Abstract

Problem of vendor evaluation and selection has always been viewed as the most important responsibility of purchasing department and for such reason, received a great deal of attention from practitioners and researchers. This solution has always been a complex process as various criteria, known and half known are involved in making a decision. This work attempts to develop a rule based model, to evaluate the performance of vendors, supplying components and raw materials to a multinational organization engaged in designing, manufacturing and delivering a range of products covering various stages of electric power transmission and distribution system. To select the vendors, there is a need to rank all the potential vendors according to a performance measure because in this industry almost all items are outsourced from vendors and input material cost constitute almost 80% cost of the product. For such reason any organization is required to select suitable vendors who can supply input materials
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and components to the organization as per the need timely with right specification and requisite quantity.

This paper presents a hybrid model using analytic hierarchy process (AHP) and neural networks (NNs) theory to assess vendor performance. The model consists of two modules: Module 1 applies AHP using pair wise comparison of criteria for all vendors, In the process the importance of the criteria is also obtained using an iterative algorithm. Module 2 utilizes the results of AHP into NNs model for vendor selection. The results yield the best vendor and appropriate score to compare the performance of each vendor. Selection of alternative vendors also can be carried out by using the historical data. Validation of the entire developed algorithm has been carried out separately.

Reference

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Index Terms

Computer Science
Operational Research
Key words

Supply chain
Optimization
Vendor selection
Networking
method of AHP
neural network theory