Abstract

Companies carrying out manufacturing operations possess market's demand satisfying objective. While carrying out such objective, companies also suppress their operations to minimum cost. The market's dynamic demand characteristic brought difference between accepted and forecasted demand to actual demand. This condition which reflects demand lumpiness is called nervousness. Nervousness affects inventory patternings, disturbing production schedule, disrupting material requirement planning, which also causes alteration of the total productional costs up to imagined figures. A solution that might be developed to cope with nervousness is the implementation of proper lot sizing rules. The Wagner-Whitin and Silver-Meal lot sizing rules were accommodative to dynamic demand environment, therefore establishing new material requirement planning capable of handling nervousness by proper procurement time and quantity.

The research studies the impact of implementing Wagner-Whitin and Silver-Meal lot sizing rules to nervous environment. Research were commenced by analyzing historical demand data, to discover the impact of nervousness to material requirement planning. Followed by calculating the makespan altered length, which is an added component to the total productional cost structure. Proceeding further is the implementation of the lot sizing rules to discover a better material requirement plan through procurement. The result given will be tested under simulation to prove whether the new system under new lot sizing rules is better than the previous by coordinating the inventory level – which is the decisive component of productional total cost – as distinctive parameter.

Simulation runs for 10 planning periods under 5 replications, brought conclusion that the new lot sizing rules reduces the average inventory units kept. The Silver-Meal Lot Sizing rule reduces average inventory up to 0.43% while the Wagner-Whitin Lot Sizing rule proves better to reduce average inventory up to 48%.

Keywords: Nervousness, Lot Sizing, Simulations, and Inventory.