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Conceptualizing smartness in government: An integrative and multi-dimensional view

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ABSTRACT

Smartness has recently emerged as a desirable characteristic of governments, cities, communities, infrastructures, and devices. Within the public sector, smart city has become a popular term and municipal governments around the world are using multiple strategies to become smarter. However, there is no consensus about what smartness means and how to identify its key components or dimensions. Some definitions highlight information technology and data, while others pay attention to sustainability, openness, innovation, or resiliency. Based on a review of current literature, this paper identifies multiple dimensions of smartness and proposes an integrative view that highlights how each dimension contributes to the understanding and development of smart governments. We argue that smartness should be conceptualized in a broad and multifaceted way. The framework we present serves as a foundation to understand and measure smartness in government and provides guidelines for the comprehensive development of smart governments. Some of the dimensions have been identified and studied explicitly in the realm of smart government. A number of other dimensions are embedded in the literature as individual characteristics of a good government; although they are not explicitly referenced in relationship to smart government, we argue that they are important components of a government being smart. The paper also suggests that public managers do not control all dimensions equally. Some dimensions could be seen as relatively direct outputs of their actions, while others could be better understood as outcomes that could be affected, but not solely determined, by strategic interventions or deliberate actions.

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1. Introduction

Within the digital government literature, studies about smart governments or the smart state are relatively scarce (Gil-Garcia, 2012a; Jimenez, Solanas, & Falcone, 2014; Schöll & Schöll, 2014). More research can be found that explores smartness and innovation in local government, specifically cities (e.g., Bolívar, 2016; Gil-Garcia, Pardo, & Nam, 2015, 2016; Hall, 2000; Harrison et al., 2010; Ho, 2002; Meijer, 2016; Nam & Pardo, 2011; Naphade, Banavar, Harrison, Paraszcak, & Morris, 2011; Toppeta, 2010; Wang & Wu, 2016). It is important to extract the knowledge and expertise obtained at the city-level and to discuss how such efforts and their results can be applied beyond local governments to national and state initiatives, and potentially also to the different branches of government (Gil-Garcia, 2012a, 2012b). This article starts this conversation by identifying multiple dimensions of smartness in

government and the roles that government can play in achieving positive results from smart initiatives. In order to identify the relevant concepts, the paper relies on existing literature about smart cities, digital government, government reform, and other related topics.

Different authors identify key characteristics that can help measure the level of smartness in a city (Chourabi et al., 2012; Nam & Pardo, 2011; Gil-Garcia et al., 2015), although the definition of a smart city is still evolving. Nam and Pardo (2011) argue that “[t]he connotation of a smart city represents city innovation in management and policy as well as technology. Since the unique context of each city shapes the technological, organizational and policy aspects of that city, a smart city can be considered a contextualized interplay among technological innovation, managerial and organizational innovation, and policy innovation.” Therefore, the authors consider a city *smart* when there are actions taken towards innovation in management, technology, and policy, all of which entail risks and opportunities (Nam & Pardo, 2011). Hence, every city could attain a different level of smartness within a range, rather than falling in black and white categories of smart or not. To tame the challenges that have emerged from rapid urbanization, cities need to operate in innovative ways in order to avoid continuous chaos and navigate through crisis. Therefore, we find a new path to urban development by making a city smart (Nam & Pardo, 2011).

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From the smart city literature, efforts have been made to develop a set of essential elements or dimensions of such endeavors (Ojo, Dzhusupova, & Curry, 2016). For example, Nam and Pardo (2011) identify three core elements for a smart city: (1) integration of systems and infrastructure; (2) service transformation and improvement; and (3) a vision for a better future (smart living, smart people, smart environment, smart economy, and more). Also, while the adoption of up-to-date technologies does not guarantee the success of smart city initiatives, Nam and Pardo (2011) argue that technology is obviously a necessary condition for a smart city.

A parallel effort to better understand public sector innovation can be found in the field of electronic government, which has significantly evolved in the last two decades. Two trends of development within electronic government bear important implications for understanding the smartness of governments and need to be incorporated in this review. First, apart from internal government operations, electronic government embraces opportunities for external relationships with citizens and other stakeholders through websites, mobile devices, and other digital channels (Mahou-Lago & Varela-Álvarez, 2016). A new generation of tools and applications has now emerged, called Government 2.0, which facilitate active participation and the pursuit of smartness via citizen participation (e.g., social media, visualizations, mash-ups, and more) (de Mello Miranda, da Cunha, & Pugas Filho, 2016; Gil-Garcia, 2012a, 2012b; Sandoval-Almazán & Armas, 2016). Gil-Garcia (2012a) argues that taking the next step beyond Government 2.0 would be to re-think the role of governments, citizens, and other social actors, with possibilities of forging new processes, relationships, structures, and even a new governance model.

Another important trend is the accelerated development and transformation of cross-boundary information integration in government efforts. Gil-Garcia (2012a) argues that not only have there been important shifts towards increased inter-organizational collaboration and information integration within government agencies, but also collaborations among government agencies, other branches of government, not-for-profit organizations, and private firms. The next ten years could witness the emergence of a highly integrated virtual State (Fountain, 2001; Gil-Garcia, 2012a, 2012b), in which all branches of government and multiple social actors seamlessly interact through the use of sophisticated technologies that integrate business processes, physical infrastructure, organizational resources, and new institutional arrangements. Even more, the extensive use of inter-organizational collaboration and information integration in different government settings could lead to a more integrated State in which all government and non-government actors are coordinated through the use of information and communication technologies in order to achieve common goals (Gil-Garcia, 2012a, 2012b).

To capitalize on the momentum of these developments, this article is an effort to conceptualize and redefine smartness in government. It is organized into four sections, including this brief introduction. Based on a review of existing literature, section two identifies the great variety of concepts that have been or could be related to smartness in government. The concepts are proposed as part of a multidimensional and complex conceptualization of smartness, which is based on a broad view of this phenomenon that includes characteristics that help government to better serve citizens and make their jurisdictions better places to live in. Section three presents examples of some of these dimensions as represented by the articles included in this special issue, which were among the best papers presented at the 15th Annual International Conference on Digital Government Research (dg.o 2014). Finally, section four provides some concluding remarks and suggests areas for future research within this topic.

2. Characterizing smartness in government

This section is a conceptual effort to identify the relevant aspects that help define what smartness in government is or could be in the future.

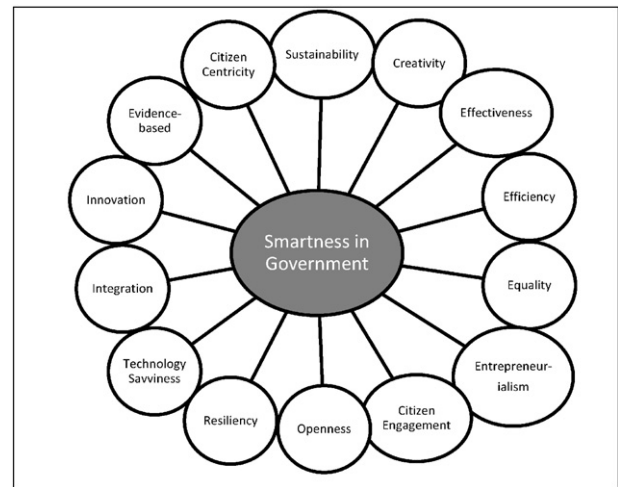


Fig. 1. Dimensions of smartness in government.

Our review has resulted in fourteen components to account for smartness in governments. They are integration, innovation, evidence-based, citizen-centricity, sustainability, creativity, effectiveness, efficiency, equality, entrepreneurialism, citizen engagement, openness, resiliency, and technology savviness (see Fig. 1). In the academic and practical literature, several components and elements could be seen as related to smartness in government. Some of them are studied and analyzed from a public policy or digital government perspective and have been identified as directly related to smartness. Others are observed outside these fields of study, but provide examples and research resources that can be used for the study of smartness in government. In addition, the literature on some components is more abundant than others, regardless of their importance in defining a smart project or endeavor. For example, although some components are clearly identified as core aspects for a smart government, little is written about them. Others are studied extensively within other fields, such as information systems, but links between such data-related or technological components and their use in government for smart projects are missing.

Before we go into the detailed description of each component, it is important to note some of their relationships to smartness in government (see Fig. 1). While some may be seen as a means to an end, such as the data-driven or the technology dimension, others are a result of the value attained from a smart government, such as resiliency or efficiency. There are also interconnections among these dimensions. For example, information integration and sharing aid a government to become more resilient and more open. As mention before, most of these dimensions have been analyzed in a city context, but we argue that they can be applied to different branches and levels of government. Although the authors intend to be as exhaustive as possible, more components can be added to the list. It will continue to evolve as technology, institutions, and organizations change.

2.1. Government smartness and integration

According to Nam and Pardo (2011), smart innovation requires profound levels of information and knowledge sharing and integration. Information technologies' potential for government reform is even greater when organizational boundaries subside (Gil-Garcia, 2012a, 2012b). To that end, managerial interoperability across organizations and applications is a key enabler of the cross-organizational information and knowledge integration necessary for ICTs to deliver the promise of government transformation (Pardo & Burke, 2008). Governments are increasingly turning to cross-organizational interoperability as a strategy for maximizing the value of information. Achieving interoperability across boundaries of agencies and levels of government requires

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