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Improving the logistics of a constant order-cycle *kanban* system

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Abstract

Kanban systems are simple, effective means of improving production that are widely applied in practice. Based on the logistic process involved, kanban systems can be divided into constant order-quantity and constant order-cycle systems. The former has received much research attention, but the latter, also known as a milk run, has been relatively neglected. Further, most prior work has been based on deterministic data, which is an assumption often violated in practice. We present the case of a manufacturer of domestic water heating equipment where a constant order-cycle kanban implementation initially failed. A structured Define–Measure–Analyse–Improve–Control approach is adopted to improve the process. It was revealed that the failure was due to high variability in the logistic processes involved. Decreasing this variability resulted in a reduction of tardy replenishment routes from 50 to 3%; a reduction in the

route time coefficient of variation from 40 to 16%; and a reduction in the mean route time from 31 to 25 min. These improvements allowed one of three existing routes to be eliminated without any negative impact on replenishment. This led to financial savings through the elimination of two operators. The logistic process appears to have a significant impact on kanban performance. Consequently, kanban implementations should not only focus on the kanban system itself but also on the other processes involved. Future research should therefore explore how resources can best be allocated between the different aspects required for a successful kanban implementation.

Keywords:

Kanban systems | milk run | case study

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