

A Multiple-Criteria Decision Sorting Model for pharmaceutical suppliers' selection under mixed imperfect data

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Selecting and evaluating suppliers is a major concern in supply chain for any company. It is even more crucial in the pharmaceutical industry since delivering the right product to the right people at the right time requires specific conditions of storage and strict rules of validity. In this context, supplier's selection appears as a complex task that involves a variety of conflicting criteria such as quality, performance history, guarantee policies, productive capacity, price and time, among others. Therefore, many Multiple-criteria Decision Making (MCDM) methods were applied to solve the supplier's selection problem. However, most of them address only the ranking and choice problems. Besides, evaluating suppliers in regard to each criterion involves the presence of imperfect and heterogeneous information, i.e., qualitative and quantitative data as well as uncertain, imprecise or incomplete data. The objective of this paper is to propose a sorting MCDM model for pharmaceutical suppliers' selection under mixed imperfect data. The proposed model is based on the integration of the FlowSort and SMAA methods and Fuzzy theory. It allows pharmaceutical companies to develop systems to classify suppliers into categories, as actual and potential suppliers, in a context with multiple uncertainties and heterogeneous data information. The method is illustrated and validated using a supplier evaluation example.