A TAXONOMY AND REVIEW ON SUPPLIER SELECTION METHODS UNDER UNCERTAINTY

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ABSTRACT
Assessment of potentially competent suppliers and selection of the right one(s) is a vital component of supply chain management which has received wide attention in recent years. An extensive range of decision making methods have been suggested to handle the supplier selection problem by a large number of authors in this area. The supplier selection problem is often faced by ambiguity and vagueness in practice and very often decision makers express their preferences in linguistic terms instead of numerical values. So, this paper intends to review the literatures on multi-criteria decision making methods in uncertain environment. Thirty-eight international journal articles published between 2008 and 2011 have been surveyed for this purpose. The articles are analysed to summarize the existing methods and the most popular method is identified and presented in this paper. Finally, suggestions for future researches are proposed for academics and decision makers.

Keywords: Supplier Selection, Multi-Criteria Decision Making, Uncertainty

1. INTRODUCTION

Due to the recent agile improvement of network technology and economic globalization, purchasing management has come to play a critical role as a key to business success in supply chain management. One of the crucial challenges confronted by purchasing managers is the evaluation and selection of suppliers. Existing researches in the field of supplier selection have been applied multi-criteria decision making methods, such as analytic hierarchy process (AHP), analytic network process (ANP), artificial neural network (ANN), data envelopment analysis (DEA), fuzzy set theory, mathematical programming, technique for order preference by similarity to ideal solution (TOPSIS), and their hybrids. The supplier selection problem is often faced by ambiguity and vagueness in practice and very often decision makers express their preferences in linguistic terms instead of numerical values.

There are at least five journal articles reviewing the literature regarding supplier evaluation and selection models (Weber et al. 1991; Holt 1998; Degraeve et al. 2000; De Boer et al. 2001; Ho et al. 2010). Since these articles review the literature up to 2008, this paper extends them through a literature review and taxonomy of the 38 international journal articles which have been focused on uncertainty in supplier selection between 2008 and 2011. This paper presents a comprehensive review of literature to identify the existing supplier selection methods in uncertain environments and determine the most popular ones.

2. RESEARCH METHODOLOGY

For a review article that is prepared basically to locate the further research needs authentic sources of knowledge is considered important. A comprehensive reference of the academic literature on supplier evaluation and selection was