A b s t r a c t

An alternatve approach of super efficiency slack-based measure data envelopment analysis has been pro- posed to make the projection of an efficient decision making unit strongly-Pareto efficient. The approach however did not examine the simultaneous effect of non-discretionary factors and integer requirements on efficiency measures. To obtain more accurate efficiency measures, this paper proposes a two-stage approach of super efficiency slack-based measure in non-discretionary factors and mixed integer require- ments. Both new factors and requirements were first integrated into the existing approach. The optimal solution of the proposed approach was then obtained by transforming its fractional form to a linear form. Thus, the scalar measures of the proposed approach can now deal directly with discretionary mixed inte- ger input saving-output surplus and discretionary mixed integer input excess-output shortfall. The prac- ticability of the proposed approach was tested using empirical data of Malaysian community colleges