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Assessing the success of e-government systems: An employee perspective

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ABSTRACT

By using information system (IS) success-based approaches from the perspective of government employees, this paper investigates the success of e-government systems. Structural equation modeling (SEM) techniques were applied to data collected by a questionnaire from 154 employees of e-government systems in Serbia. In this study, we empirically evaluated the model for measuring the success of e-government systems consisting of constructs from the updated DeLone and McLean IS success model coupled with the demographic conditions. Seven out of ten hypothesized relationships between the seven success variables are significantly supported. The findings of this study can be used to assess the success of e-government systems from the standpoint of the government employees.

1. Introduction

Electronic government (e-government) is defined as the use of computers and the Internet by government of information and communication technologies to deliver information and services to citizens, businesses, and other stakeholders [1]. In the past few decades, it received increased attention because many governments realized the importance of using information and communication technologies to provide efficient and transparent government [2]. In addition, technology helps governments to improve services and assists in building trust between governments and businesses, and between government employees and the general public [3]. An essential part of research concerning e-government deals with ways to evaluate and measure the success of e-government systems [2,4]. A number of empirical studies have tested the updated information system (IS) success model to assess different ISs [2,5–21]. Although IS success models have been receiving much attention among researchers, little is known about the success of the public website systems [22]. Recent studies in e-government have examined the role of demographic characteristics and their importance in the prediction of the use of technologies [1,23,24]. Hence, we still do not have a clear understanding of how demographic conditions (DCs) drive the e-government system success model [1].

Studies that deal with the assessment of e-government systems' success, using IS-success-based approaches, are scarce [2,25,26]; to the best of our knowledge, no research has been conducted to assess e-government systems from the perspective of government employees as primary users. The empirical results of previous studies need to be verified in different user populations and more empirical tests should be conducted to generalize the model validation in the context of e-government [2], especially considering DCs of the population [1].

This study presents an empirically validated model for measuring the success of e-government systems from the employees' perspective. We used the updated DeLone and McLean (D&M, 2003) IS success model in our research. The data were collected from 154 municipal government employees of e-government systems in Serbia using a questionnaire and then were analyzed. The employees were end users of central government applications. Seven out of ten hypothesized relationships between the seven success variables are significantly supported. The findings of this study can be used to assess the success of e-government systems from the standpoint of the government employees who use e-government applications as a tool for everyday operations.

The remainder of the paper is organized into five sections. Section 2 presents a literature review about e-government systems and IS success modeling. The section also proposes a conceptual model and hypothesis. Section 3 describes the materials and methods. Section 4 presents the result of measurement and structural modeling. Section 5 includes a discussion of theoretical and managerial implications of e-government systems. Finally,

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Section 6 provides some concluding comments and limitations along with directions for future research.

2. Background and related work

2.1. E-government systems

E-government has emerged as a popular catchphrase in public administration to cover functional areas such as service delivery, interactivity, decentralization, transparency, and accountability [27] and also to offer a one-stop shop for all stakeholders. Technology plays a central part in the development of the public sector; it can act both as an enabler and as an obstacle to sustainability [28]. There are three broad classifications of e-government systems: government to government (G2G), government to citizen (G2C), and government to business (G2B; [2]). Snead and Wright [29] found that most of the studies that investigated e-government systems are focused on interaction with citizens, or G2C systems. In addition, citizens receive the widest array of services from the e-government applications [30]. Implementation of e-government systems and appropriate applications require acquisition of new skills from the government employees [31]. Thus, it is important to further investigate G2C e-government systems, not only from the user perspective but also from the perspective of public employees.

The introduction of e-government systems has brought operational benefits for local municipalities and their employees, including the reduction in paperwork, the provision of continuous service availability to customers, a reduction in response time, and a reduction in error rate [32]. Each stakeholder has different interests and objectives that may have an impact on the success and take-up of the e-government system [33]. As e-government is a type of IS [25] and its success is a complex concept, it needs to be assessed with multidimensional factors [2]. Although research on e-government systems' success is in its infancy, general research on IS success has been conducted for almost three decades. Previous studies that investigated e-government systems' success focused on different models. Previous studies investigated factors focusing on experience of the users and meeting user needs in combination with system factors, as well as DCs and their influence on the use of the IS.

The technology acceptance model (TAM) by Davis [34] explained why some ISs are accepted by users better than others. One of the first successful attempts to apply TAM on e-government was made by Carter and Bélanger [35]. They presented a parsimonious model of e-government adoption, which converged on three frameworks (i.e., TAM, diffusion of innovation, and trustworthiness). Shareef et al. [36] applied TAM on e-government focusing on experience of the users and meeting user needs and proposed the e-government adoption model (GAM). However, the COBRA (Costs, Opportunities, Benefits, Risks Analysis) framework [33] focused only on user satisfaction (US). Similarly, another group of authors investigated e-satisfaction from the point of behavioral (i.e., trust and awareness), technical (i.e., security and privacy), and economical (i.e., quality of public services) aspects that affect the success of e-government systems [37].

Previous empirical studies have confirmed the determining effects of DCs in e-government system use [1,23,24,38]. Nam [1] grouped demographic characteristics (i.e., age, sex, job position, residential, and partisanship) and found determining effects on the use of e-government portal in the case of sex, income or job position, residential categories, and partisanship. Drawing on empirical results, Venkatesh et al. [24] found that gender, education, and income significantly influence e-government portal use. Another study conducted in Malaysia found a positive relationship between demographic characteristics (i.e., age, gender, income, education, and ethnicity) and intention to use e-government applications [23].

Acceptance and US alone, however, are not the same as success, although acceptance and US of an e-government system are necessary elements for measuring success [39]. Thus, this research focuses only on the D&M IS success model as a measurement for e-government assessment in combination with demographic characteristics as predictors of e-government system use.

2.2. D&M IS success model

The D&M IS success model was first introduced in 1992 [40]. The taxonomy consisted of six interdependent constructs (Fig. 1): information quality (IQ), system quality (SQ), system use, US, individual impact, and organizational impact [40]. During the first 10 years, many IS researchers critiqued the original D&M model and proposed suggestions for modification or extension of the original model [41–43].

Ten years later, DeLone and McLean [44] published an updated model of IS success, which offered an additional quality component called "service quality," (SV) as suggested by Pitt et al. [41], and merged the individual and organizational impact into one construct called "net benefit," (NB) as proposed by Seddon [43]. System usage continued to be a dependent variable. The authors explained this as follows: "Use must precede 'user satisfaction' in a process sense, but positive experience with 'use' will lead to greater 'user satisfaction' in a causal sense" [44]. Thus, the categories of the updated D&M (2003) IS success model are as follows: system, information, SV, system use, US, and NBs (Fig. 2). The updated model consists of six interrelated and

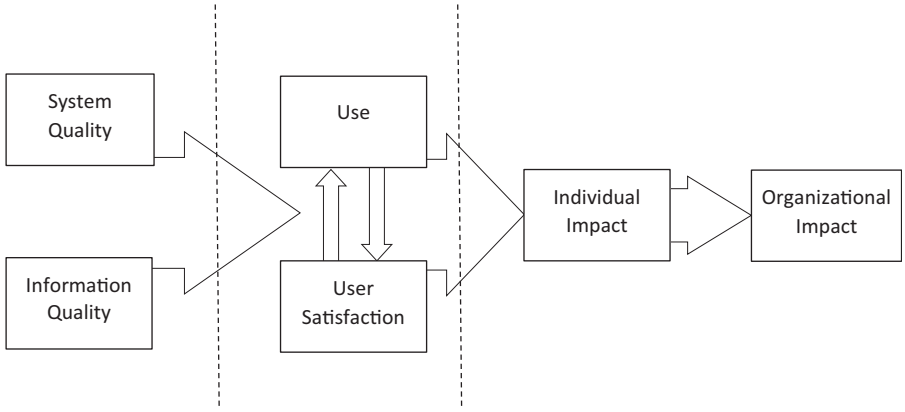

Fig. 1. The DeLone and McLean IS success model [40].