# Covid-19 Impact on Altman's Z-Scores of Bankruptcy Prediction: The Case of Moroccan Listed Companies

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## Abstract

This paper aims to determine whether the bankruptcy risk of Moroccan listed companies -measured by the original Z-score of Altman for publicly held companies and modified models (Z"-score and Z-EMS score specific to emerging markets)- has experienced a significant impact following the Covid-19 pandemic. This article also studies the ability of these three versions of the Z-score to reveal key patterns of companies' financial distress over the economic downturn driven by the Covid-19 pandemic. To do so, a quantitative approach is used based on descriptive statistics, means comparison tests and logistic regression. The data is derived from the financial reports of companies listed on the Casablanca Stock Exchange. The results highlight a significant negative impact of the Covid-19 pandemic on the original Altman Z-score of bankruptcy prediction. It is explained by the fact that, unlike Altman's modified models, the original model includes the asset turnover ratio and the market debt-to-equity ratio, which have proven their strengths in detecting the financial downturn induced by the Covid-19 pandemic. This result is also confirmed by logistic regression which proves that the original Altman model is the most accurate for predicting business failure. The results of this paper may serve as a basis for regulatory bodies, policymakers, and companies in developing early warning tools of companies' risk of failure and resilience strategies specially regarding the Moroccan context. Therefore, this research can be considered, as the first one in the Moroccan context, to conduct a critical analysis of the ability of the different Z-score's versions to reveal the risk of companies' failure especially in the context of a crisis.

## Keywords

Bankruptcy prediction, Altman, Z-score, Z"-score, Z-EMS score, Covid-19.

**JEL Classification:** G11, G33, H12, M41.