

# Utilizing Demand-Driven Materials Requirement Planning (DDMRP) to Enhance Inventory Management and Investigate the Influence of Strategic Inventory Positioning on Performance Evaluation- A Case Study of Company

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## ABSTRACT

With the advancement of time and the unpredictability of supply and demand, it has been unfavorable for businesses to conduct inventory management; nonetheless, inventory management is one of the most important factors in the survival of businesses. Due to the unpredictability of demand, Company A, the subject of this study, has been under pressure from high inventory amounts for quite some time. The unique buffer inventory management technique named as demand-driven materials requirement planning (DDMRP) was developed to address this issue. This study examined the importance of strategic inventory positioning for DDMRP by simulating the flows and establishing the same parameters for three experimental materials. Using 3, 18, 35, and 38-day decoupled lead times (DLT) for the delivery process, this study was conducted to determine the optimal strategic inventory positioning for Company A's delivery process and to investigate the differences in performance evaluation due to different strategic inventory positioning. The DLT for optimal strategic inventory positioning is 18 days. Due to the large minimum order quantity (MOQ), the flow index performance evaluation results cannot be compared due to their consistency. According to the results of the stability performance, the average rate of on-hand stability was 99 %, which represented the best stability performance. Based on the assessment of reliability performance, the average restocking program obtained a 93% compliance rate and was the steadiest. According to the performance evaluation of the individual inventory

amount, there would be no stock-outs and the average individual inventory amount would be the lowest. In comparison to a 38-day DLT, the variance can be up to 2.2 times greater. Experiments have demonstrated that the optimal inventory management performance is attained by selecting the optimal strategic inventory positioning for a variety of performance indicators, such as the stability of on-hand inventory, the reliability of restocking programs, and the amount of individual inventory.

Keyword: inventory management 、 Demand Driven MRP 、 strategic inventory positioning 、 decouple 、 performance appraisal