Chapter 17
Methodology for Risk Assessment and Costs Associated with Risk Occurrence in E–Government Projects

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ABSTRACT

The main purpose of this chapter is to emphasize the problem of e-government project risks and to introduce a methodology for risk assessment and calculation of costs associated with risk occurrence in e-government projects based on Bayesian networks. The proposed methodology presents a new approach to the assessment of risks and costs related to e-government project risks. As such, it facilitates the holistic decision making procedure for project managers. The application of Bayesian networks in the context of risks and risk related costs reduces the level of uncertainty in e-government projects and provides a graphical structure of risks and corresponding costs. Finally, the sensitivity analysis has also been integrated into the methodology and its results can have a significant impact on the overall project management quality.

INTRODUCTION

E-government is a very complex and extensively researched concept. Various aspects of its implementation have already become imperative in the

modern society since it is strongly related to the efficiency and proactiveness of the public sector and the competitiveness of the economy on the one hand, and the quality of life on the other. It can therefore be expected that various e-government

initiatives, trends and projects will continue to gain more importance in near future. Recognizing the advantages of e-government initiatives (Sharifi & Manian, 2010; Tung & Rieck, 2005), many countries around the world already provide a significant number of online services in the public sector. However, beside success stories there are also unsuccessful attempts to implement electronically supported public services, which indicates that the success of e-government projects is not guaranteed and that factors that can threaten the success of e-government development cycles need to be carefully considered. Heeks (2008) states that 85% of e-government projects in developing/ transitional countries partially or totally fail, while Capati-Caruso (2006) estimates that the rate of failure of e-government projects in industrialized countries is 60%. The costs of such failed information technology projects are extremely high (McManus & Wood-Harper, 2008), which usually impacts negatively upon public perception. This is one of the reasons why such projects have to be thoroughly planned and managed. Such a claim is reflected in the research of numerous authors who have focused on success factors of e-government projects in the pre-implementation phase (Sharifi & Manian, 2010) and during implementation (Sharifi & Manian, 2010; Rose & Grant, 2010; Sagheb-Tehrani, 2011) that were aimed to contribute to better understanding of e-government development lifecycles. Beside project and domain specific success factors the interaction among which is unique for every project, there are also aggregated indicators of societal and organizational readiness for ICT application and usage. These include the e-government Readiness Index (UNPAN, 2005), Networked Readiness Index (Kirkman, Osorio & Sachs, 2002) and maturity models (Carnegie Mellon, 2012), all of which negatively correlate with the level of project riskiness. Investigation into these indicators can be helpful in risk analysis although their scope is too wide to support detailed risk assessment for a particular project. However they can be interrelated

with specific projects' risks and contribute to the overall risk assessment.

It is important to note that, beside financial aspects, risk analysis in e-government projects comprises additional dimensions related to general public values, political priorities, international contractual obligations, etc. (Kefallinos, Lambrou & Sykas, 2009). This is reflected in the concept of e-government service value, which refers to the "value created by the government for citizens and private sector through the provision of public services, passing of laws, and government activities" (Kelly, Mulgan & Muers, 2002; Karunasena & Deng, 2012). The concept of public value and its evaluation has been recognized as an important issue in e-government projects by many authors (Karunasena & Deng, 2012; Esteves & Joseph, 2008). Therefore it is widely recognized that the value of public sector e-service is by large not represented in the Return On Investment (ROI) calculation, but in other, less tangible, factors. According to (Booz Allen Hamilton, 2002), there are six essential factors that have to be measured to fully capture and understand the value of a public (government related) e-service. These are: (1) direct user value, (2) social value, (3) government financial value, (4) government operational value, (5) strategic/political value, and (6) risk. Another study (Rotchanakitumnuai, 2008) established that the sixth factor, perceived risk, is a crucial determinant that endangers or decreases the e-government service value. Whitmore (2010) states that perceived risk as a limiting factor in e-government adoption and success, which they identified in their research, is also supported by other authors. In order to avoid e-government projects cancelation or failure and increase the total value of services flowing from the government to citizens and the private sector (Karunasena & Deng, 2012; Alford & O'Flynn, 2008; Kelly et. al., 2002; CIO Council, 2002), the planning of e-government projects should not be a trivial task and risks assessments, among other things, have to be very thoroughly conducted.

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