



Review

Towards a heuristic frame for transferring e-government technology

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ABSTRACT

This article addresses challenges in accomplishing technology transfer process involving the adaptation and implementation of e-government applications from a donor country to a recipient country. Here it is claimed that prior e-government research has overlooked existing technology transfer literature from the field of knowledge management. This work is aimed at addressing the underlying issues associated with the transfer of e-government technology, given different characteristics of donor and recipient organizations in terms of the socio-economic context and the dynamics of the technological infrastructure. Based on a review, interpretation, and synthesis of a broad range of both technology transfer, e-government and knowledge management literature, we extend the Information Technology Transfer Life-Cycle Model, as this well-known model was derived entirely based on empirical evidence. To this end, we propose a heuristic frame for e-government technology transfer. Finally, five propositions accrued from both the literature review and the proposed heuristic frame are set forth to be further tested, in order to better understand the process dynamics of e-government technology transfer between countries.

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1. Introduction

As many scholars have pointed out, governments throughout the world are subject to increasing pressure to improve efficiency and effectiveness of their operations. Citizens and businesses are demanding faster delivery of public services and much better information (Ciborra, 2003; Ongaro, 2004; Osmo, 2008; Stanforth, 2006). This motivates governments to attempt to offer better public services while spending less at the same time. In this way, information and communication technologies (ICTs) have been largely used in the public sector for more than fifty years. The advent of the internet has given this usage a new name—e-government—and it has also accelerated the diffusion of e-government applications worldwide (Heeks, 2004). Beyond the technical characteristics of the ICT artifact, Stanforth (2006) defines e-government as the socio-technical arena within which ICT is being applied to organize public management in order to increase efficiency, transparency, accessibility, and responsiveness to citizens.

Although governments are traditionally considered more conservative entities, slower to adopt new initiatives than players in the business realm, various authors recognize that there are many opportunities for developing e-government applications to providing better public services (Ciborra, 2003). Given the scale and complexity of their operations, public organizations are characterized by their extensive use of ICT. In this respect, there is a widespread consensus that knowledge about e-government applications has turned into a critical resource for public organizations (Stanforth, 2006), increasing strongly government expenditure on ICT throughout the world (Heeks, 2004).

Nevertheless, significant variations can be observed with respect to the maturity levels of e-government practices in developed and developing countries. As a consequence of this operational gap, existing literature recognizes the increasing potential of collaboration as a means of reducing this gap (Ciborra, 2003; Heeks, 2002; Nhampossa, 2005; Stanforth, 2006). In essence, the maturity level of management and information and communication technology in developing countries is often low. Additionally, it is widely known that government bodies of different countries are characterized by significant variations in terms of service scope, quality and coverage, as the nature of the operational challenges are directly dependent upon the maturity of their business processes (Heeks, 2004). Consequently, how to internalize an organization's external e-government technology and create value out of it has become a crucial issue to government bodies of developing countries.

Essentially, from a knowledge management perspective, technology transfer (TT) is considered a central instrument to tackle the necessity of different organizations to internalize external technologies (Gupta & Govindarajan, 2000). According to Jagoda (2007), TT refers to the process through which organizations learn from each other's experience and adapt all or some of the technology acquired. In this context, TT across national border is known as international technology transfer (Gupta & Govindarajan, 2000). TT has become an important phenomenon as organizations realize that it is not possible to solely rely on their in-house experience. Accordingly, the execution of TT programs has become a critical strategy for bringing in complementary capabilities and resources from external sources (Choo & Johnston, 2004; Darr &

Kurtzberg, 2000). In this way, various scholars suggest that TT programs can be employed to achieve significant organizational change (Gibson & Smilor, 1991; Gupta & Govindarajan, 2000).

However, accomplishing TT programs in the context of e-government initiatives is considered a complex challenge. According to Gibson and Smilor (1991), TT is a complex, difficult process even when it occurs across different functions within a single organization and the challenges are magnified when organization's boundaries are crossed. Furthermore, e-government systems are heterogeneous, composed of a number of disciplines and a number of sub-systems for collecting, storing, and reporting data. Hence, the e-government TT process is conceived to occur in a defined and mutant social space that involves regular collaboration with government bodies of different countries, or international organizations (Heeks, 2002). Heeks (2006) also points out that e-government TT is challenging because it requires complex customization between technology and the implementation context in developing countries. Yet, despite the complexity associated with TT environment, various developing countries are in the process of carrying out e-government technology transfer programs to strengthen their operations through technical cooperation with more advanced countries (Nhampossa, 2005; Stanforth, 2006). As such, this article concentrates on the challenges involved in transferring e-government technology from advanced government agencies in developed countries to government agencies operating in economically less developed countries. This topic is vital to public policy makers, the IT industry, and IS practitioners.

In this article, we provide a review and interpretation of technology transfer in the particular context of e-government initiatives and knowledge management. To our best knowledge, despite the need for a stronger theoretical foundation supporting e-government (Bekkers & Homburg, 2007; Jaeger & Thompson, 2003), the knowledge management literature has been largely overlooked in existing e-government research addressing technology transfer. Therefore, we draw upon the insights obtained through this review to extend the Information Technology Transfer Life-Cycle Model, proposed by Baark and Heeks (1999). This well-known model in the field of e-government is still considered a dominant lens for examining real-world projects that attempted to accomplish the transfer of e-government technology from developed to less developed countries. However, as pointed out by Baark and Heeks (1999), this model was fully derived from empirical observations of four e-government TT projects in China. To date, this model has been empirically tested by a number of scholars (Al-Mabrouk & Soar, 2008; Kaasbøll & Nhampossa, 2002; Kasimin, Ibrahim, & Yusoff, 2009; Kimaro & Nhampossa, 2004; Lwehabura & Matovelo, 1999). However, although the different tests concluded that the model is incomplete, these theory testing contributions were also empirical. As such, this article is aimed at improving the theoretical foundation of e-government research by improving understanding of the dynamics of the transfer of e-government technology through a review of popular TT models accrued from the field of knowledge management. Accordingly, this article will propose a heuristic frame that merges e-government and technology transfer issues from the perspective of recipient organizations.

The remaining part of this article is organized as follows. In Section 2, the methodological procedure adopted in this article is unveiled. In

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