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prof. Francisco Saldanha-da-Gama

Editor-in-Chief

Computers & Operations Research

September 17, 2025

Subject: Submission of Manuscript for Publication

Dear Professor Saldanha-da-Gama,

We are pleased to submit our manuscript, " Bootstrap Enhanced Scenario Optimization, a Case Study in Two-Echelon Logistics for Large-Scale Retail," for consideration in *Computers & Operations Research*. This paper contributes to the field of distributionally robust optimization by presenting a novel theoretical framework that integrates forecasting and stochastic optimization. We posit that this framework offers significant potential for enhancing research and management practice and stimulating further studies within the operations research community.

The manuscript introduces a novel approach to scenario-based optimization. This approach leverages maximum entropy bootstrap with bagging—a potentially underutilized yet robust and readily defensible forecasting method—to yield a parsimonious and efficient solution. While demonstrated within a real-world logistics context, the methodology possesses broader applicability and offers a compelling alternative to prevailing AI-based methods. A computational study validating the approach's scalability is included.

The manuscript fully conforms to the journal's submission guidelines. It builds upon prior work presented at the SOCO 2023 conference (Maniezzo & Zhou, 2023), but it contains a completely different approach that significantly advances the state-of-the-art by introducing entirely novel forecasting and optimization methodologies. This results in a substantially enhanced analysis of the two-echelon logistics problem, extending its implications for inventory management. This work has not been previously published nor is it currently under review elsewhere. We affirm that no generative AI was used in the preparation of the manuscript and that all ethical guidelines of the journal were meticulously followed.

We appreciate your consideration and look forward to your feedback.

Sincerely,

Vittorio Maniezzo, University of Bologna

Livio Fenga, University of Exeter Business School

*abstract*

We present a data-driven approach to scenario generation based on empirical distributions derived from univariate data series forecasts. The method is demonstrated using a real-world case study of supply chain optimization at the tactical level, focusing on the final stage of two-echelon logistics support for a large retail chain. The problem is modeled as a single-stage stochastic problem and framed as a prescriptive analytics case.

Our approach uses Maximum Entropy Bootstrap (MEB) with bagging for univariate time series forecasting to predict demand scenarios that incorporate the inherent uncertainties of short, non-stationary time series data. These scenarios are then integrated into a deterministic equivalent model to optimize inventory allocation across distribution centers. The result is accountable and optimized prescriptions for inventory quantification and warehouse floor sizing.

Our findings, which are also validated against an extended benchmark set of artificial instances, demonstrate the significant value of integrating MEB-enhanced forecasting with scenario-based optimization. They also provide the basis for a forecast-and-optimize framework, called Bootstrap Enhanced Scenario Optimization (BESO), whose generality extends beyond the specific use case.

*(i) brief description for the author’s choices of 5 reviewers and 3 Associate Editors*

*Associate editors*

We believe that the three following Associate Editors would be appropriate to review the manuscript

* Pippo
* Pluto
* Paperino

*Reviewers*

The following scientists have expertise in the topics covered by our manuscript. We have no conflicts of interest with any of them, as they have not worked with us in the 5 years prior to submission. They will ensure a competent and unbiased review.

* Ahmed Kheiri, University of Manchester, ahmed.kheiri@manchester.ac.uk
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