

Dynamic Performance-Evaluation Modeling of Reverse Logistics Systems
Implementing in Pallet-Rental Industries

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Abstract

Rapid growth of raw material usage has resulted in supply shortages and soaring prices worldwide, where eco-solutions become promisingly important and thus a trend. Under such a situation and a heavily competitive environment, enterprises desiring to remain current are required not only to enhance their competitiveness but, more importantly, to reduce their costs. Reverse logistics is a eco-strategy for reducing production cost; however, it accompanies with an even higher managerial counterpart. In this research, we establish a model in which prediction and decision supporting are conducted in order to greatly reduce managerial cost as well as increase performances. The model integrates a vendor manage inventory concept, the UHF RFID technology, a simulation system (e.g. eM-Plant) and a neural-based predicting component for achieving the goal of reducing managerial cost. With the proposed model, enterprises could determine the indices of recycling, production and scheduling, and therefore a dynamic approach for estimating shortages at each workstation can be accomplished, which could dramatically decrease the cost suffered from routing, inventory and resource allocations. Future work will be focused on optimization of the estimated indices, where a decision supporting system for reverse logistics could be accomplished.

Keyword : Reverse Logistics, VMI, Artificial Neural Network, RFID