

# School's academic performance determinants: A two-stage analysis

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## Abstract

The purpose of this paper is to identify the key factors that impact schools' academic performance through a two-stage analysis based on a sample of secondary schools in Tunisia. In the first stage, we use the Directional Distance Function (DDF) methodology to deal with undesirable outputs. In the second stage we apply a machine learning approach to identify and visualize variables that are associated with a high school performance. The first stage analysis shows that only 21.90% of schools are efficient and with the given resources, they could improve their students' educational performance by 15.6%. Regression trees results show that the most important factors associated with higher performance are school size, competition, class size, parental pressure and proportion of girls. We notice that school location has no impact on school efficiency.

**Keywords:** Machine Learning, Decision Trees, Efficiency, Education, Data envelopment Analysis, Directional Distance Function