Abstract

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An enhanced method for core assessment in reverse logistics

Extension of used-product recovery strategies is increasing in both the industrial and service sectors. One of these successful strategies is remanufacturing due to its environmental, economical and social benefits. It aims to get the used products into an ?as good as new? condition. Remanufacturing is concerned with saving the initial value added to the raw material in producing a final product. The steady supply of used product is critical for remanufacturing as it clearly cannot proceed without it. The complexity of the remanufacturing process lies in the uncertainty in the timing, quality and quantity of used products that are collected through reverse logistics. The movement of used products from the consumer to the producer in the distribution channel is defined as reverse logistics. Through reverse logistics activities, the assessment of used products is important to the overall profitability of the remanufacturing process. The decision taken by dealer original equipment manufacturer for accepting rejecting the used product is based on suitability for remanufacturing. Due to the lack of assessment criteria and guidelines for the assessment process, the used product assessment may be erroneous and it often depends almost entirely on the inspector's experience. This research develops from two perspectives. First, the literature for the interaction between reverse logistics and remanufacturing is reviewed. Second, the industrial problem which is identified by investigating authorized dealers' sites of remanufacturing companies. Based on those perspectives, this research emphasizes the development of a prescriptive model for reverse logistics to remanufacturing in the heavy machine sector. This model focuses on the assessment/inspection process of the used product. The prescriptive model identifies the significant criteria for accepting a suitable core for remanufacturing through developing a method based on a weighting and rating concept. The major contribution of this research: ? developing a prescriptive model for reverse logistics to remanufacturing through developing a comprehensive method to: - identify the significant criteria for accepting the suitable core for remanufacturing. - enhance the assessment/inspection process for the used product. This thesis will be of interest to reverse logistics managers, core inspectors and remanufacturing companies. Also, researchers working in the fields of remanufacturing and reverse logistics will benefit from this research.