# Trade-off analysis for multi-objective aggregate production planning

ABSTRACT

Aggregate production planning (APP) determines the best way to meet forecast demand in the intermediate future, often from 3 to 18 months ahead, by adjusting regular and overtime production rates, inventory level, labor levels, subcontracting and backorder rates, and other controllable variables. However, the majority of APP models have cost-related objectives, whereas non-cost objectives are often sought by managers. In this study, authors try to minimize total costs and maximize customer service simultaneously. It is shown there is a trade-off between these objectives. Authors propose a linear model for aggregate production planning problem. Then, the two- phase method solution, which takes both objectives into consideration, is used as an alternative objective. By solving the model, it was found that minimizing one objective results in an average loss of about 20% in the other objective. The two- phase method solution, on the other hand, results in a loss of 8% from the furthest objective and 7% from the closest objective.