Abstract

Multi-criteria decision making (MCDM) is one of the most common activities in human society. It consists of selecting the optimal one from a set of available alternatives with respect to the predefined criteria or attributes. In this paper, a hybrid decision making approach integrating Analytical hierarchical process (AHP) operators into VIKOR is proposed for tackling multi criteria problems with conflicting and non-commensurable (different units) criteria. A manufacturer produces new products by using original components or by remanufactured components. The used products are collected by the manufacturer or the retailer or a third party logistics operator. Companies can no longer afford to treatment of recovered products. It needs to be a core
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capability within the supply chain organization. Understanding and properly managing the reverse logistics can not only reduce costs, but also increase revenues. It can also make a huge difference in retaining consumer loyalty and protecting the brand. Due to intricacies, considerable risks are involved in product recovery operations; therefore core competency and experience are prerequisite for successful implementation of reverse logistics process to Third-Party Logistics Providers (3PLPs). The selection of third-party logistics provider is an intriguing practical and research question. The objective of this work is to develop decision support system to assist the decision-makers in selection and evaluation of different third-party reverse logistics providers by Analytical hierarchical process (AHP) and Višekriterijumsko kompromisno rangiranje (VIKOR) methods. A real life case of a mobile manufacturing company is taken to demonstrate the steps of the decision support system.

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