

## Applications of Bi-lateral DEA and Hierarchical DEA in Professional Services



**Prof. Chandan Kumar Jha<sup>1</sup> and Amit Sachan<sup>2</sup>**

<sup>1</sup>Operations & Analytics, SOIL SOBD Manesar, Haryana, India

<sup>2</sup>Operations Management, IIM Ranchi, Jharkhand, India

**Purpose:** This research work focuses on applications of advanced data envelopment analysis methods to evaluate the efficiency of professional services in the context of higher educational institutions (HEIs). The research study also explores the importance and impact of “establishment period” and “geographical locations” on the efficiency of HEIs.

**Design/methodology/approach:** After reviewing the past literature, we have considered eight input/output variables related to HEIs and used bilateral and hierarchical data envelopment analysis (BDEA & HDEA) models to analyze the impact of establishment period and locational variables (determinants of efficiency) on overall efficiency of HEIs.

**Findings:** Teaching and research efficiency in Indian business institutions differ significantly. The outcomes, nevertheless, indicate that business schools founded during the period from 1990 to 2000 exhibit greater efficiency, as predicted by the bilateral and hierarchical DEA models. One could contend that the institutes were able to rapidly transform into centres of excellence due to the period's concurrence with the opening of the Indian economy and a period of rapid development. Due to the advantageous proximity of economic centres to business colleges, it has been observed that establishments situated in tier-1 cities operate with greater efficiency.

**Research implications:** The results of this research possess the potential to assist policymakers in their deliberations concerning the distribution of diverse incentives and resources. In addition, these results will provide guidance to decision-makers regarding the process of benchmarking these business institutions.

**Originality/value:** This study is one of the limited number of research endeavours that examine the performance evaluation of business institutions across multiple categories of decision-making units, using bilateral and hierarchical DEA models

**Keywords:** DEA, Business Schools, Higher Education, Performance Evaluation, Hierarchical DEA, Bilateral DEA

### Biography:

Chandan Kumar Jha: He joined SOIL school of business design as Assistant Professor in Operations area on 10th March 2022. He has a total of 5 years of work experience in academic works & research. He holds a B.tech degree in Mechanical Engineering (B.P.U.T Rourkela), M.tech in Industrial Engineering & Management (IIT Dhanbad), & Ph.D (Thesis Submitted) in Management from IIM Ranchi. He has presented his research works at various national and international conferences such as Society of Operations Management (IIT Kanpur, 2019), IEOM Dubai (2020), IEOM [Singapore (2021), Delhi (2023)], The OR Society Annual Conference, University of Southampton, 2021).

Amit Sachan: He is currently working as an Associate Professor in Operations Management area at the Indian Institute of Management (IIM) Ranchi. He holds a B.Tech. Degree in industrial Engineering from IIT Roorkee and is also a Fellow from Management Development Institute (MDI) Gurgaon. He has published articles in journals such as IJPDLM, IJPPM, International Journal Services and Operations Management, Computers in Human Behavior, Asian Case Research Journal, International Journal of Services Technology and Management and Journal of Cases on Information Technology. His teaching, research and consulting interests are focused on services operations management and E services.