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# Quality and Rankings of Non- Minority Technical Institutions by Using Peer Weight Through DEA Approach

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**Abstract**

This paper describes the Quality Education and Rankings of 34 Non-Minority Technical Institutions under JNTUH through Data Envelopment Analysis by using Peer Weight. We present DEA as an alternative tool for benchmarking and ranking the assignment of decision-making units (organizations and organizational units). The method applies a multiple input and output variables approach which is a clear advantage to other approaches using simple performance ratios. The empirical part of the paper adds to international findings. It employs DEA as a suitable measure to distinguish between efficient and less efficient departments to rank them according to their performance and to reveal their improvement capacities.

**Keywords:** DMUS, DEA, Quality Education, Rankings, Peer Weight, Peer Count.

## INTRODUCTION

Ranking is the only one in the world to assess national higher education systems, and meets a long-standing need to shift discussion from the ranking of the world's best universities, to the best overall systems in each country. Quality assessment has become one of the most prominent issues in discussions about higher education, both within the academic world and in higher education policy circles. While those issues have gained particular attention in recent years due to some structural changes in higher education, we have to keep in mind that higher education and science have always had an intrinsic relationship to quality and excellence. The overall scenario of higher education in India does not match with the global Quality standards. Hence, there is enough justification for an increased assessment of the Quality of the country's educational institutions. Traditionally, these institutions assumed that

Quality could be determined by their internal resources, viz., faculty with an impressive set of degrees and experience detailed at the end of the institute's admission brochure, number of books and journals in the library, an ultra-modern campus, and size of the endowment, etc., or by its definable and assessable outputs, viz., efficient use of resources, producing uniquely educated, highly satisfied and employable graduates. This view of determining Quality in higher education, popularly termed as the "value-addition" approach, does not measure the competencies students develop through the courses offered.

**PEERS OF FIRMS AND SLACKS ASSOCIATED WITH DEA**

DEA is based on the assumption of convexity, which states that for any two points are feasible, their convex combination is also feasible. This means that for two observed DMUS lying on the frontier one can prove that their convex combination is feasible and also lies on the frontier. Based on this assumption, DEA compares actual firms to virtual firms that are the weighted combination of actual firms.

Peers & Peer Weight: For solving the peers of DMUS input technical inefficient, we use the following linear constraint is

$$\sum_{j=1}^{n} \lambda_j X_{ij} \leq \lambda X_{io}$$

Such that $\lambda_2 x_{i1} + \lambda_2 x_{i2} + \ldots\ldots\ldots + \lambda_n x_{in} \leq \lambda x_{io}$ ( i= 1,2 …m)

For an inefficient DMU its intensity parameter is $\lambda^*_k = 0$

$\mathbf{DMU_O = DMU_K}$

$\lambda^*_j > 0$ for some $j \neq k$

Efficient DMUS are for which $\lambda^*_j > 0$ and are role models. Their practices are best practices for an inefficient $\mathbf{DMU_O = DMU_K}$.

The sum of the peer weights of inefficient DMUS can be calculated by using the following expression

$$\lambda^* = \theta = \lambda_j x_{1j} + \lambda_j x_{2j} + \ldots\ldots\ldots + \lambda_j x_{mj} \qquad j = 1,2,\ldots\ldots\ldots n$$

**3. RANKINGS OF DMUS**

Ranks will be allotted based on peer count. The Efficient DMUs will be awarded ranks based on their peer count. Efficient DMU with highest peer count will be awarded first, the next highest will be second as it follows. The present peer count has been ranked in the following ranks

| Firm | Peer weights | Peer Count | Ranks |
|---|---|---|---|
| **DMU 1** | **0.202, 0.179, 0.448, 0.225** | **0** | |
| **DMU 2** | **1.000** | **35** | **1** |
| **DMU 3** | **0.121, 0.635, 0.265** | **0** | |
| **DMU 4** | **0.087, 0.289, 0.121** | **0** | |
| **DMU 5** | **0.204, 0.534, 0.121, 0.004** | **0** | |
| **DMU 6** | **0.761** | **0** | |
| **DMU 7** | **0.042, 0.580** | **0** | |
| **DMU 8** | **0.560, 0.492** | **0** | |
| **DMU 9** | **1.000** | **12** | **3** |
| **DMU 10** | **1.000** | **0** | |
| **DMU 11** | **1.000** | **0** | |
| **DMU 12** | **1.000** | **2** | **4** |
| **DMU 13** | **0.313, 0.328, 0.064** | **0** | |
| **DMU 14** | **0.383, 0.338, 0.061, 0.005** | **0** | |
| **DMU 15** | **0.062, 0.407, 0.557** | **0** | |
| **DMU 16** | **0.502, 0.234, 0.002** | **0** | |
| **DMU 17** | **1.000** | **0** | |
| **DMU 18** | **1.000** | **0** | |
| **DMU 19** | **1.000** | **13** | **2** |
| **DMU 20** | **0.297, 0.534, 0.077, 0.150** | **0** | |
| **DMU 21** | **0.655, 0.437, 0.005** | **0** | |
| **DMU 22** | **0.399, 0.171, 0.175, 0.073** | **0** | |
| **DMU 23** | **0.120, 0.363, 0.158** | **0** | |
| **DMU 24** | **0.421, 0.160, 0.072** | **0** | |
| **DMU 25** | **0.200, 0.059, 0.334** | **0** | |
| **DMU 26** | **1.000** | **0** | |
| **DMU27** | **0.137, 0.689, 0.028** | **0** | |
| **DMU28** | **0.395, 0.184** | **0** | |
| **DMU 29** | **1.000** | **0** | |
| **DMU 30** | **0.022, 0.388, 0.506** | **0** | |
| **DMU 31** | **1.000** | **0** | |
| **DMU 32** | **1.000** | **0** | |
| **DMU 33** | **1.000** | **0** | |
| **DMU 34** | **0.062, 0.236, 0.204, 0.063** | **0** | |

The Non- Minority Institutions, the peer count for DMU 2 is 35. It appears in the peer list for maximum number of times. It is considered as role model, for 35 inefficient DMUS that's the reason it has been assigned rank 1. Similarly DMU 19 has the next highest peer count i.e., 13 and awarded rank 2 and the next ranks 3 and 4 are DMU 9 and DMU 12.

## DISCUSSION AND CONCLUSION

Quality assessment has become one of the most prominent issues in discussions about higher education, both within the academic world and in higher education policy circles. While those issues have gained particular attention in recent years due to some structural changes in higher education, we have to keep in mind that higher education and science have always had an intrinsic relationship to quality and excellence. The search for scientific knowledge and discovery in higher education is a striving for excellence, characterized by a long tradition of evaluation and peer.

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