Chapter 9
Project Portfolio Selection Using a D.E.A. Approach

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ABSTRACT

The project management area uses several techniques and tools to identify, select, monitor and manage the projects portfolio of the organizations. However, these techniques still present problems and difficulties which, sometimes, inhibit their use. Project Portfolio Management (PPM) is considered a problem of considerable difficulty and complexity, which requires its constant monitoring by the organization, according to the strategic guidelines chosen. Thus, this paper presents an innovative approach for selecting the portfolio of projects by using DEA, and the development of a set of generic indicators, to support the decision makers in considering multiple projects. Each decision maker can use all or some of the indicators proposed, thus each one’s knowledge, sensitivity and intuition are taken into account, namely for indicators such as risk perception, level of innovation, market clock speed, project’s complexity.

INTRODUCTION

Project management has been, over time, an area with tremendous growth and prominence within organizations. However, it presents problems and difficulties that require a careful analysis to tackle the complexities and peculiarities that commonly are associated with it (Yeo, 1993; Shou & Huang, 2010). Organizations continue to face considerable difficulties in meeting schedule and cost estimates. According to the 10th edition of the CHAOS report of Standish Group, almost 51% of all projects inquired in the survey fail in attaining the cost and schedule estimates and functionality requirements (Henry, McCray, Purvis, & Roberts, 2007). Furthermore, Mankins & Steele (2005) indicate that companies only perform 63% of their strategies potential value and Johnson (2008) reported that 66% of the organizational strategies are never implemented. It is evident that, somehow, the development of techniques and
their applications are far from converging, and the large corporations face numerous problems with this hiatus (Fernandes, 2004).

Today’s business environment is extremely complex and dynamic which requires making faster decisions, better allocation of the organizational scarce resources, and a clearer strategic focus (Elonen & Artto, 2003). Despite all the differences on markets, cultural environment, and organizational objectives, some changes are modifying the way business occurs, turning competitive advantages difficult to accomplish. In a global marketplace scenario, changes are constant and with variable amplitude. Organizations need to be alert to all movements to counter-answer and re-align themselves with the new market conditions (Amaral & Aratijo, 2009).

Cooke Davies, T. (2002) and Pheng & Chuan (2006) pointed that despite of several past studies carried out to assess the key factors that contribute to project success, those factors are not sufficient to foresee it, to the extent that projects are developed in a dynamic environment and can be positively and/or negatively influenced by a multiple nature of factors, which might limit their overall performance. As an example, the project manager leadership style (Turner & Müller, 2005; Van der Voet, 2014; Kissi, Dainty, & Tuuli, 2013), the relationship with the project team members (Mota, Almeida, & Alencar, 2009; Aga, Noorderhaven, & Vallejo, 2016) the managerial practices used (Chen & Lee, 2007; Eik-Andresen, Johansen, Landmark, & Sørensen, 2016), and the top management involvement (Hermano & Martín-Cruz, 2016) seem to be directly related to the project performance.

Müller, Martinsuo, & Blomquist (2008) demonstrated the existence of a positive relationship between associating the organizational strategy and the projects portfolio selection with the performance achieved. Other studies point to the projects prioritization as being a determining factor and key of success of the projects portfolio (Cooper, Edgett, & Kleinschmidt, 2001; Elonen & Artto, 2003). Others state that there is a positive influence between the projects portfolio performance and the organizational results obtained (Cooper, Edgett, & Kleinschmidt, 2004a,b; Killen, Hunt, & Kleinschmidt, 2008).

According to Archer & Ghasemzadeh (1999) the project portfolio is defined as a group of projects that compete for scarce resources and are conducted under the sponsorship or management of a particular organization towards the achievement of their strategic objectives. At the same time, Cooper, Edgett, & Kleinschmidt (2001) point out that the Project Portfolio Management (PPM) is a dynamic decision process, which requires continuous updating and information review to be able to select the best solution every time. Englund and Graham (1999) emphasize the importance of assessing, prioritizing and selecting projects to the portfolio based on the strategic direction of the organization. Thus, managers, face an utmost challenge of selecting the proper projects to the portfolio, pondering which projects have the greatest potential to create value to the organization (Menke, 1991; Chu, Hsu, & Fehling, 1996). Part of this challenge is divided in tackling the “right projects” and the other in “doing projects right”.

Elonen and Artto (2003) and Cooper, Edgett, & Kleinschmidt (1998, 2000) have identified, and pointed out, the common problems in project selection and portfolio management, faced by companies. So the following reasons can be related with the difficulties on managing, and on selecting, the proper projects to the portfolio:

1. **No Link Between Strategy and Project Selection:** Projects tend not to be fully related with the organization’s strategic objectives, which affects the organization overall performance;
2. **Poor Quality Portfolios:** The organizations, normally, do not have judicious criteria for selecting viable projects from half-baked ideas;
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