A User Approach to Open Government Data Impact Assessment

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Abstract: How to achieve good governance via the development of Information and Communication Technologies (ICTs) has been a critical concern for public administrators and academic scholars in the domain of public administration. Open government data, as an enabler of transparent, accountable, and effective public administration institutions, becomes more and more important nowadays, so does the need for effective ways to evaluate its benefits and impacts. This research identifies two types public values: (1) mid-term public including transparency, accountability, and participation/collaboration; and (2) long term public values including political, social, and economic values to evaluate the impacts of open government data. We conduct a large-scale online survey of open data users' recognition and impact assessment of open government data in Taiwan. Our analysis is based information from 4,905 valid respondents. Our results indicate that the impacts of open government data is not significant yet, and government should further explore citizen needs in order to provide useful open data.

Keywords: open data, impact assessment, e-government

1. World trends of Open Government Data

How to achieve good governance via Information and Communication Technologies (ICTs) has been a critical concern for public administrators and academic scholars in the field of public administration. In addition to the improvement of ICT infrastructure, governments across the world pay attention to provide convenient services to citizens and create public values though digital government policies. The most important development of e-governance recently is Open Government Data (OGD), which provides citizens with the opportunity to access government data, conduct value-added applications, provide creative public services, and participate in different kinds of democratic processes. Open government data is as an enabler of transparent, accountable, and effective public administration institutions (Chu & Tseng 2016), and it has become the key point of electronic governance worldwide after the publication of the OGD principles. Governments worldwide are increasingly releasing non-personal data, and data that can be used freely, re-used, distributed by anyone, and machine-readable to public users (Martin, Rosario, & Perez 2016). For example, until 23th May 2018, the US OGD platform has more than 280,593 datasets (https://www.data.gov/); the UK OGD platform has more than 45,156 datasets (https://data.gov.uk/); and the Japanese OGD platform has more than 21,029 datasets (http://www.data.go.jp/), etc. Governments worldwide also encourage the public to make the value-added applications of open data in order to develop innovative business models, provide creative public services, and support transparency (Kostovski, Jovanovik, & Trajanov 2012). For example, OGD users can use Trulia (https://www.trulia.com/) to see hyperlocal insights and market trends on potential neighbourhoods and housing options, or can connect datasets and develop new ideas by using Enigma (https://www.enigma.com/) to search through billions of public records.

Open government data is important because the more accessible, discoverable, and usable data is, the more impact it can have. These impacts include, but are not limited, cost savings, efficiency for business, improved civic services, informed policy, performance planning, research and scientific discoveries, transparency and accountability, and increased public participation in the democratic dialogue (https://www.data.gov/impact/). Open government data becomes more and more important nowadays, so does the need for effective ways to evaluate its quality and impacts. Several international organizations, such as the Open Data Barometer, Open Data Index, Open Data Census, European PSI Scoreboard, and Open Data Compass, all adopt various methods to evaluate the quality of open government data and its portals. Purwanto, Janssen and Zuiderwijk (2017) develop an OGD success evaluation model that offers a systematic way of understanding how OGD creates public value. However, most OGD evaluation indicators emphasize on the importance of economic and political aspects of OGD (Viscusi, Castelli & Batini 2014; UN 2016). There is still a lack of attention on dimensions of society and sustainability.

Is OGD so promising? Whether currently available open government data really contribute to many anticipated political, social, and economic benefits? From the users' point of view, we discuss whether open government

data, an enabler of transparent, accountable and effective public administration institutions, really have significant impacts as many government officials and academic researchers expect. The outline of the paper is as follows. The next section of this paper introduces literature of open government data, focusing on academic research related to the estimation of OGD impacts. Afterwards, we introduce the status of open government data in Taiwan. We develop an impact framework, and the framework is examined using data from a large-scale survey of OGD users who reported their usage patterns of government open data and perceptions of the current and future impacts of OGD. We analyse the survey data, and from the results we then derive implications for public policy.

2. Impacts of Open Government Data

From the perspective of good governance, OGD must still account for public values such as participation, transparency, accountability, sustainability, and equity, and avoid becoming a one-dimensional system hijacked by efficiency (Friedland & Gross 2010). The development and application of OGD should not deviate from its fundamental goal of responding to public values. Previous studies have identified a volume of expected OGD benefits and impacts, such as transparency, accountability, participation, collaboration, effectiveness, and social engagement. For example, Worthy (2015) identified the most frequently mentioned democratic aims of OGD, i.e., increased accountability, increased participation, and greater information transmission. Weerakkody et al. (2017) suggested that public norms such as efficiency, transparency, and accountability have motivated governments to exploit the potential of data distribution and usage. Davies and Perini (2016) pointed out that open data as an intervention, can be promoted for a broad range of reasons, from economic benefits to greater transparency and accountability. Ubaldi (2013) suggested that OGD initiatives create an architecture for participation that enables users to not only be passive consumers of content and services, but also active contributors and designers in their own right. In addition, according to Open Culture Foundation (OCF 2017), open data can help citizens to learn more about public affairs and can enhance citizen participation.

Open data may also enable 'social monitoring', where the public used to spot problems (Worthy 2015). For example, in the field of environment protection, open data can elevate environmental awareness of citizens and can be utilized by green groups as a tool to supervise government and corporations. Moreover, the benefits of open data may range from the political and social to economic growth and stimulation of competitiveness and innovation. For example, there is evidence that startups and small and medium enterprises can benefit from the re-use of government data (World Bank, 2014). UN (2016) reported that open data allows people to develop new commercial services (e.g., new apps for public transportation), generate new employment opportunities and then facilitate the creation of start-ups. Thus, we identify two types of OGD impacts corresponding to public values: (1) mid-term impacts, e.g., transparency, accountability, and participation/collaboration; and (2) long term impacts, e.g., political, social, and economic impacts.

3. Open Government Data in Taiwan

In 2012, the National Development Council (NDC), Taiwan established the Government Open Data Platform (data.gov.tw), which brings together open datasets, providing a one-stop contact for inquiry services. Taiwan government has been implementing its open data policy based on three principles, including (1) open data for public and enterprise use; (2) free in principle, charging as the exception, and (3) automatic and systematic release and exchange of large volume of data, and four strategies (see Figure 1) (NDC 2015). Since 2014, civil groups such as g0v, Taipei Computer Association, the Open Data Alliance, etc., have worked with the central government and local governments in a spirit of interactive participation and cooperation to promote open data.

Until 23th May 2018, the OGD platform has more than 35,872 datasets and 172 Application Public Interfaces (APIs). Most datasets on the OGD platform are 3-star, which means datasets are available as machine-readable structured data plus non-proprietary format. Open Knowledge International (https://index.okfn.org/place/) has published global open data index 2016, showing that Taiwan topped the index for two consecutive years (see Figure 2) (NDC 2017). Of the 15 key categories used to gauge the state of open government data, Taiwan topped 12 with 100 percent openness, such as land ownership, location and weather forecast, administrative boundaries, air quality, company register, draft legislation, election results, government budget, national maps, national statistics and procurement. NDC expressed that the government will continue promoting OGD and releasing accurate and easy-to-use public data in a timely manner.

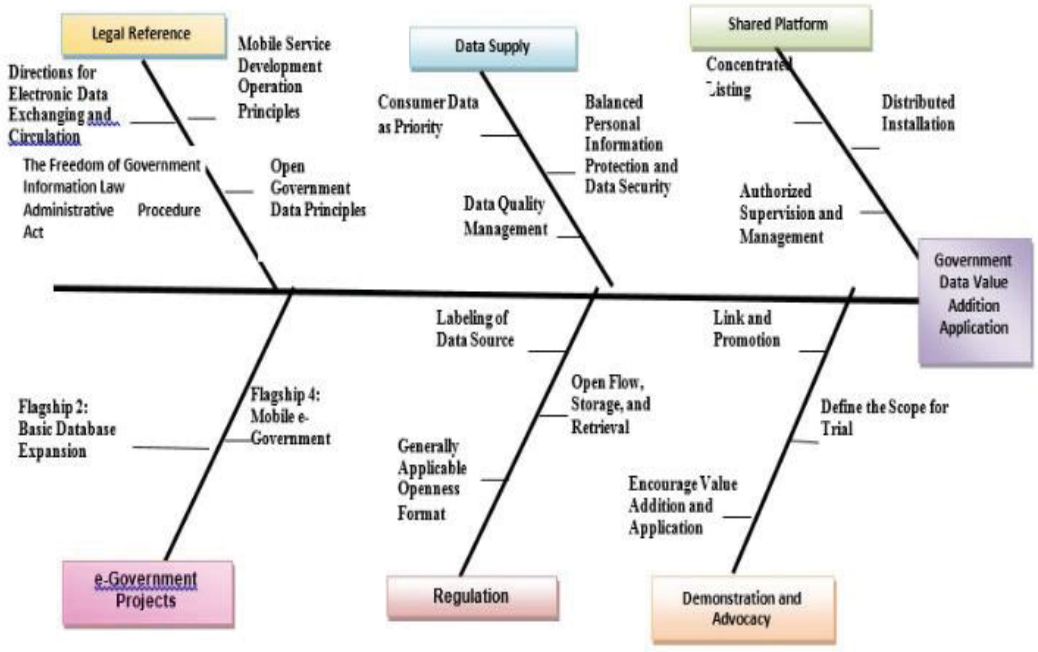

Figure 1: Strategies of open data promotion in Taiwan

Figure 2: Ranking of Open Data Index 2016

4. Methods and procedures

We examine the impacts of OGD program in the context of a user-centric approach. We incorporate a wide variety of important factors from previous research into a framework. The framework evaluates the OGD impact assessment from the aspect of public values. Since OGD emphasizes citizen participation and collaboration, and OGD is as an enabler of transparency accountability, and effective public administration institutions, the impact assessment includes not only the aspects of transparency, accountability, participation and collaboration but also the aspects of political, social, and economic impacts. In 2017 with the assistance of the NDC and Industrial Development Bureau of Ministry of Economics, we conduct an online survey and made detailed impact

assessments of the OGD program in Taiwan. Based on the preceding framework, this section details the subsequent constructs and questionnaire items and the survey settings to collect the empirical data from OGD users.

The main foci of the questionnaire are OGD impacts, including its midterm and long term impacts on public values such as transparency, accountability, participation, collaboration and effectiveness (including the aspects of political, social, and economic impacts)(see Table 1). All answers in the this part are coded on a 5-point Likert Scale with '1' representing 'strongly disagree' and '5' representing 'strongly agree.' We also collect demographics and characteristics (motivation to use OGD, types of OGD used most, etc.) of the OGD users through the questionnaire. The questionnaire was reviewed by a committee (a team of government officials and experts from various domains like public administration, public management, and information management) and was pretested on several people to verify the clarity of the questions and to ensure its content validity. According to their comments, the terminology in various sections was improved, and greater clarification is made. We post the questionnaire information and URL on the Government Open Data Platform (data.gov.tw), social networks, and Facebook fan pages related to OGD. In addition, we sent our survey invitation email to people who participated in various OGD contests host by Industrial Development Bureau of Ministry of Economics.

Table 1: Questionnaire content

Construct	Code Name	Questions	Mean (SD)
Transparency	Q1	OGD brings greater understanding of internal information for citizens.	3.79 (0.71)
	Q2	OGD leads to more transparency for government.	3.90 (0.74)
Accountability	Q3	OGD brings accountability of government effectively.	3.83 (0.77)
	Q4	OGD helps to fight against government corruption.	3.66 (0.91)
Participation/ Collaboration	Q5	OGD promotes public engagement of marginalized groups.	3.74 (0.84)
	Q6	Citizens and government can collaborate in solving social problems.	3.78 (0.79)
Political impacts	Q7	Presently, I think OGD can enhance citizens' trust in government.	3.75 (0.82)
	Q8	In the next five years, I expect OGD will enhance citizens' trust in government.	2.41 (0.93) (n=204)
Social impacts	Q9	Presently, I think that with OGD, the public services have helped to solve the environmental problems in Taiwan.	3.56 (0.79)
	Q10	In the next decade, I expect that OGD will help to solve the environmental problems in Taiwan.	2.33 (0.95) (n=272)
	Q11	Presently, I think that with OGD, the public services have contributed to greater inclusion for marginalized groups in our society.	3.29 (0.81)
	Q12	In the next decade, I expect that OGD will help contribute to greater inclusion for marginalized groups in our society.	2.81 (1.01) (n=524)
	Q13	Presently, I think that with OGD, public services have helped governments to facilitate access to basic services for people living in poverty, gender inequality and unemployment.	3.30 (0.86)

Construct	Code Name	Questions	Mean (SD)
	Q14	In the next decade, I expect that OGD will help governments to facilitate access to basic services for people living in poverty, gender inequality and unemployment.	2.31 (.90) (n=583)
Economic impacts	Q15	The development of start-ups and Small and Medium Enterprises (SMEs) in Taiwan now benefit from the use of OGD.	3.61 (0.72)
	Q16	The use of OGD allows people to develop new commercial services, thus generating new employment opportunities and facilitating the creation of start-ups.	3.67 (0.73)

Note: If the answer of Q7, Q9, Q11, and Q13 is 3, 4, 5, respondents will skip Q8, Q10, Q12, and Q14 respectively.

5. Results

4,235 OGD users finished the questionnaire. Among them, 1,312 (31%) are the OGD heavy users, and 2,923 (69%) are the OGD light users. Overall, there are more women (56%) who responded, indicating that female are slightly more interested in using OGD. The education level of these respondents are high, about 70% of the respondents having completed college or higher degrees. Many of the respondents are in the age group of 40-45 and the mean age for the respondents was 43, indicating that the OGD users are highly educated and mature (see Table 2). Table 2 also shows that among all the OGD data, "social issues and welfare (31.8%)", environment and weather (30.2%), and "workforce and employment (23.7%)" are the top three data that OGD users are most interested in, indicating that OGD users truly care about social issues. In addition, most respondents reveal that they frequently use OGD to conduct statistical analysis (31%) and academic research (20.9%). This seems to be in accord with the education level of respondents. Moreover, table 2 represents the motivations of OGD usage. Results show that the top three motivating factors are: (1) to meet citizen's needs of public service, (2) to realize the operation of the government, and (3) to discover potential social issues.

Table 2: Demographics and OGD usage patterns of OGD users

Gender			*Age*				*Frequency of OGD Use*			
Male	Female		Under19	20-39	40-59	60+	Seldom	Sometimes	Usually	Often
1,869 (44.1%)	2,366 (55.9%)		98 (2.3%)	2,118 (50%)	1,833 (43.3%)	186 (4.3%)	1,465 (34.6%)	1,458 (34.4%)	1,017 (24%)	295 (7.0%)
Top 3 types of data OGD users interested most										
Social issues and welfare			Environment and weather				Workforce and employment			
1,346 (31.8%)			1,278 (30.2%)				1,002 (23.7%)			
Top 3 purposes of using government open data										
To run statistical analysis			To conduct academic research				To develop online service			
1,400 (31.0%)			884 (20.9%)				849 (20.0%)			
The motivations for OGD Usage										
Question items						Mean			SD	

To meet personal curiosity	3.48	0.84
To learn new technique	3.82	0.77
To realize the operation of the government	3.89	0.77
To supervise the government	3.53	0.84
To help government become more efficiency	3.86	0.83
To respond requests from organizations or superiors	3.63	0.84
To meet citizen's needs of public service	3.96	0.78
To make business profits	3.05	0.91
To discover potential social issues	3.88	0.82

Table 3 shows the measurement scales of all impacts evaluated. The most valuable impacts perceived by OGD users are transparency, and accountability, collaboration. Near 80% respondents show their positive attitudes toward the statement that open government data can lead to more transparency for government. Over 70% respondents believed that open government data would have beneficial to accountability and collaboration among government and citizen. In summary, these results indicate that in the perspective of OGD users, government open data can help government in achieving the mid-term public values. However, only 56% OGD users believe that OGD can improve social issues, such as environmental problems, poverty, gender inequality and unemployment, indicating that in order to enhance the government's ability to solve social issues and to achieve higher public value, the government should dedicate to improve the quality of data and expand the variety of datasets.

Table 3: Measurement scales of constructs

Constructs	Positive (%)	Neutral(%)	Negative (%)	Mean	SD
Transparency	77.6	19.4	3.0	3.84	0.67
Accountability	72.2	21.1	6.7	3.75	0.77
Collaboration	71.5	22.7	5.8	3.76	0.76
Political	64.3	31.4	4.3	3.75	0.82
Social impacts	56.9	28.3	14.8	3.38	0.71
Economic	64.9	30.8	4.3	3.64	0.68

Table 4 demonstrates the comparison of motivations between the heavy and the light OGD users. Our results show that the heavy users have higher motivations for OGD usage in all the motivating factors we present in Table 4, indicating that the heavy users have more internal/external driving forces than the light users in every aspects of OGD. The top three motivating factors of heavy users are: (1) to meet citizen's needs of public service, (2) to realize the operation of the government, and (3) to discover potential social issues. Moreover, in answer to the open-ended questions, our respondents suggested that government should publish more cases of the successful OGD applications on government websites to encourage innovative OGD applications. .

Table 4: Comparison of motivations between the heavy and the light OGD users

	Heavy Users		Light Users		
	M	*SD*	*M*	*SD*	*p*
To meet personal curiosity	3.64	0.91	3.40	0.80	.000***
To learn new technique	4.01	0.78	3.74	0.75	.000***

	Heavy Users		Light Users		
	M	*SD*	*M*	*SD*	*p*
To realize the operation of the government	4.05	0.79	3.82	0.75	.000***
To supervise the government	3.64	0.91	3.48	0.81	.000***
To help government become more efficiency	4.02	0.83	3.79	0.82	.000***
To respond requests from organizations or superiors	3.83	0.87	3.54	0.80	.000***
To meet citizen's needs of public service	4.11	0.79	3.89	0.76	.000***
To make business profits	3.16	1.00	3.00	0.86	.000***
To discover potential social issues	4.04	0.80	3.81	0.82	.000***

Table 5 demonstrates the comparison of perspectives on OGD impacts between the heavy users and the light users. Results show that the heavy users have higher awareness of both the mid-term and the long-term impacts than the light users do, indicating that heavy users are more likely to believe that open government data can bring the influence of transparency, participation, and accountability, and create political, social, and economical benefits. This could be caused by the higher motivations for OGD usage of heavy users and the positive user experiences of them, thus enhance the intention to reuse OGD. However, the causalities should be further examined. In addition, according to the open-ended questions, OGD users suggested that government should focus on establishing a public-private partnership system to enhance the possibility of solving public or social issues.

Table 5: Comparison of perspectives on OGD impacts between heavy and light users of OGD

	Heavy Users		Light Users		
	M	*SD*	*M*	*SD*	*p*
Transparency	3.95	0.68	3.80	0.66	.000***
Accountability	3.85	0.78	3.70	0.75	.000***
Collaboration	3.88	0.77	3.70	0.75	.000***
Political	3.88	0.77	3.69	0.75	.000***
Social	3.51	0.77	3.33	0.67	.000***
Economic	3.77	0.70	3.58	0.66	.000***

6. Conclusion and discussion

According to Open Data Handbook, open government data is a tremendous resource both because of the quantity and centrality of the data it collects, but also because most of that government data is public data by law, and therefore could be made open and made available for others to use. There are many areas where we can expect open government data to be of value, and where examples of how it has been used already exist. There are also many different groups of people and organizations who can benefit from the availability of open data, including government itself (http://opendatahandbook.org/guide/en/why-open-data/). At the same time it is important to know how and where value is and will be created by OGD. Open government data may be very promising. However, whether currently available open government data really contribute to good governance and help the accomplishment of public values remains unclear.

In this paper, we develop a framework to evaluate the midterm impacts, i.e., transparency, accountability, and participation; and the long-term social, political, and economic impacts of OGD from the perspective of OGD users. Even Taiwan has topped the Open Knowledge International index for two consecutive years, our results show that both the mid-term and the long-term impacts of government open data are not very promising now but are still highly expected in the future. Considering our research findings, much of OGD users concern about social and welfare, environment and weather, and workforce employment, which we refer to as OGD's social impact. However, user perspective of OGD's social impact is relatively low. As Weerakkody et al. (2017) pointed out that there is a disconnection between potential and realistic impact of open data. Therefore, the government should dedicate to enhance the quality of data, to extend the number of data sets, or to encourage a different kind of data usage. Meanwhile, the government should think more widely when it comes to deciding what kind of data should be released, or to be released in which format. Viscusi, Castelli and Batini (2014) argued that most of the open data sets based on a technology-driven perspective, rather than on a focus on the potential public or social value of the data to be published. In order to enlarge citizen participation and collaboration in the creation of innovative, value-added services, government should focus on increase data transparency. Furthermore, data openness is eventually expected to improve the decision making of both governments and individuals (Ubaldi 2013). In summary, our research findings lead us to believe that the impacts of OGD are not significantly recognized by the OGD users yet, and the development of OGD is still in its nascent stage. For this reason, government should further explore citizen needs in order to provide useful open data.

References

Chu, P. Y. and Tseng, H. L. (2016) "A Theoretical Framework for Evaluating Government Open Data Platform", *EGOSE '16 Proceedings of the International Conference on Electronic Governance and Open Society: Challenges in Eurasia*, pp, 135-142.

Chu, P. Y., Huang, W. L., Huang, T. Y., Hung, Y. T., Lee, C. P. and Tseng, H. L. (2017) "A Longitudinal Research of Public Value and Electronic Governance Development in Taiwan", *ICEGOV '17 Proceedings of the 10th International Conference on Theory and Practice of Electronic Governance*, pp 459-464.

Davies, T. and Perini. F. (2016) "Researching the emerging impacts of open data: revisiting the ODCC conceptual framework", *The Journal of Community Informatics*, Vol 12, No. 2, pp 148-178.

Friedland, C. and Gross, T. (2010) "Measuring the public value of e-government: Methodology of a south African case study", *International Information Management Corporation (IIMC)*, 2010 IST-Africa. 19-21 May 2010.

Kostovski, M., Jovanovik, M., and Trajanov, D. (2012) "Open Data Portal based on Semantic Web Technologies", *In Proceeding of the 7th South East European Doctoral Student Conference*.

Martin, A. S., Rosario, A. H. D., and Perez, M. D. C. C. (2016) "An International Analysis of the Quality of Open Government Data Portals", *Social Science Computer Review*, Vol 34, No. 3, pp 298-311.

Meijer, A.J., D. Curtin and M. Hillebrandt. (2012) "Open Government: Connecting Vision and Voice", *International Review of Administrative Sciences*, Vol 78, No. 1, pp 10–29.

National Development Council (2015) "*An Outline of the Government Open Data Promotion Situation in Taiwan",* Retrieved April 22, 2018, from http://www.ndc.gov.tw/en/News_Content.aspx?n=8C362E80B990A55C&sms=1DB6C6A8871CA043&s=09819AC7E099BCD5

National Development Council (2017) "*Global Open Data Index Taiwan topped for two consecutive years",* Retrieved April 22, 2018, from https://www.ndc.gov.tw/News_Content.aspx?n=114AAE178CD95D4C&sms=DF717169EA26F1A3&s=9628F75B06CCA7DD.

Open Data Handbook (2015) "Why Open Data?", Retrieved September 215, 2017, from http://opendatahandbook.org/guide/en/why-open-data/

Purwanto, A., Janssen, M. and Zuiderwijk, A. (2017) Towards an Open Government Data Success Model: A case study from Indonesia. In: 2017 17th European Conference on Digital Government (ECDG). Lisbon, Portugal. 15 - 16 Jun 2017.

Ubaldi, B. (2013) "Open Government Data: Towards Empirical Analysis of Open Government Data Initiatives", OECD Working Papers on Public Governance, No. 22, OECD.

United Nations (2016) "The United Nations E-Government Survey 2016: E-Government in Support of Sustainable Development", New York: United Nations.

Viscusi, G., Castelli, M. and Batini, C. (2014) "Assessing Social Value in Open Data Initiatives: A Framework", *Future Internet,* Vol 6, No. 3, pp 498-517.

Weerakkody, V., Irani, Z., Kapoor, K., Sivarajah, U. and Dwivedi, Y. K. (2017) "Open data and its usability: an empirical view from the Citizen's perspective" *Information Systems Frontiers,* Vol 19, No. 2, pp 285-300.

World Bank (2014) "Open Data for Economic Growth", [online], available: http://www.worldbank.org/content/dam/Worldbank/document/Open-Data-for-Economic-Growth.pdf.

Worthy, B. (2015) "The Impact Of Open Data In The Uk: Complex, Unpredictable", And Political. *Public Administration*, Vol 93, No. 3, pp 788–805.

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