Open Governance and Duality of Technology: The open data designer-user disconnect in the Philippines

Ruth Angelie B. Cruz* and Hong Joo Lee**

*De La Salle University-Manila, ruth.cruz@dlsu.edu.ph
**Catholic University of Korea, hongjoo@catholic.ac.kr

Abstract: This paper builds on the data designer (government) and local data-user concepts in terms of "technological duality." This model applies Orlikowski's structurational model of technology that extends basic ideas about interactions of organizations and information communication technology (ICT). The model is supported by its application to multiple interpretative case studies of the Philippine Open Government initiative. It was evidenced that open government data as a technology is subjective—understood and interpreted inconsistently by the government and data users and therefore creates a disconnect between them. Based on the cases presented, it is proposed that a two-way open governance model will be a more effective approach in developing a truly open government. This reinforces the role of user-side stakeholders as they have the interest, expertise, and resources to utilize open data and can therefore build networks with more users within their respective fields that government initiatives may not be able to reach.

Keywords: Open Governance, Open Data, Duality of Technology

1. Introduction

With developing countries struggling to institutionalize open government systems, the question of how to effectively implement new public systems has been of central importance. This pressing issue, coupled with the lack of citizens' trust in government and political organizations both in developed and developing countries (Cheema, 2010; Ohemeng & Ofosu-Adarkwa, 2015) may lead to citizen dissatisfaction and withdrawal from the political process, which can further result in a fragile and stagnant state (Diamond, 2007).

The growing interest in e-government and the shift towards mobile and technology-enabled private and public services mean that it is high time for governments to build information communication technologies (ICTs) that facilitate a more open information exchange between a government and its citizens. Yet, open governance efforts promoting transparency and efficiency face several challenges, from implementation to citizen participation. Literature on public innovations is filled with assumptions of the "build it and they will come" mindset (Blakemore & Craglia, 2006). Such conventions result in a lackluster impact on open government (OG) and the implementers, the government, are left wondering why their programs fail to capture the attention and cooperation of the public. When it comes to open government data (OGD), existing studies show open government implementations to be data-driven and are biased towards the goals set by the implementing bodies, paying less attention to user-side requirements (Cruz & Lee, 2015; Lee, Tan, & Trimi, 2005; Neuroni, Riedl, & Brugger, 2013; Susha, Gronlund, & Janssen, 2015).

Academics and researchers focus mostly on the strengths and weaknesses of policies and implementation of OGD-leading nations like the Netherlands, South Korea, and the United States (M. Janssen, Charalabidis, & Zuiderwijk, 2012; Lee et al., 2005; Zhang, Dawes, & Sarkis, 2005) leaving a big gap on the state of open government in developing countries like the Philippines.

Moreover, it is important to recognize that each country's OGD initiatives significantly differ due to the nation's situation and motivations for opening data; therefore, there is even greater need to study both developed and developing nations. This is especially insightful in assisting the Open Government Partnership (OGP), an initiative that fosters trust and citizen-government collaboration to improve development, in making OGD a global concern among its 79 member nations. Future nation and local members can learn from the implementation processes of others to innovate from them and avoid similar pitfalls. In line with the goal of the Open Partnership Agenda, "to secure concrete commitments from governments to promote transparency, empower citizens, fight corruption, and harness new technologies to strengthen governance" (Open Government Partnership, 2011), it is imperative to include all member countries in fulfilling OGP goals, with more emphasis on developing countries, which suffer from problems rooted in rampant corruption.

To instill a culture of transparency and accountability in the government, the Philippines signed into the Open Government Partnership on June 20, 2011, becoming one of the first eight countries to join the movement together with Brazil, Indonesia, Mexico, Norway, South Africa, the United Kingdom, and the United States. Since the beginning of the Philippines' involvement with OGP, the Department of Budget and Management (DBM), the Presidential Communications Operations Office (PCOO), and the Department of Information Communications and Technology (DICT), have been involved in planning and implementing the country's open data initiatives. In the beginning, an ad hoc Open Data Task Force was formed and solicited input from the World Bank regarding developing and executing Open Data Philippines, and on a broader scale, in fulfilling the Philippines' commitments to the Open Government Partnership. Years later, how is the Philippines fulfilling its commitment to proactively release public sector datasets and generate an ecosystem for its public use and reuse? How does the initiative ensure noteworthy collaboration between the government and its citizens?

We argue in this paper that despite the Philippine's proactive participation in the OGP as a founding member, the nation has struggled in fulfilling its commitment to opening government data and has not, despite its rhetoric, generated an ecosystem for its effective public utilization. This is not a surprising result given the limited ICT expertise, infrastructure, and the fact that its basis—if there is one—is weak and dated. Despite these limitations, a few cases of government data use have been recorded and recognized locally and internationally. It is, then, worth investigating how these organizations could contribute in harnessing new technologies to strengthen governance.

The objective of this research is threefold. First, explain and address the "adoption gap" caused by the interpretive flexibility of technology and the agencies of both the government as the OGD designer and local organizations as data users. We identify that data users adopt the rules, knowledge, and assumptions from the implemented technology that align with their own to perform tasks that support their motivations for using the data. Second, propose a model for open governance implementation based on Orlikowski's duality of technology (1992) to explain how the design and use of OGD is shaped by the actions of human agents and their institutional properties—in this case, the Philippine government and local organizations. And lastly, contribute to the literature on open government, specifically pertaining to developing countries, in the hope that other countries may learn from the Philippine initiative.

2.   Literature Review

2.1.   Open Government Data: its Implementers and its Users

In this section, we review the existing literature on open government and open government data. The review included here is in no way exhaustive because this literature includes a vast assortment of topics and cannot be covered fully in a short paper. The goal is to show the imbalance of available literature on developed versus developing countries and why there is a need for more research focusing on the user-side of open government.

The term "open government" has become a global tagline among policy makers, politicians, and civic groups to encapsulate the goals of transparency and public participation in governments. Meijer, Curtin, and Hillebrandt (2012) define it as, "Openness of government is the extent to which citizens can monitor and influence government processes through access to government information and access to decision-making arenas." Under open government are two independent but related movements: open government data; and right to information, otherwise called freedom of information (FOI). Together, these two campaigns represent the global call for proper democracy, curbing corruption, encouraging accountability, and empowering citizens to get involved with policy-making (Afful-Dadzie & Afful-Dadzie, 2017).

There are four main drivers identified by M. Janssen, et al. (2012), and adopted by other scholars, as the main forces that drive governments to open up their data to their citizens. These drivers are: (1) transparency and accountability; (2) participatory governance; (3) innovation and economic growth; and (4) public value. International attention on OGD has been intensive in the last few years with developed countries and international organizations leading efforts to convince governments

to open data. Designer-side approaches, actions coming from the government, have been well investigated in the past years with results showing that most of the work in open government implementation and research has taken the data-driven path, mostly focusing on information and communication technologies supporting OGD access, usability, and citizen engagement (Afful-Dadzie & Afful-Dadzie, 2017; Evans & Campos, 2013; K. Janssen, 2012). Meanwhile, research specifically about FOI have revolved around issues of legislation, policies, and exemptions (Afful-Dadzie & Afful-Dadzie, 2017; K. Janssen, 2012) (See Table 1).

Table 1. Review of Open Government Literature and their Main Themes

Developed Countries		
Main Themes	*Countries Covered*	*Authors*
Policy-making, legal frameworks, political commitments	United States, United Kingdom, European region, Netherlands	Bertot, Gorham, Jaeger, Sarin, & Choi (2014), Catlaw & Sandberg (2014), Chapman & Hunt (2006), Dawes (2010), Frank, & Oztoprak (2015), Katleen (2011), Zuiderwijk, & Janssen (2015), Van Der Sloot (2011)
Designer-side implementation and institutionalization	Canada, United States, United Kingdom, France, European Region, South Korea, Taiwan, Gulf Cooperation Council (GCC) Countries	Timms (2015), Ruesch, Basedow, & Korte (2012), Misuraca & Viscusi (2014), Alexopoulos, Zuiderwijk, Charapabidis, Loukis, & Janssen (2014), Kim, Kim, & Lee (2009), Cruz & Lee (2015), Yang, Lo, & Shiang (2015), Nam (2015), G. Lee & Kwak (2011), Elbadawi (2012)
Impact and user-side perspectives	United States, Sweden, Netherlands, Denmark, Chile	Seoud & Klischewski (2015), Stromer-Galley, Webb, & Muhlberger (2012), Susha, Grönlund, & Janssen (2015a), Susha, Grönlund, & Janssen (2015b), Lönn & Uppström (2015), Hansen, Hvingel, & Schrøder (2013), Gonzalez-Zapata & Heeks (2015)
Developing Countries		
Main Themes	*Countries Covered*	*Authors*
Policy-making, legal frameworks, political commitments	Indonesia, Philippines	Furuholt & Wahid (2008), Alampay, Bautista, & Montes (2017)

| Designer-side implementation and institutionalization | Brazil, Kenya, Moldova, Morocco, and the Philippines, India, Indonesia, Ghana | Shkabatur & Peled (2017), Shkabatur & Peled (2016), Wahid & Sein, (2013), Krishna & Walsham (2005), Alampay (2013), Alampay (2013), Ohemeng & Ofosu-Adarkwa (2015) |
| Impact and demand-side perspectives | Philippines, India | Schalkwyk, Canares, Chattapdhyay, & Andrason (2015), Sein (2011), Kumar, & Best (2006) |

However, implementing countries, especially developing countries, encounter barriers in pursuing their open data commitments. One reason is because publishing open data is complex and involves consistent political commitment. Moreover, it also requires appropriate organizational structures, resources, technical readiness, and technical skills in government organizations (M. Janssen, et al., 2012).

In addition, the success of OGD initiatives does not solely depend on the information technology available for building OGD infrastructure but also on social factors (Cruz & Lee, 2016). Social factors address the government individuals who enforce the initiatives, private and social groups, academics, and the citizens who are expected to ultimately benefit from OGD. OGD can be used by a wide range of stakeholders: companies, entrepreneurs, corporations, consultancy firms, politicians, government institutions, civil society organizations, advocacy groups, journalists and media personnel, academics, etc. (Gonzalez-Zapata & Heeks, 2015; Susha, et al., 2015). Ohemeng & Ofosu-Adarkwa (2015) explained that a supply-side-focused (government) initiative created an underdeveloped demand-side (user) system in Ghana where normal citizens are not motivated to engage with open data. A similar situation was seen in Chile where the private sector and citizen-users are absent from significant involvement in OGD (Gonzalez-Zapata & Heeks, 2015). However, with open data being a fairly recent concept, even public servants, whose skills are not necessarily in IT, have difficulty understanding the actual benefits of publishing government data in an open format (Crane, 2013).

This study shows a different phenomenon in the Philippines, where there are active user-side initiatives by the nonprofit and for-profit sectors regarding the promotion and application of government information despite weaknesses in the designer-side. Research on the Philippines, like in other countries, mostly focuses on investigating the top-to-bottom approach. Research topics include: implementation of an e-governance system in the country (Alampay, 2013); enforcement of fiscal policies (Alampay, et al., 2017); impacts of a full disclosure policy (Canares, 2014); and increasing citizen engagement (Canares, Marcial, & Narca, 2016).

2.2. The Structurational Model of Technology

Orlikowski's (1992) view on the duality of technology originates from adapting Gidden's ideas (Giddens, 1976; Jones & Karsten, 2008) into the information systems field. The structurational model views technology as: (i) created and changed by human action as it is used to accomplish an

objective, recognizing two iterative modes of human interaction with technology, the design mode and the use mode; and (ii) interpretively flexible—that there is an inherent flexibility in how technology is designed, used, and interpreted by actors. Thus, "the interaction of technology and organizations is a function of the different actors and socio-historical contexts implied in its development and use" (Orlikowski, 1992, p. 405). This emphasizes that technology is not merely a physical object but also a means for human action that produces and reproduces current organizational practices as it interacts with institutional properties (Mota & Filho, 2011). This means that technology, or in this case, open government data, is physically built by its designer, the government working in a given social context, but also socially built by both the government and the users "through the different meanings they attach to it and the various features they emphasize and use"(Orlikowski, 1992, p. 406).

Orlikowski's structurational model of technology (1992), in Figure 1 and as explained in Table 2, comprises of the following components: (1) human agents: the designers, users, and other stakeholders involved in the technology, (2) technology: both an artifact and means for task execution, and (3) institutional properties: organizational dimensions such as structural arrangements, ideologies, culture, control mechanisms, standard operation procedures, and environmental pressures such as regulations, competitive forces, socio-economic conditions, sanctions, and professional norms.

This research does not aim to test the validity of Orlikowski's theory but rather use her theory to interpret the existing phenomenon of implementing open government changes in e-governance and propose a solution. It examines the implementation of open government actions, focusing on processes used in developing countries to promote transparency and accountability, and how technology is being used by data users to create value. Moreover, this study views open government technology both as a product and as a means for human actions that, interacting with institutional properties and human agents, produces and reproduces existing organizational practices. The objective is to comprehend open government as a form of technology with interpretive flexibility—and how people design, interpret, and use technology varies according to the artifact, institutional contexts, power, knowledge, and interest of human actors involved (Orlikowski, 1992).

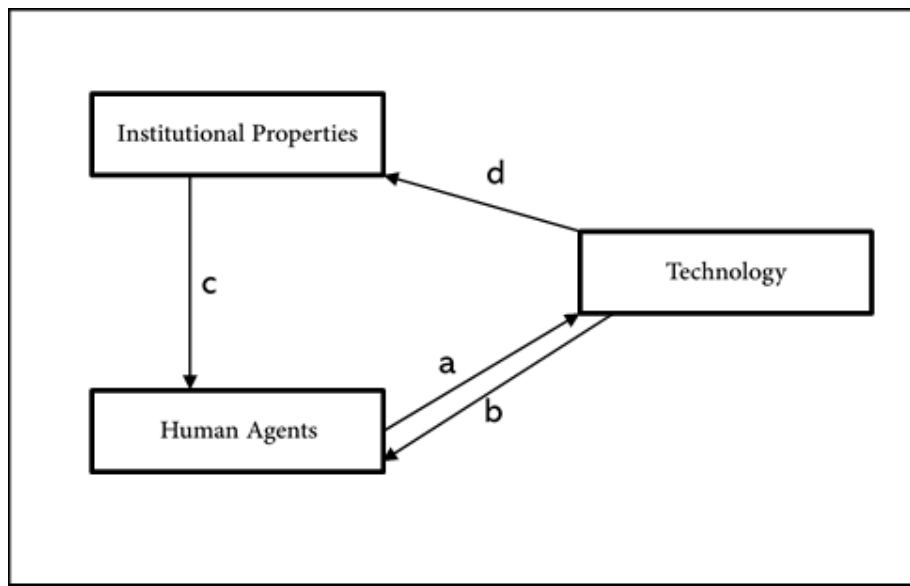*Figure 1: Structurational Model of Technology (Orlikowski, 1992, p. 410)*

Table 2: Structurational Model of Technology Relationships (Orlikowski, 1992, p. 410)

Arrow	Type of Influence	Nature of Influence
a	Technology as a part of human action	Technology is a product of human activity—design, development, appropriation, and modification.
b	Technology as a medium of human action	Technology both facilitates and constrains human action through the provision of interpretive schemes, facilities, and norms.
c	Institutional conditions of interaction with technology	Institutional properties influence humans in their interaction with technology. Institutional properties include intentions, professional norms, state of the art materials and knowledge, design standards, and available resources (time, money, skills).
d	Institutional consequences of interaction with technology	Interaction with technology influences the institutional properties of an organization, through reinforcing or transforming the structure of signification, domination, and legitimation.

The issues mentioned in Part 2.1 of this paper highlight the significance of this study and provide perspective on two different views of technology. The outcome of this duality and hence the outcome of open-government initiatives is complex, going beyond a simple top-down government-to-

citizens approach. Much of today's research perspective is supply-driven and overlooks the fact that success of open data systems depends largely on the use of data, its ability to consider users' needs, and the ability to process feedback (M. Janssen, et al., 2012). This is emphasized by scholars citing the lack of citizen participation and data-use in open governments despite the initiation of open government programs (Gonzalez-Zapata & Heeks, 2015; Heeks & Santos, 2009; M. Janssen, et al., 2012; Ohemeng & Ofosu-Adarkwa, 2015; Wijnhoven, Ehrenhard, & Kuhn, 2015).

3.   Methodological Approach

This research is qualitative in nature and examined multiple qualitative case studies conducted in the Philippines at the technology-designer (government) and technology-user (data user) level. In choosing the qualitative studies method, the researchers were motivated by the fact that contextual settings are significant in probing open government development (Yin, 2003) and the experiences of the actors and the context of their actions are critical (Benbasat, Goldstein, & Mead, 1987). Moreover, development of open government data is at its early stages, and few in both the public and private sector have a clear understanding of it. Furthermore, conducting qualitative case studies is a suitable method to generate exhaustive knowledge on a certain subject (Susha, et al., 2015). Hence, the unit of analysis in this research is the measures the government and local organizations have taken to implement open government data in their own domains. The cases included are limited by definition and context (Baxter & Jack, 2008); therefore, the research will only focus on organizations which directly utilized open government data. The data sources in the case studies and in investigating the evolution of OGD in the Philippines include documentary analysis, artifacts, and interviews to achieve triangulation of qualitative evidence.

Table 3: Interview Summary

	Interviewees
Government-side	1 Program Director for the Freedom of Information Program
	1 Project Development Officer III for the National Government Portal (DICT)
User-side	1 Project Manager and Executive Director of CheckmySchool
	2 CEO & Co-founders of ByImplication
	1 Chief Executive Officer & Co-founder of Thinking Machines

Data were collected in two steps following the methodology of Susha, et al. (2015), as (1) an artifact and (2) a process. First (artifact approach), we analyzed existing academic literature, reports, and documentation on open government data development to identify prevailing themes in developed and developing countries. The literature available on Filipino open government was mostly published online. Second (process approach), we identified organizations that use or have used open government data based on stakeholders described by Gonzalez-Zapata and Heeks (2015) and analyzed their work (see Table 4). Cases were based on the Open Data Impact Map by Open Data For Development Network (2017) and the results of their documentary analysis.

Table 4: Summary of Open Government Involvement per Organization

	Organization	Industry	Description	Purpose of Use
Government - Designer	Presidential Communications Operations Office (PCOO)	Freedom of Information	A separate arm of the government in charge of handling Freedom of Information requests from the public	OGD and FOI Implementation
	Department of Information Communications and Technology (DICT)	Open Government Data	The Open Government Data portal administration was transferred from the Department of Budget and Management (DBM) to DICT	
Nongovernmental Organization Data User	CheckMySchool (CMS)	Education	A nonprofit monitoring initiative that addresses public education by empowering Filipinos to mobilize and engage with local and national governments through transparency and social accountability	Organizational use - nonprofit
Private Organization- Data User – Startup Companies	ByImplication	Software Development and Design	Designs and develops software for clients, two of which are transport apps based on govt data	Organizational use for profit
	Thinking Machines	Data Science Consultancy	Data science and consultancy firm involved with analyzing government data to identify solutions to existing problems	Organizational use for profit

Representatives of the 5 cases identified, 2 government units and 3 user-side organizations, comprised a total of 6 interviewees (see Table 3) who were invited to participate in semi-structured interviews to determine how they implement or have implemented their activities related to use of government data. Interviews of 30−60 minutes occurred from July 2017–August 2017 in the Philippines. The interviews were done in person except for circumstances when the interviewees preferred a schedule after August 2017, when Skype and chat interviewees were done. There were two sets of

questions, based on previous literature: one set for the government side and another set for the user side of data. Follow-up questions and related questions were asked by the researcher as fit the study.

Data analysis was carried out in several phases (Eisenhardt, 1989): within-case analysis was conducted to deal with the volume of data and to identify unique patterns from each individual case, understanding the different circumstance of each case and its operation, and then cross-case searches were conducted for patterns which involved identifying within-group similarities and intergroup differences. In order to achieve a high standard of data analysis, a framework based on the structurational model of technology was employed.

4.   Designer-User Discontinuity in Philippine Open Government Data

The Philippine's commitment to the Open Government Partnership experienced a rapid start with the country consistently increasing its ranking in Open Data Barometer evaluations (Iglesias & Robinson, 2015). However, there is still much to do to improve the state of OGD in the country.

As government-led initiatives are very much dependent on the current administration, shifts in political situations greatly affect initiatives. By the end of President Benigno Aquino Jr.'s administration, the development of open government in the Philippines had seen a shift in focus from proactive disclosure to reactive disclosure. To illustrate the prevailing gap in Philippine open governance, we borrow Orlikowski's time-space discontinuity model (see Figure 2). However, we apply it in a real-life context where the designer of the technology and user of technology have a disconnected relationship in their involvement with open government data.

4.1.   Arrow 1: Institutional properties → Government

Institutional properties greatly affect the designer's implementation of the technology artifact. In this case, these properties include the initial standards for open government, available resources (funding, time, technical skills), and infrastructure capability. As the Philippines is a developing country, it is without much surprise that resources to create and sustain the initiative are limited. Moreover, changes in leadership and government organizations in charge of OGD has caused lost expertise and institutional memory for the initiative.

Initially, the Department of Budget and Management (DBM), Office of the Presidential Spokesperson (OPS), and Presidential Communications Development and Strategic Planning Office (PCDSPO) were involved in planning the country's first open government data initiative. In May 2013, an ad hoc Open Data Task Force was formed with representatives from various government units assigned to be "open data champions" of their respective departments. The task force sought help from the World Bank in developing and executing Open Data Philippines, and on a broader scale, in fulfilling the Philippines' OGP commitments.

Among the challenges encountered during the initial implementation of OGD, the representative from the National Government Portal mentioned:

"DBM did not provide a budget for opening datasets. The budget provided was for trainings, workshops, and technical assistance. Another challenge was the lack of a person dedicated to open data in each agency. Department Secretaries were appointed as data champions; however, they were not required to be the implementer in their respective agencies. Because of this, a different employee attends the data trainings. And unless the person is a data analyst, a developer, coder, or a data scientist, the concept of open data was difficult to understand."

The Department of Information Communications and Technology (DICT) took over the OGD initiative after the shift in administration beginning June 2016. The transition in government also reduced the open data team from 18 to four dedicated open data staff. The initiative suffered lost expertise and institutional memory since the senior staff was changed under the new administration. The open data portal was scheduled for a re-launch together with new plans for public open data talks. However, the government transition requires another restart of capacity-building initiatives and orientation among newly appointed agency officials. Agencies must be reoriented about open government data, its purpose, and its importance.

Additionally, the open government data initiative did not have an official mechanism to monitor main users of data. The main targets of the initiative are the media, academics, civil service organizations, and hackathons. However, developers never engaged in conversation-type initiatives. Consequently, the government had no implementation plans for web and mobile applications developed during the hackathons. The agency recognized this as lost potential. Moving forward, DICT plans to draft an engagement principle that will make a more effective engagement policy with data users.

As an offshoot of the government's open government data initiative, the freedom of information initiative sought to learn from the former's weaknesses. Within the government, public officials and employees undergo training for FOI. Capacity-building within public agencies is as important as educating the public about their right to information. In addition, all concerned agencies were required to nominate a receiving officer and a decision-maker. As a new government program, the FOI is an added task to each agency without corresponding additional funds for processing data:

"It's a cultural change…. It's very important that there is an FOI champion within [the] agency. It's very important that they understand what FOI is. We personally tell them that we understand that it's an added task. Somehow, that eases a little of their pain. Some agencies support the program, embrace it, and are ecstatic about it. Other agencies are reluctant to implement but they must do it because it is an executive order. It's a cultural change that won't happen overnight. We at PCOO do our best to impress on them the importance of disclosing information."

The Presidential Communications Operations Office (PCOO) oversees the implementation and operation of the FOI program. When asked about the reason regarding the move from OGD to FOI, the PCOO Assistant Secretary explained:

"We learned in the implementation of open data that communication is one way. It's the government thinking what information the people need without even knowing if that information is what they need… And several data uploaded on opendata.gov did not have any downloads at all because there was no citizen engagement…. We feel that FOI marries open data in such a way that it's a tool for people to

inform their government what information they need, then the government learning from that will then proactively upload that data next time."

The e-FOI initiative received assistance and support from the World Bank, the Asian Development Bank, and the Open Government Partnership Philippines Secretariat. However, like the open data initiative, the program is running without its own budget allocation from the government. Participating executive departments were expected to manage expenses related to the management and processing of information.

Figure 2: Designer and User Discontinuity of Open Government in the Philippines (Adapted from Orlikowski's Time-Space Discontinuity in Traditional Models of Technology Design and Use, 1992)
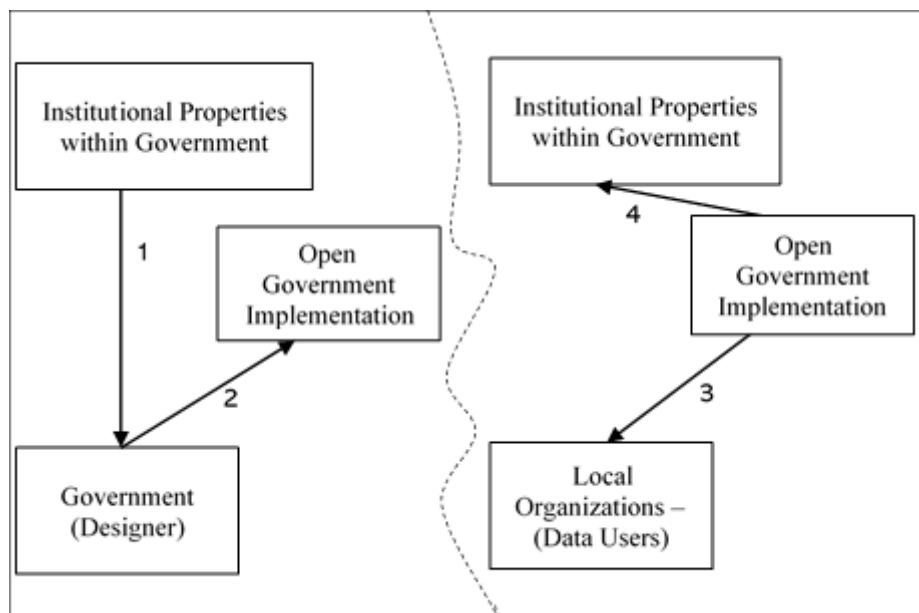
4.2. Arrow 2: Government → Open Government Implementation

The authors consider the data portals of the two open government initiatives as the technology artifact created to meet the initiative's goals of promoting transparency and seeking to collaborate with the citizens regarding data use.

4.2.1. Philippine Open Data Portal—the Proactive Approach

On January 16, 2014, the Philippine Open Data Portal, was officially launched during the Philippine Good Governance Summit with 400 data files hosted upon its opening. The Open Data Portal at data.gov.ph served as a unified online interface for machine-readable data released and published by various government agencies. In addition to creating the fully functional Open Data Portal, the task force, headed by the DBM, hosted the Open Data Workshop, Open Data Boot Camp, International Open Data Champions Master Class, #KabantayNgBayan Hackathon, and the Open Data @PH Multi-stakeholder Consultative Forum within nine months from its inception (Capili, 2015).

Inspecting the data.gov.ph website, it was evident that data uploaded were already outdated. As of September 18, 2017, there were a total of 796 datasets across 12 data categories uploaded on the old website and 492 datasets have been migrated to the www.gov.ph/data website. The data migration occurred to upgrade the system to a new content management tool that will allow multiple users in preparation for all government agencies uploading their data. The DICT representative confirmed that in the initial launch of the open data portal under the DBM, there were no clear guidelines given to the different departments regarding the formats and characteristics of data to be uploaded on the website. Despite comprehensive categories, the uploaded data were rarely downloaded based on the website's statistics.

4.2.2. Philippine e-FOI Portal—the Reactive Approach

The Philippine Executive Order on Freedom of Information (Executive Order No. 2, series of 2016) opens the executive branch of the government together with its agencies to the citizens of the Philippines. It attempts to make the government more transparent by strengthening the people's right to information as expressed in the constitution. This is embodied in the e-FOI online platform where citizens can file a request for information from participating government agencies. The platform was launched in just four months after the signing of the executive order.

Currently, requests are directly received by participating agencies on their own agency dashboards. Data and information releases are then approved by the appointed FOI decision maker of the agency. As explained by the PCOO Assistant Secretary:

> "For example, [for an information request to] the DBM, someone requests using the centralized FOI website. The DBM employee receives the request and the reviews it. If DBM finds out that the information is already available on their own website, they will have to respond with the URL of the data requested. [The system is] decentralized in the way that we do not force agencies to upload the information on the FOI website."

The designated processing time for data requests is 15 days. As of November 20, 2017, there have been 2,511 requests for data from 195 agencies participating in the FOI program. According to the website, 766 requests have been granted so far, with 764 pending, and others have been denied or rejected (Republic of the Philippines, 2016). However, only agencies under the executive department are covered by the executive order.

Regarding rejected information requests, a Memorandum Circular to the Executive Order reflects nine specific exemptions "as recognized by the Constitution, existing laws or jurisprudence." Requests will be rejected if the information requested fall under the following nine exemptions:
1) Information covered by executive privilege;
2) Privileged information relating to national security, defense, or international relations;
3) Information concerning law enforcement and protection of public and personal safety;
4) Information deemed confidential for the protection of the privacy of certain individuals such as minors, victims of crimes, or the accused;

5) Information, documents, or records known by reason of official capacity and are deemed as confidential, including those submitted or disclosed by entities to government agencies, tribunals, and boards or officers, in relation to the performance of their functions or to inquires or investigation conducted by them in the exercise of their administrative, regulatory or quasi-judicial powers;

6) Prejudicial, premature disclosure;

7) Records of proceedings or information from proceedings which pursuant to law or relevant rules and regulations are treated as confidential or privileged;

8) Matters considered confidential under banking and finance laws and their amendatory laws; or

9) Other exceptions to the right to information under laws, jurisprudence, and rules and regulations.

The target group of FOI is the ordinary Filipino. As opposed to Open Data's target being more technical individuals, the FOI program aims for *"ordinary people [to be] able to use FOI to get the information withheld from them by their government."* The current communication strategy of the program is the use of social media—official Facebook, Twitter, and Instagram accounts. Roadshows and caravans are also held in and outside of Metro Manila to educate people about FOI.

4.3. Arrow 3: Open Government Implementation → Data Users

Managing open data involves an effective ecosystem composed of "multiple and varying interrelationships between data, open data providers, open data users, material infrastructures and institutions" (Zuiderwijk, Janssen, & Davis, 2014, p. 22). Despite the weaknesses of the open governance programs, NGOs and private organizations knowledgeable in data applications were not non-existent. The organizations included in this study utilized education, transportation, and infrastructure spending data. It should be noted that these organizations are experts in data applications and are therefore facilitated by the technology to achieve their own motivations for data usage. Because open government data, in its machine-readable and raw form, are not subject to a specific manner of usage (datasets on transportation and road data with nationwide provenance with adequate level of details are not limited to a specific data application), local organizations are afforded the technological flexibility to utilize it the way they want. Table 3 summarizes the applications of government data produced by organizations that created them.

Table 5: Open Government Data Use of Organizations in the Study

Organization	Data Category Used	Output from Data	Data Access	Government-User Interaction
CheckMySchool (CMS)	Education	Participatory monitoring of local schools	Requested the Department of Education (DepEd) for data access	In continuous partnership with DepEd since 2010
ByImplication	Transportation	Sakay.ph (web and mobile app)	Downloaded data from the portal during the hackathon	2nd place at the Transit App Challenge 2013 but no follow-up support
Thinking Machines	Infrastructure spending; Transportation	OnTrackPH (proof-of-concept software); Road Crash Data visualization and analysis	Downloaded data from open data portal, requested data from government units involved; Accessed data from the Metro Manila Development Authority website	Commissioned under a World Bank OGD initiative with DBM and software presented to DBM in 2016; 3rd place Road Safety IDEA HACK 2017

Despite initial interactions with the government, except for CMS, organizations included in this study have cited the lack of government support to their initiatives as a huge barrier in creating public value. This does not necessarily mean funding, that is a given for start-up organizations, but more so for the timeliness and sustainability of the data provided. The data they accessed on the portal are not updated after its first upload. Granular data is rare because most published data are aggregated statistics from different agencies. Lack of updates to published government data is a hindrance to sustaining the outputs of data-based applications.

Changes in administration also greatly affected the continuation of collaboration between government and organizations as projects were not properly transitioned to new government officials. Due to a lack of follow-through from the government, these organizations are left on their own to sustain their open data products. CheckMySchool, on the other hand, is funded by the World Bank and the Open Society Institute Budapest Foundation, and have secured a Memorandum of Agreement with the Department of Education regarding the sharing of available data on public schools. This type of government-organization partnership, however, is more of an exception than the rule.

4.4. Arrow 4: Data Users → Institutional Properties

As the Philippines is still in its early stages of institutionalizing open governance, it is too early to tell how data users are transforming the institutional properties within the government. Moreover, as a developing country, it would be inappropriate to use the institutionalization of developed nations' open government initiatives as a benchmark.

Nevertheless, the importance of coordinating with local organizations and developers has already been considered in the next open government agenda as mentioned earlier.

5. A Structurational Model for Open Government Data

The gap between the Philippines' open government data designer and user has been thoroughly discussed in the previous section. This evident discontinuity is a hindrance in achieving the goals of open governance—transparency and collaboration to solve existing social problems. The lack of a clear source of funding at the beginning of the OGD and FOI initiatives make it rather difficult for the programs to be effective. Not only is there deficient interaction between the government and data users, as shown by the lack of updates in data publishing, non-existent support to data users, and a lack of follow-up to government-led hackathons, but there is also an evident disarray within the planning and implementation of open government. Therefore, we propose the structurational view of open government data (Figure 3). This model views the institutional properties, open governance technologies, and technology user and designer as relatively stable components, while their range, content, and relative power over each other will vary over time. The dynamic nature of structuration is applicable and accurately depicts open governance because data, as a technology artifact, is subject to different interpretations by its users. In this way, both technology designer and user shape the technology in both design and use modes (arrows a & b) instead of a designer-focused interpretation of OGD.

## 5.1. Arrow A: Open Government as a Product of Human Action

Open government should be built with organizational use in mind but keep channels open for citizen requests. Most implementers design initiatives with engaging the ultimate beneficiaries, the general public, in mind. This is a rather impossible task because only a selected few will have the expertise to manipulate data and create valuable solutions. These selected few organizations, much like the cases presented in this study, can serve as "intermediaries." They are not only skilled in using data but are most likely more familiar with the needs of certain groups of people within their domains. They can create services and products of higher impact and public value using government data.

5.2. Arrow B: Open Government as a Medium of Human Action

As highly autonomous actors limited by data quality and implementation limitations or restrictions, open government data both constrains and enables open data use. Another perspective is that, while the government will be unable to identify all possible applications of government data, limitations can be enforced on how data is accessed (through one open data portal) and through clear legal provisions on the use of open government data. However, to promote public value, open governance initiatives should be user-focused; data published and made available should match with the data needs of users.

Figure 3. Proposed Structurational Model of Open Government Data – Ensuring Adoption of Innovation
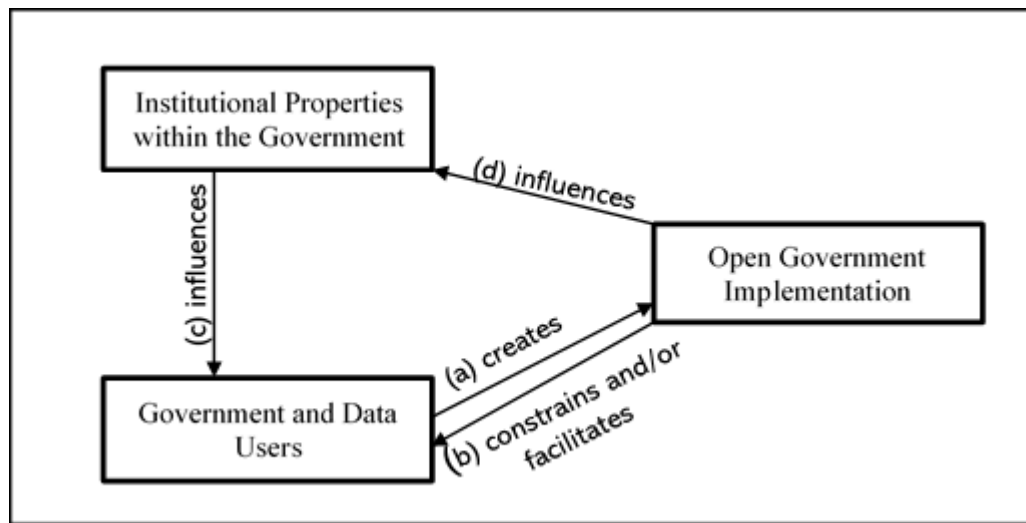
5.3.　Arrow C: Institutional Conditions of Interaction with OG

Data has its costs. Despite data being purely online for open governance implementations, there are administrative and operating costs in managing it. Therefore, the Open Government Partnership calls open government agendas as "country commitments." Technology is built and used within these circumstances and the form and functioning of open government implementations will bear the imprint of these conditions (Orlikowski, 1992). These institutional conditions influence how the OGD will be implemented and also how it will be used. State-of-the-art resources and design standards will translate into high-quality open government data initiatives which in turn will increase open data use.

5.4.　Arrow D: Institutional Consequences of Interacting with OG

Technology is an "enacted environment" (Orlikowski, 1992). Therefore, open data users can reinforce institutional properties of the government or transform them. Currently, with the weak institutional properties of the Philippines' government, open data users can transform the institutional properties of open governance, if the government allows them to. While governments of developing countries have limited resources and skilled people to initiate open governance, there is still hope in the capability of data users or so-called "intermediaries" to augment these inadequacies. A demand-side lead open government might be the solution for countries with weak government structures.

6.　Conclusions

6.1.　There is a Designer-User Side Efforts Disconnect

Government initiatives, at the beginning of institutionalization, are focused on (1) building technical capacities, (2) capacity-building within government agencies, and (3) reaching out to normal citizens who are not capable of transforming data into different forms. With the government needing to

devote its limited resources (capabilities, skills, and budgets) on these priorities, user-side institutional actors are neglected. As expressed by PCOO and DICT, there are no programs to reach organizations using government data as of date. Nonetheless, as shown in this paper, organizations mentioned in the cases continue to use open data, developing it using their own resources and with the help of international organizations. Moreover, another divide cited by the DICT representative is that citizens may also go directly to agencies and request data (a decentralized approach). These requests are not recorded by the organization and therefore they are not able to track the demand for these data. As shown in Figure 3, the government and the data users must work together in designing an effective OGD initiative. Governments will benefit from the skills and knowledge of data-versed users to identify high-priority datasets that will be usable for the creation of new products and services.

6.2.   Data Users have the Interest, Expertise, and Resources to Utilize Open Data

Organizations that use open data (see Table 5) can be considered "intermediaries" and are important actors in the open government ecosystem (Cruz & Lee, 2015; Schalkwyk, et al., 2015; Sein, 2011). They act as a link between the government, data, and citizens. This paper showed that these actors possess the agency to mobilize their resources and networks towards the achievement of their goals related to the use of government data despite the weaknesses in open government implementation (Section 4.3). As opposed to a normal citizen without interest in government data, these actors do not need further education about the importance of data, how to use it, and how to innovate from it. Furthermore, these actors already have set objectives regarding the function and purpose of the data they want. Their knowledge of the needs of their own fields motivate them to transform the data into solutions to social problems, products, and services needed by their own communities, thereby contributing to the institutionalization of open government.

   The importance of data-user organizations is even greater in developing nations with limited resources and budgets for implementation of open governance. As these actors work towards their own objectives regarding their use of data by mobilizing their own resources and applying their data-oriented skills, they influence their own networks to understand and adopt the concept of open government. By having people use government data with or without them being conscious of it, (such as with Sakay.ph and CheckMySchool data applications), they are already promoting the benefits of a transparent and collaborative government. These organizations promote the concept of open government by embedding open government data in people's daily lives.

6.3.   Intermediaries Can Build Networks within their Respective Fields that Government Initiatives may not be able to Reach

Because developing countries have limited resources and infrastructure to build OGD, as evidenced by insufficient budgets for open governance programs, governments should take advantage of the capabilities of organizational users to reach more citizens through their activities. Mobile and web applications and services emerging from government data will be more effective in embedding the principle of the technology within citizens' lifestyles as they will experience the benefits of open government (dos Santos Brito, da Silva Costa, Garcia, & de Lemos Meira, 2015). The services and

product outputs (see Table 5) of the organizations included in this study already have been used for their intended purposes. As government roadshows, trainings, and hackathons cannot reach every Filipino, organizations can supplement these activities with their own practices to maintain and build their networks of data users. With Filipinos being one of the biggest users of mobile internet and social media in the nation, these networks have as much potential for education, collaboration, and participation as it has for fake news.

7. Theoretical and Practical Implications

This study showed two perspectives on open government, the designer- and user-side of open government data. The activities of data users empower open governance in the Philippines despite weaknesses in the designer aspect. It is expected that this research will strengthen the literature on the role of an active demand-side of open government. As the ultimate benefactors of government transparency, citizen-involvement is a powerful driving force in the pursuance of the institutionalization of open government in both developing and developed countries. As an interpretive research study, the findings are generalized to theoretical concepts rather than the population. Nonetheless, it contributes to the theoretical development of the duality of technology as it applies to information systems, specifically in open governance. It shows how the open government data designer and users have their own interpretation in terms of open government data. This perspective on institutionalizing an e-government initiative can contribute to the study of information system implementation in developing countries.

The user-side approach of open governance views the concept in a more citizen-centric way. It is more proactive in the sense that data users know the most urgent problems that need attention in their own communities and therefore actively seek the data they need. This user-focused approach emphasizes the function and purpose of the data for the community and less on the technical requirements for publishing it. This paper offers practical insights on implementing open governance by proposing governments open dialogue and collaborate with members of society who have technical expertise in data, especially when these skills are not present in the government units responsible for data management.

Based on the cases presented in this study, it is suggested that a two-way open governance model will be a more effective approach in developing a truly open government. However, this ideal model requires a healthy demand-side that not all countries might have. This social stimulation will come from data scientists, data activists, academics, and the private sector, with support of international organizations. This reinforces the role of demand-side stakeholders as active participants in promoting open government data from the beginning of the process, instead of just mere spectators waiting for the government to fully develop effective open government infrastructure. Based on the Philippines' example, a limited OG infrastructure can be assisted by an active civil society demand for transparency which can give the government that needed nudge to continually pursue its open government commitments. Moreover, this study reveals that an active user demand for data is as important as a committed government. As designers of open government data implementations, government agencies involved tend to limit the scope, format, and availability of data based on how they think data should be utilized. The cases presented in this paper show how the benefits of open

data can be harnessed by committed individuals and organizations despite limitations in OGD development.

8. Recommendations for Future Study

Because open government is a fairly new concept, the viewpoint has been mostly top-to-bottom or linear, expecting immediate impacts from initiatives set forth by governments. This, however, is not the case. Institutionalization within socio-technical systems, such as open government, has an intricate web of people with varying skills, interests, and technologies. It is recommended that future studies focus on institutionalization within government agencies which contain staff who need training. Moreover, looking at how civil society can contribute to institutionalization, it is evident that demand-side actors and initiatives should be investigated further to reach the full potential of open government initiatives. These future investigations could include more IT concepts such as linked data, the semantic web, artificial intelligence, OGP in data science, and other similar topics.

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About the Authors

Ruth Angelie Cruz

Ruth Angelie Cruz is an Assistant Professor at the Decision Sciences and Innovation Department of De La Salle University in Manila, Philippines. She earned her MBA and Doctorate degree in Business Administration

majoring in Management Information Systems from the Catholic University of Korea. She has worked in diverse companies focused on social media and e-business before joining the university. Her research interests cover the utilization of social media as a marketing channel of business organizations and the utilization of public open data for the creation of new products and services to increase transparency and accountability in government.

Hong Joo Lee

Hong Joo Lee is a Professor of Business Administration at the Catholic University of Korea. He has a Ph.D. from the KAIST Business School (2006) and was with the MIT Center for Coordination Science as a postdoctoral fellow in 2006. He stayed at the MIT Center for Collective Intelligence as a visiting scholar in 2011 and was at the Brunel Business School, Brunel University as an international researcher in 2017–2018. His research areas are utilizing intelligent techniques and analyzing effects of intelligent aids in digital business. His papers have been published in *International Journal of Electronic Commerce*, *Decision Support Systems*, *Expert Systems with Applications*, *Journal of Electronic Commerce Research*, *Information Systems Frontiers*, and other journals.