

A Multicriteria Pre-Selection Framework for Stock Investment Using the FITradeoff Method and Fundamental Analysis

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Abstract

Selecting stocks in financial markets requires evaluating a large number of alternatives under multiple conflicting criteria, such as profitability, indebtedness, liquidity, and risk. Without a structured decision support method, this process is prone to cognitive bias and inconsistency. This study addresses this challenge by applying the FITradeoff (Flexible and Interactive Tradeoff) method to the pre-selection stage of a broader investment portfolio construction framework. FITradeoff is a multicriteria decision analysis method grounded in the Multiattribute Value Theory that elicits scale constants (weights) through partial preference information, avoiding the cognitive burden of precise indifference judgments required by classical tradeoff procedures. Instead, the decision maker responds to tradeoff comparisons between consequences, and the method progressively narrows the feasible weight space using linear programming until a consistent ranking of alternatives emerges. The method was applied to 75 stocks from the Brazilian Ibovespa index, organized by market sector, using eight fundamental criteria: Price-to-Earnings (P/E), Price-to-Book (P/B), Dividend Yield, Return on Equity (ROE), Net Debt-to-Equity, Trading Liquidity, Price Volatility, and Corporate Governance level. Results show that top-ranked stocks are not necessarily those with the best individual indicators, but those presenting the best compensatory tradeoffs aligned with the decision maker's preference structure. The sector-based rankings produced by FITradeoff constitute a rational, transparent, and reproducible shortlist of assets that feeds directly into the subsequent portfolio optimization stage of the framework, where capital allocation is determined based on risk-return objectives.

Keywords

FITradeoff, Multicriteria Decision Analysis, Stock Pre-Selection, Fundamental Analysis, Investment Decision Support.

Biography

Rafael de Azevedo Palhares is a doctoral candidate in Production Engineering at the Federal University of São Carlos (UFSCar), Brazil. He previously served as a faculty member in the Production Engineering undergraduate program at the Universidade Federal Rural do Semi-Árido (UFERSA), Campus Angicos, where he taught courses in Probabilistic Modeling and Production Systems Simulation, Operations Research II, Fundamentals of Production Engineering, and Integrated Production Systems Design. He holds an M.Sc. in Production Engineering from the Federal University of Rio Grande do Norte (UFRN) and a B.Sc. in Production Engineering from UFERSA. He is the developer of the Weighted Fuzzy Reference Ideal Method (W-FRIM), a multicriteria decision-making method published in the journal *Expert Systems with Applications*.