

ABSTRACT

The capability of material requirements planning (MRP) as a management information system for world class manufacturing is widely recognized. This study extends previous work by increasing the complexity of product structures and conducting sensitivity analysis on cost structures. For the more complex product structures introducing forecasting error into the master production schedule by positively biasing the forecast reduces total costs. Biasing forecasts is especially effective when stockout costs dominate carrying and ordering costs in the total cost structure. The cost structure sensitivity analysis shows that: (1) when shortage cost is reduced the cost curve related to underforecasting (forecast less than demand) shifts downward, and vice versa; and (2) when carrying cost is reduced the cost curve shifts downward. The magnitude of change related to overforecasting (forecast higher than demand) is greater than the magnitude of change related to underforecasting.

Keywords: Production and Operations Management, Material Requirements Planning, Systems Simulation