Chapter 7
Fuzzy Approach for Monitoring Projects Success in the IT/IS Industry

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ABSTRACT

There are many uncertainties that can influence the success of Information Technology (IT) and Information Systems (IS) projects. These are characterized to be highly complex and risky, among other issues. These features explain the high rate of failures in this kind of projects. So, if practitioners want to prevent undesired outcomes in their IT/IS projects, they have to continuously manage the risks existing in them. In this way, practitioners should monitor risks impacts on IT/IS projects success. However, current methods used for it, have several limitations that can be overcome by employing artificial intelligence techniques. Based on the fuzzy theory, this chapter proposes the use of fuzzy approaches to model risks effects on IT/IS projects success measures. Its applicability is presented through an illustrative case. The findings highlight that the method proposed give project managers insights into the causes of failure or delay of their IT/IS projects, in order to develop effective strategies.

DOI: 10.4018/978-1-4666-0170-3.ch007
INTRODUCTION

Worldwide companies develop information technology (IT) projects to maintain and incorporate the most innovative technologies in their information systems (IS). These projects have certain characteristics that make them different from the rest of engineering projects and increase the chances of their failure. These characteristics must be considered when developing and managing any IT/IS project. However, the management of complex IT/IS projects is challenging even when measures of success are known and understood. The practical management of IT/IS projects beyond the theories for success finds significant difficulties as follows (Rodriguez-Repiso et al., 2007; Working Group from the Royal Academy of Engineering and the British Computer Society, 2004):

- IT/IS projects are often poorly defined, codes of practice are frequently ignored, and in some cases not many lessons are learned from past experience.
- Market pressures demand delivery in the shortest time frame even if it may result in a lower quality product.
- The rapid pace of technological progress in IT/IS hinders the expertise in a particular technique and creates a culture where the use of tools not completely tested is acceptable and commonplace.
- The tendency to write new software code to perform well-established functions decreases reliability.
- IT/IS projects involve numerous iterations and continuous interaction between everyone involved in design and implementation. Their work is highly interdependent which necessitates efficient communication within the project team.
- IT/IS projects contain a greater degree of novelty than other engineering projects. In particular, IT/IS projects related to product innovation development are extremely complex, risky and expensive endeavour (Cormican & O’Sullivan, 2004).

The main characteristics are classified in seven categories (Peffers & Gengler, 2003; Rodriguez-Repiso, et al., 2007; Salmeron & Herrero, 2005): abstract constraints, difficulty of visualization, excessive perception of flexibility, hidden complexity, uncertainty, tendency to software failure, and goal to change existing business processes.

From the late 1970s to the late 1990s, research and practice were dominated by three classical methodologies for managing success in information systems: critical success factors (CSF) (Rockart, 1979), technology acceptance model (TAM) (Davis, 1989), and DeLone and McLean success model (DeLone & McLean, 1992), among others. In the last few years, new methodologies for identifying, classifying and evaluating success factors in IT/IS projects emerged. These are critical success chains (CSC) (Peffers & Gengler, 2003), analytic hierarchy process (AHP) (Salmeron & Herrero, 2005) and delphi method (Nasir et al., 2011), to name a few.

However, when analyzing failures of complex IT/IS and engineering projects, it seems clear that the widely accepted assessment criteria for measuring projects success cannot guarantee success when IT/IS projects are concerned. In fact, as indicated in Kwak and Stoddard (2004), the nature of software projects creates many risks that must be managed diligently. Practitioners should handle risks factors effectively to avoid failures and increase the likelihood of project success (Aloini et al., 2007). A proper risks management helps to practitioners to be aware of the real situation of the project, their problematic aspects and potential causes existing of IT/IS project failure (Iversen et al., 2004). They will thus resolve more efficiently the threats’ IT/IS projects. Otherwise, improper risks management lead the carrying out of evitable error and the appearance of potential problems, which make the achievement of IT/