

IMPLEMENTATION OF OPEN GOVERNMENT DATA IN ASIAN COUNTRIES: A REVIEW

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ABSTRACT: Open Government Data (OGD) is the data gathered and processed by public sectors or government agencies and made available to the public via a web portal. Many countries have implemented OGD in order to promote economic growth and social development (e.g., the UK, Korea, Japan, Malaysia, Australia, the Netherlands, etc.). The purpose of this paper is to examine the implementation of OGD in a few Asian countries based on previous research, in order to understand the challenges and experiences of the OGD implementation in these countries. Analysis was done on relevant literature and online resources. The findings indicate that there are many benefits gained from the OGD implementation, at the same time there are challenges that need to be overcome before realizing these benefits. Additionally, it was found that there are several factors that contribute toward the success of OGD implementation in those selected countries. Another finding is that there is not many past research related to the OGD implementation in Asian countries, hence it can be concluded that the OGD research in this region is still at infancy.

KEY WORDS: *Open Data, Open Government, Open Government Data, OGD, Implementation, Asian Countries.*

1. INTRODUCTION

In recent years, there has been a surge of interest toward open data. Open data is the data that the public can freely access, reuse, and redistribute. The Open Data Handbook (2021) defines open data by its openness and accessibility, reuse and redistribution, and universal involvement. Many countries around the world nowadays have started to initiate information openness and transparency by starting with the implementation of open government data (Ruijter et. al, 2020). Open Government Data (OGD) is defined as sets of data that are accessible, machine processable and license free where those data can be used by the public without any restrictions (Veljkovic, Bogdanovic, Stoimenov, 2014; Kassen, 2013; Davies, 2010). Governments gather all sorts of data from different agencies or departments which is then compiled into de-identified datasets and made available to the public (Huijboom & Broek, 2011).

Additionally, there are a number of expectations from implementing OGD. According to a study conducted by Logica Business Consulting, there are six reasons for data openness in the United States, the United Kingdom, Canada, and

New Zealand, which are to (1) increase transparency, (2) stimulate economic growth, (3) improve government services and responsiveness, (4) promote reuse, (5) improve public perceptions toward government, and (6) improve government data (Kucera & Chlapek, 2014).

In terms of population, Asia is the world's most populous region, with at least 40 percent of the global population including two of the world's largest countries by land area. In terms of the open data implementation at the governmental level, there are still much more can be done (Lindroth, 2016). In fact, the region's countries have a poor track record in terms of transparency and accountability. According to Transparency International's latest Corruption Perception index (2020), less than half of Asian countries scored above 50, indicating that at least a quarter of those countries face systematic corruption. However, some countries have made notable efforts to impose transparency measures in order to move toward greater openness (Canares, 2019).

In the past studies, Asian countries have not been given attention regarding the OGD implementation (Aarshi et. al, 2018). Therefore, the purpose of this study is to conduct a review of research on OGD in Asian countries primarily the Southeast region which include Indonesia, Thailand, Singapore, the Philippines, and Malaysia.

2. LITERATURE REVIEW

Open government data is non-personal datasets that can be accessed by the public (Veljkovic, Bogdanovic, Stoimenov, 2014; Kassen, 2013; Geiger & Lucke, 2012; Davies, 2010). According to Organization for Economic Co-operation and Development (2019), OGD is a set of policies that promotes transparency, accountability, and economic growth by making the government data available to the public. Government data is considered open when they follow the "Eight Principles of Open Government Data". The principles were discussed during the gathering of open government advocates on December 7 and 8, 2007 in Sebastopol, California. Table 1 describes the "Eight Principles of Open Government Data".

Table 1: The "eight principles of open government data" (Joshua, 2014)

No	Principles	Description
1	Complete	All data must be available to the public
2	Primary	Data are published as collected from the source
3	Timely	Data are made available as soon as possible to protect the value of data
4	Accessible	Data are available to the widest possible number of users for a wide range of purposes
5	Machine Processable	Data are arranged in a way that allows it to be processed automatically
6	Non-Discriminatory	Data can be accessed by anyone with no registration required
7	Non- Proprietary	Data are available in a format that no entity has complete control over it

8	License- Free	Data are not protected by copyright, patents or trademarks unless because of certain regulations governed by respective states
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2.1. OGD in Asian Countries

Recent survey showed at least 23 countries in the Asia regions have their own open data portal that has been actively managed by government authorities (Open Data Soft, 2018). According to the 4th edition of Open Data Barometer (2017), Asia regions outperform Africa, and Latin America. the Philippines tops the ranking in terms of the open data implementation and impacts. Open Data Barometer is a non-profit organization that ranks open data around the world. The ranking is based on three (3) criteria: (1) government readiness for open data, (2) the implementation to meet open data requirement, and (3) the impact of open data on society. Table 2 shows 16 Asian countries that have been ranked. 12 other countries from the Asia regions are not included in the ODB ranking.

Table 2: Asian countries' ranking in the open data barometer (ODB) 4th edition (Web Foundation, 2018)

Rank	Countries	Score	Readiness	Implementation	Impact
5	Korea	81	95	59	100
8	Japan	75	84	60	69
22	Philippines	55	58	41	76
23	Singapore	53	73	46	41
33	India	43	68	32	35
38	Indonesia	38	51	39	25
53	Malaysia	28	53	20	19
53	Thailand	28	40	31	11
59	United Arab Emirates	26	47	23	12
71	China	20	46	10	11
74	Bahrain	19	33	20	7
74	Saudi Arabia	19	37	15	12
93	Bangladesh	4	15	4	0
108	Pakistan	4	15	4	0
113	Myanmar	1	2	5	4

As mentioned above, the three (3) main criteria for this ranking are readiness, implementation, and impact. The term "readiness" refers to the government open data initiatives, the term "implementation" refers to the effectiveness of open data program produced by governments and the term "impact" refers to the impacts of open data on society. To have a positive impact on citizen's lives, data cannot stand alone and must be processed in order to produce more meaningful information.

2.2. Open Government Data in Southeast Asia

2.2.1. Indonesia

- **Background:** Indonesia started their movement toward transparent government in 2008. In 2011, Indonesia became a founding member of the Open Government Partnership (OGP). The OGP assists countries in developing or implementing national action plans to increase transparency, accountability, and citizen involvement within their respective jurisdictions. Currently, there are six other countries from the Asia regions that joined the OGP including Columbia, the Philippines, Afghanistan, Pakistan, South Korea, and Sri Lanka (Canares, 2019). Indonesia was ranked at the 38th position in the 2017 ODB, scored 51, 39 and 25 on readiness, implementation, and impact respectively (Web Foundation, 2017).
- **Portal:** Indonesia launched their open data portal (data.go.id) in 2014. Currently, the portal has over 95,000 datasets from 32 federals, states, and municipal government agencies. In addition, some local governments like Jakarta, Bandung and Banda Aceh have launched their own open data portals.
- **Expected Benefits:** The Indonesia government is expecting some sort of benefits to businesses and citizens with the implementation of OGD (OECD, 2019):
 - Ensuring better policy results
 - Increasing policy efficiency and effectiveness
 - Reinforcing policy and regulatory compliance
 - Promoting inclusive socio-economic development
 - Fostering innovation
- **OGD Implementation Related Research:** A research done by Jacob (2019) analyzed the barrier to OGD in Indonesia. The findings from this study indicates 10 barriers to the Indonesia's OGD which is divided into two main themes: institutional barriers and information quality barriers. Meanwhile, another related research focused on the developing and OGD success evaluation model. This model helps to understand how OGD creates public value (Purwanto, Janssen & Zuiderwijk, 2017).
- **Initiatives:** There have been some initiatives taken by the Indonesia government to accelerate the implementation of OGD (OECD, 2019):
 - Establishment of National Secretariat 2015
 - National Long-Term Development Plan (2005-2025)
 - National Medium-Term Development Plans
 - Implementing third OGP action.

2.2.2. Thailand

- **Background:** In Thailand, the government started their open government data project in 2013. Thailand was ranked at the 53rd position together with Malaysia in the 2017 ODB, scored 40, 31 and 11 on readiness, implementation, and impact respectively (Web Foundation, 2017).

- **Portal:** Thailand's national open data portal (*data.go.th*) has been operational since 2013, with over 3,000 datasets made public by 142 organizations. The datasets are divided into 15 clusters and the portal is operated by the electronic government agency (EGA).
- **Expected Benefits:** Fig. 1. shows the expected benefits from the implementation of OGD by the Thailand government (OECD, 2020).

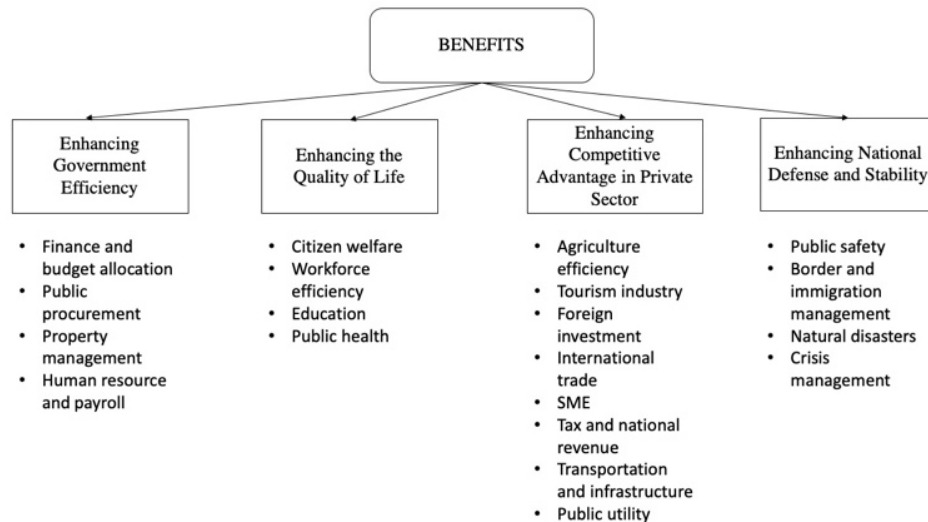


Fig. 1. Expected benefits on the OGD implementation in Thailand

- **OGD Implementation Related Research:** Srimuang, Taniamal, Cooharajanone & Chandrachai (2017) conducted a study to assess and evaluate the level of development of Thailand's OGD components. The following key components have been identified based on the research: (1) policies and plans, (2) laws and regulations, (3) organization, (4) enterprise architecture, (5) capabilities enhancement, (6) open government principles, (7) technology infrastructure, (8) innovation, and (9) citizen involvement. Aside from that, another study looks into Thailand's open data portal and compares it to other portals from the top ASEAN countries. The study aims to publicize the portal through systematic functional analysis and effective promotion methods (Iamamphai, Noymanee, San-Um & Pasupa, 2016).
- **Initiatives:** According to National Statistical Office Thailand (2017), these are the initiatives and advanced use of OGD:
 - Agricultural Data Integration and Zoning Optimization Modeling: What2grow
 - National water management: statistics and open government data
 - Thailand Government Spending: mobile and web application

2.2.3. Singapore

- **Background:** Singapore's national open data portal was launched in July 2015. According to Govtech Singapore (2017), one out of ten in Singapore uses OGD daily. Singapore was ranked at the 23rd position in the 2017

ODB, scored 73, 46 and 41 on readiness, implementation, and impact respectively (Web Foundation, 2017).

- **Portal:** In April 2016, the latest version of Singapore's open portal data (*data.gov.sg*) has been introduced. Currently, the portal is having over 1,800 datasets publicly provided by 70 public agencies. The main categories of datasets available on the portal are economy, education, environment, finance, health, infrastructure, society, technology, and transportation. The portal is operated by the Government Technology Agency of Singapore. Additionally, more than 100 apps were built using the government's open data.
- **Expected Benefits:** A survey done by Govtech Singapore (2017) shows how the citizens used OGD and the expected benefits for society. There are two main benefits which are expected by the public, namely economic benefits and improve government transparency. The implementation of OGD is said to have created new business opportunities and jobs, and at the same time helps citizens to be more self-reliant. Other than that, OGD also helps to build trust between citizens and the government as OGD can improve the government's transparency. The survey also mentioned how the respondents which the majority are the citizens of Singapore put trust in their government to secure their data safe as compared to other countries like Australia and Mexico who had done the survey as well.
- **OGD Implementation Related Research:** A very limited study and research have been done on the OGD implementation in Singapore. In 2011, Hallam Steven conducted a study to better understand the role of Singapore's open data portal in the context of the country's ongoing political and economic development. The findings from the study shows how the power of the existed open portal can reinforce and entrench existing modes of governance.
- **Initiatives:** An initiative taken by the Singapore government was conducting a National Data Viz Video Challenge. This competition was organized by Govtech Singapore where the participants were given an opportunity to create data visualizations based on the datasets from the open government portal (Govtech Singapore, 2017).

2.2.4. The Philippines

- **Background:** The Philippines started the movement toward open data with the launched of open data portal in 2014. Together with Indonesia, the Philippines is also one of the members of Open Government Partnership (OGP). According to the Open Data Barometer (ODB), the Philippines was ranked at the 22nd position in the 2017 ODB, scored 58, 41 and 76 on readiness, implementation, and impact respectively (Web Foundation, 2017).
- **Portal:** The Philippines's national open data portal (*data.gov.ph*) was launched in 2014. There are currently over 300 datasets available on the open portal. The Open Data Task Force, comprised of the Office of the Presidential Spokesperson, the Department of Budget and Management, and the Presidential Communications Development and strategic Planning

Office (PCDSPO), operates the portal. (UN Spider, 2013). In 2016, the ODB mentioned the Philippines as the most improved country but after the Philippines transitioning to a new political leadership, their project on open data has slowed down (Canares, 2019). Their portal was inactive for 2 months and after the portal was relaunched, historical data previously existed cannot be found as a new policy has been issued by the President. Only the information by the executive branch of the government can be published on the portal.

- **Expected Benefits:** The Philippines government looks forward to the benefits of the OGD implementation based on the “Five Grand Challenges” (Capili, 2015). Those challenges are:
 - Enhancing government services
 - Improving the public’s trustworthiness
 - More efficient management of public resources
 - Making communities safer
 - Increasing the accountability of corporations
- **OGD Implementation Related Research:** A study by Saxena (2018) aims to investigate the issues and barriers to reuse datasets in the Philippines. The study was done by investigating the open data portal and a documentary analysis research approach. Findings show that, the majority of the datasets are not timely and the not attempt to update can be seen. Aside from that, the portal’s data mapping service is ineffective, and some of the links are inactive. Plus, conducting statistical analysis online is not possible. Based on the study, the researcher suggested for the policymakers and practitioners to address these issues to ensure a successful implementation of OGD in the Philippines.
- **Initiatives:** A few initiatives have been taken by the Department of Information and Communication Technology [28] to encourage the usage of OGD in the Philippines:
 - Scope and Resource Planning
 - Open Data Portal and DKAN Training Workshop
 - Hack4Ph
 - National Spatial Database Infrastructure
 - Collaboration with PSA-Openstat
 - Open Data x Business Analytics

2.2.5. Malaysia

- **Background:** The Malaysian Administrative and Modernization Unit (MAMPU) is responsible to bring Malaysia toward digitalization across their government’s departments. It is also MAMPU’s responsibility to ensure the government’s departments continuously up to date with innovative solutions to for a better policy making. In 2014, MAMPU started their movement toward open data and took a huge step with the launched of an open data portal (*data.gov.my*) in September 2016. MAMPU collaborated with Malaysia Digital Economy Corporation (MDEC) and ODI to grant a clear path toward a new policy (ODI, 2017). Malaysia was ranked at the 53rd

position together with Thailand in the 2017 ODB, scored 53, 20 and 19 on readiness, implementation, and impact (Web Foundation, 2017).

- **Portal:** Malaysia's national open data portal (data.go.my) currently has over 12,000 datasets publicly, managed by MAMPU. The datasets are provided by 276 dataset publishers and divided into 18 clusters. Those clusters include national election, land ownership, education, budget, national statistics, agriculture, census, crime, environment, legislation, international trade, health, public contract, company registration, transport, government spend, mapping and others.
- **Expected Benefits:** With the availability of the open data portals, all the government data can be easily and publicly accessed. The Malaysia government is hoping for positive impacts with the implementation of open government data in their country. Fig. 2. shows the expected benefits by the government. (Source: malaysia.gov.my)

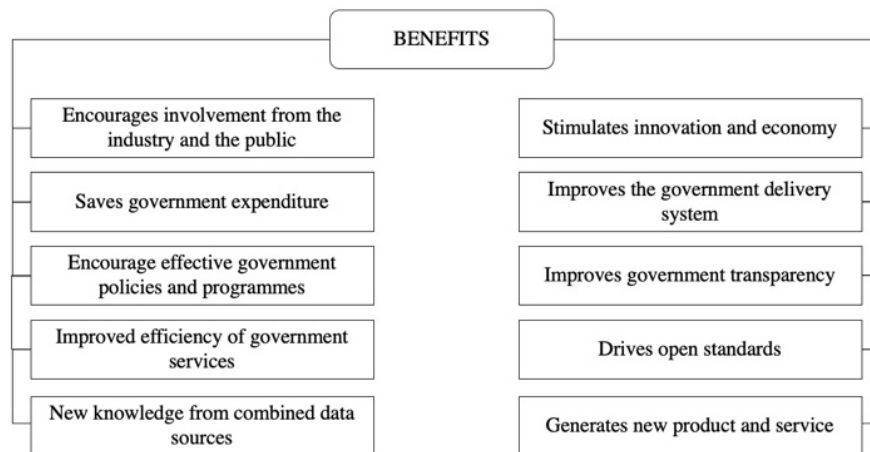


Fig. 2. Expected Benefits on the OGD Implementation in Malaysia

- **OGD Implementation Related Research:** To our best knowledge, there are lack of research or studies done related to the implementation of OGD in Malaysia but there are a few that focused on the OGD issues. A study done by Zainal, Hussin & Nazri (2019) focused on proposing a new model to measure the level of OGD in Malaysia. With the new model, the researchers hope that the public will benefit from the datasets published in the open data portal. Meanwhile, another study focused on analyzing the influencing factors of OGD adoption where they proposed a conceptual model of OGD adoption for Malaysia local governments. The new model perhaps can encourage the public sector leaders to improve their data sharing quality in terms of data quality and time consume (Haini, Rahim & Zainuddin, 2019). Lastly, another study focused on examining the factors of the usage open government data among academicians (Khurshid, Zakaria, Rashid & Shafique, 2018). This study aims to improve policymaking while also increasing the use of OGD.

- **Initiatives:** To hasten the implementation of open data in Malaysia and to enhance the quality and quantity of the datasets publications in the portal, MAMPU has initiated these movements:
 - Open Data User Group (MODUG) Program
 - Collaboration with companies and private agencies
 - Engagement sessions and open data coaching program
 - Open Data Hackathon Program
 - Presidential Hackathon Program
 - Online Open Data Hackathon
 - 8 Hours Public Sector Hackathon
 - 33 Hours Public Sector Hackathon

2.3. Summary of Overview of the OGD Implementation

Table 3 summarizes the overview of the OGD implementation among Indonesia, Thailand, Singapore, the Philippines, and Malaysia.

Table 3: Summary of the overview of OGD implementation

Country	ODB	Portal	Expected Benefits	Initiatives
Indonesia	38 th	data.go.id	<ul style="list-style-type: none"> • Ensuring better policy results • Increasing policy efficiency and effectiveness • Reinforcing policy and regulatory compliance • Promoting inclusive socio-economic development • Fostering innovation 	<ul style="list-style-type: none"> • Establishment of National Secretariat 2015 • National Long-Term Development Plan (2005 – 2025) • National Medium-Term Development Plan • Implementing third OGP action plan • Establishment of National Secretariat 2015
Thailand	53 rd	data.gov.th	<ul style="list-style-type: none"> • Enhancing government efficiency • Enhancing competitive advantage in private sector • Enhancing the quality of life • Enhancing national defense and stability 	<ul style="list-style-type: none"> • Agriculture Data Integration and Zoning Optimization Modeling: What2grow • National water management: Statistics and Open Government Data
Singapore	23 rd	data.gov.sg	<ul style="list-style-type: none"> • Economic benefits 	<ul style="list-style-type: none"> • National Data Viz Video Challenge

			<ul style="list-style-type: none"> • Improve government transparency 	
Philippines	22 nd	data.gov.ph	<ul style="list-style-type: none"> • Enhancing government services • Improving the public's trustworthiness • More efficient management of public resources • Making communities safer • Increasing the accountability of corporations 	<ul style="list-style-type: none"> • Scope and resource planning • Open data portal and DKAN training workshop • Hack4Ph • National Spatial Database Infrastructure • Collaboration with PSA-Openstat • Open Data x Business Analytics
Malaysia	53 rd	data.gov.my	<ul style="list-style-type: none"> • Encourages involvement from the industry and the public • Saves government expenditure • Encourage effective government policies and programmes • Improved efficiency of government services • New knowledge from combined data sources • Stimulates innovation and economy • Improves the government delivery system • Improves government transparency • Drives open standards • Generates new product and service 	<ul style="list-style-type: none"> • Open Data User Group (MODUG) Program • Collaboration with companies and private agencies • Engagement sessions and open data coaching program • Open Data Hackathon Program • Presidential Hackathon Program • Online Open Data Hackathon • 8 Hours Public Sector Hackathon • 33 Hours Public Sector Hackathon

3. CONCLUSION

The goal of OGD is to empower citizens by providing them with free and unrestricted access to the public data. There are many benefits expected from the implementation of OGD. Some of these benefits are ensuring better policy outcomes, enhancing policy efficiency and effectiveness, enhancing government efficiency, enhancing the quality of life, improving public services, increasing public integrity and a variety of other initiatives. Although some of the Asian countries are still at infancy in the journey of the OGD implementation, most of the governments have taken proper initiatives to ensure the success of the implementation such as

holding a seminar to educate the public about open data and open government data. Other than that, some countries organized a competition that is necessary for the participants to use datasets from the open data portal. This will encourage people to use the portal even after the competitions for a good purpose. This paper reviews on the experienced of countries in Asia region in implementing open government data. Thus, further research needs to be conducted to gain an in-depth understanding on the implementation of OGD in Asia regions especially in Malaysia.

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