

**AN ALTERNATIVE APPROACH OF SUPER EFFICIENCY SLACK-
BASED MEASURE IN HYBRID INTEGER AND NON-DISCRETIONARY
OF DATA ENVELOPMENT ANALYSIS FOR EVALUATION OF
COMMUNITY COLLEGES**

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Abstract

a superior non-parametric approach called Data Envelopment Analysis (DEA) is explored. Since those factors are both uncontrollable and integer-valued, in addition to the existing non-integer valued of inputs and outputs, any classical DEA model is not able to properly measure their efficiency. As a result, this research developed an alternative two-stage approach of super efficiency slack-based measure in hybrid integer values and non-discretionary factors. The approach first dealt with hybrid integer requirements and non-discretionary factors. Then, these requirements and factors were integrated into a two-stage approach of super efficiency slack-based measure. The measures of the proposed approach deal with discretionary hybrid integer input saving-output surplus and input excesses-output shortfalls. The new model with all factors is tested to examine the efficiency of 39 Malaysian community colleges. For further robust results, the ideal model was identified through sensitivity analysis. Its empirical findings showed that more than half of the community colleges are super-efficient. However, most efficient colleges are relatively weak-efficient, while the rest are inefficient. In addition, the consistency of the results was realized using external validity. The overall performance has provided evidences that the proposed models have been successfully formulated and implemented in an effective manner. The proposed models are able to provide new insights for decision makers in community colleges to discriminate among the efficient and inefficient colleges in order to improve their performance.

Keywords: Data Envelopment Analysis, Hybrid integer-valued data, Non-discretionary factors, Super efficiency slack-based measure, Malaysian Community Colleges