# Managerial Perspective of Performance Measurement through CAMEL Framework in Indian Banking Sector

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**Abstract**

CAMEL framework involves analysis of five groups of indicators reflecting the health of banking institutions i.e. Capital Adequacy, Assets Quality, Management Efficiency, Earning Quality and Liquidity. The study has been conceived to assess the managerial perspective regarding CAMEL framework and to identify whether there exists a difference in the perception of bankers of public and private sector banks with respect to CAMEL model. The attempt here is to see how and to what extent banks were aware of and used various ratios to reveal the performance of their banks and how this particular model encompasses a wide range of parameters making it a widely used and acceptable model in today's scenario. To achieve the desired objectives, primary data has been used. For collection of data, a sample of 200 bankers selecting equal number from both public sector and private sector banks has been drawn. The analysis reveals that public sector banks assigned more importance to these ratios as compared to private sector banks. In order to improve the earning quality of the banks, it is suggested that private sector banks should need to lay more emphasis on these ratios.

## INTRODUCTION

The financial sector reforms have brought tremendous changes in the banking sector of our economy. A well sequenced and calibrated process of financial sector reforms introduced in the early 1990s has resulted in a competitive and resilient banking sector. It is pertinent to note that the changed financial scenario

has provided our banks an ample opportunity to expand globally through self-expansion, strategic alliances, etc. Two decades have elapsed since the initiation of banking sector reforms in India. Over this period, the banking sector has experienced a paradigm shift. There has been a substantial change in the supervisory system of the banking sector over the earlier system in terms of frequency, coverage and focus. Two supervisory rating models based on CAMEL (Capital Adequacy, Assets Quality, Management, Earning and Liquidity) and CACS (Capital Adequacy, Assets Quality, Compliance, Systems and Controls) factors for rating of Indian commercial Banks and Foreign Banks operating in India respectively, have been worked out on the lines recommended by Padmanabhan Working Group (1995). These ratings have enabled the RBI to identify the banks whose condition warrants special supervisory attention.

The main endeavour of CAMEL framework is to detect problems before they manifest themselves. The RBI has instituted this mechanism for critical analysis of the balance-sheet of banks by themselves and presentation of such analysis to provide for internal assessment of the health of banks. The analysis, which is made available to the RBI, forms a supplement to the system of off-site monitoring of banks. The prime objective of the CAMEL model of rating banking institutions is to catch up the comparative performance of various banks.

## REVIEW OF LITERATURE

A number of studies have been conducted in India and abroad to study the various aspects of CAMEL framework in the banking sector.

Rao and Datta (1998), Prasuna (2004), Satish et al. (2005), Bodla and Verma (2006), Satish and Bharathi (2006), Sisodiya, Bhatathi and Kavitha (2007), Sisodiya, Bhatathi and Moghal (2008) and Sisodiya and Pemmaraju (2009)   analysed the performance of Indian banks by adopting the CAMEL model from time to time and had adopted CAMEL model for rating banks. These studies have been emphasizing on the rankings of public as well as private sector banks based on CAMEL ranking. The survey of literature brings out that most of the studies have focused on the adoption of CAMEL model for rating of various banks and as such no study has been conducted to examine the managerial perspective of CAMEL framework so as to assess the opinion of various bankers about CAMEL framework. The present study is an attempt to fill that research gap.

## RESEARCH OBJECTIVE, SCOPE AND METHODOLOGY

The study has been conceived to assess the managerial perspective

regarding CAMEL framework and to identify whether there exists a difference in the perception of bankers of public and private sector banks with respect to CAMEL model. To achieve the desired objectives, primary data has been used. For collection of data, a sample of 200 bankers selecting equal number (100 each) from both public sector and private sector banks has been drawn. These respondents hold senior management positions such as General Manager, Vice President, Circle Officer, Zonal Manager, Deputy General Manager, Senior Managers and Branch Manager in banks. The universe of study is entire Indian banking sector. However, for the purpose of the study, a sample of six banks which comprise of three public sector banks - State Bank of India (SBI), Punjab National Bank (PNB) and Canara Bank (CB) and three private sector banks - ICICI bank, HDFC bank and AXIS bank have been taken. These six banks represent entire Indian banking sector in which there are two key players i.e. public sector and private sector banks. The analysis of collected data has been carried out by using simple frequencies, percentages, averages, Weighted Average Scores (WAS), Mann Whitney test (U-test) etc.

## HYPOTHESES

Ho, 1 : There is no significant difference in the perception of public sector and private sector bankers regarding importance of various capital adequacy ratios.

Ho, 2 : There is no significant difference in the perception of public sector and private sector bankers regarding importance of various assets quality ratios.

Ho, 3 : There is no significant difference in the perception of public sector and private sector bankers regarding importance of various management efficiency ratios.

Ho, 4 : There is no significant difference in the perception of public sector and private sector bankers regarding importance of various earning quality ratios.

Ho, 5 : There is no significant difference in the perception of public sector and private sector bankers regarding importance of various liquidity ratios.

## RESULTS AND DISCUSSIONS

CAMEL model is basically a ratio based Performance Measurement System based on financial measures for measuring the performance of the banks. It is based on computation of different ratios to find out ranking of the banks according to their financial performance. CAMEL model involves computation of various ratios such

as Capital Adequacy, Asset Quality, Management Efficiency, Earning Quality and Liquidity of the banks. Different banks used different ratios (relationship) for each variable of CAMEL model so as to find out ranking of various banks.

To examine the opinion of bankers regarding the importance of various ratios under capital adequacy, they were asked to give their opinion about various ratios under Capital Adequacy. Their responses are presented in Table 1. The table reveals that majority of the bankers considered the capital adequacy ratio (96.50%) as the most important ratio followed by debt-equity ratio (82.00%), general securities to total investments (76.00%) and advances to total asset (75.00%).

**Table 1**
**Opinion of Bankers Regarding Various Ratios under Capital Adequacy**

N = 200

| Ratios | Most Impor-tant | Impor-tant | Neither Important Nor Unimportant | Un-important | Most Un-important | WAS |
|---|---|---|---|---|---|---|
| Capital Adequacy Ratio (CAR) | 142 (71.0) | 51 (25.5) | 4 (2.0) | 3 (1.5) | 0 (0.0) | 4.28 |
| Debt-equity Ratio | 82 (41.0) | 82 (41.0) | 28 (14.0) | 6 (3.0) | 2 (1.0) | 4.18 |
| Advances to Total Assets | 54 (27.0) | 96 (48.0) | 37 (18.5) | 10 (5.0) | 3 (1.5) | 3.94 |
| General Securities to Total Investments | 54 (27.0) | 96 (48.0) | 39 (19.5) | 11 (5.5) | 0 (0.0) | 3.97 |

Note : The figures given in parentheses show the percentages.

Weighted Average Scores for all the bankers have been calculated by assigning appropriate weights with regard to all the ratios under capital adequacy norms. The weighted average scores indicate that all the bankers gave greater importance to all the listed ratios, viz. capital adequacy (4.28), debt-equity ratio (4.18) followed by general securities to total investments (3.97) and advances to total assets (3.94). Further, weighted average scores have also been calculated for the selected banks. Bank-wise analysis of both public and private sector banks with

regard to importance of various ratios under Capital Adequacy has been presented in Table 2.

**Table 2**

**Weighted Average Scores Corresponding to Various Ratios under Capital Adequacy**

| Ratios | Public Sector Banks | | | | Private Sector Banks | | | | Mean Values | p-values |
|---|---|---|---|---|---|---|---|---|---|---|
| | SBI | PNB | CB | Total | ICICI | AXIS | HDFC | Total | | |
| Capital Adequacy Ratio (CAR) | 4.06 | 4.54 | 4.57 | 4.38 | 4.29 | 3.87 | 4.34 | 4.18 | 4.28 | 0. 210 |
| Debt-equity Ratio | 4.00 | 4.00 | 4.30 | 4.09 | 4.20 | 4.17 | 4.43 | 4.27 | 4.18 | 0.029* |
| Advances to Total Assets | 3.74 | 3.80 | 4.17 | 3.89 | 4.11 | 3.77 | 4.06 | 3.99 | 3.94 | 0.225 |
| General Securities to Total Investments | 3.71 | 3.69 | 4.17 | 3.84 | 4.00 | 3.77 | 4.46 | 4.09 | 3.97 | 0.030* |

* Significant at 5 per cent level of significance.

An overview of the weighted average scores as shown in the table reveals that bankers from private sector banks have accorded more importance to all the listed ratios under Capital Adequacy as compared to those from public sector banks except capital adequacy. It means public sector banks accord more importance to capital adequacy ratio which is the premier ratio of measures of Capital Adequacy of CAMEL framework. Table 2 reveals that among the selected public sector banks, bankers from Canara Bank assigned greater significance to all the ratios as compared to SBI and PNB. Similarly, among the selected private sector banks, bankers from HDFC Bank gave more importance to ratios like capital adequacy, debt-equity and general securities to total investments followed by ICICI Bank which accorded more significance to advances to total assets ratio as is reflected by their respective weighted average scores for each ratio under capital adequacy measure of CAMEL model.

The estimated p-values using Mann-Whitney U-test with regard to each

ratio of capital adequacy show that there is a significant difference among public and private sector banks with regard to debt-equity ratio and general securities to total investments. As regards other ratios like capital adequacy and advances to total assets ratio, no significant variations have been observed (p-values>0.05). The null hypothesis that there is no significant difference in the perception of public and private sector bankers regarding importance of various ratios of capital adequacy under CAMEL model stands accepted regarding ratios, such as capital adequacy ratio and advances to total assets ratio, but it stands rejected for ratios like debt-equity ratio and general securities to total investment ratio.

## OPINION OF BANKERS REGARDING IMPORTANCE OF VARIOUS RATIOS OF ASSETS QUALITY UNDER CAMEL MODEL

To ascertain the opinion of bankers regarding importance of Assets Quality in CAMEL model, they were asked to give their opinion regarding importance of various ratios as measures of Assets Quality. The response obtained from the bankers in this regard has been shown in Table 3. The table explains that all the

Table 3
Opinion of Bankers Regarding Various Ratios under Assets Quality

N = 200

| Ratios | Most Impor- tant | Impor- tant | Neither Important Nor Unimportant | Uni- mportant | Most Un- important | WAS |
|---|---|---|---|---|---|---|
| Gross NPAs to Net Advances | 132 (66.0) | 60 (30.0) | 8 (4.0) | 0 (0.0) | 0 (0.0) | 4.61 |
| Net NPAs to Net Advances | 129 (64.5) | 56 (28.0) | 14 (7.0) | 1 (0.5) | 0 (0.0) | 4.56 |
| Total Investments to Total Assets | 76 (38.0) | 85 (42.5) | 37 (18.5) | 2 (1.0) | 0 (0.0) | 4.15 |
| Net NPAs to Total Assets | 111 (55.50) | 62 (31.0) | 25 (12.5) | 2 (1.0) | 0 (0.0) | 4.39 |
| Percentage Change in Net NPAs | 125 (62.5) | 53 (26.5) | 19 (9.5) | 3 (1.5) | 0 (0.0) | 4.41 |

Note : The figures given in parentheses are percentages.

bankers considered various ratios under assets quality, such as gross NPAs to net advances (96.00%) and net NPAs to net advances (92.50%) as the most important ratios followed by percentage change in net NPAs (89.00%), net NPAs to total assets (86.50%), and total investments to total assets (80.50%).

It is pertinent to note that only negligible number of bankers have considered the ratios like percentage change in net NPAs (1.50%) followed by total investments to total assets and net NPAs to total assets (1.00% each) and net NPAs to net advances (0.50%) as unimportant to indicate the assets quality of the banks under CAMEL framework. Weighted average scores have been calculated for all the bankers with regard to various ratios under assets quality by putting appropriate weights. On the basis of weighted average scores, bankers considered all the ratios as important for measuring assets quality of the banks, such as gross NPAs to net Advances (4.61) and net NPAs to net advances (4.56) followed by percentage change in net NPAs (4.41), net NPAs total assets (4.39) and total investments to total assets (4.15).

Further, weighted average scores have also been computed for the selected banks under study. Bank-wise analysis of both public and private sector banks with regard to various ratios as indicator of assets quality has been presented in Table 4. The weighted average scores presented in the table reveal that public sector banks have accorded greater significance to all these ratios of assets quality as compared to private sector banks except total investment to total assets.

Among the selected public sector banks, there has been a mixed response to the different ratios under assets quality. The bankers from PNB accorded greater importance to gross NPAs to net advances (4.86) and percentage change in net NPAs (4.69), while bankers from SBI accorded importance to net NPAs to net advances (4.77). Ratios like total investments to total assets (4.40) and net NPAs to total assets (4.67) considered more important by the bankers from Canara Bank. Similarly, among the selected private sector banks, bankers from ICICI Bank accorded importance to ratios like total investments to total assets (4.43), percentage change in net NPAs (4.63) and net NPAs to total assets (4.57) followed by Axis Bank considering gross NPAs to net advances (4.60) and net NPAs to net advances (4.43) as most important ratios as indicator of assets quality of the banks under the CAMEL framework.

The estimated p-values using Mann-Whitney U-test with regard to various ratios under assets quality show that there is a significant difference among pubic and private sector banks with regard to ratios, such as gross NPAs to net advances and net NPAs to net advances under the measure of assets quality of CAMEL framework (p-values < 0.05). Bankers from public sector banks gave more importance

Table 4

Weighted Average Scores Corresponding to Various Ratios under Assets Quality

| Ratios | Public Sector Banks | | | | Private Sector Banks | | | | Mean Values | p-values |
|---|---|---|---|---|---|---|---|---|---|---|
| | SBI | PNB | CB | Total | ICICI | AXIS | HDFC | Total | | |
| Gross NPAs to Net Advances | 4.69 | 4.86 | 4.57 | 4.71 | 4.49 | 4.60 | 4.46 | 4.51 | 4.61 | 0.045* |
| Net NPAs to Net Advances | 4.77 | 4.66 | 4.70 | 4.71 | 4.40 | 4.43 | 4.37 | 4.40 | 4.56 | 0.007* |
| Total Investments to Total Assets | 3.77 | 4.09 | 4.40 | 4.07 | 4.43 | 4.13 | 4.09 | 4.22 | 4.15 | 0.098 |
| Net NPAs to Total Assets | 4.11 | 4.60 | 4.67 | 4.45 | 4.57 | 4.23 | 4.17 | 4.33 | 4.39 | 0.259 |
| Percentage Change in Net NPAs | 4.34 | 4.69 | 4.53 | 4.52 | 4.63 | 4.10 | 4.14 | 4.30 | 4.41 | 0.154 |

* Significant at 5 per cent level of significance.

to these ratios of assets quality as compared to private sector banks. For rest of the ratios of assets quality, such as total investment to total assets, net NPAs to total assets and percentage change in net NPAs, no significant difference among public and private sector banks has been observed (p-values > 0.05). In other words, both the banks assigned equal importance to the above mentioned ratios of assets quality as a measure of CAMEL framework.

The null hypothesis that there is no significant difference in the perception of public and private sector bankers regarding importance of various ratios of assets quality under CAMEL model stands accepted in all other ratios except gross NPAs to net Advances and net NPAs to net Advances.

## BANKERS OPINION REGARDING VARIOUS RATIOS OF MANAGEMENT EFFICIENCY UNDER CAMEL FRAMEWORK

The importance of various ratios under the Management Efficiency as a measure of CAMEL framework has been examined on the basis of response obtained

from the bankers in this regard. The data pertaining to their response has been presented in Table 5. The table shows that majority of the bankers considered all the ratios important, but total advances to total deposits (93.00%) and business per employee (88.50%) appeared as the most important ratios of management efficiency under CAMEL framework.

**Table 5**
**Bankers Opinion Regarding Various Ratios under Management Efficiency**

N = 200

| Ratios | Most Important | Important | Neither Important Nor Unimportant | Un-important | Most Un-important | WAS |
|---|---|---|---|---|---|---|
| Total Advances to Total Deposits | 122 (61.0) | 64 (32.0) | 13 (6.5) | 1 (0.5) | 0 (0.0) | 4.54 |
| Return on Net Worth | 117 (58.5) | 56 (28.0) | 22 (11.0) | 5 (2.5) | 0 (0.0) | 4.43 |
| Business per Employee | 126 (63.0) | 51 (25.5) | 17 (8.5) | 5 (2.5) | 1 (0.5) | 4.48 |
| Profit per employee | 125 (62.5) | 49 (24.5) | 23 (11.5) | 1 (0.5) | 2 (1.0) | 4.47 |

**Note :** The figures given in parentheses indicate the percentages.

Weighted average scores have been calculated for all the bankers regarding various ratios as measure of management efficiency by assigning appropriate weights. An overview of weighted average scores as shown in Table 5 reveals that bankers considered all the ratios, viz. total advances to total deposits (4.54), business per employee (4.48), profit per employee (4.47) and return on net worth (4.43) as important. Further, bank-wise weighted average scores have also been calculated with regard to public and private sector banks and presented in Table 6. The table reveals that public sector banks provided greater significance to all the ratio of management efficiency in comparison to private sector banks as is evident from their weighted average scores. Among the selected public sector banks, bankers from all the three banks under study gave importance to different ratios of management efficiency as a measure of CAMEL model. PNB accorded more importance to total advances to total deposits (4.63) and business per employee and profit per employee (4.71 each) followed by Canara Bank which accorded importance to return on net worth (4.80).

**Table 6**

**Weighted Average Scores Corresponding to Various Ratios under Management Efficiency**

| Ratios | Public Sector Banks | | | | Private Sector Banks | | | | Mean Values | p-values |
|---|---|---|---|---|---|---|---|---|---|---|
| | SBI | PNB | CB | Total | ICICI | AXIS | HDFC | Total | | |
| Total Advances to Total Deposits | 4.46 | 4.63 | 4.57 | 4.55 | 4.71 | 4.60 | 4.26 | 4.52 | 4.54 | 0.905 |
| Return on Net Worth | 4.46 | 4.40 | 4.80 | 4.54 | 4.51 | 4.03 | 4.34 | 4.31 | 4.43 | 0.163 |
| Business per Employee | 4.51 | 4.71 | 4.63 | 4.62 | 4.37 | 4.43 | 4.23 | 4.34 | 4.48 | 0.004* |
| Profit per employee | 4.31 | 4.71 | 4.57 | 4.53 | 4.43 | 4.37 | 4.43 | 4.41 | 4.47 | 0.194 |

* Significant at 5 per cent level of significance.

Similarly, among private sector banks, ICICI Bank gave more importance to all the listed ratios for measuring management efficiency except business per employee as compared to Axis Bank and HDFC Bank as shown by their respective weighted average scores. The Axis Bank gave importance to business per employee (4.43) as a measure of management efficiency when compared with other selected private sector banks. However, it is pertinent to note that HDFC Bank also assigned more importance to profit per employee (4.43).

The estimated p-values using Mann-Whitney U-test with regard to all the listed ratios of management efficiency show that there is a significant difference among the public and private sector banks as far as business per employee ratio is concerned (p-value<0.05). Bankers from the public sector banks gave more importance to business per employee ratio as a measure of management efficiency as compared to the private sector banks as is evident from their weighted average scores. Regarding other measures of management efficiency like total advances to total deposits, return on net worth and profit per employee, no significant difference between public and private sector banks has been observed. Both the banks accorded equal importance to the above mentioned measures of management efficiency as a measure of CAMEL framework. Thus, the null hypothesis that there is no significant difference in the perception of public and private sector bankers regarding importance of various ratios of

management efficiency under CAMEL model stands accepted except business per employee.

## OPINION OF BANKERS REGARDING IMPORTANCE OF VARIOUS RATIOS AS A MEASURE OF EARNING QUALITY OF THE BANKS UNDER CAMEL MODEL

The significance of various ratios under the Earning Quality as a measure of CAMEL framework has been examined on the basis of response obtained from the bankers in this regard The data pertaining to their response has been presented in Table 7.

**Table 7**
**Opinion of Bankers Regarding Various Ratios under Earning Quality**

N = 200

| Ratios | Most Impor- tant | Impor- tant | Neither Important Nor Unimportant | Un- important | Most Un- important | WAS |
|---|---|---|---|---|---|---|
| Operating Profits to Average Working Funds | 99 (49.5) | 76 (38.0) | 21 (10.5) | 4 (2.0) | 0 (0.0) | 4.35 |
| Spread | 107 (53.5) | 62 (31.0) | 25 (12.5) | 5 (2.5) | 1 (0.5) | 4.35 |
| Net Profit to Average Assets | 79 (39.5) | 87 (43.5) | 22 (11.0) | 11 (5.5) | 1 (0.5) | 4.16 |
| Interest Income to Total Income | 74 (37.0) | 101 (50.5) | 20 (10.0) | 4 (2.0) | 1 (0.5) | 4.22 |
| Non-interest Income to Total Income | 94 (47.0) | 80 (40.0) | 22 (11.0) | 1 (0.5) | 3 (1.5) | 4.31 |

**Note :** The figures given in parentheses are percentages.

The table shows that all the bankers have considered all the ratios of earning quality, such as operating profits to average working funds and interest income to total income (87.50% each) followed by non-interest income to total income (87.00%), spread (84.50%) and net profit to average assets (83.00%) as important to judge the earning quality of the banks. Weighted average scores have been computed for all the bankers with regard to various ratios as indicator

of earning quality by assigning appropriate weights. The weighted average scores reveal that bankers considered all the ratios as important measure of earning quality of the banks, such as operating profits to average working funds and spread (4.35 each) followed by non-interest income to total income (4.31), interest income to total income (4.22) and net profit to average assets (4.16).

**Table 8**

**Weighted Average Scores Corresponding to Various Ratios under Earning Quality**

| Ratios | Public Sector Banks | | | | Private Sector Banks | | | | Mean Values | p-values |
|---|---|---|---|---|---|---|---|---|---|---|
| | SBI | PNB | CB | Total | ICICI | AXIS | HDFC | Total | | |
| Operating Profits to Average Working Funds | 4.43 | 4.34 | 4.27 | 4.35 | 4.46 | 4.13 | 4.43 | 4.35 | 4.35 | 0.725 |
| Spread | 4.54 | 4.51 | 4.73 | 4.59 | 4.20 | 3.77 | 4.29 | 4.10 | 4.35 | 0.000* |
| Net Profit to Average Assets | 4.23 | 4.26 | 4.50 | 4.32 | 4.23 | 3.83 | 3.91 | 4.00 | 4.16 | 0.024* |
| Interest Income to Total Income | 4.06 | 4.26 | 4.50 | 4.26 | 4.17 | 4.17 | 4.17 | 4.17 | 4.22 | 0.645 |
| Non-interest Income to Total Income | 4.43 | 4.54 | 4.53 | 4.50 | 4.26 | 4.23 | 3.86 | 4.11 | 4.31 | 0.001* |

* Significant at 5 per cent level of significance.

Further, weighted average scores have also been calculated for the selected banks of the study. Bank-wise analysis of both public and private sector banks regarding various ratios as a measure of earning quality have been presented in Table 8. The table explains that weighted average scores of public sector banks against all the ratios are higher as compared to the private sector banks.

Among the selected public sector banks, bankers from Canara Bank considered all the ratios, viz. spread (4.73), non-interest income to total income

(4.54) and net-profit to average asset and interest income to total income (4.50 each) except operating profits to average working funds (4.43) ratio, which is considered by the bankers of SBI. Further, among the selected private sector banks, bankers from ICICI Bank gave more importance to all the ratios as a measure of earning quality except spread as compared to Axis Bank and HDFC Bank as shown by their weighted average scores. Bankers from HDFC Bank provided greater significance to spread (4.29) as compared to other two selected private sector banks.

The estimated p-values using Mann-Whitney U-test with regard to all the listed ratios of earning quality show that there is a significant difference among public and private sector banks as regards ratios like spread, net profit to average assets and non-interest income to total income (p-values<0.05). Bankers from public sector banks gave more importance to these ratios as a measure of earning quality when compared with the bankers from private sector banks. For rest of the measures of earning quality such as operating profits to average working funds and interest income to total income, no significant variations between public and private sector banks have been observed (p-values >0.05). Both the banks accorded equal importance to these measures of earning quality as a measure of CAMEL framework.

The null hypothesis that there is no significant difference in the perception of public and private sector bankers regarding importance of various ratios of earning quality under CAMEL model stands accepted in ratios, such as operating profits to average working funds and interest income to total income ratio. However, it stands rejected for ratios like spread, net profit to average assets and non-interest income to total income ratio.

## BANKERS OPINION REGARDING VARIOUS RATIOS OF LIQUIDITY AS A MEASURE OF CAMEL FRAMEWORK

To examine the opinion of bankers regarding the importance of various ratios of Liquidity as a measure of CAMEL framework, they were asked to give their opinion about all the listed ratios such as liquid assets to total assets, general securities to total assets, approved securities to total assets, liquid assets to demand deposits, and liquid assets to total deposits. The response obtained from the bankers in this regard has been presented in Table 9.

**Table 9**
**Bankers' Opinion Regarding Various Ratios under Liquidity**

N = 200

| Ratios | Most Impor- tant | Impor- tant | Neither Important Nor Unimportant | Un- important | Most Un- important | WAS |
|---|---|---|---|---|---|---|
| Liquid Assets to Total Assets | 111 (55.5) | 70 (35.0) | 18 (9.0) | 0 (0.0) | 1 (0.5) | 4.45 |
| General Securities to Total Assets | 46 (23.0) | 98 (49.0) | 41 (20.5) | 12 (6.0) | 3 (1.5) | 3.86 |
| Approved Securities to Total Assets | 65 (32.5) | 86 (43.0) | 38 (19.0) | 7 (3.5) | 4 (2.0) | 4.01 |
| Liquid Assets to Demand Deposits | 88 (44.0) | 75 (37.5) | 27 (13.5) | 8 (4.0) | 2 (1.0) | 4.20 |
| Liquid Assets to Total Deposits | 82 (41.0) | 85 (42.5) | 28 (14.0) | 3 (1.5) | 2 (1.0) | 4.21 |

**Note :** The figures given in parentheses are percentages.

The table shows that the bankers have considered all the ratios of liquidity important. But the ratios, such as liquid assets to total assets (90.50%) and liquid assets to total deposits (83.50%) have been more important followed by liquid assets to demand deposits (81.50%), approved securities to total assets (75.50%) and general securities to total assets (72.00%). All these ratios depict the liquidity position of the banks.

Weighted average scores have been calculated for all the bankers with regard to various ratios as a measure of liquidity of the banks by assigning appropriate weights. A glance at the weighted average scores given in Table 9 reveals that bankers considered the ratios, such as liquid assets to total assets (4.45), liquid assets to total deposits (4.21) and liquid assets to demand deposits (4.20) as more important and approved securities to total assets (4.01) and general securities to total assets (3.86) as important.

Further, weighted average scores have also been calculated for the selected banks under study. Bank-wise analysis regarding various ratios as a measure of liquidity under CAMEL model has been presented in Table 10.

Table 10

Weighted Average Scores Corresponding to Various Ratios under Liquidity

| Ratios | Public Sector Banks | | | | Private Sector Banks | | | | Mean Values | p-values |
|---|---|---|---|---|---|---|---|---|---|---|
| | SBI | PNB | CB | Total | ICICI | AXIS | HDFC | Total | | |
| Liquid Assets to Total Assets | 4.54 | 4.54 | 4.63 | 4.57 | 4.40 | 4.30 | 4.29 | 4.33 | 4.45 | .010* |
| General Securities to Total Assets | 3.63 | 3.77 | 4.00 | 3.79 | 4.11 | 3.70 | 3.94 | 3.93 | 3.86 | .242 |
| Approved Securities to Total Assets | 3.69 | 3.86 | 4.27 | 3.92 | 4.31 | 3.87 | 4.06 | 4.09 | 4.01 | .139 |
| Liquid Assets to Demand Deposits | 4.31 | 4.23 | 4.63 | 4.38 | 4.17 | 3.90 | 3.94 | 4.01 | 4.20 | .003* |
| Liquid Assets to Total Deposits | 4.29 | 4.23 | 4.43 | 4.31 | 4.26 | 4.00 | 4.06 | 4.11 | 4.21 | .249 |

* Significant at 5 per cent level of significance.

The table shows that both the public and private sector banks have given importance to different ratios. The public sector banks gave more importance to liquid assets to total assets (4.57), liquid assets to demand deposits (4.38) and liquid assets to total deposits (4.31) followed by private sector banks which accorded importance to other ratios, such as approved securities to total assets (4.09) and general securities total assets (3.93).

Among the selected public sector banks, bankers from Canara Bank accorded more importance to all the listed measures when compared to other selected public sector banks, such as SBI and PNB as indicated by their respective weighted average scores. Similarly, among the selected private sector banks, bankers from ICICI Bank accorded greater significance to various ratios in comparison to Axis Bank and HDFC Bank as measures of liquidity as shown by their respective weighted

average scores.

The estimated p-values using Mann-Whitney U-test with regard to all the listed ratios of liquidity show that there is a significant difference among public and private sector banks as far as ratios like liquid assets to total assets and liquid assets to demand deposits (p-values<0.05) are concerned. Bankers from public sector banks accorded more importance to these ratios (measures) of liquidity as compared to those from private sector banks. As far as other ratios like general securities to total assets, approved securities to total assets and liquid assets to total deposits, no significant variations between public and private sector banks have been observed. Both the banks gave equal significance to these ratios of liquidity as a measure of CAMEL framework.

The null hypothesis that there is no significant difference in the perception of public sector and private bankers regarding importance of various ratios of liquidity under CAMEL model stands accepted in all other ratios except liquid assets to total assets and liquid assets to demand deposits.

On the other hand, the study shows that when these results were compared with the actual overall composite ranking of both public and private sector banks for the last 5 years, much compatibility has been observed. The overall ranking for the period shows that public sector banks have shown an improvement, while in the case of private sector banks composite rank has slipped from top to bottom as shown in Table 11.

**Table 11**

**Overall Composite Ranking of Public and Private Sector Banks for the Last Five Years in CAMEL Framework**

| Year | Public Sector Banks | | | Private Sector Banks | | |
|---------|-----|-----|-----|------|------|------|
|         | SBI | PNB | CB  | ICICI | AXIS | HDFC |
| 2004-05 | 8   | 3   | 16  | 1    | 3    | 2    |
| 2005-06 | 18  | 9   | 10  | 4    | 14   | 3    |
| 2006-07 | 23  | 19  | 12  | 9    | 12   | 7    |
| 2007-08 | 21  | 9   | 17  | 14   | 13   | 12   |
| 2008-09 | 21  | 2   | 13  | 10   | 8    | 6    |

**Source :** Chartered Financial Analyst, The Analyst, Various Special Issues, October.

As far as selected public sector banks are concerned, composite rank in case of PNB stands at number 2nd whereas that of Canara Bank improved from 17th to 13th. The SBI Bank maintained the same position for the last 2 years at 21st rank.

On the other hand, among the selected private sector banks, ICICI Bank, HDFC Bank and Axis Bank slipped from top three ranks to 10th rank, 6th rank and 8th rank respectively. On the whole, it is observed that public sector banks outperformed private sector banks with regard to CAMEL framework as a method of measuring and managing performance of the bank under financial measures.

## CONCLUSION AND SUGGESTIONS

CAMEL model is a ratio based performance measurement system for ranking/rating performance of the banks. Regarding awareness and application of CAMEL framework, it is observed that public sector banks gave more significance to CAMEL framework as compared to private sector banks. An overview of all the measures of CAMEL model such as Capital Adequacy, Assets Quality, Management Efficiency, Earning Quality and Liquidity as well as various ratios under these measures reveals that public sector banks provided greater significance to these measures. The survey results when compared with the actual overall composite ranking of both public and private sector banks, much compatibility has been observed in the study about the overall composite ranking of the banks. Therefore, it is suggested that private sector banks should focus more on CAMEL framework as a performance measurement system under financial measures. Under Assets Quality measures of CAMEL model, various ratios like Gross NPAs and Net NPAs as a percentage of Total Assets and Total Advances shows that the scores of public sector banks were on the higher side. The same result is also observed during the study of the impact of liberalization on the performance of Indian banking sector. The study reveals that during the period under study, public sector banks' NPAs declined significantly whereas, the NPAs of private sector banks are on the increase. Therefore, it is suggested that private sector banks should focus more on the quality of advances/assets i.e the increasing level of NPAs particularly after 2005-06. Similarly, various ratios as a measure of Management Efficiency of CAMEL framework such as Total Advances to Total Deposits, Return on Net worth, Business per Employee, Profit per Employee, the bankers from public sector accorded more importance to these ratios as compared to private sector banks. So to improve the efficient management of the banks, it is suggested that private sector banks should also provide more significance to various ratios of management efficiency as a measure of CAMEL framework. The Earning Quality of the banks as a measure of CAMEL framework is indicated by various ratios such as Operating Profits to Average working Funds, Spread, Net Profit to Average Assets, Interest Income to Total Income and Non-interest Income to Total Income. The analysis reveals that public sector banks assigned more importance to these

ratios as compared to private sector banks. In order to improve the earning quality of the banks, it is suggested that private sector banks should need to lay more emphasis on these ratios.

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