An Application of Visual Management to Reduce In-House Material Handling Wastes in SMEs with High Product Variety and Low Volume

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Abstract

Small and medium-sized enterprises that are characterized by high-mix, low-volume, and highly variable production operations often have unstructured material movement processes that are prone to material handling wastes. These sub-optimal material handling systems are oftentimes a result of small and medium-sized enterprise’s limited resources. Current tools to assist organizations in reducing material handling wastes are resource intensive, complex, or too vague. Material handling wastes are defined in this research as: a) inappropriate material handling, b) operator search time, and c) inefficient forklift routing. To help small and medium-sized enterprises reduce material handling wastes it is hypothesized that tailored visual management systems 1) can be designed from the analysis of three material handling wastes, and 2) can yield a low resource intensive solution to assist small and medium-sized enterprises in reducing material handling wastes. In order to test these hypotheses, a methodology to design an ad-hoc material handling system is developed, tested via a case study, and validated via two alternate scenarios. Results show that ad-hoc visual management systems can be designed from low resource intensive analysis and are capable of increasing the efficiency of in-house material movements in small and medium-sized enterprises. The resulting methodology is expected to assist small and medium-sized enterprises in reducing in-house material handling wastes using visual management systems.

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