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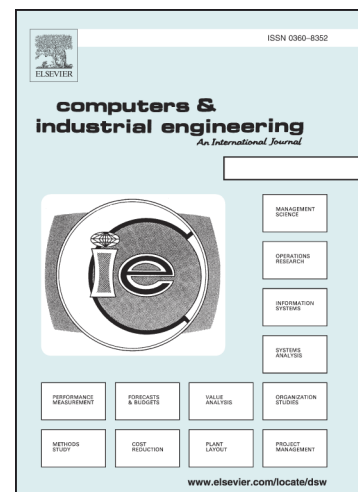
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A novel decision model based on mixed chase and level strategy for aggregate production planning under uncertainty: case study in beverage industry

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Abstract: The present study proposes a novel decision model to aggregate production planning (APP) decision making problem based on mixed chase and level strategy under uncertainty where the market demand acts as the main source of uncertainty. By taking into account the novel features, the constructed model turns out to be stochastic, nonlinear, multi-stage and multi-objective. APP in practice entails multiple-objectivity. Therefore, the model involves multiple objectives such as total revenue, total production costs, total labour productivity costs, optimum utilisation of production resources and capacity and customer satisfaction, and is validated on the basis of real world data from beverage manufacturing industry. Applying the recourse approach in stochastic programming leads to empty feasible space, and therefore the wait and see approach is used instead. After solving the model using the real-world industrial data, sensitivity analysis and several forms of trade-off analysis are conducted by changing different parameters/coefficients of the constructed model, and by analysing the compromise between objectives respectively. Finally, possible future research directions, with regard to the limitations of current study, are discussed.

Keywords: Aggregate production planning (APP); Uncertainty; Stochastic nonlinear multi-objective optimisation.

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