

Chapter 13

Evaluating the Quality Attributes of E-Government Websites

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ABSTRACT

The purpose of this chapter is to address the issue of e-government website evaluation in terms of providing a decision making framework. Built around the concepts of website evaluation and e-government, the proposed framework deploys Multi-Attribute Decision Making (MADM) methods and Fuzzy Sets Theory to overcome the subjectivity and inaccuracy that characterizes the conventional models for e-government website quality assessment. The framework offers also the possibility of performing comparisons with regard to the overall quality of different implementations either at national or international level. The chapter presents a holistic and scalable approach to e-government website evaluation and it is anticipated to be of great interest to both researchers and practitioners requiring an understanding of the factors influencing the quality of e-government websites or allocating resources to the relevant implementations respectively.

INTRODUCTION

The Internet and particularly the World Wide Web has evolved for both private and public organizations all over the world from a basic tool of displaying information into a means of provid-

ing added value services to customers. However, while an effective presence on the web appears as a competitive advantage for private organizations, for public organizations it constitutes rather an obligation toward citizens. As public authorities at all government levels around the world attempt to embrace the digital revolution and place a wide

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range of materials on the web, from mere information to actual online services for the convenience of citizens, expectations of the performance levels that e-government websites should provide have been considerably raised, bringing up the issue of their quality evaluation.

To address this issue, this chapter provides a decision making framework for evaluating and comparing e-government websites that is based on Fuzzy Sets Theory and MADM methods. The proposed framework constitutes a holistic approach and is characterized by scalability.

The discussion in this chapter proceeds as follows. Section 1 is an introduction to the issues addressed in this chapter. Section 2 provides an overview of current evaluation approaches as well as an insight to fuzzy numbers and MADM methods, which are the tools adopted to establish the evaluation framework. Section 3 sets the grounds of the framework by identifying the individual factors that compose the overall quality of an e-government website and may thus serve as evaluation criteria. Section 4 presents the evaluation framework, which is based on the afore-mentioned tools, while Section 5 exposes the basic guidelines for performing comparisons with regard to the overall quality of different implementations through the use of MADM methods. Section 6 presents an alternative approach for establishing a highly dynamic comparison framework, using Fuzzy Inference Systems. Lastly, the chapter concludes with a summary of ideas presented.

BACKGROUND

This chapter presents a decision making framework for evaluating and comparing e-government websites. For this purpose, in this section we first discuss the current website evaluation approaches and specify the reasons for adopting tools such as MADM methods and Fuzzy Sets Theory in order to establish the evaluation framework. We then provide fundamental information on the

aforementioned tools, so that the reader acquires a basic understanding of the relevant concepts before proceeding with the evaluation methodology.

Literature Review

Although there is already an extensive literature on website evaluation (Alexander & Tate, 1999; Bauer & Scharl, 2000; Nielsen, 2000), only lately have there been attempts to address the issue under the prism of specific business sectors and website categories. Within this frame, a few attempts have also been made recently to propose and use specific metrics for assessing the websites of public authorities. Despite that several different criteria and metrics are utilized, it is obvious that the authors generally agree on a specific set of concepts such as usability, content, technical characteristics, online services and citizens' participation (Bauer & Scharl, 2000; Fei, Yao & Yu, 2008; Peters, Janssen & Van Engers, 2004; Soufi & Maguire, 2007; Wang, Bretschneider & Gant 2005).

Moreover, recent research points out that evaluating the quality of an e-government website is a process of organizing in a hierarchical structure (Alshawi, Alahmary & Alalwany, 2008; Fei et al., 2008; Peters et al., 2004) multiple criteria that serve as surrogates to deduce the overall quality and weighting them appropriately; that what differs is the method of assessment adopted. Nevertheless the methods used to define the weights of the selected criteria are usually not clarified or the weights are simply determined based on the researchers' own personal opinion (Panopoulou, Tambouris & Tarabanis, 2008). In other cases, the proposed schemes rely on citizens to define such weights through questionnaires (Barnes & Vidgen, 2004).

Panopoulou et al. (2008) propose a holistic approach for evaluating the websites of public authorities that applies three different levels of detail (axes, factors and metrics) and to define the overall score of each website they employ for

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