

# **A Decision Support System for Long-Term Supplier Selection Using Configurable Decision Criteria**

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## **Abstract**

Proper selection of suppliers is the primary focus of purchasing organizations in which the ultimate goal is to select the best supplier in terms of three popular decision criteria namely price, quality and on-time delivery. Nowadays, companies apart from the three aforementioned decision criteria use other factors in choosing the best supplier. Furthermore, in terms of the philosophy of JIT, long-term partnerships between the buyer and the supplier are preferred. The objective of this study was to come up with a decision support system that can take in configurable decision criteria for long-term supplier selection. The proposed decision support system is called the Supplier Selection Assistant or SSA which is composed of two functional modules: Configuration, and Supplier Selection. Verification of the system was done to determine the correctness of the solution algorithm. Test cases were randomly generated and MS Excel solver and TORA were used to solve the test cases. The same problems were solved using the proposed system, and results show that the solution of SSA was similar to the solutions of Excel and TORA. Validation of the SSA was done by comparing the common step by step processes of purchasing of six companies of different material purchases in terms of variety and volume. Results show that the common purchasing processes of the interviewed companies were similar to the methodology of SSA, and a majority of the criteria in purchasing can be accommodated by using SSA. Given this, SSA could be used as a purchasing tool to support purchasing managers in terms of supplier selection.