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Applying modern data analytics techniques to the evaluation and selection of sustainable suppliers

The application of multi-criteria decision making (MCDA) methods has been well-established in solving supplier evaluation and selection problems as they have been the most widely used category of methods so far. However, the problem of sustainable supplier evaluation and selection (SSES) is much more complex due to the additional features/dimensions included in the decision (e.g. environmental and social evaluation/selection criteria of the supplier) as well as the relatively larger number of suppliers sustainable supply chains deal with on average. This makes the SSES problem more complex to the extent that raises concerns about the suitability and computational efficiency of MCDA methods to the SSES problem especially in the wake of the big-data era, which has found its way to supplier data. This gives rise to the need to explore different methods that are more fitting for solving SSES problems in terms of suitability to the decision making setting and computational efficiency. This paper tests the application of modern analytics techniques to the SSES problem and draws a comparison between their solution performance compared to that of standard MCDA methods solving similar problems. A novel data-analytics-based method for solving SSES problem is illustrated and suggested.