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The Reduction of the Overall Cost of Pallet Reverse Logistics Activities Implementing Iot Technology Evaluated by Activity-Based Costing Model

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Abstract

Background: Producers, distributors, and retailers share a standard objective: optimizing logistic costs. Pallet management as a backbone of logistics and supply chain activities is essential to supply chain parties [1] [2]. To manage pallets efficiently, researchers have developed several pallet management strategies (PMS) which involves direct and reverse logistic models and also is one of the foremost activities in supply chain management.

Objectives: In this paper, we will focus on the pallet which has been a very important innovation in the logistics industry, it is are so widely used that we can locate them in nearly every warehouse or logistical operation scenario. Hence, this paper aims to assess the effectiveness of IoT technology on cost levels in three different PMS. The PMS can be seen in three scenarios namely (i) single-use expendable mode, (ii) buy-and-sell mode, and (iii) pallet pooling, its performances could be improved by an advanced tracking system based on the Internet of Things (IoT). During the last years, this technology is being widely applied in logistics such as manufacturing and distribution of physical goods, warehouse management, shipping operations, inventory management, and reengineering production lines.

Methodology: In this paper, the authors propose an effective model of activity-based costing (ABC) which calculates total activity costs and then aims to highlight the activities that mainly contribute to the overall cost of pallet management operation. The ABC model has been applied in several case studies concerning a logistic provider which has to evaluate its optimal operational management [3]. The model aims to support economic analysis on IoT implementation in pallet management according to the producer-distributor point of view.

Results, conclusions and future work: Therefore, this research addresses the concept of how IoT application is economically sustainable to cut back the overall cost of pallet management activities and its impact on the overall profitability.

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