An Application of Multicriteria Analysis for ERP Software Selection in a Greek Industrial Company

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Abstract

This paper presents an application of multicriteria analysis in a large Greek company for the selection of an ERP (Enterprise Resource Planning) system. The limited time available in most of the companies for software selection, the inability to make fast but sound decisions on IT issues and the lack of technical expertise in ERP functionality often results in an undocumented or even irrational final decision. As a consequence, the purchase of expensive software ends up to be affected by issues such as personal acquaintances, sporadic information, fashion or intuition. Taking into account all the existing practical constraints in the Greek industry due to the limited existence of resources, a practical and easy-to-use methodological approach was developed, using the typical principles of multicriteria analysis for the software selection and implementer selection process. The objective of the approach is to provide an easy way to support the final decision in the selection problem in a documented manner. The practical application of the proposed approach is presented in a real case study of a Greek company, emphasising on the process, organisational and computational dimensions of the selection.

Keywords: Software Selection, Multicriteria Decision Aid, Business Processes, Case Study.
1. Introduction

Many companies that realise business process reengineering projects and reorganisation business plans or simply update their infrastructure in informative systems, face the critical decision of software selection, as a hot issue. The success of such reengineering projects is, at most cases, in direct relation to the selection and the implementation of the most suitable information system.

Companies, usually, do not have the available time to make the decisions that concern the selection of information systems and, often, the decision makers do not have the essential technical knowledge related to information technology. The result is that companies’ software selection is often superficial or undocumented and it is based on irrelevant factors such as the insufficient information, market trends and the intuition of managers. Multi-Criteria Decision Aid can effectively support the decision making process and the documentation of the final decision, providing the required transparency in the entire process.

Many academia researchers and practitioners internationally, have worked on the issue of software selection. Most of the proposed approaches are variants of the multicriteria analysis, trying to define the final value of every available selection based on a set of criteria. Various attempts towards the formulation of software selection problem (especially of production planning and control software) are reported by Wortmann (1984), Tatsiopoulos (1989, 1990), while Hoff and Virnich (1986), Hackstein (1990) and Hackstein and Virnich (1991) refer to the BAPSY methodology and to the related software as well, which produced positive results in software selection. At the same time, the difficulty of the companies in adopting complicated mathematical models which require lots of data, led many researchers and practitioners in designing less advanced models from the theoretical point of view, but easier and more effective from the practical one. Such models proposed by Geitner (1993) and Shemwell et al. (1992) for the definition and the scoring of the most appropriate functional specifications and Tatsiopoulos et al. (1998) for the selection of information systems in the aluminium industry. The software selection issue has been covered by many consultancy companies, but with doubtful results.

The selection of one among many software products for the accomplishment of specific business processes is the most typical from a series of problems that is called “software evaluation” [Vlahavas et al. (1999), Anderson and Chen (1997)]. Many other problems may arise, such as the decision whether to develop a new product or acquire an existing commercial product with similar requirements. On the other hand, software evaluation may have different points of view and may concern various parts of the software itself, its production process and its maintenance. Thus, software evaluation is not a simple technical activity, but a decision process where subjectivity and uncertainty are present without any possibility of arbitrary reduction. In recent years, research has focused on specific software characteristics, such as models and