

# THE OPERATING IMPACT OF PARTS COMMONALITY

## Abstract

This paper investigates the impact of between- and within-product parts commonality on the workload of a manufacturing firm using an MRP system. More specifically, we investigate the impact of several operational factors and their interactions with part commonality. We develop and validate a large simulation of an MRP system and integrate the generation of planned order releases with workload estimation on the shop floor. The results indicate that increasing parts commonality has positive effects in terms of average shop load but does lead to greater variability in terms of loadings as well as increasing system disruption. Further, we also find that the number of work centers significantly impacts the shop floor effects of commonality. Hence, although an increase in parts commonality results in less design effort and increased standardization, the negative effects of increasing commonality often appear on the shop floor. This points to a need for the effective management of parts commonality by assessing the tradeoff between strategic “benefits” and operational “costs”.

## Full citation:

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