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# Government inter-organizational information sharing initiatives: Understanding the main determinants of success

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## ABSTRACT

In an era of wicked social problems, a smarter, more responsive, more efficient governance structure is necessary to take advantage of the enormous capability of the public to congregate, interact, and collaborate in finding solutions to intricate sociotechnical challenges. The bedrock for such a structure is open and shared information; the key to opening and sharing information lies in interagency information sharing and integration. With the objective to supplement previous research based on rich qualitative data, this study systematically identifies and tests some important determinants of the success of inter-organizational collaboration and information sharing initiatives through quantitative empirical analysis. Based on a national survey of government managers from two policy domains (criminal justice and public health) in the United States, this study found four statistically significant predictors of inter-organizational information sharing success. From those, we found compatibility of technical infrastructure and formally assigned project managers as the two most important predictors explaining the success of inter-organizational information sharing initiatives.

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## 1. Introduction

Advancements in information and communication technologies (ICTs) have the potential to create substantial transformation in society by fostering the ability to connect and collaborate with diverse social actors. Driven by their interests, values, and needs, individuals use and shape the capabilities provided by technology (Castells, 2005) to find solutions for community challenges and social problems (Johnston & Hansen, 2011). This drive to use technology for the common good has risen in the last few decades as the social problems we face have become even more complex, what some called “wicked” (O’Toole, 1997). Johnston and Hansen (2011) argue that to augment the enormous collective capabilities of individuals to organize, interact, and govern in order to overcome complex social challenges, they need a smart government infrastructure, which is both more responsive and more efficient than our current government paradigms.

Scholars have argued that the key factors for creating a smart government that can handle complexity and uncertainty are coordination, continued engagement, access to open data, and shared information (Gil-Garcia, 2012b; Gil-Garcia, Helbig, & Ojo, 2014; Scholl & Scholl, 2014). Thus, the bedrock for smart governance infrastructure is shared, timely, and actionable information (Scholl & Scholl, 2014; Johnston &

Hansen, 2011). Consequently, opening and sharing information is vital for smart governance infrastructure (Johnston & Hansen, 2011). Furthermore, the linchpin for opening and sharing data and information lays in interagency information sharing and integration (Dawes, 2012) because it is regarded as a practical and efficient tool for joint problem solving (Dawes, 1996; Klievink & Janssen, 2009; Tapscott & Caston, 1993).

Effective inter-organizational information sharing has been associated with various benefits within technical, organizational, and political spheres (Dawes, 1996; Gil-Garcia, Chengalur-Smith, & Duchessi, 2007). Inter-organizational information sharing improves efficiency by reducing the cost from shared development (Dawes, 1996; Kwon, Pardo, & Burke, 2009), pooling resources and shared technical expertise (Fedorowicz, Gogan, & Williams, 2007; Gil-Garcia & Pardo, 2005a, 2005b), and reducing redundancy in terms of multiple data collection efforts and data storage (Dawes, 1996). Inter-organizational information sharing can also improve public service delivery by facilitating collaboration and coordination across multiple agencies (Zheng, Yang, Pardo, & Jiang, 2009).

In addition, inter-organizational information sharing often relies on the collaborative work of diverse actors from different organizations performing different roles at distinct times. Within this complex environment, inter-organizational information sharing initiatives face numerous challenges. Some studies of inter-organizational information sharing focus on understanding those challenges (for examples see

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Gharawi & Dawes, 2010; Gil-Garcia, Chun, & Janssen, 2009; Pardo, Gil-Garcia & Burke, 2009; Pardo & Tayi, 2007; Gil-Garcia, Chengalur-Smith, & Duchessi, 2009). Other studies take on the discussion of challenges and then also propose success factors of interagency information sharing (Dawes, Cresswell, & Pardo, 2009; Gil-Garcia & Pardo, 2005a, 2005b; Yang & Maxwell, 2011).

This study aims to provide quantitative empirical examinations of the relationships among various factors that influenced the success of inter-organizational information sharing initiatives in the public sector. The study addressed two research questions: (1) What factors contribute to the success of inter-organizational information sharing initiatives? (2) Among the significant determinants, which factors are more important to the success of inter-organizational information sharing initiatives?

Literature in the field of Information Science has discussed the issue of success factors for inter-organizational information systems (IOS) for a long time. Within the private sector, studies have been conducted to empirically test various success models through quantitative examination of inter-organizational systems, including Delone and McLean's (1992) proposed success model (see Ilvari, 2005; Wu & Wang, 2006; Wang, 2008; Wang & Liao, 2008). Likewise, there have been extensive and rich discussions of both the challenges and success factors of inter-organizational information sharing in the public sector, but mostly from qualitative perspectives. Therefore, this study complements the findings from previous inter-organizational information sharing studies by using quantitative analysis.

The data we analyzed in this study is from a national survey conducted by the Center for Technology in Government to understand the challenges and success factors of inter-organizational information sharing initiatives from the perspective of public officers, consultants, and NGOs involved in information sharing initiatives. This paper focuses its discussion on the determinants of information sharing at the inter-organizational level and we do not discuss factors affecting interpersonal information sharing.<sup>1</sup>

This paper is organized in six sections, including the foregoing introduction. The second section discusses the determinants of inter-organizational information sharing from previous studies, including our hypotheses and preliminary research model. The third section outlines the data collection, the operationalization of the variables, and the analysis techniques. Section four presents the results of our analysis and section five discusses the main findings. Finally, section six provides some concluding remarks and suggests areas for future research within this topic.

## 2. Inter-organizational information sharing success in the public sector

This section describes the main determinants of inter-organizational information sharing identified in the literature and groups them in broad categories to organize and better understand them. As argued by Dawes et al. (2009), the need to overcome complex social problems that are beyond the capabilities of a single organization or jurisdiction requires inter-organizational collaboration and sharing of information. Depending on the complexity of the problems and the organizations involved, cross-boundary information sharing gradually increases from intra-organizational, to inter-organizational, to inter-governmental (Gil-Garcia & Pardo, 2005a, 2005b; Yang & Wu, 2013). Following this logic, in this paper we use the term inter-organizational information sharing to refer to the cross-boundary information sharing that takes place among multiple organizations as opposed to among multiple units within the same organization.

To frame our discussion of the success factors of inter-organizational collaboration and information sharing, in this study we adopt the

concept of inter-organizational information integration from Gil-Garcia, Pardo, and Burke (2010). They define inter-organizational information sharing as a multi-dimensional concept with four key components: trusted social networks, shared information, integrated data, and interoperable technical infrastructure (Gil-Garcia et al., 2010). They further view inter-organizational information sharing as an essential element underlying the socio-technical phenomenon of inter-organizational collaboration. Thus, we argue that the success of inter-organizational information sharing is affected by multiple socio-technical determinants. Andersen and Dawes (1991) propose a framework to understand the determinants and relevant aspects of government information technology initiatives from a socio-technical perspective. Their framework classifies the determinants into three inter-related categories: technology, organization, and policy. These three categories reside within larger contexts, such as the economy or political environment (Andersen & Dawes, 1991).

Enriching the framework proposed by Gil-Garcia et al. (2010) and Andersen and Dawes (1991); Yang and Maxwell (2011) further identify antecedents of information sharing from organizational perspectives. They argue that there are three major components supporting the success of information sharing: a) external and environmental factors, such as government regulations, law or politics; b) organizational factors, such as trust or culture; and c) social or interpersonal relations (Yang & Maxwell, 2011). Additionally, as suggested by Pardo, Nam, and Burke (2011), success in inter-organizational information sharing also depends on the governance, strategic management, information policy, and technological readiness underlying the sharing. Technological readiness implies many different aspects; foremost are interoperable infrastructure (Pardo et al., 2011) and the need for standardization to support interoperability (Reichman, Jones, & Schildhauer, 2011).

Assessing the challenges and success factors of inter-agency data sharing in England, Sanderson, Banks, Deakin, and Udagawa (2015) found three major factors as determinants of inter-agency data sharing, in the forms of (1) social and organizational networks, (2) technical considerations, and (3) legal considerations. As also succinctly argued by Yang (2011), factors affecting the success of inter-organizational information sharing can be categorized into four dimensions: technological, organizational, legislative, and contextual. Thus, based on the existing literature, it can be concluded that the key determinants to inter-organizational information sharing success can be grouped into seven categories: (1) information, (2) technology, (3) managerial, (4) organizational, (5) policy, (6) political, and (7) contextual. Following, we briefly describe and discuss each of these four categories of factors and group them into four clusters for presentation purposes.

### 2.1. Information and technology determinants

The growing role of technology in government is central to inter-organizational information sharing. These initiatives have achieved some promising benefits from the use of ICTs (Caffrey, 2000; Cresswell, Canestraro, Gil-Garcia, Pardo, & Schneider, 2004; Cresswell, Pardo, Thompson, et al., 2002; Dawes & Pardo, 2002; Dawes, 1996; Hale & McNeal, 2011). However, though technology is an important factor for inter-organizational information sharing, the expectation that technology creates new information sharing and integration capability often remains hype, but only comes to fruition in a few cases (Pardo, Gil-Garcia, & Burke, 2009).

The technology determinants typically involve the availability of technical infrastructure, interoperable standards, and technological compatibility. Technological compatibility and interoperability substantially affect the performance of inter-organizational information sharing initiatives; therefore, incompatibility between the technical resources of participating organizations represents a major challenge (Pardo et al., 2011; Sanderson et al., 2015). Ensuring technological compatibility requires the development of standards, platform and application interoperability, metadata, and the use of algorithms (Bekkers, 2009;

<sup>1</sup> For a discussion of interpersonal information sharing, see Yang and Maxwell (2011).

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