

A Six Sigma and DEA approach for learning outcomes assessment at industrial engineering programs

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Abstract

This research assesses the performance of 89 industrial engineering degrees in Colombia. The proposed approach articulates the Six Sigma concept of quality with the efficiency assessment from data envelopment analysis. The data used correspond to the standardised test taken by university students in Colombia in their last year of training (SABER_PRO). The input variables used for the Six Sigma metrics are quantitative reasoning, critical reading, citizen competencies, English and written communication. The output variable is the learning outcome, 'formulation and evaluation of projects'. The study's findings show that universities with institutional quality accreditation have a higher level of compliance than non-accredited universities. Also, private universities have a higher level of compliance than public universities. Regarding the data envelopment analysis model results, the average level of efficiency of the universities determined by the CRS, VRS, and performance to scale models is 93%, 90%, and 92%, respectively.

Keywords

Six Sigma, data envelopment analysis, DEA, predictive evaluation, higher education

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