

Data-Driven Government: Essential Mechanisms to Unleash the Power of Data

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ABSTRACT

Open government data (OGD) has become a trend in recent years. Previous research on OGD has investigated two main areas—supply and demand. However, little is known about how OGD supply is linked to OGD demand. This study is an early attempt to determine the mechanisms that explain how OGD transforms and impacts supply and demand. It also aims to determine the essential pre-conditions driving OGD development. Secondary data from 115 countries were analyzed using partial least squares-structural equation modeling (PLS-SEM). The results showed that OGD as a strategic asset does not directly impact a country's development; instead, OGD requires government capability (GC) to unleash its values. GC fully mediates the relationship between OGD and its impacts. In order to achieve OGD, information and communications technology infrastructure (ICTI) should be well designed and developed and there should be a high level of data security (DS).

KEYWORDS

Data Impacts, Data-Driven Government, Government Transformation, Open Government Data, Public Administration

INTRODUCTION

Data are currently perceived as a strategic asset and a fundamental fuel for organizations both in the private and public sectors (Marr, 2017; Mayer-Schonberger & Cukier, 2013). In the bureaucratic world of today, data have helped to digitize governments and have empowered governments to concentrate on the most pressing problems and needs in order to improve policy decision-making, to improve transparency, and to embrace citizen-centric services (Bertot, Butler, & Travis, 2014; Höchtl, Parycek, & Schöllhammer, 2016; Parycek, Höchtl, & Ginner, 2014; Zuiderwijk & Janssen, 2014).

Governments play essential roles as data providers and vice versa for OGD. Previous research has investigated two main areas of OGD. The first body of work honed in on the supply side, focusing on the search for quality OGD (i.e. Solar, Concha, & Meijueiro, 2012; Ubaldi, 2013) and data security as the factors influencing OGD development (i.e. Blauer (2017), Spavin & Fegan (2017)). However, data experts are still proposing other factors, such as ICT infrastructure challenges (Lane, 2018; Marr, 2017) and trust in the government (Chawda, 2017; Gravestock, 2017). These factors should be further tested. The second body of work focused on the demand side, mainly investigating the

impacts of OGD, such as the value and usefulness of OGD (Gravestock, 2017; Marr, 2017; Parkes, Karger-Lerchl, Wells, Hardinges, & Vasileva, 2018; Young & Verhulst, 2016). However, despite the growing amount of OGD released by governments, the adoption of OGD in the government sector has not been extensively studied. According to Young and Verhulst (2016), human capacity and technical capacity among government officials are the first barriers to maximizing OGD impact. The lack of readiness at both the supply and demand side of OGD prevents it from being as impactful as it could be. Importantly, the global OGD movement has slowed down (World Wide Web Foundation, 2017) because of the lack of data usage to create real benefits or transform the data to maximize its impacts (Safarov, Meijer, & Grimmelikhuijsen, 2017; Zuiderwijk & Janssen, 2013). A recent study found that OGD objectives did not significantly impact their benefits (Zuiderwijk, Shinde, & Janssen, 2019). In other words, there is a mismatch between OGD objectives and how they are achieved, which, in turn, leads to a mismatch between OGD supply and demand, which may limit and inhibit the impacts of data on socio-economic development.

Collecting, publishing, and investing in OGD are not the ultimate objectives; rather, how to unleash the power of OGD so that it impacts socioeconomic development is more important (Höchtel, Parycek, & Schöllhammer, 2016; Marr, 2017; Mayer-Schonberger & Cukier, 2013; Young & Verhulst, 2016). Organizations still have mainly focused on technology and faced overwhelming and unusable data (Marr, 2017; Wang & Shepherd, 2020). Based on previous research, little is known about how to unleash the power of data, and very little is known about how data supply is linked to data demand. This knowledge gap is the result of a lack of systematic study (Young & Verhulst, 2016). As long as the question remains unanswered, governments will continue to face risks and inconsistencies between data supply and data demand. This study, therefore, attempts to explore the essential prerequisites that would drive OGD development and to determine the necessary GC in order to transform OGD and to maximize its impacts. This article is structured as follows. Section 2 reviews the related work and develops the research hypotheses. Section 3 explains the research methodology. Section 4 describes the research findings, followed by the discussion in section 5. Finally, section 6 presents the conclusion.

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Data are the catalyst that drives the modernization and digitization of governments in the 21st century (Marr, 2015). In the present study, OGD must be (i) complete, (ii) timely, (iii) machine-readable and accessible, (iv) easily accessed electronically, and (v) freely licensed (Kalampokis, Tambouris, & Tarabanis, 2011; Kassen, 2013; World Wide Web Foundation, 2017). This definition of data is commonly used to formulate the principles for developing OGD. The creation and measurement of OGD quality popularly follow the five main principles above (Solar et al., 2012; Ubaldi, 2013).

Factors Influencing the Development of OGD

What are the factors that influence the development of OGD? Based on the past literature and empirical research, governments must establish three major pre-conditions before they can truly be data-driven.

First, ICTI is a fundamental structure for developing OGD (Lane, 2018). This infrastructure includes Internet access, broadband communication, international Internet bandwidth, computers, and so on (International Telecommunication Union, 2017). Governments can better maximize OGD and become smarter at using it if such infrastructure is well-designed and developed (Lane, 2018; O’Flaherty & Maloney, 2017). In this way, governments and citizens would have more quality data to access, reuse, and apply. In the case of developing an appropriate ICTI for OGD development, the real mark is sustainability and a valuable outcome for the broader community (Lane, 2018). ICTI is thus a long-term investment. This study hypothesizes the following (H1): ICTI positively influences the development of OGD.

Second, publicly published data could be vulnerable to privacy issues, as these data naturally attract hackers (O’Flaherty & Maloney, 2017). DS is a relevant concern when talking about OGD.

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