**Response to the comments and suggestions from the reviewers**

We would like to take this opportunity to express our sincere gratitude to the reviewers and the associate editor for their extremely valuable comments and suggestions to improve the quality of our work.

We have revised the manuscript in accordance with the comments/suggestions from all the reviewers and associate editor. All the changes made in the revised paper are presented in Red. We provide a discussion of modifications with respect to the comments in this letter.

Colour code: Comments, reply and explanation, modification in the draft.

Comments

* This paper proposes a robust optimization method for procurement portfolios. The proposal is based on mixed integer linear programming (MILP) and considers the lead time and the costs associated with each factory. To address the uncertainty of future forecasts, some deterministic variables are replaced with sampled data, which is a common practice in robust optimization. Experimental results show that the proposed method outperforms both the baseline method and the deterministic method.

Reply: Thanks a lot for the comment.

* I have some comments and questions regarding the abstract. In my opinion, the abstract should provide the overview of your proposal to clarify your contributions. The abstract should clearly state the meanings of “Risk-Aware,” “Multiperiod,” and “Uncertainty” as used in the title. “Risk-aware” and “Uncertainty” seem to have the duplicated meanings, both indicating the uncertainty of future forecasts. Does “Risk-aware” in the title refer to robust optimization as used in the abstract?

Reply: In this context risk aware corresponds to robust optimization.

Multiperiod corresponding to the fact that we consider a discrete time setting where ordering and other decisions are updated in every timeslot. The planning is conducted over a planning horizon.

Uncertainty refers to uncertain parameters. This results in risk of missing demand that is explicitly addressed through the optimization problem.

We modify the abstract as follows:

Cash flow optimization in terms of inventory management to strike a balance between risk of demand miss and having extra inventory is incrementally challenging because of uncertain demand, price, lead time etc. This paper introduces an innovative Robust Optimization technology to address these challenges, providing optimized recommendations on order timing, supplier selection, and order quantities with cost modelling of inventory and demand backlog risk considering multiple time periods, dynamically.

* Although the title contains the word of “Complexity,” I cannot identify your contribution to addressing the “Complexity” after reading the main document. “Complexity” seems to refer to the situation where the optimization problem should consider the lead time and the costs associated with each factory. Is it particularly complex for the MILP framework? If so, the main document should clarify the differences of the “Complexity” between your problem setting and a typical MILP problem setting, as well as how your proposal overcomes this complexity.

Reply: In this paper complexity is an attribute of the supply chain. We do not make any contribution to analyze/reduce the algorithmic complexity to solve the MILP problem. This is clarified with the following modification in the modified draft:

Even when all the parameters associated with the inventory management is known the planning is challenging. The uncertainties associated with various parameters such as demand makes procurement optimization inherently complex, even though it is critical for financial performance. Additionally, at times the uncertainties can even be very dramatic which further aggravates the issue [2]. In this paper we address the issue of this complexity of the supply chain.

We have also added the following to reiterate this point:

In this paper we do not discuss about the complexity of the above optimization problem, the complexity appearing in the title corresponds to the supply chain with uncertain parameters.

* The abstract should clearly state the meaning of “Extreme.” Because this is a technical report, such an adjective should be mathematically and quantitatively defined. Can you distinguish “EXTREME Complexity and Uncertainty” from merely “Complexity and Uncertainty”? To solve such an “Extreme” problem, what contributions does your research make?

Reply: In this paper complexity is an attribute of the supply chain. We do not make any contribution to analyze/reduce the algorithmic complexity to solve the MILP problem. This is clarified with the following modification in the modified draft:

* I have one question about your experimental results. What causes the difference in the performance between the in-sample and out-sample experiments of your proposal, as described in Fig. 5? Equations (1) and (12) are optimization methods and seem to have no trainable parameters that can be used in the out-of-sample experiment.

The following are small comments regarding the writing.

* The lower left of the first page should include the affiliations of the authors and the email address of the corresponding author. Please refer to the template.
* In my opinion, Sections 2.4 and 2.5 should be included to a new section, such as “3. Results & Discussion.”
* The terms “insample” and “outsample” should be replaced with “in-sample” and “out-sample,” respectively.
* Some sentences are not easy to read due to a lack of commas; for example, the first sentence of Section 2.4.1.