

INTISARI

MODEL KOMBINASI SERIAL DENGAN OPTIMALISASI ALGORITMA GENETIKA UNTUK PREDIKSI *FINANCIAL DISTRESS*

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Saat ini, investor perlu memutuskan perusahaan mana yang akan diinvestasikan dengan melakukan prediksi kesulitan keuangan untuk mencegah kerugian. Studi sebelumnya telah membagi rasio keuangan (FRs) menjadi atribut jangka panjang (LT) dan jangka pendek (ST) menggunakan pendekatan stacking ensemble, sementara studi lain menambahkan fitur seperti Beneish M-score untuk meningkatkan prediksi. Terdapat area abu-abu pada fitur LT yang sulit membedakan distress dan nondistress, namun dapat ditingkatkan dengan fitur tambahan seperti Beneish. Penggunaan kombinasi serial berpotensi memanfaatkan area abu-abu ini, yang belum dijelajahi oleh studi sebelumnya. Dalam penelitian ini, digunakan model kombinasi serial terkini dengan base-learner yang diterapkan pada set fitur berbeda. Ambang batas dalam kombinasi serial dioptimalkan secara adaptif menggunakan algoritma genetika. Dengan data 362 perusahaan Taiwan, model ini menunjukkan hasil sebaik stacking ensemble sebagai baseline, sambil menawarkan ambang batas terpilih yang memberikan interpretabilitas lebih dalam mengeksplorasi fitur tambahan. Hasil ini menunjukkan biaya misklasifikasi kompetitif serta analisis dampak perusahaan untuk merekomendasikan arsitektur yang tepat.

Keywords: *financial distress prediction*, *kombinasi serial*, *features handling*, *optimalisasi model*, *Algoritma Genetika (GA)*

ABSTRACT

ADAPTIVE SERIAL COMBINATION MODEL OPTIMIZED USING GENETIC ALGORITHM IN IMPROVING FINANCIAL CRISIS PREDICTION

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Nowadays, investors need to decide which companies to invest in by performing financial distress predictions to prevent loss. Existing studies have considered treating distinct sets of categories, such as splitting the financial ratios (FRs) into long-term (LT) and short-term (ST) attributes using a stacking ensemble approach, and another study incorporated an additional set of features such as Beneish M-score using stacking for improvement. From these studies, there exists some specific gray area from LT features that is difficult to distinguish between distress and nondistress, which can be helped using additional features such as Beneish to predict. Utilising serial combination is potentially able to implement the existence of the gray area which existing study has not explored. In this study, a state-of-the-art serial combination model is used where each base-learner is implemented with distinct sets of features. In addition, the thresholds in the serial combination are optimized adaptively using a widely-used optimization algorithm which is the genetic algorithm. Using 362 Taiwan companies data, the novel model can achieve results as good as the stacking ensemble classifier as baseline while providing selected thresholds which allow interpretability to explore further additional features. The results have been provided with competitive misclassification costs and companies impact analysis to recommend the suitable architecture.

Keywords: financial distress prediction, serial combination, distinct features, model optimization, Genetic Algorithms (GA)