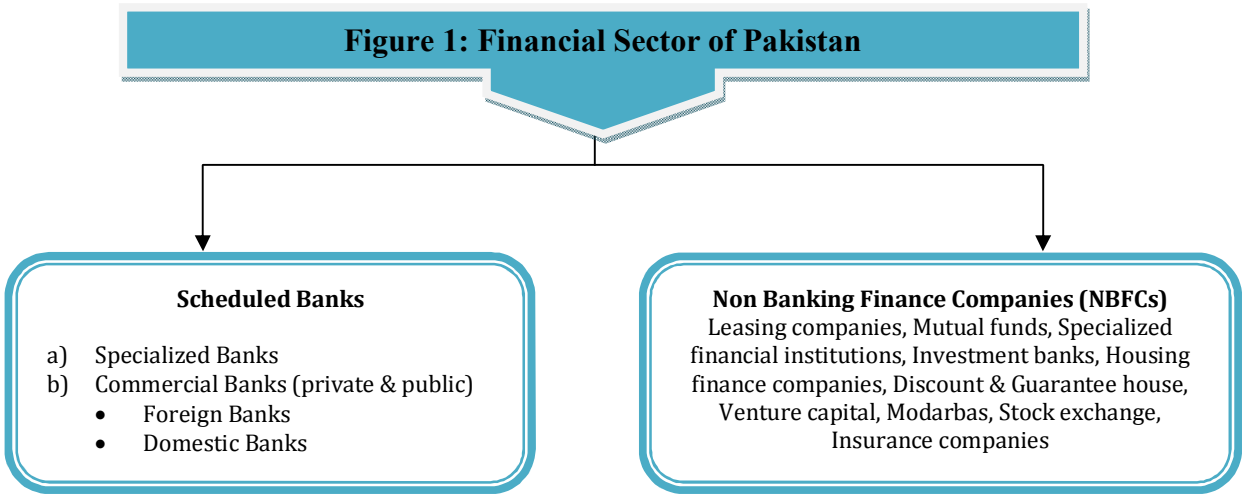
INTRODUCTION

The present financial situation prevailing all around the world demonstrates number of different obstacles and challenges for the banking industry. In order to uphold competitive edge in such a tough competition, financial institutions and banks should enhance their efficiency and improve their performance. It is normally said that if a nation's banking system is developed it shows more efficient and healthy economic growth of that particular nation. An economy can only enhances its growth, development and improve the way of living of its population if it has an efficient, smooth, well-structured and well functioned financial system and are key to the economic growth of any economy (Rashid 2010). Therefore, one can also say that financial sector development and economic development is positively associated or interlinked with each other (Levine, Loayza & Beck, 2000). The significance of banking sector in any country is just like that without "bank" an economy might stop. As we know, the existence of any human is not possible without heart, similarly without a bank any country's growth can't be possible (Stankeviciene & Mencaite, 2012). Banking industry is now considered to be the most significant pillar of financial sector and it plays an important role for the improvement and development of country's economic growth by pulling the flow of surplus funds from excessive economic units and shifting it towards deficit economic units (Usman Ahmad, 2011). Like other developing countries, Pakistan is also dependent on its banking sector for the improvement and growth of its financial system and they are now became a leading participant in a new dawn of progress. Currently, there are 33 commercial banks operating in Pakistan, out of which 17 are private commercial banks, 5 are public banks, 5 are Islamic banks and 6 are foreign banks (Pakistan Golf and Economist [PGE], 2015). In Pakistan, banks are now

becoming a trustworthy institution as it gained a lot of trust of its customers which in turn satisfy them from their performances. This all would be happened due to improvement in performances of banks which is being achieved through the performance evaluation process. Performance evaluation process is an essential criterion for determining the financial situation of any organization (Almazari, 2011).

FINANCIAL STRUCTURE OF PAKISTAN

Pakistan financial sector is based on wide range of financial institutions. Financial growth of Pakistan has been enhanced from last several decades but the role of commercial banks is tremendous as ninety five percent of total financial assets are due to their massive contribution. Hence progress and development of Pakistan is majorly based on the good health of its banking sector (Ishrat Hussain, 2005). Both the Scheduled banks and Non bank financial institutions in Pakistan are regulating by prudential regulations of State bank of Pakistan and they have also meet certain obligations set by the state bank of Pakistan about capital and liquidity reserve requirements. Other components of financial structure of Pakistan include Modarba and leasing companies but these are regulating under Securities and Exchange Commission of Pakistan which is formally known as Corporate Law Authority.



Source: *State Bank of Pakistan (SBP)*

SIGNIFICANCE OF STUDY

Studies on Pakistani banking sector were found to be more focused on traditional way of evaluating performances of banks, that is, on the financial ratio analysis. Current study focuses to adopt more authentic and appropriate method of evaluating the performance of commercial banks of Pakistan i-e "CAMEL" Approach. In past, this approach has been adopted by various researchers (Anojan and Nimalathasan, 2014; Venkatesh and Suresh, 2014; Roman and Camelia Sargu, 2013; Jha and Hui, 2012; Kosmidoo & Zopounidis, 2008). On the successful completion of current study, outcome deducted would be beneficial for bank managers, policy makers individuals, and educationists.

RESEARCH OBJECTIVES

From the review of related literature, following are the objective of current research study

1. To find out either Capital Adequacy Ratio has significant relationship with ROA of public and private sector banks
2. To find out either Asset quality has significant relationship with ROA of public and private sector banks
3. To find out either Management efficiency has significant relationship with ROA of public and private sector banks

4. To find out either Earning quality has significant relationship with ROA of public and private sector banks
5. To find out either liquidity has significant relationship with ROA of public and private sector banks.

LITERATURE REVIEW

Anojan and Nimalathasan (2014) done a work based on comparative analysis on relative measure of performance of local public and private commercial sector banks in Sri Lanka by applying the CAMEL rating system for the time period of 2008-2012. They selected two public and two private commercial banks. From the results of CAMEL rating system, it showed that public sector banks got the rank of 1st and 4th whereas private banks got 2nd and 3rd rank.

Agarwal et al. (2014) conducted a research for measuring the financial health and effectiveness of Indian banks for ten years from 2004 to 2013. Eighteen private sector and ten public sector banks were taken as sample for their study. They used DEA approach for efficiency analysis on which they apply input and output oriented Model and for performance measurement they used CAMEL approach. Result of study shows that private banks are better performer than state owned banks because out of nine top banks six banks were private and remaining 3 were public sector banks.

Mahva Biswas (2014) put his efforts for measuring the performance of two public sector banks that are Andhra Bank and Bank of Maharashtra by using the CAMEL Model for the period of 2011-2013. About twenty variables were used related to CAMEL Model. For doing analysis descriptive statistics and one sample t test has been performed with the help of SPSS. Result of t-test shows that these two banks are same in terms of capital adequacy ratio and management efficiency. As far as liquidity and earning quality were concerned result shows significant difference among banks. Andhra Bank shows better performance in case of Management efficiency and earning quality. In case of Asset quality and liquidity Maharashtra bank shows better performance.

Dogan (2013) examined the financial performance of domestic and foreign banks by making comparison between them. Ten domestic and foreign banks of Turkey were selected for the time period of 2005-2011. He used financial ratios for evaluating the performances of sampled banks. From his analysis It was found that performance of foreign banks were higher in term of return on asset, capital adequacy, and loan to deposit ratio but at the same time they have low asset quality which shows they were more risky banks. Local banks have showed better performance than banks operating outside of the country in terms of returned on equity, Management competence, asset quality, quick ratio, deposit ratio and bank size.

Amir et al. (2011) done work on the banking sector of Pakistan determining the before and after process of nationalization using CAMEL model. It covered the time period from 1990 to 2002. The study was conducted to evaluate the efficiency and soundness of banking sector of Pakistan specially they focus on two banks which were Habib Bank limited and the Muslim commercial bank, during the reform period. Result of the study shows that process of nationalization has good effect on the overall soundness of banking sector & also revealed that these reforms also made an impressive improvement in that sector.

Kumar et al (2012) had done a research to analyze the soundness of Indian banking sector using "CAMEL Approach". Twelve (12) banks were selected from both sector banks and data has been gathered for 11 years from 2000 to 2011. Result shows that that privatized banks are in a good condition with respect to performance as compared to other sector banks as most banks were at the top of list of ranking and showed better performance according to financial ratios. Two public sector banks had shown a very poor performance as compared to other banks. It was also observed that private sector banks are now growing faster towards the development of an economy.

Amir Hussain et. Al (2010) applied a new model Bankometer to assess the financial health of banking sector of Pakistan. Bankometer was applying on every bank for testing the solvency of every bank in Pakistan and result of it was then compared with other approaches like CAMEL and CLSA stress test. Dependent variable used was solvency where as independent variables used were capital adequacy ratio, Capital asset ratio, equity to assets, NPL ratio, cost to income and loan to assets to test the hypothesis. By comparing the results obtained from bankometer with the stress test. It showed that banks that were insolvent under stress test again remained insolvent while the

banks which were previously solvent were remained the same under bankometer procedure as well, because of inadequacy of capital those banks which were efficient and solvent under stress test would not found solvent under criteria of bankometer.

Alexious & Sotoklis (2009) investigated the effect of internal based and external base factors that would affect the profitability of banking sector of Greek. A quarterly balance sheet data from 2000 to 2007 of six major banks has been collected for analysis. The result shows inflation depicts less but significant effect on banks profitability where as GDP was highly not significant. According to bank specific factors, log of bank asset shows statistically positive impact on bank profitability. The credit risk and bank profitability is negatively associated with profitability. The efficiency of banks has negative association with the bank profitability and liquidity has no significant relation with profitability.

METHODOLOGY

Research method is basically a technique to gather data and this can be associated with different kinds of research designs. The current research study focuses on gathering of secondary data that has been analyzed in order to find out the answer of research problem.

SAMPLING

According to State Bank of Pakistan (SBP) and Pakistan & Golf Economist (PGE), currently there are five public banks and seventeen private banks operating in Pakistan. As the current study has done to compare and evaluate the performance of public and private sector banks of Pakistan, so sample selected from the total population is 4 public sector banks and 16 private sector banks of Pakistan. One public bank that is Sindh bank is not included in current research study because it was incorporated in 2010 so didn't fall in the research study time period and one bank from private sector that is KASB bank is also not included in the study due to unavailability of its financial data on the internet.

RESEARCH DESIGN AND DATA COLLECTION

Secondary data has been gathered from audited unconsolidated financial statements of selected sampled banks which were published on the website of State Bank of Pakistan and also on the websites of respective banks during the financial period of 2006-2014. After the completion of gathering data process it has been edited, encoded and cleaned. Descriptive statistics, Regression analysis and testing of main hypothesis were done by using STATA (v13) software. By using Independent sample t-test result of main hypothesis has been analyzed.

ECONOMETRIC MODEL

After reviewing the literature and in order to find out the result of hypothesis, the following econometric model has been applied.

$$\mathbf{Yit = \alpha + \beta_1 X_1 it + \beta_2 X_2 it + \beta_3 X_3 it + \beta_4 X_4 it + \beta_5 X_5 it + \varepsilon\ it}$$

Where,

α= constant term β= Coefficient term ε= Error term

Yit = PERF = Represents performance and measured by ROA ratio

X_1 = CAR = Capital adequacy ratio, measured by (tier 1+tier 2 capital)/risk weighted assets

X_2 = AQ = Asset quality and is measured by non performing loan to gross advances

X_3 = MQ = Management Quality, measured by non markup interest expense to total income

X_4 = EP = Earnings Performance, measured by net markup interest margin to total asset

X_5 = LiQ = Liquidity and is measured by Liquid assets to total assets

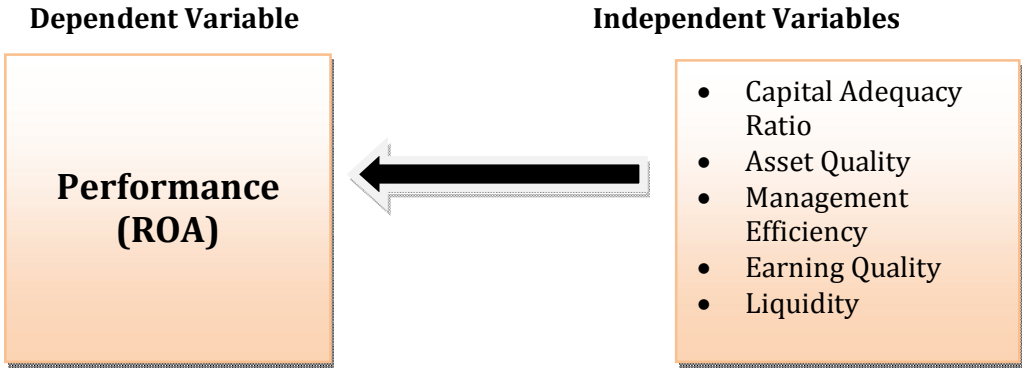
RESEARCH HYPOTHESIS

After reviewing literature, following hypothesis formulated.

1. H_{01}:$\mu_1 \neq \mu_2$: No statistical difference found among mean of groups for capital adequacy.
2. H_{02}:$\mu_1 \neq \mu_2$: No statistical difference found among mean of groups for Asset Quality

3. H_{03}:$\mu_1 \neq \mu_2$: No statistical difference found among mean of group for Management Efficiency
4. H_{04}:$\mu_1 \neq \mu_2$: No statistical difference found among mean of groups for Earning quality
5. H_{05}:$\mu_1 \neq \mu_2$: No statistical difference found among mean of groups for Liquidity

Figure 2: Conceptual framework



FINDINGS AND DISCUSSION

To estimate the regression model, OLS technique is most appropriate but before using that technique all the assumptions of classical linear regression model should be fulfilled. Regression model of current research study has fulfilled all the assumptions of CLRM.

ASSUMPTIONS OF REGRESSION MODEL

a) Homoscedasticity:

White test used for testing homoscedasticity among residuals and found that there is homoscedasticity among residuals because p value is greater than level of significance 0.05 as shown in table I.

Table: I - White's Test

Test Summary	Chi-sq-stat	Prob
Homoscedasticity	30.44	0.0634

b) Autocorrelation:

Wooldridge (2002) test has been used to test the assumption of serial correlation and as the P-value is greater than level of significance 0.05 shown in table II indicating the acceptance of null hypothesis that is there is no autocorrelation among disturbances.

Table: II – Wooldridge Test

Test summary	F-statistics	Probability
No Autocorrelation	0.354	0.5590

c) Multicollinearity:

To test the multicollinearity among regressor, two tests applied: Variance Inflation Factor (VIF) test, and Correlation Matrix. As all the values of VIF shown in the Table III below is 1 showing that we cannot accept the H_0 and conclude that there is no perfect multicollinearity among explanatory variables (CAR, AQ, ME, EQ, LIQ) and similarly result of correlation matrix also indicates that there is no multicollinearity among regressor (Table IV)

Table: III – Multicollinearity Test: VIF		
Variables	VIF	1/VIF
EQ	1.51	0.660406
AQ	1.51	0.663175
ME	1.28	0.783098
CAR	1.26	0.791015
LIQ	1.09	0.916732
MEAN VIF	1.33	

Table: IV – Correlation Matrix					
Variables	CAR	AQ	ME	EQ	LIQ
CAR	1.0000				
AQ	-0.0638	1.0000			
ME	0.4191	0.1148	1.0000		
EQ	0.1570	-0.5611	-0.0475	1.0000	
LIQ	0.0518	-0.2211	0.1213	0.2118	1.0000

PANEL DATA ANALYSIS

Hausman Model:

The generally accepted way of choosing between fixed and random effects is running a Hausman test. Thus, in order to choose between fixed or random effect models, we run a Hausman test (Table V). The null hypothesis for the Hausman test is that the preferred model is random effect and the alternative is the fixed effect. As the p-value of Hausman test for both the models is less than level of significance value, that is, p-value less than 0.05, therefore fixed effect model used. Hausman test for both models are given below:

Table V: Hausman Test				
	---- Coefficients ----			
	(b)	**(B)**	**(b-B)**	**sqrt(diag(V_b-V_B))**
	Fixed	Random	Difference	S.E.
CAR	.0419196	-.0012604	.0431801	.0253951
AQ	.1236716	-.0686451	.1923166	.0227708
ME	-.0424848	-.024149	-.0183358	.008331
EQ	-.1504011	.4265917	-.5769928	.2059504
LIQ	-.5205462	.0514034	-.5719497	.0479984
chi2(5) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 271.79 Prob > chi2 = 0.0000				

Fixed Effect Model:

OLS regression model is used to measure the impact of independent variables on the dependent variable. In order to find out the relationship exists between Return on Asset (ROA) and explanatory variables, such are Capital Adequacy Ratio (CAR), Asset Quality (AQ), Management Efficiency (ME), Earning Quality (EQ) and Liquidity (LIQ) regression model is formulated and analysis of this model is processed by STATA (v13) software. The estimated regression model is as follow-

$$ROA = 0.09874 - 0.01094CAR - 0.06438AQ - 0.02406ME + 0.46440EQ + 0.06009LIQ$$

Regression Parameter Estimates

Table: VI – Parameter Estimates

Variables	Coefficients.	Std. Err.	T	P>|t|	[95% Conf. Interval]
CAR	-.0109417	.0104449	-1.05	0.296	-.0315566 .0096732
AQ	-.06438	.0112236	-5.74	0.000	-.0865319 -.042228
ME	-.024062	.0047626	-5.05	0.000	-.0334619 -.014662
EQ	.4644036	.077544	5.99	0.000	.3113557 .6174516
LIQ	.060095	.0278871	2.15	0.033	.0050545 .1151354
_cons	.0987428	.4475021	0.22	0.826	-.7844881 .9819738

P value of OLS regression parameter estimates shows that all the variables have significant impact on return on asset except CAR. Because p value of CAR = 0.296 greater that level of significance i-e 0.05. To determine the direction of impact that regressor posses on regressand is indicated by the value of regression coefficients. Regression coefficient of asset quality is-.06438 which means that 1 unit increase in AQ may decrease the ROA by 0.064 keeping other variables constant. Inverse relation between ROA and AQ is due higher ratio of nonperforming loans of banks during the study time period and if banks came across with such situation it would affect their profitability. Regression coefficient of management efficiency is -0.0240 which shows that a unit increases in ME decrease the ROA by 0.0240 units while keeping other variables remain constant. Non markup interest expenses remained higher as compared to the income generated by the banks during the research time period which shows an inverse relationship between ROA and ME. This shows that Asset Quality (AQ) and Management Efficiency (ME) both have significant but negative relationship with Return on Assets (ROA). Similarly, regression coefficient of Earning Quality is 0.4644 depicts that if one unit of EQ increases it will increase the ROA value by 0.4644. Mostly sampled banks earned more markup on advances rather than markup interest expense on deposits which turns their profitability high. The value of regression coefficient of Liquidity that is 0.0600 also indicates a unit increase in liquidity increases the return on asset by 0.0600 keeping all variables constant. Liquid Assets/ Assets ratio of both sector banks have maintained a more liquid position and shown a generally more stable position during the research time period revealing that the banks are still in a better shape of liquidity and this may be considered that the operation of banks will be stable in the future. Capital adequacy ratio (CAR), an insignificant variable, also possess a negative relationship with ROA because value of regression coefficient is negative -.0109417.In a nut shell, findings of regression model shows that capital adequacy ratio has negative/indirect insignificant relationship with return on Asset, asset quality and management efficiency also have negative/indirect but significant relationship with return on assets where as earning quality and liquidity posses positive/direct significant relation with return on assets as shown in the Table VI.

ANOVA TABLE AND GOODNESS OF FIT TEST

Table: VII – ANOVA Table and Goodness of Fit Test Results

Source	SS	Df	MS	Number of obs = 180
				F (5, 174) = 45.39
Model	375.23	5	75.05	Prob > F = 0.000
Residual	287.69	174	1.65	R-squared = 0.5660
				Adj R-squared = 0.5536
Total	662.92	179	3.71	Root MSE = 1.2858

The goodness of fit test summarizes the following information. Fitness of regression line is measured through the value of R-square. R-square basically shows the amount of variance in regressand that can be explained by regressor. R-square value also shows the explanatory power of the model. Explanatory power in regression model is 56% which means that 56% variance from total variation in ROA is due to regressor used in the model whereas 44 % is explained by some other factors which are not taken in current research study. Standard deviation of error term (Root MSE) is also low 1.28 shows good strength of our estimation. The result of regression model also reveals that model is significant as its p value is 0.000 which is less than the level of significance of 0.05.

Table: VIII– Results of Hypothesis

Hypothesis of Study	Acceptance/ Rejection	Relationship Direction
H_{a1}: A significant relationship found between capital adequacy ratio (CAR) and performance (ROA) of both sector banks	Rejected	Negative
H_{a2}:A significant relationship found between asset quality (AQ) and performance (ROA) of both sector banks.	Accepted	Negative
H_{a3}:A significant relationship found between management efficiency (ME) and performance (ROA) of both sector banks.	Accepted	Negative
H_{a4}:A significant relationship found between earning quality (EQ) and performance (ROA) of both sector banks	Accepted	Positive
H_{a5}:A significant relationship found between liquidity (LIQ) and performance (ROA) of both sector banks.	Accepted	Positive

DESCRIPTIVE STATISTICS

Table IX shows the descriptive statistics of all the variables under study

Table: IX – Descriptive Statistics

	ROA	CAR	AQ	ME	EQ	LIQ
Mean	.574	16.430	12.821	23.514	3.207	9.269
Variance	3.703	107.036	110.56	520.010	2.326	12.95
Standard Deviation	1.924	10.345	10.515	22.803	1.525	3.599
Max	7.56	65.43	63.05	128.40	7.17	26.91
Min	-7.18	.56	0	-44	-15	.65
Skewness	-1.499	2.278	1.811	-.523	-.0594	1.209
Kurtosis	7.459	9.063	7.305	6.827	3.413	5.606

TESTING OF MAIN HYPOTHESIS

Two sample t test:

To find out the difference of performance among these two groups that is public and private sector commercial banks, two sample t test was employed and the outcome of two sample t test relating to each dimension of CAMEL Model is described below.

First Hypothesis for Capital Adequacy of Both Groups:

H_0: $\mu_1 \neq \mu_2$: No statistical difference found between means of groups in terms of capital adequacy
H_1: $\mu_1 = \mu_2$: statistical difference found between means of groups in terms of capital adequacy

Table X : Two-sample t test Of CAR with equal variances

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]
Private	144	16.01472	.8952108	10.74253	14.24517 17.7842
Public	36	18.09417	1.417745	8.506472	15.21599 20.9723
Combined	180	16.43061	.7711353	10.34587	14.90893 17.9523
Diff		-2.079444	1.926953		-5.88205 1.7232

diff = mean(private) - mean(public) t = -1.0791
Ho: diff = 0 degrees of freedom = 178
Ha: diff < 0 Ha: diff! = 0 Ha: diff > 0
Pr (T < t) = 0.1410 Pr (T > t) = 0.2820 Pr (T > t) = 0.8590

As per BPRP circular no 6 of 2013 issued by State Bank of Pakistan (SBP) has stated that banks in Pakistan should maintain the minimum Capital Adequacy ratio of 10 percent till 31 December 2014. As in table above mean of both public and private sector banks is above minimum requirement of capital adequacy ratio which shows both banks are in good condition in maintaining their capital requirement during the study time period. The p value (0.2820) is greater than the level of significance i-e 0.05 indicating that the null hypothesis should be accepted which states that there is no statistical difference found between public and private sector banks in terms of capital adequacy ratio.

Second Hypothesis for Asset Quality of Both Groups:
H_0: $\mu_1 \neq \mu_2$: No statistical difference found between means of groups in terms of Asset Quality
H_2: $\mu_1 = \mu_2$: statistical difference found between means of groups in terms of Asset Quality

Table XI: Two-sample t test of AQ with equal variances

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]
Private	144	11.64542	.772063	9.264756	10.11929 13.17155
Public	36	17.52639	2.274962	13.64977	12.90797 22.14481
Combined	180	12.82161	.7837512	10.51513	11.27503 14.36819
Diff		-5.880972	1.914792		-9.659586 -2.102359

diff = mean(private) - mean(public) t = -3.0713
Ho: diff = 0 degrees of freedom = 178
Ha: diff < 0 Ha: diff! = 0 Ha: diff > 0
Pr (T < t) = 0.0012 Pr (T > t) = 0.0025 Pr (T > t) = 0.9988

Table XI shows the result of asset quality for these two sampled groups. Mean of public sector banks is 17.2 whereas private sector banks mean is 11.645 stating that state owned banks showing lower performance as compared to private sector banks in terms of Asset quality. In other words, it could be said that private banks have a higher asset quality and lower riskiness compared to public banks in terms of non performing loans because private sector banks were found to be more active in recovering their non performing loans during the study time period. As the p-value (0.0025) is less than the significance level so we reject the null hypothesis and concludes that there is statistical difference found between both sector banks in terms of Asset Quality.

Third Hypothesis for Management Efficiency of Both Sector Banks:
H_0:$\mu_1 \neq \mu_2$: No statistical difference found between means of groups in terms of ME
H_3: $\mu_1 = \mu_2$: statistical difference found between means of groups in terms of ME

Table XII: Two-sample t test of ME with equal variances

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]
Private	144	22.87007	2.08351	25.00213	18.75161 26.98853
Public	36	26.09028	1.640994	9.845963	22.75888 29.42167
Combined	180	23.51411	1.69969	22.80374	20.1601 26.86812
Diff		-3.220208	4.254303		-11.61557 5.175152

diff = mean(private) - mean(public) t = -0.7569
Ho: diff = 0 degrees of freedom = 178
Ha: diff < 0 Ha: diff! = 0 Ha: diff > 0
Pr (T < t) = 0.2250 Pr (T > t) = 0.4501 Pr (T > t) = 0.7750

Outcome of two sample t test of management efficiency for both sector banks is shown in the above table. P value is 0.4501 which emphasis on the acceptance of null hypothesis that is there is no significant difference between these two groups in terms of management efficiency.

Fourth Hypothesis for Earning Quality of Both Groups:
H_0: $\mu_1 \neq \mu_2$: No statistical difference found between means of groups in terms of EQ
H_4: $\mu_1 = \mu_2$: statistical difference found between means of groups in terms of EQ

Table XIII: Two-sample t test of EQ with equal variances

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
Private	144	3.253125	.1212338	1.454806	3.013483	3.492767
Public	36	3.023333	.2983885	1.790331	2.417572	3.629094
Combined	180	3.207167	.1136767	1.525133	2.982848	3.431486
Diff		.2297917	.284468		-.3315721	.7911555

diff = mean(private) - mean(public) t = -0.8087
Ho: diff = 0 degrees of freedom = 178
Ha: diff < 0 Ha: diff! = 0 Ha: diff > 0
Pr (T < t) = 0.7899 Pr (T > t) = 0.4203 Pr (T > t) = 0.2101

To reject or accept our null hypothesis H_4 we see the p value in the highlighted region which is 0.4203 greater than the level of significance which shows that we accept the null hypothesis and concludes that there is no statistical difference found among these two groups that is public sector and private sector banks in case of management efficiency.

Fifth Hypothesis for Liquidity of Both Groups:
H_0: $\mu_1 \neq \mu_2$: No statistical difference found between means of groups in terms of liquidity
H_5: $\mu_1 = \mu_2$: statistical difference found between means of groups in terms of liquidity

Table XIV: Two-sample t test of LIQ with equal variances

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
Private	144	8.840208	.2765381	3.318457	8.293578	9.386839
Public	36	10.98528	.696869	4.181214	9.570558	12.4532
Combined	180	9.269222	.268288	3.599462	8.739808	9.798636
Diff		-2.145069	.6531023		-3.433889	-.8562499

diff = mean(private) - mean(public) t = -3.2844
Ho: diff = 0 degrees of freedom = 178
Ha: diff < 0 Ha: diff! = 0 Ha: diff > 0
Pr (T < t) = 0.0006 Pr (T > t) = 0.0012 Pr (T > t) = 0.9994

Our final fifth null hypothesis which states that there is no statistical difference between private and public sector banks in terms of liquidity shows public sector banks remained more liquid than private sector banks during the study time period as the mean value of public sector banks is higher 10.98 than that of private sector banks 8.84 indicating public banks remained more liquid than private sector banks. Result of two sample t test in case of liquidity also reveals that we cannot accept the null hypothesis because p value in table below is 0.0012 is less than the

significance level hence we conclude that there is statistical difference found between these two groups in terms of liquidity.

CONCLUSION

As we know that Banks are now playing a key financial role in the development of any economy. So their performance evaluation is necessary for the betterment of financial growth of any country. Keeping in mind the importance of performance evaluation process this study examines the performance of two major banking sectors of Pakistan (public sector & private sector) using the CAMEL model. The research study also provides a comparison between private and public sector banks for the time period of 2006 to 2014.

Regression model is used to find out the impact and relationship among regressor and regressand and for finding any difference in the means of performance of these two sector banks we use two sample t-test. By running hausman test, we conclude that current model is based on fixed effect. OLS Result of regression shows that all the parameters of CAMEL model shows significant effect on performance which is measured by return on Asset because p value of all parameters are less than significance level i-e 0.05 except Capital Adequacy ratio. P value of CAR is 0.296 which shows capital adequacy ratio has no significant effect on performances of banks. Similarly Capital adequacy ratio, Asset quality and management efficiency shows negative relationship with Return on Asset whereas earning quality and liquidity shows positive and direct relationship with Return on Asset.

Result of t test shows that no significant difference found between mean of groups of these two sector banks in case of Capital adequacy ratio because it's p value is 0.28 greater than the level of significance i-e 0.05. In case of Asset quality p value is 0.0025 less than level of significance shows significant difference found between means of these groups. Probability value of management efficiency of these two groups is 0.4501 which shows there is no statistical difference found among these two groups. Similarly in case of earning quality we cannot reject our null hypothesis as the p value 0.4203 is greater than the level of significance and concludes that no statistical difference found among these groups. Last parameter of CAMEL model which is liquidity shows that there is statistical difference found among groups as the p value is 0.0012 which is less than significance level i-e 0.05. In a nut shell no statistical difference found in means of both groups in case of CAR, Management Efficiency and Earning Quality whereas Asset quality and Liquidity shows difference among means of these two groups.

RECOMMENDATIONS

After doing a detailed analysis on the performance of public and private sector banks following recommendations are providing which helps in improving the performances of both banks.

1. Evaluating system of banks should be strong and effective enough which would be helpful for them in converting their weaknesses into opportunity which then make this opportunity into strength, enabling them to compete with the global market
2. Introduction of new technology in the banking sector which helps in reducing the cost and helps in generating more revenue in no time period.
3. As no significant difference found in terms of capital adequacy ratio but both sector banks should maintain their capital requirement as per BASEL II
4. Both sector banks should try to increase their asset quality by reducing the non performing loan by taking some measures like to take control and do continuous monitoring on the financial life of the borrower, making some strict policies for recovering of loans from borrowers, eliminating the illegal involvement of some high pressure group while granting loans.
5. In terms of management efficiency both group means are same but they should train their employees in such a way that they would utilized all the resources of banks in an effective way which in turn would be beneficial or profitable for bank's life.
6. Banks should focus not only on quantity of its earning but also on the quality of earnings as well. They have to increase their level of income through hard work and sincere commitments of their employees, improving their quality and efficiency of services and try to invest in those

funds which are suppose to be higher yield producing investments. Banks should maintained their NIM so that they will protect themselves from any kind of future distress.

7. A statistical difference found among these two groups for liquidity. Both sector banks should utilize their excess liquidity in some productive sector and helps in enhancing the economic growth.

LIMITATION OF THE STUDY

As current research study is based on comparison of performance of public and private sector banks of Pakistan but due to unavailability of data of KASB bank we were unable to take that bank as sample. Moreover CAMEL approach is restricted to bank specific or internal factors of bank performances that's why external factors like inflation, GDP cannot taken into account in our research study.

FUTURE OUTLOOK

In future, the current research study will also be done by applying CAMEL rating system or by applying most recent approaches and methods. Research based on Trend analysis and making yearly comparison of these two sector banks will also be conducted which will give clearer and more accurate picture of the performances of these two sector banks.

ANNEXURE

LIST OF BANKS	
Public sector banks	***Private sector banks***
1. First woman bank limited	1. Allied Bank limited
2. National Bank of Pakistan	2. Askari Bank limited
3. The Bank of Punjab	3. Samba Bank limited
4. The Bank of Khyber	4. JS Bank limited
	5. Summit Bank limited
	6. MCB Bank limited
	7. NIB Bank limited
	8. Bank Alfalah limited
	9. Silk Bank limited
	10. Bank Al Habib limited
	11. Soneri Bank Limited
	12. Faysal Bank limited
	13. United Bank limited
	14. Habib Bank limited
	15. Habib metropolitan Bank limited
	16. Standard Chartered Bank (Pakistan) limited

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