

## Assessment of Student Pass Rate Based on Correlation and Regression Models

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**Abstract.** This paper presents a case study exploring the use of correlation and regression models to evaluate and predict the promotion rate of students at the Technical University of Moldova, a public higher education institution in the Republic of Moldova. Static correlation models are used to examine the relationships between academic performance and results achieved throughout the years of study. While linear and logistic regression models are applied to estimate the prediction of student promotion and successful graduation. The paper highlights the importance of these tools in identifying relevant factors influencing academic success and in developing effective educational strategies to improve promotion rates and reduce the risk of university dropout.

Evaluating and predicting student promotion rates is an important process for higher education institutions, as it provides valuable insights about academic performance, the quality of the educational process, and the factors influencing student success. Correlation and regression models are statistical tools that help identify key factors affecting promotion rates and contribute to the development of effective strategies for improving academic performance.

The research objectives are to identify key factors influencing student promotion (e.g., demographic data, prior academic performance, academic engagement), develop and apply regression models to predict

promotion probability, and accurately interpret correlation coefficients to gain relevant data and insights.

The correlation models examined include admission performance vs. promotion rate and academic engagement vs. promotion and graduation rates.

The regression models studied are linear regression and logistic regression.

These correlation and regression models were applied to historical datasets containing information on students' admission performance, academic engagement, and achievements throughout their studies.

As a result, the following valuable insights were gained for optimizing the study process:

- Key factors with the most significant impact on the promotion rate were identified;
- Logistic regression was used to estimate the probability of student promotion based on their academic history.

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