Paper Title: *A decision model for ranking Asian Higher Education Institutes using an NLP-based text analysis approach*
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1 Summary

1.1 Motivation

Selecting the ideal higher education institute is a current challenge due to the proliferation of institutions with impressive facilities. This complexity necessitates a decision model based on Natural Language Processing (NLP) and Multiple Criteria Decision Making (MCDM) methods. The proposed model aims to simplify the identification process by considering various criteria.

1.2 Contribution

This paper presents several key contributions, including the development of a decision model for selecting the best higher education institute based on multiple criteria. The model incorporates NLP-based text analysis to extract and format information from diverse sources. The identified criteria are organized into main and sub-criteria, with consideration given to both subjective and objective weight assignment methods. Additionally, an objective function is defined to generate ranking scores for the selected alternatives.

1.3 Methodology

The process involves data preprocessing, converting textual data from the NIRF website into numerical values using tokenization in NLP. Criteria are selected and organized into main and sub-criteria, followed by the construction of a data matrix. Criteria weights are calculated using CRITIC and Rank centroid methods. Ranking grades are generated through TOPSIS by combining sub-criteria matrices into a main criteria matrix. The final scores are produced using an objective function, and ranks are determined based on these scores.

1.4 Conclusion

The NIRF framework, established by the Government for ranking higher education institutes, considers various factors such as infrastructure, research, placements, societal impact, and individual growth. To address subjectivity in evaluations, a decision model utilizing NLP extracts data from the NIRF website for analysis. The model uses CRITIC, TOPSIS, and Rank order centroid methods to rank institutes by sub-criteria importance, overall grades, and main criteria weights. Results closely align with expert and NIRF rankings.

2 Limitation

2.1 First limitation

A significant drawback of the decision model is its effectiveness limited to smaller datasets. While the proposed system aligns well with NIRF website rankings and expert opinions, its performance needs validation with a larger dataset.

2.2 Second limitation

Applying artificial intelligence and optimization techniques can enhance the precision of predictions. Additionally, it is possible to create a universal decision model applicable across diverse application domains, accommodating any number of conflicting criteria

3 Synthesis

The paper addresses the challenge of identifying the best institute for higher education in the current education system, considering the complexity arising from the existence of numerous institutes with extraordinary infrastructural facilities. The use of extensive criteria, NLP-based text analysis, and MCDM methods opens avenues for future research and development in decision-making processes across various domains.