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Title: Data Envelopment Analysis Modelling for efficiency Optimization in Indian Banking Industry

This study throws light onto the performance of the public and private sector banks both for pre and post crisis period. The study covers 46 Indian commercial banks for the period 2005 - 2012. The study had carried out an efficiency optimization modelling with different models using DEA. Also sensitivity analysis has been carried out to verify the appropriateness of selected input and output variables. The ranking of efficient banks along with inefficient banks has also been obtained using Anderson and Peterson model of DEA, which further helps in classifying the banks in to different clusters. This study has also verified the robustness of the results obtained from DEA technique using post-DEA analysis carried out by using Jack-knifing analysis. Further there is ample scope of research to extend this study for future research. The Study is capsulated into ten chapters.

Chapter 1 gives overview of the global banking, need of the study structures and brief methodology. Chapter 2 provides the important concepts of the financial and banking systems, evolution, structure role of banking in Indian economy which serves as a background for conducting the empirical analysis of bank efficiency. Chapter 3 describes the concept of efficiency and performance measures and alternative methods of measuring efficiency. Chapter 4 describes the workings of the DEA algorithm, application, advantages and limitations of DEA. Chapter 5 provides the brief literature review and published research studies on banking efficiency at national and international level with limitations of the present research. Chapter 6 explains the research methodology which includes the research problem, research design, sampling size, sample period, tools, techniques and software adopted to measure efficiency. Chapter 7 deals with the efficiency of banks based on ratio analysis for the period 2005-2012 based on an index of efficiency. Chapter 8 deals with efficiency optimisation modelling using DEA. Different models are framed with different specifications of

input and output variables. The appropriateness of selected input and output variables in terms of discriminatory power of the model has been checked and tested on the basis of a sensitivity analysis for each model. Chapter 9 illustrates the results obtained by an output-oriented CCR, BCC models of DEA, on the selected set of input-output specification model to obtain measures of TE, decomposed into the product of PTE and SE. It deals with the further analysis of DEA to determine the nature of returns to scale and sources of inefficiency using slack analysis and impact of global crisis on the efficiency. Further Jack-knifing analysis, has also been carried out to check the overall robustness of the results. Also the ranks are assigned to all the efficient and inefficient banks on the basis of super-efficiency scores using “Anderson and Peterson model”. Chapter 10 provides a summary of the study, findings and discussion of results, implications, and directions for future research. It concludes with the suggestive remarks.

DEA study revealed that PSBs are leading over private sector banks while large private sector banks outperformed over PSBs large banks and operating optimally. Also DEA results indicates that Indian banks were least affected by global crisis. Finally, results of technical efficiency scores and efficiency index comparison of small medium and large shows similar ups and downs trends with slight variation in all the years.

Thus, this research offers many suggestions including bringing the change in strategies for better performance, consolidation for changing position in the marketplace, targeting different types of customer base, changing product portfolio and so on for overall performance of the banks.