

Profitability of Indian Scheduled Commercial Banks - A Factor Analysis Approach

** Dr. Kavitha Nachimuthu, Associate Professor, Department of Rural Development and Agricultural Extension, College of Agriculture and Rural Transformation, University of Gondar, Ethiopia.*

Abstract

Banking sector is playing important role for the sustainable economic growth. Profitability in Indian scheduled commercial banks needs to be evaluated for the improvement of banking system. The purpose of the study is to analyze the impact of the profitability and evaluate the role of bank specific factors on the Scheduled commercial banks in India for the period of 2006-07 to 2016-17. In this paper, financial ratios are used on the basis of factor analysis. The study shows that no individual factor can be solely responsible for the variations in the profitability in the banks; it is a combination of different factors which are associated with the profitability. Factor analyses have selected to identify the factors that get highest, moderate and lowest priority in banking performance. The various analyses have been used to study the profitability and various tests have been applied to know the factors and bring out the variables. Nationalized Banks Group associated with profitability was positioned at the top followed by SBI Banks Group.

Key words: Profitability, factor analysis, economy, banking system and commercial banks

Introduction

The banking system had such a low level of profitability that the banking system might itself become seriously sick on account of the transfusion of money to treat the financial anemia of the economy. It was clear that the viability of the banking system was under a grave threat in increasingly competitive business environment, and that if the system was to continue to serve its social objectives, banks should be allowed to become commercially viable units. Commercial banks enlarged and widened the network of services provided by them to their customers. The financial services, accounting services and insurance services are covered under the umbrella of the banking services provided. Banks as commercial organizations survive by earning a higher return on users' fund than what they pay for their sources of funds. Hence the banks have to maintain or manage the funds by ensuring that the risks are minimized, such that a reasonable return is earned. The trend is increasingly towards effective and active asset liability management to maximise profits by obtaining access to new and expanding sources of liabilities for advantageous investment, either

in loans and advances and / or securities including money market assets.

Literature Review

Shaher, Kasawneh and Salem (2011) , this paper mainly concentrates on evaluating the major factors that affect the commercial banks' performance in the Middle East region based on factor analysis technique. In our study, we choose 23 variables and analyze them according to factor analysis techniques (PCA), in order to extract them in six different factors based on their importance to banks' performance. The results revealed that the first factor (banks' characteristics) is considered the most important factor to banks' performance. On the contrary, the sixth factor (other factors) is considered the least important factor that influences commercial banks' performance in the Middle East region. Our results suggest that commercial banks in Middle East region should concentrate on the six factors, mainly variables in the first factor, in order to improve their performance and compete efficiently with global commercial banks

Objectives of the study

- To analyze the impact of the profitability of Indian Scheduled commercial banks
- To evaluate the role of bank specific factors on the Scheduled commercial banks in India

Methodology

The research is quantitative in nature for which secondary data is used. Data collected from RBI Statistical table relating to banks, Database on Indian Banking published by Indian Banking Association and financial statements of the banks in India for the period of 10 years from 2006-07 to 2016-17 were selected and grouped into SBI and its Associate banks, Nationalized Banks Groups and Private Sector Banks Group

Factor Analysis aims at studying the effect of two or more predictor variables on certain evaluation criterion. One among it is the Factor Analysis which is intended to group the original input variables into factors which underlie the input variables. Each factor will account for one or more input variables. By performing factor analysis the total number of factors in the study can be reduced by dropping the insignificant factors based on the criterion.

In studies of interdependence, all the variables have equal footing, and the analyst is concerned with the whole set of relationships among the variables that characterize the objects. But as seen in regression analysis, it is often not possible to look for a whole set of relationships due to inherent problems associated with multi-collinearity etc. As such, one of the tools which are quite often used to study the developmental

variables is the factor analysis. Factor analysis deals directly with the correlative dependence

arranging variables into independent linear combinations and permits any indicator to be tested as a dependent variable of a small set of underlying or common components. The output of the factor analysis is obtained by using principal component analysis and specifying the rotation. There are two stages in factor analysis. Stage one being the factor extraction process, wherein the objective is to identify how many factors are to be extracted from the data.

For the purpose of factor analysis the banks are divided into three groups such as SBI group, nationalized banks group and private banks group. The Kaiser-Meyer-Olkin (KMO) measure is the indicator of how well-suited the sample data are for factor analysis. It is the ratio of the sum of the squared correlations for all variables in the analysis to the squared correlations of all variables plus the sum of the squared partial correlations for all variables. The denominator of this ratio increases with variation that is unique to pairs of variables (partial correlations), making the value of KMO less than one. Small values of KMO indicate that factor analysis may not be appropriate for the data. Kaiser (1974) suggests that values of .9 or higher are great and values below .5 are unacceptable. Bartlett's test of Sphericity evaluates the null hypothesis that the correlation matrix is an identity matrix (all the values in the diagonal are 1 and all the off-diagonal values (correlations) are zero, which would indicate no relationship among the variables, and thus no basis on which to proceed with factor analysis. A significant test result allows us to reject this hypothesis.

Factor Analysis – SBI Group

Table 1 presents the factor loadings of SBI group of the variables considered during the period of study. It can be understood from the factor loading table that in the case of SBI bank group, out of the total variable, the most contributing factors are three in total. Three components are extracted because, these three have Eigen values greater than 1 and the history of the derived components is outlined. Each factor comprises a set of ratios considered for the study. Factor 1 is composed of the following significant ratios such as “Approved Securities to Assets”, “Cash Deposit Ratio”, “Other Assets to Working Funds”, “Liquid Assets to Working Funds”, “Fixed Assets to Working Funds”, “Net NPA to Net Advances”, “Interest Earned to Working Funds”, “Non-Interest Expenses to Working Funds”, “Provisions and Contingencies to

Total Assets” and “Government Securities to Assets”. The table 1 also shows the communality

values. Communality can be defined as the proportion of variance in any one of the original variables, which is captured by the extracted factors.

Table: 1 FACTOR ANALYSIS – SBI GROUP

Variables	Components			Communalities
	1	2	3	
Approved Securities to Assets	0.958	0.170	0.117	0.960
Cash Deposit Ratio	0.949	0.230	-0.134	0.971
Other Assets to Working Funds	0.941	-0.099	0.022	0.895
Liquid Assets to Working Funds	0.935	0.262	-0.144	0.964
Fixed Assets to Working Funds	0.855	0.251	-0.344	0.913
Net NPA to Net Advances	0.822	0.564	-0.038	0.995
Interest Earned to Working Funds	0.773	0.585	0.079	0.945
Non-Interest Expenses to Working Funds	0.761	-0.142	-0.463	0.813
Provisions and Contingencies to Total Assets	-0.700	-0.183	0.568	0.846
Government Securities to Assets	-0.579	0.556	0.564	0.962
Debt Equity Ratio	-0.022	0.945	-0.313	0.992
Borrowings to Total Assets	-0.150	-0.891	-0.406	0.982
Credit Deposit Ratio	-0.424	-0.863	0.079	0.930
Priority Sector Advances to Total Advances	0.392	0.768	0.376	0.885
Interest Expended to Working Funds	0.682	0.697	0.078	0.945
Net Profit to Working Funds	-0.059	-0.291	0.920	0.934
Non-Interest Income to Working Funds	0.009	0.212	0.855	0.776
Capital Adequacy Ratio	-0.246	0.424	0.590	0.588
Eigen Values	9.494	4.701	2.110	
Variance (%)	52.743	78.860	90.582	

Source: Data calculated from Statistical Tables Relating to Banks in India, R.B.I., Mumbai Issues of relevant years

Factor II has “Debt Equity Ratio”, “Borrowings to Total Assets”, “Credit Deposit Ratio”, “Priority Sector Advances to Total Advances” and “Interest Expended to Working Funds”. Factor III consists of “Net Profit to Working Fund”, “Non-Interest Income to Working Funds” and “Capital Adequacy Ratio”. Factor 1, being the dominant variable, explains the variations in eighteen variables considered for the study in

terms of profitability. These three factors taken together could explain 90.58 % of the variations in the profitability of banks. This shows that no individual factor can be solely responsible for the variations in the profitability in the banks; it is a combination of different factors which are associated with the profitability. The importance of a given factor for a given variable can exactly be expressed in terms of the variations in the variable that can be accounted for by the factor which accounts 90.58 %. It can be seen that the first factor accounts for only 52.74 % of variation in the variable set. Second factor accounts for 26.12 % and third factor with 11.72. All the three factors taken together could explain as much as 90.58 % of the variations in the variables associated with profitability. Remaining factors, which are not linked with profitability, constitute about 9.42 %.

Factor Analysis – Nationalized Banks Group

With regard to Nationalized Banks, which is shown in table 2, those factors which contribute towards profitability of the nationalized banks group. It can be understood that the significant variable, which has reduced the total number of factors into three. Factor I consists of “Interest Earned to Working Funds”, “Interest Expended to Working Funds”, “Net NPA to Net Advances”, “Other Assets to Working Funds”, “Non-Interest Expenses to Working Funds”, “Credit Deposit Ratio”, “Fixed Assets to Working Funds”, “Approved Securities to Assets”, “Approved Securities to Assets”, “Priority Sector Advances to Total Advances”, “Borrowings to Total Assets”, “Capital Adequacy Ratio” and “Liquid Assets to Working Funds”.

Table: 2 FACTOR ANALYSIS – NATIONALIZED BANKS GROUP

Variables	Components			Communalities
	1	2	3	
Interest Earned to Working Funds	0.992	0.050	-0.017	0.986
Interest Expended to Working Funds	0.992	-0.037	-0.008	0.985
Net NPA to Net Advances	0.984	-0.038	0.156	0.995
Other Assets to Working Funds	0.984	-0.075	0.149	0.996
Non-Interest Expenses to Working Funds	0.968	-0.021	0.045	0.940
Credit Deposit Ratio	-0.904	-0.381	-0.104	0.974
Fixed Assets to Working Funds	0.892	-0.142	0.425	0.998

Approved Securities to Assets	0.880	-0.083	0.466	0.998
Priority Sector Advances to Total Advances	0.835	-0.467	0.092	0.924
Borrowings to Total Assets	0.779	-0.607	-0.002	0.976
Capital Adequacy Ratio	0.756	0.440	0.087	0.772
Liquid Assets to Working Funds	0.675	0.386	0.612	0.980
Non-Interest Income to Working Funds	0.336	0.914	0.022	0.949
Government Securities to Assets	0.083	0.897	0.381	0.957
Provisions and Contingencies to Total Assets	0.301	0.869	0.353	0.971
Net Profit to Working Fund	0.501	0.831	0.044	0.943
Debt Equity Ratio	0.038	0.115	0.976	0.968
Cash Deposit Ratio	0.618	0.410	0.654	0.977
Eigen Values	11.237	4.539	1.512	
Variance (%)	62.426	25.219	8.398	

Source: Data calculated from Statistical Tables Relating to Banks in India, R.B.I., Mumbai Issues of relevant years

In the case of second factor the components comprise of 4 variables such as “Non-Interest Income to Working Funds”, “Government Securities to Assets”, “Net Profit to Working Fund”. Factor 3 has the following variables such as “Debt Equity Ratio” and “Cash Deposit Ratio”.

Factor 1, being the dominant variable, which explains the variations in eighteen variables considered for the study in terms of profitability. These three factors taken together could explain 96.04 % of the variations in the profitability of banks. This shows that no individual factor can be solely responsible for the variations in the profitability in the banks; it is a combination of different factors which are associated with the profitability. The importance of a given factor for a given variable can exactly be expressed in terms of the variations in the variable that can be accounted for by the factor which accounts 96.04 %. Since it can be seen that the first factor accounts for only 62.43 % of variation in the variable set, second factor accounts for 25.22 % and third factor with 8.4. All the three factors taken together could explain as much as 96.04 % of the variations in the variables associated with profitability. Remaining factors which do not constitute are about 3.96 %.

Factor Analysis – Private Banks Group

With regard to Private sector banks, shows table 3 the factors which contribute towards the profitability of the private sector banks group. It can be understood that the significant variable has reduced the total number of factors into three. Factor I consists of “Liquid Assets to Working Funds”, “Government Securities to Assets”, “Interest Expended to Working Funds”, “Cash Deposit Ratio”, “Interest Earned to Working Funds”, “Approved Securities to Assets”, “Net NPA to Net Advances”, “Credit Deposit Ratio”, “Debt Equity Ratio”, “Non-Interest Expenses to Working Funds”, “Priority Sector Advances to Total Advances”, “Fixed Assets to Working Funds” and “Provisions and Contingencies to Total Assets”.

Table: 3 FACTOR ANALYSIS – PRIVATE BANKS GROUP

Variables	Components		Communalities	
	1	2	3	
Liquid Assets to Working Funds	0.984	-0.076	0.064	0.978
Government Securities to Assets	0.963	0.200	-0.087	0.975
Interest Expended to Working Funds	0.959	-0.031	0.058	0.925
Cash Deposit Ratio	0.958	0.229	0.036	0.971
Interest Earned to Working Funds	0.946	-0.154	0.117	0.932
Approved Securities to Assets	0.922	-0.262	-0.021	0.919
Net NPA to Net Advances	0.881	0.118	-0.353	0.915
Credit Deposit Ratio	-0.853	-0.491	0.067	0.974
Debt Equity Ratio	0.840	0.270	-0.139	0.798
Non-Interest Expenses to Working Funds	-0.832	-0.403	0.246	0.915
Priority Sector Advances to Total Advances	0.824	-0.192	-0.177	0.746
Fixed Assets to Working Funds	0.806	0.499	-0.030	0.900
Provisions and Contingencies to Total Assets	-0.510	-0.348	0.507	0.638
Borrowings to Total Assets	-0.314	0.863	-0.224	0.894
Other Assets to Working Funds	0.068	0.753	0.327	0.679
Capital Adequacy Ratio	0.462	0.632	0.471	0.835
Net Profit to Working Fund	0.170	0.205	0.810	0.726
Non-Interest Income to Working Funds	-0.382	-0.010	0.795	0.778
Eigen Values	10.828	2.670	1.999	
Variance (%)	60.157	14.836	11.105	

Source: Data calculated from Statistical Tables Relating to Banks in India, R.B.I., Mumbai Issues of relevant years

In the case of second factor the components comprise of 3 variables such as “Borrowings to Total Assets”, “Other Assets to Working Funds” and “Capital Adequacy Ratio”. Factor III has the following variables such as “Net Profit to Working Fund” and “Non-Interest Income to Working Funds”.

Factor 1, being the dominant variable, explains the variations in eighteen variables considered for the study in terms of profitability. These three factors taken together could explain 86.09 % of the variations in the profitability of banks. This shows that no individual factor can be solely responsible for the variations in the profitability in the banks; it is a combination of different factors which are associated with the profitability. The importance of a given factor for a given variable can exactly be expressed in terms of the variations in the variable that can be accounted for by the factor which accounts 86.09 %. Since, it can be seen that the first factor accounts for only 60.16 % of variation in the variable set. Second factor accounts for 14.84 % and third factor with 11.11. All the three factors taken together could explain as much as 86.09 % of the variations in the variables associated with profitability. Remaining factors which do not constitute are about 13.961 %.

Analysis of Empirical Findings

SBI and Associate Banks

Factor 1, being the dominant variable, explains the variations in eighteen variables considered for the study in terms of profitability. These three factors taken together could explain 90.58 % of the variations in the profitability of banks. This shows that no individual factor can be solely responsible for the variations in the profitability in the banks; it is a combination of different factors which are associated with the profitability. The importance of a given factor for a given variable can exactly be expressed in terms of the variations in the variable that can be accounted for by the factor which accounts for 90.58 %. Since it can be seen that the first factor accounts for only 52.74 % of variation in the variable set, second factor accounts for 26.12 % and third factor with 11.72. All the three factors taken together could explain as much as 90.58 % of the variations in the variables associated with profitability.

Nationalized Banks Group

Factor 1, being the dominant variable, explains the variations in eighteen variables considered for the study in terms of profitability. These three factors taken together could explain 96.04 % of the variations in

the profitability of banks. This shows that no individual factor can be solely responsible for the variations in the profitability in the banks; it is a combination of different factors which are associated with the profitability. The importance of a given factor for a given variable can exactly be expressed in terms of the variations in the variable that can be accounted for by the factor which accounts for 96.04 %. Since it can be seen that the first factor accounts for only 62.43 % of variation in the variable set, second factor accounts for 25.22 % and third factor with 8.4. All the three factors taken together could explain as much as 96.04 % of the variations in the variables associated with profitability.

Private Banks Group

Factor 1, being the dominant variable, explains the variations in eighteen variables considered for the study in terms of profitability. These three factors taken together could explain 86.09 % of the variations in the profitability of banks. This shows that no individual factor can be solely responsible for the variations in the profitability in the banks; it is a combination of different factors which are associated with the profitability. The importance of a given factor for a given variable can exactly be expressed in terms of the variations in the variable that can be accounted for by the factor which accounts for 86.09 %. Since it can be seen that the first factor accounts for only 60.16 % of variation in the variable set, second factor accounts for 14.84 % and third factor with 11.11. All the three factors taken together could explain as much as 86.09 % of the variations in the variables associated with profitability.

Conclusion

Banking sector is the most prominent sector in India. The factor analysis is adopted to identify how many variables are associated with the first factor. The research has concluded that banking sector has to take greatest care on the variables which pertain to profitability. The various analyses have been used to study the profitability and various tests have been applied to know the factors and bring out the variables. Nationalized Banks Group associated with profitability was positioned at the top followed by SBI Banks Group. All the banking groups have to take necessary steps to improve the overall performance of the banking sector. However, according to the results found in this study, following recommendations are suggested for the banking sector.

- Reluctance of banks in lending matters. The system of narrow banking should be avoided.

Narrow banking means hesitating on the part of banks to be more open on lending money on business aspects.

- Reduction in Interest rate, extension of Installments, banks itself joining the board of company, bank auditing directly the transactions which can directly eliminate fraudulent dealings. Thus, banks become stakeholder of company.
- Banks can adapt to an easier way of operations like treasury management instead of conventional banking approach. The treasury operation here could be exchange of money where as banks should concentrate more on the productivity factor which help the economy flourish.

Abbreviation /Acronyms

- SBI Group – State Bank of India Group

References

- Afroza Parvin, M. S. (2010). Satisfaction of Debit Card Users in Bangladesh: A Study on Some Private Commercial Banks. *Journal of Business and Technology (Dhaka)*, 5 (2), 88-103
- Athanoglou, P., Brissimis, S., Delis, M (2008). Bank-Specific, Industry-Specific and Macroeconomic determinants of bank profitability. *Journal of International Financial Markets, Institutions and Money*, 18(2), 121-136.
- Barth, J., Caprio, G., Levine, R. (2004). Bank regulation and Supervision: What works best? *Journal of Financial Intermediaries*, 13, 205-248.
- Barros, C., Ferreira, C., and Williams, J. (2007). Analyzing the determinants of performance of best and Worst European banks: A mixed logit approach. *Journal of Banking & Finance* 31, 2189-2203.
- Chechet, I. L. & Olayiwola A.B. (2014). Capital Structure and Profitability of Nigerian Quoted Firms: The Agency Cost Theory Perspective. *American International Journal of Social Sciences*, 3 no.1, 139-158.
- Gerlach, S., Peng, W. & Shu, C. (2004). Macroeconomic conditions and banking performance in Hong Kong: A panel Data study. *Hong Kong Monetary Authority Memorandum*, April.
- Guru, B. J., Staunton & Balashanmugan. (2002), Determinants of commercial bank profitability in Malaysia. *University Multimedia Working Papers*.
- Hsiao, C. (2003). *Analysis of Panel Data*, Cambridge: Cambridge University Press (Econometric Society monograph No. 34).
- Hsiao, C. (2005). Why Panel Data?, *Singapore Economic Review*, Vol. 50(2), pp. 143- 154.

- Hsiao, C. (2006). Panel Data: Advantages and Challenges, IEPR Working Paper 06.49, Institute of Economic Policy Research, University of Southern California
- Maiyaki, A. A. (2011). Factors Determining Bank's Selection and Preference in Nigerian Retail Banking. *International Journal of Business and Management*, 6 (1).
- Nsambu K.F.(2014) . Factors affecting performance of commercial Banks in Uganda: a case for domestic commercial banks. Proceedings of 25th international BusinessResearch Conference 13-14 Jan ,2014. .
- Saira, J., Jamil, A., Khalid , Z & Abdul G. (2011) . Determinants of bank profitability in Pakistan: Internal Factor Analysis .*Mediterranean Journal of Social Sciences*, 59- 78.
- Safiek Mokhlis, H. S. (2009). Commercial bank Selection : Comparison Between Single and Multiple bank Users in Malaysia. *International Journal of Economic and Finance*, 1 (2), 263-273.
- Shaher, Kasawneh and Salem (2011), The Major Factors that Affect Banks' Performance in Middle Eastern Countries, *Journal of Money, Investment and Banking* ISSN 1450-288X Issue 20 (2011), © EuroJournals Publishing, Inc. 2011, <http://www.eurojournals.com/JMIB.htm>
- Oladele, P.O., Sulaimon, A.A. &Akeke, N.I. (2012).Determinants of Bank Performance in Nigeria. *Internal Journal of Business and Management Tomorrow*, 2(2), 1-4.
- Olweny, T.,&Shipo, T.M.(2011). Effects of Banking Sectorial Factors on the Profitability of Commercial Banksin Kenya.*Economics and Finance Review*, 1(5) 1-30.
- World Bank (2013).*World Development Indicators*, New York: Oxford University Press.
- Zouari, A (2010). Efficient Structure versus Market Power: Theories and Empirical Evidence. *International journal of Economics and Finance*. 2(4) 151-166