RESEARCH ARTICLE

Open Government Data (OGD): The Implementation of Its Principles in Ten Leading Countries

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Abstract

OGD is undoubtedly a strategic asset for public sector since it enhances economic development, creates innovation, drives evidence-based policy, and increases government transparency and accountability. Data quality is said to play an essential role in the mentioned benefit creation. Its quality remains relatively dependent on a government's principles which may yield different outcomes based on its differences. This research aimed to compare and contrast OGD policies that are focused on the principles for opening up data in ten leading countries as case studies including the United Kingdom, Canada, France, the United States of America, South Korea, Australia, New Zealand, Japan, Netherland, and Norway as ranked by the Open Data Barometer. The document analysis with

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using content analysis was employed to analyze the available and relevant documents (i.e. laws and regulations, government policies and plans, government reports, and so on). Findings reported that all ten counties perceived their OGD as a strategic public asset. There are eight principles involved in opening up government data namely, (1) completeness, (2) machine - readability, (3) open standards or open formats, (4) non-discrimination, (5) timeliness, (6) cost-free, (7) open license, and (8) open-by-default. The findings can serve as a fundamental guideline for designing and establishing an OGD policy in terms of development and evaluation. Understanding how to implement its principles effectively will boost up national development potentiality in data utilization.

Keywords: Open Government Data, Open Data Policy, Policy Implementation

บทความวิจัย

ข้อมูลเปิดของภาครัฐ: การนำหลักการเปิดเผยข้อมูลภาครัฐไปสู่การปฏิบัติของ 10 ประเทศชั้นนำ

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บทคัดย่อ

ข้อมูลถือเป็นสินทรัพย์เชิงกลยุทธ์ของภาครัฐเนื่องจากช่วยพัฒนาเศรษฐกิจ สร้างนวัตกรรม ขับเคลื่อนนโยบายที่อยู่บนพื้นฐานของหลักฐาน และเพิ่มพูนความโปร่งใสและความรับผิดชอบได้ คุณภาพของข้อมูลเปิดมีบทบาทในการสร้างประโยชน์ดังกล่าว คุณภาพของข้อมูลยึดโยงอยู่กับหลักการของการเปิดเผยข้อมูลของแต่ละประเทศซึ่งความแตกต่างของหลักการอาจนำไปสู่ผลลัพธ์ที่แตกต่างกัน งานวิจัยนี้มีวัตถุประสงค์เพื่อเปรียบเทียบนโยบายข้อมูลเปิดของภาครัฐซึ่งมุ่งเน้นไปที่หลักการในการเปิดเผยข้อมูลของประเทศชั้นนำ 10 ประเทศ ได้แก่ อังกฤษ แคนาดา ฝรั่งเศส สหรัฐอเมริกา เกาหลีใต้ ออสเตรเลีย นิวซีแลนด์ ญี่ปุ่น เนเธอร์แลนด์ และนอร์เวย์ ซึ่งได้รับการจัดอันดับด้วยดัชนีการเปิดเผยข้อมูลระดับสากล (Open Data Barometer) การวิจัยนี้ใช้การวิเคราะห์เชิงเอกสารที่เกี่ยวข้องด้วยวิธีวิเคราะห์เชิงเนื้อหา เช่น กฎหมาย ข้อบังคับ นโยบายและแผนงานรัฐบาล รายงานประจำปี เป็นต้น ผลวิจัยพบว่าทั้ง 10 ประเทศ เห็นความสำคัญของข้อมูลเปิดของภาครัฐในฐานะที่เป็นสินทรัพย์สาธารณะเชิงกลยุทธ์ โดยมีหลักการเปิดเผยข้อมูลภาครัฐที่สำคัญ

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จำนวน 8 หลักการ คือ (1) ข้อมูลที่มีความสมบูรณ์ (2) ข้อมูลที่เครื่องหรืออุปกรณ์เทคโนโลยีอ่านได้ เช่น คอมพิวเตอร์ (3) ข้อมูลที่มีมาตรฐานแบบเปิด (4) ข้อมูลที่ทุกคนสามารถเข้าถึงและใช้ได้โดยไม่เลือกปฏิบัติ (5) ข้อมูลที่เป็นปัจจุบัน (6) ข้อมูลที่ไม่มีค่าใช้จ่าย (7) ข้อมูลที่มีลิขสิทธิ์แบบเปิด และ (8) ข้อมูลที่เปิดโดยปริยาย ผลการวิจัยดังกล่าวนี้สามารถใช้เป็นแนวทางพื้นฐานในการออกแบบและกำหนดนโยบายข้อมูลแบบเปิดในแง่ของการพัฒนาและการประเมินผล การทำความเข้าใจวิธีการปฏิบัติอย่างมีประสิทธิภาพนี้จะช่วยเพิ่มศักยภาพในการใช้ข้อมูลเพื่อพัฒนาประเทศได้

คำสำคัญ: ข้อมูลเปิดของภาครัฐ นโยบายข้อมูลเปิด การนำนโยบายไปปฏิบัติ

Introduction

Governments around the world recognize the powerful value of OGD in fostering modernization through economic activities, social improvement alongside the increase in transparency and accountability of respective governments (Marr, 2017; Zuiderwijk & Janssen, 2013). Currently, the United States has perceived the OGD as strategic asset of evidence-based policy on how a policy should be formulated, evaluated, and improved by systematically utilizing OGD (Foundations for Evidence - Based Policymaking Act, 2018). Importantly, OGD increases economic values through providing opportunities to understand the insights of customers and market trends that help to create economic activities, such as new investment, jobs, innovation, and starts-up. For example, the United Kingdom obtained its economic values from “HM Land registry” as the open data project with an estimated $1.4 billion in the investment of Proptech startups in 2014 (Verhulst & Young, 2016). France gained a direct economic value of "DataPublica” project around 0.5% of GDP (La Iniciativa Aporta, 2017). Australian government open data has released directly and indirectly economic values at $25 billion per annum (Australian government, 2015a). With these values, many countries have adopted OGD to be their strategic asset by implementing their national OGD policies to exercise the influence of data (Janssen, 2012).

However, unleashing or utilizing OGD’s values may not be fully developed. An essential factor that may hinder the full potential of data utilization is the quality of data (Yoon, 2017). The quality of data is related to the principles for opening up data (Vetro et al., 2016). Theoretically, the principles are universal as it

encompasses various information and organizations. However, they can rarely be used as practical support in opening data (Zuiderwijk & Janssen, 2012). It is important to note that the principles are strongly reliant on the OGD policy of individual countries. The differences in OGD policies among these countries would inevitably cause the yielding of different data impacts.

Despite the increasing pressure to develop and maximize fully the power of data, little attention has been paid to forming a standard set of principles for opening government data using existing model policies from successful countries. Therefore, this research aims to compare and contrast the OGD policies by focusing on the model principles for opening data of these successful countries. This research provides an opportunity to better understand the underlying principles of opening up government data. This newfound knowledge could then contribute to developing and improving existing OGD policy by using guidelines from successful countries as a benchmark to develop the quality of OGD that would lead to unlock the power of its.

Literature Review

The OGD principles vary considerably. They are mainly derived from the definition of OGD which refers to “data and content that is freely used, modified, and shared by anyone for any purpose” (Open Knowledge International, n.d.). The general principles of OGD were widely proposed by Maurino, Spahiu, Batini, & Viscusi (2014), Ubaldi, (2013), Solar, Concha, & Meijueiro (2012), World Wide Web Foundation (2007), and Berners-Lee (2006) as presented in Table 1.

Table 1
Principles of OGD

The Principles of OGD	Description
Completeness	Government data is available at the source, is not aggregated, and is not subject to privacy or security.
Timeliness	Data is regularly updated.
Machine readability	Data is reasonably structured, readily processable, or easily accessed, and modified by a computer or an electronic tool.
Open standard or open format	Data is in open format to easily process.
Cost-free	Data is easily assessed without any charge or fee.
Open licensing	Data is license-free, not subject to any copyright.
Non-discrimination	Data is available for all without requiring any registration.

These above principles are the foundation for data quality. An analytical framework based upon literature above is temporarily applied across ten countries to present some more widely applicable principles for opening up data.

Methods and Materials

Since OGD is a recent phenomenon at the early stage of its development (Safarov, 2019), this study employed the case study research method as it is appropriate for early-stages, developing concepts (Eisenhardt, 1989), and for investigating new phenomena (Yin, 2003). The selection of case studies was done according to the

ranking of countries in the Open Data Barometer (2017), including the United Kingdom, Canada, France, United States of America, South Korea, Australia, New Zealand, Japan, Netherland, and Norway. The document research with using content analysis was employed to collect and analyze relevant and credible secondary documents since it could deal with the complexity of different evidences (Kohlbacher, 2006; Yin, 2003). The secondary documents included laws and regulations (i.e. Act on Promotion of the Provision and Use of Public Data (2017), Act to amend the Parliament of Canada Act and the Access to Information Act (transparency) (2014), etc.), government policies or plans (i.e. Australian government public data policy statement (2015), Japan open data charter action plan (2013), policy on open data of Netherland (2019), open data white paper of the United Kingdom (2012), etc.), government evaluation reports (i.e. private sector use of open government data resulted from the open data 500 Australia (2015a), open government consultation report of Canada government (2012), etc.), and previous research (i.e. open data in the G8 analyzed by Castro, & Korte (2015), international open data best practices reported by La Iniciativa Aporta (2017), institutional dimensions of open government data implementation reported by Safarov (2019), open data best practices in Europe's top performers analyzed by Radu (2020), etc.).

Results and Discussions

1. Overview of OGD in Ten Leading Countries

The ten leading countries as presented in Table 2 have a long history of opening up government data. The opening up

government data was a result of the Freedom of Information Act or Right to Information Act in these countries. Since the Right Information Act was established, relevant policies about government data have also been actively developed. In recent years, governments have proactively published and opened up their data by launching a centralized OGD portal which served as a data catalog site. With extensive search capabilities, this portal contains data provided by government agencies and is made available for public use.

Table 2

Implementation of Right to Information Act in Ten Leading Countries

Ranked	Country	Year of the RIA*,**	OGD Portal	Year of Portal Launch
1	United Kingdom	2000	https://data.gov.uk	2010
2	Canada	1983	https://open.canada.ca	2014
3	France	1978	https://www.data.gouv.fr	2011
4	United States of America	1966	https://www.data.gov	2009
5	South Korea	1996	https://www.data.go.kr	2011
6	Australia	1982	https://data.gov.au	2013
7	New Zealand	1982	https://www.data.govt.nz	2009
8	Japan	1999	http://www.data.go.jp	2014
9	Netherland	1978	https://data.overheid.nl	2011
10	Norway	1970	https://data.norge.no	2010

Note: * RIA is the Right to Information Act

Source: **Centre for Law and Democracy. (n.d.).

According to Table 2, these ten countries have made great progress in opening their data and increasing access for people. They perceive OGD as strategic public asset such as Australia, the United States, the United Kingdom, Canada, New Zealand, and Japan. The term "open government data" differs according to country. It is known as "open public data" in Norway, "open data" in the United Kingdom, Canada, France, United States, New Zealand, Japan and Netherlands, "public data" in South Korea, and "big data" in Australia. These keywords are often used interchangeably to refer to OGD in their policy.

As mentioned earlier, the principles of OGD were founded based on the definition of OGD perceived by a country. Each country holds a different definition for the term. For example, the United Kingdom defines OGD as "public sector information that has been made available to the public as open data" (Minister for the Cabinet Office and Paymaster General, 2012). On the other hand, "open data" in the United States means "recorded information, regardless of form or the media on which the data is recorded" while the term 'OGD asset' means "a public data asset that is: (A) machine-readable; (B) available (or could be made available) in an open format; (C) not encumbered by restrictions, that would impede the use or reuse of such asset; and (D) based on an underlying open standard that is maintained by a standards organization" (Foundations for Evidence - Based Policymaking Act, 2018). In Canada, "open data" is defined as "government data that is offered in useful formats to enable citizens, the private sector, and non-government organizations to leverage in innovative and value-added ways" (Government of Canada, 2012). "Open data refers to

government information that is factual and usually statistical in nature". Later, the Canadian government additionally defines "open data" as "the proactive release of government data in free, accessible and machine-readable formats, to encourage its use by businesses, the public and government" (The Office of the Information and Privacy Commissioner of Ontario (IPC), 2016).

As for Norway, "open public data" is "information that is made available so that it can be read and interpreted by both machines and humans, and which anyone can access, use and share" (Datakatalog, 2020) while South Korea defines the two keywords, "open data" and "public data" used interchangeably, as "data or information processed by optical or electronic methods, such as databases and electronic files, created or acquired by public agencies for purposes specified laws" (Promotion of the Provision and Use of Public Data Act, 2013). In contrast, Australia refers "open data" as "data that is freely available, easily discoverable, anonymous, accessible and published in ways and with licenses that allow reuse" (Department of the Prime Minister and Cabinet, n.d.) while "big data" refers to "the vast amount of data that is now being generated and captured in a variety of formats and from several disparate sources" (Department of Finance and Deregulation, 2013). Finally, New Zealand defines OGD as "non-personal, unclassified, and non-confidential government-held data that's easily accessible, openly licensed, and available in a machine-readable format (so it is easily reused by computer programs)" (Statistics New Zealand, 2018) and defines "open data" as "data anyone can use and share, has an open license, is openly accessible and is both human-readable and machine-readable" (New Zealand

government, 2019). The definitions of each country guide their principles of opening up data in one way or another.

2. Implementation of OGD Principles in Ten Leading Countries

From the content analysis on the policies of open data of the ten countries, they have executed the OGD policies by giving their political will and by prioritizing the importance of OGD in their missions that focused on the OGD development and utilization, such as the United Kingdom (Safarov, 2019), Digital Republic Act in France (Radu, 2020), Obama administration (the United States) (The White House, 2013). To implement the OGD policies, the governments established the specialized organization (i.e. Etalab in France (Radu, 2020)), defined the responsibility to a ministry (i.e. the Minister of the Interior and Safety of South Korea (Act on Promotion of the Provision and Use of Public Data, 2017)), and defined each public agency to appoint a Chief Data Officer (CDO) and a statistical expert, such as the United States (Foundations for Evidence - Based Policymaking Act, 2018). These actors are responsible for utilization support, data quality improvement, data portal development, and guidance provision of OGD by following the defined principles for each country. In this regard, the principles of OGD that the countries have been implemented were found as shown in Table 3.

Table 3

Principles in OGD Implemented by Ten Countries

Principles	United Kingdom	Canada	France	United States of America	South Korea	Australia	New Zealand	Japan	Netherland	Norway
Completeness	●	●	●	●	●	●	●	●	●	●
Timeliness	●	●	●	●	●	●	NA	●	●	●
Machine readability	●	●	●	●	●	●	●	●	●	●
Open standards / open formats	●	●	●	●	●	●	●	●	●	●
Openly licensing	●	●	◉	●	NA	◉	●	●	◉	◉
Free of charge	●	●	●	●	●	●	●	NA	●	●
Non-discrimination	●	●	●	●	●	●	●	●	●	●
Open by default*	●	●	●	●	●	●	●	●	●	NA

Note: ●: A principle that a country has fully implemented.
◉: A principle that a country has partially implemented.
NA: No information available
* New finding

The first principle, completeness, is implemented by all ten countries. In the United Kingdom, completeness refers to the availability of public data in terms of search availability and usage (Minister for the Cabinet Office and Paymaster General, 2012). While in Canada, the OGD concept is a primary source of information and should be as whole as possible (The Office of the Information and Privacy Commissioner of Ontario (IPC), 2016; City Clerk's Office of

Toronto, 2011). In France, OGD will be completely available (Savy, 2017). Similarly, public data is complete and made available and accessible in the United States (OPEN Government Data Act, 2017), South Korea (Promotion of the Provision and Use of Public Data Act, 2013), Australia (Australian government, 2015), New Zealand (Statistics New Zealand, 2018), Japan (Castro & Korte, 2015), Netherland (Kennis-en Exploitatiecentrum Officiële Overheidspublicaties (KOOP), 2019), and Norway (Ministry of Local Government and Modernization, 2017).

The second principle is timeliness. Some countries that employed this principle are the United Kingdom, the United States and South Korea. In the United Kingdom, public data is updated as closest as possible to real-time. For example, the weather forecast data is presented using the hourly basis while government spending should be publicly released within 15 working days of the end of the month they were paid (Minister for the Cabinet Office and Paymaster General, 2012). On the other hand, in the United States, data is updated and available on the web portal not later than 5 days from the day data was obtained (Foundations for Evidence - Based Policymaking Act, 2018). The same can be said for other countries. Data is continuously kept up to date in an automated way to ensure the latest data is reported in Canada (IPC, 2016), France (Savy, 2017), Australia (Australian government, 2015), South Korea (Republic of Korea, 2016), Japan (Castro & Korte, 2015), Netherland (KOOP, 2019), and Norway (Ministry of Local Government and Modernization, 2017). Notably, countries like Australia and Norway provide their data through Application Programming Interfaces (APIs)

and find it the best way to frequently update large and complex data and make it available.

The third principle is machine-readability. All of these countries (including the United Kingdom (Minister for the Cabinet Office and Paymaster General, 2012), Canada (IPC, 2016), France (Savy, 2017), the United States(Foundations for Evidence - Based Policymaking Act, 2018), South Korea (Promotion of the Provision and Use of Public Data Act, 2013), Australia (Australian government, 2019), New Zealand (New Zealand government, 2019), Japan (Japanese government, 2013), Netherland (KOOP, 2019), and Norway (Ministry of Local Government and Modernization, 2017)) have similarly implemented this principle by abiding to their respective definition of OGD. For example, public data or OGD will be freely released in machine-readable form so that the public can easily and automatically read and allow data to be processed by a computer, a software, or a machine for searching, indexing, modifying and downloading without human intervention.

The fourth principle is the open standards/open formats. Like the third principle, this principle is also implemented by all ten countries (including the United Kingdom (Minister for the Cabinet Office and Paymaster General, 2012), Canada (City Clerk's Office of Toronto, 2011), France (Savy, 2017), the United States (OPEN Government Data Act, 2017), Korea (Promotion of the Provision and Use of Public Data Act, 2013), Australia (Australian government, 2015), New Zealand (New Zealand government, 2019), Japan (Japanese government, 2013), Netherland (KOOP, 2019), and Norway (Ministry of Local Government and Modernization, 2017)). The same standard open formats that are reusable and in readable formats by

a computer or a software may be used and provided by the different public agencies. The open formats in each country vary from MS Word, HTML, XLS, CSV, Zip, Atom to RDF(Turtle), RDF(XML), RSS feed or XML, JSON, Shapefile). The New Zealand government stated that PDF format is a human-readable format and is not machine-processable (New Zealand government, 2018). However, the Netherlands uses a basic PDF format that is available on the web portal although it is not categorized as a machine-readable (Knowledge and Exploitation Center Official Publications, n.d.). Additionally, the United Kingdom and the Netherlands have adopted the framework of data openness levels developed by Berners - Lee (2006) in order to improve their OGD standards. The levels of data openness that was relevant to data open formants were presented in Table 4.

Table 4

Levels of Government Data Openness

Levels	Description/Data Open Formats
I	Availability on the web with an open license in any format or PDF.
II	Machine-readable formats in structured data, such as Excel.
III	Data in open file in non - proprietary formats, such as CSV or XML.
IV	The all the aforementioned stars (one, two, and three stars) including open format, RDF.
V	All previously mentioned stars including linked data with an open format, RDF.

Source: Berners-Lee (2006), Minister for the Cabinet Office and Paymaster General (2012), Knowledge and Exploitation Center Official Publications (n.d.)

The fifth principle is an open license or license-free. This means that the public can freely use OGD without a license and that data is not subjected to any copyright, regulation, or patent. The United Kingdom (Minister for the Cabinet Office and Paymaster General, 2012), Canada (OECD, 2014; City Clerk's Office of Toronto, 2011), the United States (OPEN Government Data Act, 2017), New Zealand (New Zealand government, 2019), and Japan (Japanese government, 2013) have declared open license by legal guarantee. Other countries only partially implement this principle. In France, for example, some data can be subjected to licensing due to the contribution of publishers (Savy, 2017; Republic of France, n.d.). Similarly, in Australia, agencies are encouraged to make data openly licensing or minimize the licensing issue (Department of the Prime Minister Cabinet of Australian government, n.d.). In the Netherlands, both open license and limited license have been implemented depending on data. The Netherlands government determines the degree of license for OGD use. For example, OGD found on data.overheid.nl as public domain are mostly open license, but there are some licenses which impose restrictions on data usage. In Norway, data is freely used under open standard licenses but is still bound under the Norwegian Public Data License (NLOD) conditions. Open standard licenses must be clear (Ministry of Local Government and Modernization, 2017). There are no available records on open license principle regarding South Korea during doing this research.

The sixth principle is cost-free (free of charge). A key concept in public data or OGD is that it must be "freely accessible and usable" by the public where they can use OGD at no charge at all. All countries including the United Kingdom (Minister for the Cabinet

Office and Paymaster General, 2012), Canada (IPC, 2016), France (European Union, 2019), the United States (Foundations for Evidence - Based Policymaking Act, 2018), South Korea (Republic of Korea, 2016; Ministry of the Interior and Safety, 2017), New Zealand (New Zealand government, 2019), Netherland (KOOP), 2019), and Norway (Ministry of Local Government and Modernization, 2017), except Australia, commit to this principle by default. Generally, data are free of charge in Australia (Australian government, 2015). However, there are certain charges imposed for specialized data services. There are no available documents on this issue in Japan during the course of this research.

The seventh principle is non-discrimination. This means that OGD are readily available for anyone without the need for mandatory registration, user information, permission application or any form of restrictions. All ten countries including the United Kingdom (Minister for the Cabinet Office and Paymaster General, 2012), Canada (IPC, 2016), France (Savy, 2017), the United States (Data.Gov, n.d.), South Korea (Promotion of the Provision and Use of Public Data Act, 2013), Australia (Department of the Prime Minister and Cabinet, n.d.), New Zealand (New Zealand government, 2019), Japan (Japanese government, 2013), Netherland (KOOP, 2019), and Norway (Ministry of Local Government and Modernization, 2017) adopt this principle where OGD can be used by anyone, from anywhere, and for any purpose.

The last principle, open-by-default, is a new finding in this research. The countries that employed this principle are presented in Table 3. Open-by-default refers to the act of the government in readily publishing OGD, providing easy access to data as well as

meaningfully responding to citizens' requests for both government data and personal data. It allows citizens to easily access information through a single web portal. In the United Kingdom, this principle is demonstrated in the web portal (Minister for the Cabinet Office and Paymaster General, 2012). Similarly, Canada has committed to this principle of open-by-default by enforcing the Access to Information Act (An Act to amend the Parliament of Canada Act and the Access to Information Act (transparency), 2014; Government of Canada, 2016). In France, the open-by-default principle has been endorsed by the Law for Digital Republic in 2016 (Savy, 2017). In addition, the United States government has also strongly committed to this principle in the OPEN Government Data Act (2017) which states that public agencies have the responsibility to make data open by default to the public-these data should be in a machine-readable format and does not intrude privacy or security. Furthermore, the Australian government has also declared and committed to this principle since 2009 by stating that non-sensitive data will be opened by default-data will be reliable, free, and easy to use (Australian government, 2017; Australian government, 2015). The same can be said for the Netherlands and Japan where the open-by-default principle is viewed as a fundamental principle (KOOP, 2019; Japanese government, 2013a). On the other hand, in South Korea, public agencies have the permission to provide public data to the general crowd upon request according to the Act on Promotion of the Provision and Use of Public Data (Ministry of the Interior and Safety, 2013). Interestingly, New Zealand has committed to this principle by using a different term which holds a similar meaning-open-by-design (Statistics New

Zealand, 2018). This implies that the accessibility to OGD will be the foremost fundamental part of its OGD policy. Although there is no mentioned about the open-by-default principle in Norway, the government is known to actively share and publish their data to the public (Ministry of Local Government and Modernization, 2019).

Making OGD available is more than releasing data on a website. It must also be made available in an appropriate way to support the general public in utilizing and maximizing data. OGD must be well-described and improved. Previous studies (Maurino et al., 2014; Ubaldi, 2013; Solar et al., 2012; World Wide Web Foundation, 2007; Berners-Lee, 2006) proposed the general principles of data openness using seven principles: completeness, timeliness, machine-readability, open standards / open formats, open license, free of charge, and non-discrimination. The analyses of the ten case studies confirmed that these proposed principles are implemented by all ten countries. Some principles are intrinsically related to each other. For example, machine-readability is linked to open formats. Besides, an open license or free license is commonly related to the cost-free principles. The highlight of this study is the discovery of the open-by-default principle. Out of ten case studies, nine leading countries have already implemented open-by-default as a fundamental and practical principle. By providing easily accessible and reliable OGD which includes meaningful responses to citizens' requests, the open-by-default principle ensures the commitment of a government in processing and implementing OGD.

Conclusion and Suggestions

It is already widely accepted that OGD is a potential asset for both the public and private sectors. It has the power to change and improve lives as well as to create better progress and outcomes. More governments around the world are slowly becoming aware of the importance of this notion which prompts them to take further action in this area. To initiate and improve the OGD policy, it is suggested that governments take into account the eight principles delineated in this research: completeness, machine - readability, open standards / open formats, non-discrimination, timeliness, cost-free, open license, and open-by-default. These principles, modeled upon the policies of ten countries that successfully implemented OGD, will prove to be useful in stimulating data provision and utilization besides providing a benchmark for other countries that intend to follow suit. Implementing the 8 principles would lead to greater quality of OGD that is sufficient to utilize and unlock the power of it. Additionally, as OGD is still in its infancy, future research may broaden the current findings and could further explore the value or impacts of OGD and how to unlock the power of the data.

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