

A Comparative Analysis of Open Government Data in Practices and Facing Problems

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Abstract. Open Government Data (OGD) is the publication of data by government and public institutions on the Internet. Interestingly, after more than a decade of implementing OGD there are different practices from countries in the world, even though they have the same aims. This difference is due to differences in the culture of openness, the level of openness, and the level of state confidence in opening data. This research is a qualitative research with a constructivist approach through descriptive analysis with comparisons of several countries. Based on the results of the analysis and discussion, it can be concluded that the implementation of OGD is carried out in many countries as part of efforts to fulfill data openness in the information age. Data structuring is made with a scheme that allows the government to choose which data can be published and which cannot. The roadmap for OGD activities is gradually becoming more comprehensive. Clarity of objectives is needed to create a roadmap that is effective in implementing OGD. The security of personal data is an important thing that must be guaranteed by the government. The strategy to build OGD must be carried out in one entity that is authorized to manage data.

Keywords: Open Government Data, Comparative Analysis, Qualitative Research, Descriptive Analysis, Road Map.

1 Introduction

The practice of government data openness (open government data hereinafter referred to as OGD) has become a kind of obligation for governments in the world. The governments must provide data free of intellectual property rights. It must be available and free to be used and republished by everyone, without restrictions on copyright, patents, or other control mechanisms. According to [1] OGD initiatives that occur throughout the world aims to provide data to the public for free without restrictions to use data. Several journal articles record OGD users to be in business activities for example, such as Croatia [2], Japan [3], Mauritius [4], Jordan [5], and etc.

Interestingly, after more than a decade of OGD implementation there were differences in practices from these countries even though the objectives of the OGD were the same. This

difference may occur due to differences in the culture of openness, level of openness, and the level of trust or confidence of the country in opening data. This is as it was said [6] in their research that different stakeholders have different perspectives. Furthermore [7] found something interesting like the practice of OGD in Austria which stated that the involvement of local authority was more important than the federal level. Some of the studies that have been submitted through articles in reputable journals by scholars are as follows: [8] said that in Brazil many steps need to be done in order to achieve a high level of effectiveness of OGD. The effectiveness in question is the use of OGD for decision making by stakeholders. In Thailand [9] examined the development of components directly related to OGD. They see the level of development of use through nine key components which include Organizations, Policies and Plans, Laws and Regulations, Innovation and participation of Citizens, Capability enhancements, Open government principles, Enterprise architecture, and Technology infrastructure. According to [10] there are several factors that influence OGD practices in Malaysia, namely user expectations, confirmation, and perceived performance. From the several papers mentioned above, there are many differences that can be seen in the success of the implementation of OGD, as well as the problems faced.

In this study, the reality of OGD will be described from several OGD practices from several countries through comparative analysis to describe the problems faced by countries that practices OGD. Focus on "What is the practice of OGD in countries that implement it as an initiative?" and "How do the countries face problems arose from OGD's practices?".

This research uses qualitative research methodology. The aim is to make a systematic, factual, and accurate description through a conceptual framework. The hope that conclusions can be drawn from the best practices of OGDs from the countries that have been analyzed; it will be part of an effort to provide the best reference for the practice of OGD.

2 The Material and Method

2.1 The Material

OGD is built from three words that contain a combination of three perspectives of the word, namely the word open, government, and data. According to [11] OGD can be expressed as an international phenomenon relating to the openness of government data that is freely available for use, and free for digital distribution. Furthermore the following scholar [12], [13], [14] also state the same that government data must be available and open to all stakeholders responsibly at no cost. A specific definition is conveyed by [15] that open data is openly available for use without restrictions and costs.

Data provided by the government are many types. Examples are population census data, public health data, poverty data, education data, business data, agricultural data, mining data, transportation data, and others. Stakeholders also vary according to the interests of each. According to [16] there is a lack of clarity in the open data context because of the diverse interests of the stakeholders, therefore the data provided by the government must be able to adopt all the interests of the stakeholders.

The implementation of OGD in many countries shows that diversity occurs. This is mentioned by [17] as a diversity of implementations in various countries. As also stated by [18] who researched for Austria, Greece, and UK that the practice of OGD was a concern and attracted many stakeholders interest. Awareness upon the importance of OGD was also discussed in the article [19] which discussed Switzerland's OGD, stating that the attention of

stakeholders was on transparency, participation and collaboration. While the results of the study [20] state that attitude from public servants determines the success of OGD. For the framework, some scholars have submitted their research results such as [21] which discuss the obstacles in implementing OGD in China, [22] which discuss the strengths and weaknesses of the application of OGD in the GCC member states: The United Arab Emirates, Bahrain, Kuwait, Saudi Arabia, Oman, Qatar. In Italian's OGD, a research is conducted on the legal system by [23] which states that in reality the Transparency Act is not enable and cannot reinforce the OGD.

As explained by [24] and [17] in their papers the British, German, Dutch and other countries formed a task force to prepare data disclosure. The practice of OGD is part of electronic governance, which is a form of honest, responsible and dignified state administration practice. According to [18] in Austria, Greece, and the UK the policy of OGD practices caught the public's attention. Research on OGD by [19] was carried out in Switzerland with the statement that OGD emphasized encouragement of transparency, collaboration and participation. The result of their research shows that Swiss executive authorities value the increase in their core business and economic development potential.

Another study from [25] shows that the barriers in implementing OGD are perceptions based on the behaviour of state employees (identified as the main barrier). Other significant barriers includes perceived legal barriers, structuring perceived hierarchy of authority, perceived culture of bureaucratic decision making and perceptions of organizational transparency.

Some countries that are not European has different success factors and barrier factors as reported by [26]. The results of [7] reveal the success factors that accompany implementations that are defined as clear responsibility and implementation of the process model, as well as the integration of the OGD platform into the existing Content Management System.

2.2 Research Method

Research Design

This is a research with qualitative research methodology through a constructivist approach by means of descriptive analysis. The aim is to make a systematic, factual, and accurate description of facts and events with a conceptual framework. In this study the reality of OGD will be described from several OGD practices from several countries that have been analysed by experts in scientific articles that have been published in index and reputable scientific journals.

Object of Research

This study uses journal articles on the practice of OGD in various countries as the object of research. Objects are selected using classification criteria based on clustering. The number of articles is limited to six articles for reasons of grouping countries as follows: a) Two articles that have reviewed developed countries. It is a country that characterized by high per capita income and high quality of population. b) Two articles that have reviewed developing countries. It is a country that characterized by averages per capita income and relatively low quality of population. c) Two articles that have reviewed the newly industrialized countries. It is developing countries which are pioneering their economies towards advanced industries. Some countries according to classification are as follows: a) Developed countries: Britain, Germany, United States, Japan, and Australia. b) Developing countries: Nicaragua, South

Africa, India, Indonesia. c) New industrial countries: Singapore, Hong Kong, South Korea, Taiwan, Malaysia.

Research Methods

Research Method is the method or technique used for research. For this study the method used is content analysis with comparative techniques. This analysis activity uses tabulation analysis. To obtain accurate data and in accordance with the needs of this research, the steps are as follows: (1) Clustering appropriate OGD articles and published journals that is reputable and indexed; Scopus, ISI, Proquest, JSTOR. (2) Determination of country group and selection of two articles from each OGD article from that country in order to obtain information relevant to this research. (3) Other studies that are relevant to the practices of selected OGD countries, namely the authors obtain data from other sources such as: (a) OGD report books from other institutions, such as from the World Bank, OECD and others that support research. (b) References or other relevant references from previous studies that support research.

3 Results And Discussion

OGD has become an obligation for the government to provide as part of government and business interests. As part of the world agreement to organize OGD, there have been many studies conducted with OGD as objects. This study began by sorting and selecting articles that were considered to be in accordance with the objectives of the study. The method used is semantic scholar on the <https://www.semanticscholar.org>, and open knowledge on <https://openknowledgemaps.org> to see the linkages between articles. The collected articles are then carried out by country clustering, and tabulations are conducted to facilitate the comparative analysis. Following are the tabulations that have been made.

Table 1. The Relevant Articles

Article 1	
Proposed Approach	Using Relevant publication, single case study, and extended model from DeLone and McLean's[27]
Problem Focus/Country	OGD value and impact assessment / Indonesia & The Netherland
Problem Description	Seeking OGD contribution of value and impact assesment model
Proposed Solution	An evaluation model that offers a systematic way
Technique	Case study
Evaluation metrics	Quality in information, system, service, and user satisfaction, net benefit
Findings	Collaboration can solve societal problems
Limitation\ Future work	1. Model needs validation through empirical studies. 2. Single case study cannot be generalized.

Article 2	

Proposed Approach	TOE and UTAUT framework [28]
Problem Focus/Country	The gap between prospects and challenges / India
Problem Description	OGD in India is still in its early stages. Both opening data and information has been underscoring in prospect and challenges
Proposed Solution	A conceptual framework using framework of TOE & UTAUT
Technique	Research modelling, frameworks of TOE & UTAUT, multiple regression
Evaluation metrics	Behavioural intention for usage of OGD in technological, social and individual context.
Findings	There are quality issues regarding the data usage
Limitation\ Future work	A comparative perspective needs to be drawn regarding India and other countries

Article 3	
Proposed Approach	Benchmarking, and conceptual model [16]
Problem Focus/Country	Data openness, transparency, participation, and collaboration / USA
Problem Description	The development of an OG benchmarking is hindered by the lack of OG conceptual clarity
Proposed Solution	Conceptual model of OG
Technique	Benchmark model for open government
Evaluation metrics	Basic data set, Data Openness, Transparency, Participations, and Collaboration
Findings	E-Government openness index, Maturity
Limitation\ Future work	Focused on evaluation, framework, and applied in a wider range of governments

Article 4	
Proposed Approach	Capitalize on literatures on eGov stage models, and OGD initiatives to propose a stage model for OGD [1]
Problem Focus/Country	Lack of roadmaps, guidelines, and benchmark framework to measure and drive the use of OGD / U.K
Problem Description	It is evident that there is a lack of roadmap guidelines that set clear objectives, benchmarks, and can measure progress
Proposed Solution	An OGD stage model
Technique	Proposing a stage model of OGD
Evaluation metrics	Organizational and technological complexity, and added value for data consumers
Findings	A stage model for OGD that can be used by researchers, and practitioners to further study OGD roadmaps and evaluation frameworks
Limitation\ Future work	Identification of important data set, organizational barriers, and technological solutions for each stage

Article 5	
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Proposed Approach	Conducted a questionnaire survey to collect and analyze public needs [29]
Problem Focus/Country	Appropriate data to serve public, and satisfy their needs / China
Problem Description	Government store huge amounts of data related to citizen life and work. It is critical for government to released appropriate data
Proposed Solution	An OGD model
Technique	A set of questionnaire survey
Evaluation metrics	Basic information, awareness and behaviours, and informational needs
Findings	The study found variations different demographic groups
Limitation\ Future work	According to the needs of the public, government should open data fit for use.

Article 6	
Proposed Approach	Improving transparency and public partisipation using open data [30]
Problem Focus/Country	Data are scattered in different sites with different statues / Indonesia
Problem Description	Current open data regarding fishing SMEs are scattered and lack the strategy to integrate and utilize seized data to run fishing SMEs efficiently
Proposed Solution	Open data strategy
Technique	A top down model as a strategy to identify problems, opportunities, and challenges
Evaluation metrics	Strengths, Weaknesses, Opportunities, Threats
Findings	Open data impacts SMEs's decision making
Limitation\ Future work	Future research will cover more business sectors

The following are the results obtained from the table's content analysis:

1. The value of OGD investments approved by the government is unclear and not in line with expectations.
2. Prospects and challenges of implementing OGD.
3. Transparency and collaboration in OGD implementation activities.
4. Inequality and obscurity in the roadmap of OGD implementation activities.
5. Mismatch of data available from OGD implementation activities on stakeholder needs.
6. Distribution of data on several sites because it has not been integrated.

OGD implementation can be assessed as a government investment. The expectation of investment is to bring benefits to the country, and provide added value from the data. The implementation of OGD is still relatively new, and has only been implemented for a decade. This is a very short period and OGD is still looking for the best form of investment. To enable countries to gather high-quality, high-value knowledge, a new business model can be valued further as a unit area advantage between the general public and the private sector that can be explored. From the attitude of the non-public sector, the value taken from OGD may be economic such as direct price savings (cheaper services), indirect price savings (saving time through more satisfying services) or increasing opportunities to generate income. The value captured may also be social as trust increases, many communities are equal and honest and expectations are increased. From the perspective of the value of the general public, the value of OGD also comes from justice and equity from economic benefits. Finally, a lot of market

activity and increasing market potential must benefit everyone to a certain extent, at least in a democratic society. Increased transparency, participation and collaboration through reasonable citizenship and procedures may be the initiatives needed to ensure that the opportunities and unit values of the regions are evenly distributed.

This can also be seen from the prospects and challenges of implementing OGD. The prospect of being a facility that can generate business is the hope of OGD implementation in the future. Big challenges also arise in line with the prospects that arise. There are important aspects that can become bridges in an effort to minimize challenges and make prospects bigger, namely interoperability. Interoperability is a condition where systems and organizations have the ability to work together. This is the ability to cross operations from different data sets. This capability maximized the potential of existing data and the challenges or risks of failure to use data can be minimized.

The issue of transparency of data that is considered to be openly comprehensive also alludes to the interests of state security. Many countries in the practice of OGD are not prepared if this transparency is carried out one hundred percent openly. That is why in collaboration and exchange of data between countries at this time can not be one hundred percent honestly applied. The issue of security and misuse of data are also big problems. The issue that develops in open government data is the issue of sustainable state security. Data on wealth contained in the country's land in the form of mining materials such as gold, uranium, oil, and gas is a very sensitive issue. There is no country that is willing to open the data on natural resources they own. It seems like someone who hides his wealth, Whereas in this open era, the mining material data that is owned must be released as part of a business collaboration, considering that the shares of a company that has been registered as a public company can be owned by anyone, including investors from outside the country. So that open government data must pay more attention to the interests of all stakeholders. The government is required to be able to open data that is supposed to be open and on the other hand it must also be able to close data that is not yet allowed to be opened to the public. It is interesting to make a data structuring scheme that allows the government to choose which data is allowed to be publicized and which is not.

The current roadmap for OGD activities is gradually becoming more comprehensive considering that each country is carrying out initiatives to develop OGD. Even so, the imbalance remains because there are no details about the objectives of the OGD. It is important to prepare objectives clearly from OGD activities in order to determine the next steps. There are four OGD perspectives, namely Bureaucratic, Technological, Political, and Economic. These perspectives are a reference in the development of OGD. The problem is in making weighting interests, and proportional interests. which perspective becomes first, second, third and fourth. this order of importance is a reference in making a roadmap for the successful implementation of OGD. Each country must have a different order of interests. Clarity is needed in order to create a roadmap so that the implementation of OGD can be effective.

Releasing appropriate data for the benefit of users, and satisfying needs is not easy. The government must also pay attention to the interests of stakeholders. Many data concerning the social life of the community such as income or salary data, paid tax data, biodata place and date of birth, mother's name, and so forth. This data certainly should not be issued or provided haphazardly because it concerns the interests of the community. The security of personal data is an important thing that must be guaranteed by the government. Privacy is a human right that is guaranteed by state law. It is a problem that clashes between openness and privacy. This is one of the concerns in designing open government data. Stakeholders must always remember

that the importance of data privacy is more important than data disclosure. That is why the provision of open data from the government must pay attention to aspects of interest and data compatibility with the data needs of stakeholders. An example is a clear limitation of data that may be open to access by business people. In this case, business people certainly need complete data from their prospective customers. Creating a complete profile of prospective customers is an important activity in the business. While on the side of customer privacy, this can be referred to as a human rights violation. Providing data that is suitable for the people who need data is also important. Data becomes useless if it is not available and fits the needs. Many problems occur precisely from the classification of data not in the process of collecting data. Data that is not suitable and incorrect in its classification will not be useful at all.

Data logging is a problem from a country that is just starting out for data management. The OGD that has already been built is still struggling with this problem. Many developing countries are still troubled by the amount of scattered data. The strategy of building OGD must be carried out by one entity that is given authority in data management. The authority of data management is a kind of centralization of data by one entity that plans collection activities and classifies data, conducts data organization activities, conducts activities related to open data, and maintains and updates data.

4 Conclusions

Based on the results of the analysis and discussion above, it can be concluded that the implementation of OGD is carried out in many countries as part of efforts to fulfill data disclosure in the information age. The many interests of each stakeholder influence the successful implementation of OGD. This is good for the country's development because the implementation of OGD that supports the needs of stakeholders can make this investment directly beneficial to the country.

It is interesting to make a data structuring scheme that allows the government to choose which data is allowed to be publicized and which is not. This is related to the issue of sustainable state security.

Roadmap for OGD activities is gradually becoming more comprehensive considering that each country is carrying out initiatives to develop OGD. The clarity of objectives is needed in order to create a roadmap so that the implementation of OGD can be effective.

The government must also pay attention to the interests and concerns of stakeholders to release appropriate data. The security of personal data is an important thing that must be guaranteed by the government. It is a problem that clashes between openness and privacy.

OGD collaboration activities still ask for a higher level of trust from the country. In developing countries, the problems that arise are data that are still scattered. Some of the developing countries are still troubled by the amount of scattered data. That is why we need the strategy of OGD building. It must be carried out by one entity that is given authority in data management.

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