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The moderating effect of external pressure on the relationship between internal organizational factors and the quality of open government data

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ABSTRACT

Open government data (OGD) have important political, economic, and social values that are highly valued by many countries around the world. These data represent the cross-boundary information sharing practices between governments and the public. Therefore, this paper investigates OGD by following the theory and practice of cross-boundary information sharing. Most of the current studies have focused on OGD platform, whereas this study has focused on individual government departments and datasets. From the perspective of public data users, we constructed an evaluation index to measure OGD quality, which reflected the degree of cross-boundary information sharing between the governments and the public. We specifically concentrated on the external environment of OGD and selected 128 government departments in Shanghai, Beijing, and Wuhan in China as samples. We found that institutional capacity is an important factor for OGD quality of individual government departments. However, technology capacity and organization arrangement demonstrated small significance for OGD quality. The pressure from the public and higher-level government departments can moderate the relationship between institutional capacity and OGD quality. These results can guide governments in prioritizing the improvement of OGD quality and implementing an OGD project.

1. Introduction

Open data refer to non-privacy-restricted and non-confidential public financial data, which are available and distributed without restriction (Janssen, Charalabidis, & Zuiderwijk, 2012). Open data have been highly valued by many governments and have become an important policy around the world. OGD can encourage the public to participate in government activities and thereby improve the transparency of government departments (Dawes, 2010). OGD can also mobilize social forces to reuse and create considerable economic and social values (Graves, 2011). Under certain legal requirement, government agencies should reveal their data to the public for potential value. Many researchers assumed that achieving information sharing across the boundaries of government agencies at an inter-organizational level is complicated. However, cross-boundary information sharing in the public sector is not restricted within the borders of government agencies and public organization. To some extent, open government data (OGD) can be perceived as the cross-boundary information sharing between the governments and the public, including businesses, non-profit organizations, and individuals (Yang, Lo, & Shiang, 2015).

OGD has attracted the interest of many scholars, which can be classified into three categories: (1) OGD evaluation from different

standards and perspectives (Solar, Daniels, Lopez, & Meijueiro, 2014; Kassen, 2013; Zuiderwijk & Jassen, 2014; Carrasco & Sobrepere, 2015; Veljković et al., 2014; Susha, Zuiderwijk, and Janssen, 2015; Lee & Kwak, 2012), assessing the level of OGD implementation; (2) OGD implementation (Yannoukakou & Araka, 2014; Lourenco, 2015; Nam, 2015; Sieber and Johnson, 2015; Harrison & Sayogo, 2014; Janssen & Zuiderwijk, 2014; Whitmore, 2014; Linders, 2013; Jetzek, Avital, & Bjorn-Andersen, 2013), focusing on the impact of OGD; (3) factors that affect OGD (Conradie and Choenni, 2014; Nam, 2012; Yang, Lo, and Shiang, 2015; Wang & Lo, 2016).

In China, municipal governments have constructed a unified OGD platform where each government agency publishes data on the platform based on their specific requirements. OGD practice of each government agency is different due to the influence of institutional frameworks, organizational arrangements, resources, and other factors (Conradie, 2014; Yang, Lo, and Shiang, 2015). Although the abovementioned research studied OGD comprehensively, few studies have focused on datasets and open data quality of individual government agencies. Therefore, we examine the open data quality of government agencies and investigate the influencing factors to fill the research gap of OGD. This paper aims to answer the following questions: (1) what are the factors, including organization and external environment factors, that

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affect the OGD quality of a particular government agency or the information sharing between the governments and the public? And how? (2) What is the relationship between cross-boundary information sharing and OGD? Can excellent OGD surpass or replace the stage of inter-government information sharing?

The rest of this paper is organized as follows. Section 2 reviews the literature on the challenges experienced by OGD and cross-boundary information sharing. Section 3 establishes the evaluation index for OGD quality. Section 4 provides the theoretical construction and hypothesis based on existing research. Section 5 introduces the research methodology. Section 6 shows the results and discussion of findings. Section 7 presents the conclusion.

2. Literature review

2.1. Cross-boundary information and OGD

Inter-organization information sharing in public sectors is the focus of e-government research. Government agencies should integrate internal information resource and share information with other government agencies to provide efficient, intelligent, and innovative services to the public and resolve complex social problems. The inter-organization information sharing in public sectors or cross-boundary information sharing has been identified as an important driver for advance development of e-government and government reform (Klievink & Janssen, 2009). Government agencies use the money of taxpayers to collect information and data for different purposes. Therefore, the data and information maintained by the government are national assets. Cross-boundary information sharing in public sectors should not be limited within the boundary of the government, and government agencies should also share information to the public, including private sectors, nonprofit organizations, in which a sectoral boundary is observed (Zheng et al., 2009). OGD has been valued by many countries and many governments have published data that are maintained to the public for reuse. OGD can enhance government efficiency and the quality of decision making by making the public much active in government activities. Consequently, cross-boundary information sharing in public sectors should not be restricted to government agencies. Moreover, OGD should be considered as part of cross-boundary information sharing. According to Open Government Working Group, all government data should be opened to the public, except if they are related to national security, commercial secrets, personal privacy, or other restrictions.

2.2. Cross-boundary information sharing in public sectors

Cross-boundary information sharing in public sectors or inter-organization information sharing is a subject undergoing intense study in the field of information management, especially in the area of e-government research (Gil-Garcia and Pardo, 2005; Pardo, Cresswell, Thompson, & Zhang, 2006; Pardo & Tayi, 2007; Zheng, Yang, Pardo, & Jiang, 2009). Pardo, Cresswell, Thompson, and Zhang (2006) concluded that leaders and information technology (IT) executives in public organizations played an important role in inter-organization information sharing. However, inter-organization information sharing involves complicated interactions among different factors (Pardo & Tayi, 2007; Zhang & Dawes, 2006). Several researchers have defined influential factors in e-government information sharing from three primary perspectives: technology, management, and policy (Zhang & Dawes, 2006; Gil-Garcia & Pardo, 2005). Yang and Maxwell (2011) conducted a literature review on cross-boundary information sharing from three main perspectives, which are technical, organizational, legal, and policy perspectives. According to existing research, many factors can influence cross-boundary information sharing in public organizations. Therefore, we will discuss the factors in the following section from three aspects: technical, organizational, and legal

perspectives.

Technical capacity, which is the main precondition for government departments to use information systems for improving the efficiency and effectiveness of their activities, significantly affects the success of cross-boundary information sharing and serves as an important indicator of e-government service (Fedorowicz, Gogan, & Williams, 2007; Welch & Feeney, 2014; Welch & Pandey, 2007). Information sharing activities are IT projects, which include the construction of information systems and the reconstruction of business processes and organizational structures. Given the differences in software and hardware used by government departments, it is a great challenge to integrate the integration of different information systems and datasets with different standards and quality (Gil-Garcia et al., 2009; Klischewski & Scholl, 2008). Moreover, information security and privacy are technical problems that must be addressed in OGD practice. Previous studies indicated that technical capacity is a key factor in realizing cross-boundary information sharing (Akbulut, Kelle, & Pawlowski, 2009; Driss & Asmae El, 2008), whereas other studies emphasized technical capacity as an important factor for OGD (Conradie & Choenni, 2014; Zuiderwijk & Jassen, 2014). In sum, we assumed that technological capacity is an important factor that affects cross-boundary information sharing and OGD.

The implementation of any governmental project must be guided by a legal basis. A legislation that regulates the disclosure of government information and the overall implementation of e-government projects should be analyzed to aid the evaluation of those strategic policies related to OGD (Kassen, 2013). Legal and political factors play important roles in information and knowledge sharing across governments (Dawes, 1996; Gil-Garcia & Pardo, 2005). Without law and policy, the overall implementation of government information sharing activities is not regulated by a framework, and information security and personal privacy involved in the information sharing process cannot be effectively protected. Government data are perceived as sources of power and symbols of authority. Therefore, most governments perceive that sharing such information will lead to their loss of power and prevent them from achieving their goals. If law and policy on basic provisions cannot be implemented, then government departments will refuse to share their information to some extent and avoid revealing their data to the public. Yang et al. (2015) identified legal and policy factors as the primary considerations of government departments in OGD practice and suggested that these departments must ensure that their open data are in accordance with existing regulations. A unified and clear legal framework must also be established to ensure the successful implementation of an open government.

Previous studies suggested that the participation of a superior leader significantly affected the implementation of government projection. Zheng et al. (2009) indicated that leadership significantly influenced inter-organization information sharing in the government by studying its traits, power, behavior, interventions, and success criteria. Fan et al. (2013) concluded that superior leadership authority and top management support positively influenced the degree of inter-government information sharing. Leadership can be utilized as a force to promote cross-boundary coordination among organizations (Willem & Buelens, 2007). Many governments may refuse to share information due to the possibility of losing their power and competitive advantages. However, several researchers assessed that these problems can be solved through the intervention of senior leadership and institutional pressure (Dawes, 1996). As a vital factor in the readiness assessment model of the World Bank, leadership has a crucial role in overcoming the obstacles and is vital for achieving the goals and value of OGD (World Bank, 2015).

2.3. Challenging factors in OGD

OGD initiatives can be viewed as part of government information sharing activities (Yang et al., 2015). Therefore, the perspectives employed for analyzing cross-boundary information sharing can be

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