Title:
Evaluation and ranking of suppliers of automotive parts by using data envelopment analysis and TOPSIS and value engineering approach.

Abstract:
Tending the economic and commercial environment to get competitive as well as high impact of suppliers on the organization's products and activities, reveal the desperate need for a realistic approach based on the manufacturers' competencies. The complexity and importance of deciding about selection of the suppliers reveal the necessity of providing a systematic, transparent method, based on the information and purchases records from suppliers, clearly. Of important factors to survive in today's competitive environment, is reducing the costs of production. Choosing the suitable suppliers can substantially reduce purchasing costs and increase the competitiveness potential of the organization, because in the most industries, the cost of raw materials and the product's components, cover the major proportion of the product's price. An organization in order to optimize the competitive field, should consider selection of suppliers as an essential part of its activities. In recent decade, how to determine the most suitable supplier has been considered as a strategic factor in the supply chain. Such quantitative and qualitative performance factors as quality, price, flexibility, and delivery time must be considered to determine the best supplier. The purpose of this study is to evaluate the performance as well as to rank the automobiles' components suppliers in the industrial park of AmirKabir; in this study, we have used the DEA method to evaluate and TOPSIS method to rank the suppliers. In addition, in this study, using the opinion poll and questionnaire done by senior management and staff personnel as well as the use of value engineering approach, the key variables to select the superior suppliers are chosen. Then, we collected information data for each variable and then using TOPSIS method and data envelopment analysis (DEA) as well as using software DEA and TOPSIS, the best and most reliable suppliers for the desired organization is elected. This study, in terms of objective is theoretical-practical and in terms of nature of data is quantitative. The methodology used in this study was a descriptive-analyzing, and according to data collected about the indicators used in the evaluation of producers, the research is descriptive. The results indicate that the inputs contain the quality and performance and outputs include the cost and most suppliers care delivery on time and customers satisfaction very highly.

Keywords:
performance evaluation, suppliers, DEA, TOPSIS, Value Engineering