

Reverse logistics system for WEEE: exploration of economic and environmental benefits

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Abstract

Waste of Electrical and Electronics Equipment (WEEE) is growing due to the short life cycles and to the random consumption patterns. These waste contain both hazardous and valuable materials which need a suitable management approach. Reverse logistics (RL) is a strategy to recover value from materials that have diminished it at any stage in the supply chain. This work is aimed at exploring the environmental and economic benefits of a RL system for the WEEE management at higher education institutions. Environmental benefits for decreasing the extraction of raw materials due to recovery and also for avoiding to dispose WEEE in the landfill. Industrial metabolism was used by applying the MET matrix (Materials, Energy, Toxicology) as a tool for the qualitative life cycle analysis. Economic benefits were considered like the income for the materials recovered and costs due to the resources allocated in the RL system activities. The results provided with a global vision of the inputs and outputs at each stage of the life cycle of the RL system for the WEEE management. The evaluation of inputs and outputs represent a key issue for decision making process related to a complex object of knowledge such WEEE management.

Keywords

Environmental and economic benefits, Reverse logistics, Waste of Electrical and Electronic Equipment, MET Matrix, Industrial Metabolism

Biography

Claudia Cecilia Peña Montoya Full time lecturer and researcher at Universidad Santiago de Cali Colombia, she is the head of the Master in Industrial Engineering. She earned B.S. in Industrial Engineering from Universidad Autonoma de Occidente, Colombia; Masters in Management from Lancaster University, UK; Specialist in Logistics

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