# Open Government Data from the Perspective of SMEs: A Case Study in Indonesia

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Abstract - The Indonesian government conducts Open Government Data (OGD) through the development of a data portal (data.go.id) called Satu Data Indonesia (SDI) as part of an open government initiative. Numerous studies on OGD and its effect on SMEs business in a variety of countries have demonstrated that it has a positive effect on SME business growth, implying that OGD is critical and can benefit implementing countries such as Indonesia. The government must address several issues, including the use and benefits of data made available to stakeholders. Micro, Small, and Medium-Sized Enterprises (MSMEs) employ approximately 97 percent of the total workforce in Indonesia, and account for 99.9 percent of all businesses. MSMEs contribute roughly 60% of Indonesia's total GDP. As a pillar of the Indonesian economy, MSMEs must be considered when it comes to data availability that meets their needs. That is why it is critical to conduct this research to gain their perspective. The purpose of this article is to examine only the perspectives of Indonesian SMEs on the open data made available by the Indonesian government. Based on the data analysis findings, it is possible to conclude that the SMEs society has a demand for open data in terms of the existence of agency mechanisms for receiving and responding to data requests. Additionally, the Open Data Ecosystem is critical for SMEs in terms of government promotion of data reuse.

Keywords: OGD, Satu Data Indonesia, SMEs business, MSMEs, Open Data Ecosystem.

# 1 Introduction

Open government data (hereinafter referred to as OGD) is a critical component of government organizations in almost every country in the world, including monarchies and communist countries. The OGD began with President Obama's 2009 inaugural address (Hossain et al., 2015; Okamoto, 2016; Srimuang et al., 2017; Kubler et al., 2018; Zuiderwijk et al., 2019; Syarif et al., 2020; Enriquez-Reyes et al., 2021), implying that the OGD is Despite this, its development is accelerated and results in a variety of benefits. As evidenced by the following research articles: 1) Discussing the benefits of OGD on innovation (Bedini et al., 2014); 2) Discussing the benefits of OGD in Sustainable Development (UNITED NATIONS, 2017); and 3) Discussing the benefits of OGD in a variety of ways (Safarov et al., 2017).

Gomes and Soares (2014) conducted a study on the implementation of OGD in Europe with the goal of analysing and identifying differences in how northern and southern European countries adopted, accepted, and promoted open government data portals. The results of the direct content analysis observation indicate that there are some current differences between the countries of the two regions, most notably in terms of their ability to reuse open data made available by public entities. At the moment, OGD is considered a desirable resource not only by citizens, but also by small, medium, and large businesses and other public and private organizations that view public data as a source of innovation and entrepreneurship, and thus the benefits of open data are increasingly

recognized by a broad range of national and international organizations. According to research conducted by (Styrin et al., 2016), there are differences in the application and practice of OGD in Mexico, Russia, and the United States, with a particular emphasis on their respective policies. These distinctions are due to historical problems, policies, and politics that are context specific. Another article from (Saxena, 2017) discusses the enormous potential of OGD in facilitating the Gulf Cooperation Council's economic diversification initiatives (GCC). According to the author, open government data (OGD) is critical in facilitating the GCC region's economic turnaround because it fosters innovation and economic growth while also facilitating collaboration and participation among stakeholders.

The government of Indonesia carries out OGD by developing a data portal (data.go.id) under the name Satu Data Indonesia (SDI) as part of an open government initiative (Rahmatika et al., 2019), which is a significant starting point for the era of open Indonesian government. According to (Jacob et al., 2019), Indonesia, like other countries with obstacles to OGD practice, has problems related to obstacles to OGD implementation, namely structural barriers and obstacles to knowledge quality. According to (Syarif et al., 2020), the barriers to the practice of OGD in Indonesia are similar to those in countries that are members of the Association of Southeast Asian Nations because of their homogeneity, namely developing countries with a culture of openness, a degree of openness, and a similar level of confidence. The practice of OGD in Indonesia is at maturity stage 3, with a ranking ranging from 1 to 4. This means that while policies and procedures for implementing OGD are in place, their implementation is inefficient, and formalization of activities is still minimal (Rahmatika et al., 2019).

According to Huber et al. (2020), governments have decided to push for the use of open data due to its potential to catalyze digital innovation. Despite this, little research has been conducted on the role of open data in SME, in contrast to the growing literature on the collection and sharing of open data by the public sector. As a result, our research contributes to the field of open innovation by examining the critical capabilities required to successfully manage open data in SMEs. According to our findings, several critical factors influence the acquisition, assimilation, transformation, and exploitation of open data by SMEs. The findings indicate that without specific open data capabilities, SME adoption of open data will be limited, which may explain why open data adoption by SMEs in general has been limited thus far. If this 'raw material' for the digital economy is to be fully exploited, government must improve its development of these unique open data capabilities.

Several studies by researchers on OGD and its effect on SMEs business in various countries have shown that it has a positive influence on the progress of SMEs business, so it can be said that OGD is very important and can bring goodness to implementing countries such as Indonesia. This paper investigates the perspectives of Indonesian SMEs on the open data provided by the Indonesian government on the Indonesian One Data Portal (SDI), www.data.go.id.

#### 2 Literature Review

Discussing OGD is akin to debating a country's future. Data has become a very important material in this fast-paced era of information technology. This is due to the growing volume of data collected, which must be published by the government as part of its responsibility and as a means of providing useful information to the public and businesses. OGD ushers in an era of open government based on information and communication technology, which is thought to provide flexibility and speed in making effective and efficient decisions. Stakeholders can use the available data for free and reuse or distribute it.

#### 2.1 Understanding and Vision of Open Government Data

The following are some expert opinions that can be cited as OGD definitions: 1) The underlying philosophy of Open Government Data is "to make data freely accessible to all, without restriction" (Kalampokis et al., 2011), 2) According to Saxena and Janssen (2017), governments throughout the world took the initiative to "open" their administrative data to the general public, making it freely accessible and re-usable by all. 3) Open government data is defined as publicly available public sector data that individuals or organizations can use for personal or organizational purposes (Talukder et al., 2018). On the basis of these three definitions, OGD is digital data that has been made available with the technical and legal characteristics necessary to enable it to be freely used, reused, and redistributed by anyone, at any time and from any location.

Users can sort open data definitions according to their involvement in the business processes of each stakeholder. For instance, not all stakeholders desire the same type of data. The ice trader's information requirements will differ from those of the police. This is consistent with the view that open government is a "multilateral, political, and social process characterized by transparent, collaborative, and participatory action by government and

administration," as stated by Wirtz et al. (2017). Moreover, Geiger and Von Lucke (2012) define Open Data as "stored data that can be made freely accessible in the public interest."

OGD is a global phenomenon aimed at making government data publicly and freely available in digital formats for use, reuse, and redistribution, according to Zhu (2017). OGD and open data are terms that are frequently used interchangeably. Even though it is significantly different. The term OGD refers to official data issued by the government, whereas open data refers to business data made available to the public. As stated by Gonzalez-Zapata and Heeks (2015), OGD can have several meanings. Because of the influence of stakeholders' interests on data, it has a lot of meaning.

The government's provision of data is an example of a public service. This is directly related to the government's responsibility in the public sector. According to Veljkovi et al. (2014), one of the factors impeding the development of Open Government (hereinafter referred to as OG) is a lack of conceptual clarity for OG. Thus, developing a conceptual model of Open Government will aid in better understanding the concept and guide the process of establishing benchmark indicators for OG evaluation. Governments should make data available in a reusable format that enables data indexing and retrieval without imposing restrictions on data retrieval. Given the widespread use and significance of government data, it must be comprehensive, primary, timely, accessible, machine-processable, non-discriminatory, non-proprietary, and license-free.

OGD is a component of electronic government, which is a form of honest, accountable, and dignified state administration. According to Purwanto et al. (2018), the policy of OGD practices in Austria, Greece, and England needs to take into account societal issues. According to Neuroni et al. (2013) research on OGD in Switzerland, OGD emphasizes encouraging transparency, collaboration, and participation. Their findings also show that executive authorities in Switzerland place a premium on the expansion of their core business and the potential for economic development. Another study Wirtz and Birkmeyer (2015) shows that the perception of government employees who are concerned about risks is a constraint to implementing OGD. This was identified as a significant constraint. Other significant barriers include legal barriers, authority hierarchies, a bureaucratic decision-making culture, and organizational transparency.

# 2.2 Open Government Data Indonesia

At the start of his tenure as Indonesia's seventh president, President Joko Widodo's vision and mission were Nawa Cita. One of the steps in Nawa Cita is to continue efforts to build a more open, participatory, and innovative government through the Open Government of Indonesia Commitments (OGI). This demonstrates the Indonesian government's commitment to reforming the country's public sector. OGI is expected to generate ideas, initiatives, and practices of government openness to all levels of society to foster collaboration and accelerate progress toward national goals and priorities. This will significantly improve the quality of public policy innovation and implementation to meet the needs of society.

Satu Data Indonesia (SDI), with the address <a href="https://data.go.id">https://data.go.id</a> is Indonesia's OGD portal. The goal of this government data management policy is to produce high-quality data that is easily accessible and shared among Central and Regional Agencies (OECD Public Governance Reviews, 2016). This policy is outlined in Presidential Regulation No. 39 of 2019 on One Indonesian Data. The SDI Portal contains all government data as well as data from other relevant agencies. The Ministry of National Development Planning / Bappenas manages the Central Secretariat of One Data Indonesia to achieve government transparency and accountability while also supporting national development. As stipulated in Law 14 of 2008 on Freedom of Information, the entire data set in the One Data Indonesia Portal can be accessed freely and classified as public data, as long as it does not contain information containing state secrets, personal secrets, or other sensitive information. According to the OECD report 2016, in order to improve accountability and citizen engagement, Indonesia needs to: 1) foster a greater awareness of the relevance and usefulness of open governance reforms in public administration, 2) officials with the requisite capacity to enact reforms at the national and local levels of government, and a greater reliance on society, 3) Understanding civilians encourages the rise of more non-government actors capable of playing a constructive role in the open government agenda.

Sayogo and Yuli (2018) conducted research on the complexities of open government and the implementation of open data from the perspective of local government in Indonesia, discussing challenges, success factors, learning, and success indicators. This study discovered five major challenges in the practice of OGD: 1) data abuse and misuse, 2) limited technological capabilities, 3) data credibility, 4) availability of information policies to regulate transparency, and 5) maintaining public involvement and enthusiasm. There are four factors that will determine the success of OGD: 1) collaboration between the government, academia, the private sector, and the general

public, 2) openness of government offices to accept criticism and suggestions, 3) accommodating leaders, and 4) commitment of government agencies to be involved in open government and open data.

According to research conducted by Syaripul and Bachtiar (2016) on the relationship between UKM and OGD in Jakarta, which is the capital of the Republic of Indonesia, shows that 78.05% of respondents cannot take insights from the data, and only 21.95% are able. The results of this study also indicate that respondents 100% agree that the OGD of the Jakarta City Government is still difficult to read and understand.

Referring to the OGD of the Indonesian government from the SDI portal, it can be said that OGD is still far from ideal expectations. The data.go.id portal (see figure 1a, 1b, and 1c) accessed on March 25, 2021 is still in Beta and only in the Indonesian version and there is no English version yet. The available dataset is 94,588. The number of datasets is still very minimal considering that this program is part of President Joko Widodo's Nawa Cita, which was launched in 2014. From several available datasets, a search using the keyword "UMKM" means that "MSMEs" only produces 165 datasets (see figure 1b), whereas if the keyword is used "Business", only produced 27 datasets (see figure 1c).

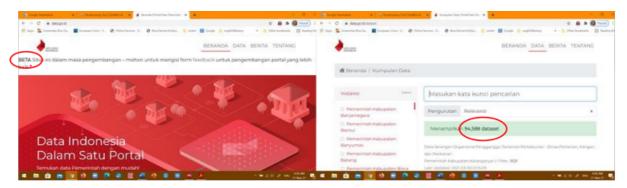


Figure 1a: The view from the portal https://data.go.id

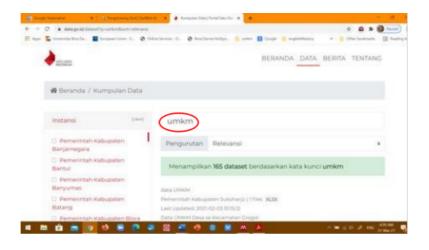


Figure 1b: Searching using MSMEs keyword

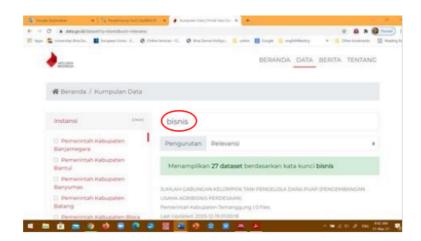


Figure 1c: Searching using Business keyword for MSMEs and Business respectively

OGD is a component of the country's investment in information and communication technology (ICT), which is believed to have the potential to grow the economy. According to Rachman (2017), determining the future potential for ICT investment is contingent upon the relationship between the adoption of ICT services by small to medium-sized enterprises (SMEs) and national economic growth. ICT services have a significant impact on SME productivity growth, which benefits the Indonesian economy. OGD is critical for society and business in Indonesia, particularly SMEs.

# 2.3 Chanel for Data and Information Sharing

OGD is a method of delivering open data to stakeholders. All countries that are members of open government initiatives (OGI) have joined the open data movement. According to (Parung et al., 2018), there are five types of barriers in order of importance: 1) law and privacy; 2) government culture; 3) social; 4) technical; and 5) economy. There are five priorities: 1) Priority 1 is to involve stakeholders in OGD preparation and form an OGD competency center, 2) Priority 2 is to establish a legal enforcement structure, 3) Priority 3 is to implement OGD in phases, 4) Priority 4 is to build collaboration features on the platform for communication and raising public awareness of OGD stakeholders, and 5) Priority 5 is to conduct training.

Indonesia is a prime example of a country that is only now embracing the open data movement. Nugroho (2013) reports that data are published for a variety of reasons, including public reuse, more efficient governance, and increased transparency. The most recent development in this area is the expectation that published data will be in a machine-readable format. There is, in general, a dearth of guidelines to assist in organizing and facilitating the data opening process. The comparison of open data policies was conducted to serve as a foundation for drawing conclusions and making recommendations about Indonesia's open data policy. The report makes several recommendations, including strengthening the legal framework, establishing an ecosystem between data publishers and users, enhancing information technology and organizational support for open data, and launching government-level initiatives that leverage open data.

The steps taken to implement the OGD, based on Guidelines on Open Government Data for Citizen Engagement published by United Nations, (Data, 2018) are as follows:

- Make government data and information available online. All published data and information must be
  available online, the information uploaded must be in a format that the public can easily access and reuse
  based on their needs, the government must provide the public with the opportunity to provide feedback
  on the data and information provided, and the government is required to respond to any requests and notes
  made by the community.
- 2. Build and establish government institutions with an open culture. Openness is a culture that encourages the government to be more transparent and accountable. Things that must be done include: a) the publication of plans made by the government that can provide an overview to the public of the government's efforts to improve and develop a culture of transparency, collaboration, and public participation; and b) following the implementation stage, the evaluation stage to the application of the principles and the government's response. The results must also be published. c) Promoting transparency, collaboration, and public participation through innovative ideas.
- 3. Developing a policy framework. This policy framework is used to provide clear direction and guidance

for the long-term sustainability of open government implementation by allowing for collaboration with various parties. The goal is to increase government professionalism so that the implementation of open government can be properly developed in the future.

### 2.4 The Open Data Readiness Assessment (ODRA)

The World Bank has established a methodology to assist governments around the world in assessing and developing their Open Data programs. The Open Data Readiness Assessment, or ODRA, of the World Bank. It is an action-oriented assessment based on desk research and stakeholder consultation, according to (Government & Working, 2013) ODRA is intended to identify the steps required to launch an open data initiative. There are eight dimensions used, which are as follows: 1) At the highest level of government, leadership that evaluates the vision, understanding, and championing of Open Data; 2) A policy and legal framework that investigates how the state can be a legal supportive framework for the development of the Open Data Initiative. 3) government institutional structures, responsibilities, and capabilities that see how the government works horizontally and what the capacities of various institutions are usually very important in the implementation of the Open Data Initiative; 4) Data management policies, procedures, and data availability within the government that map existing data assets and data procedures; 5) Open data requests that assess open data awareness and initiatives among non-government actors, particularly NGOs, the private sector, academia, media and journalists, and startups and innovators; 6) Citizen engagement and open data capabilities that assess the state of interaction between government and nongovernment actors, the state of the country's information society, and overall societal capacity in ICT. 7) Fund open data programs that investigate whether budgets are available for the development of Open Data initiatives; 8) National technology and infrastructure skills that assess the state of the country's IT infrastructure.

This is driving the implementation of new Open Data initiatives, such as those initiated by the countries listed below: ODRA has been implemented in Moldova (Rahemtulla et al., 2012), Indonesia (Alonso et al., 2013) Kyrgyzstan (Zijlstra, 2015), Croatia (Vracic et al., 2016), Malaysia (World Bank Group, 2017), Uganda (Chrzanowski et al., 2017), Ethiopia (Boyera et al., 2017), Bahrain (Katbi & Al-ammary, 2019), Sierra Leone (World Bank Group, 2020b), Bangladesh (World Bank Group, 2020a), and other countries.

#### 2.5 Definition of Small and Medium-sized Enterprises (SMEs)

According to the Organization for Economic Cooperation and Development (OECD, 2005), small and medium sized enterprises (SMEs) are self-contained, non-subsidiary businesses with fewer than a specified number of employees. This figure varies considerably by country. As is the case in the European Union, the most frequently used upper limit for SME designation is 250 employees. Certain countries, on the other hand, impose a limit of 200 employees, whereas the United States defines SMEs as businesses with fewer than 500 employees. Small businesses typically employ fewer than 50 people, while microbusinesses employ no more than ten, and in some cases, five. Additionally, SMEs are defined by their financial assets. In the European Union, a new definition took effect on January 1, 2005. It applies to all Community acts and funding programs, as well as State aid, and allows SMEs to receive a greater intensity of national and regional aid than large corporations. The new definition raises the financial thresholds, requiring medium-sized enterprises (50-249 employees) to have a maximum revenue of EUR 10 million, and micro enterprises (less than 10 employees) to have a maximum revenue of EUR 2 million. On the other hand, the balance sheets of medium-sized, small, and micro enterprises should not exceed EUR 43 million, EUR 10 million, and EUR 2 million, respectively.

According to Capri's snapshot of Indonesian SMEs, approximately 57 million micros, small, and medium-sized enterprises (MSMEs) operated in 2017. MSMEs employ approximately 97 percent of the total workforce in Indonesia and account for 99.9 percent of all businesses. MSMEs contribute roughly 60% of Indonesia's total GDP. The following table summarizes data on Indonesia's small and medium-sized enterprises (SMEs).

Table 1: Indonesian SMEs Asset Classification

Business Type	Asset (IDR)	
Micro	Max 50 million	
Small	50-500 million	
Medium	500 million	

Notes: 1 USD equal to 14,500 Indonesian Rupiah (IDR) as of March 2021.

Micro, small, and medium-sized businesses have been forced to transform into digital businesses as a result of the Covid 19 pandemic, with available data indicating that 4.8 million MSMEs have gone digital as of March 2021 (https://www.liputan6.com/bisnis/read/4544531/48million-umkm-have-gone-digital-in-march-2021).

The evolution of business culture from traditional to digital has had an effect. It is unknown whether it has had a positive or negative effect on the growth of MSME businesses in Indonesia. According to the author, what may occur is a hybrid business in which two business platforms operate concurrently.

According to (Albats et al., 2019) who noticed that the majority of the cases examined corroborated an assumption about the triggers that preceded SME innovation processes. Simply put, all of the cases studied demonstrated an innovation process that was triggered by either internal factors (founders' ideas, intelligence, and entrepreneurial mindset), external factors (market demand and emerging opportunities, market turbulence and crises), or a combination of the two. While entrepreneurs initially sensed and scoped market opportunities and initial business strategies (internally), external knowledge sources were also utilized during these early stages. So, it can be said that this Covid pandemic may also be a business trigger.

# 3 Methodology

Information systems is a multidisciplinary field of study. Mathematics, management, natural science, engineering, linguistics, and behavioral sciences all contribute to its success (Myers, 1997). As a result, determining and selecting appropriate research methodology is difficult.

This study is based on mixed methods research (Ojeda & Juárez-Cerrillo, 1996; Yin, 2009; Flick, 2013; Antwi & Kasim, 2015; Alismaili et al., 2015; Creswell, 2018), specifically quantitative and qualitative research, as well as a case study. The researchers used exploratory methods for qualitative research and explanatory methods for quantitative research. Qualitative research is used to elucidate attitudes, underlying causes, and motivations (Oktaba & Piattini, 2008). It sheds light on the problem or aids in the formulation of concepts or hypotheses. According to (Kaplan & Duchon, 1988), Quantitative research elucidates a problem through generalizable findings; it does not prioritize data depth, whereas analysis prioritizes data breadth. Quantitative research employs the Likert scale as a measure of the indicator variable under study for qualitative method interpretation. The study examined 30 SMEs in Palembang, Indonesia. The questionnaire distributed to respondents is in the form of closed questions with response options ranging from 1 to 5, indicating a level of agreement or disagreement. A Likert scale is a numerical scale ranging from 1 to 5. The question item is a translation of the ODRA dimensions and indicators into the languages of the countries that have adopted them (World Bank Group, 2020a). SmartPLS software is used to process data. The data processing results are presented descriptively, utilizing respondent data tabulation and PLS analysis to illustrate the importance ranking of the variables. The purpose of this paper will elaborate on SME actors' perspectives on the OGD.

#### 4 Results and Discussion

The data was gathered by handing out questionnaires to 30 SMEs actors in Palembang. The criteria for respondents are small businesses with 0 to 20 employees and assets ranging from IDR 50 to 500 million, and medium businesses with 21 to 100 employees and assets ranging from IDR 500 million to IDR 500 million. The questionnaire contains approximately eight dimensions and indicators, as shown in the table below, which are tailored to the needs of SMEs.

Dimensions Indicators

(1) Leaders have expressed publicly visible support for OGD. (2) Support for OGD among key data-owning agencies. (3) The broader political context and top national priorities/plans help or hinder OGD.

Policy & (1) Existence and effectiveness of an access to information law. (2) Privacy protection. (3) Systems security and archiving preservation. (4) Ownership and licensing of government data.

Table 2: Table of ODRA Dimensions and Indicators

Government Institutional Structures & Skills for Data	(1) Expressed readiness of an agency with sufficient political weight and competency to lead on OGD for SMEs. (2) Track record of inter-agency mechanisms coordinating major ICT for OGD initiatives. (3) Existence and effectiveness of positions comparable to a CIO/CTO within agencies responsible for strategic ICT decisions and management.
Data of the ministry responsible for SMEs policies	(1) How and where data is held by the ministry. (2) The visibility of agencies into their data holdings. (3) The existence of key data-owning agencies with demonstrable capabilities in data management.
Demand for Open Data from SMEs Society	(1) Evidence of data demand by SMEs society, and the private sector. (2) Existence of agency mechanisms in place to intake and respond to requests for data.
Open Data Ecosystem	(1) Government record on SMEs engagement. (2) Existence of Business Apps. (3) Government promotion of reuse of the data.
Funding an Open Data Program	(1) Existence of resources and personnel for an Open Data Program. (2) Availability of government funding for necessary ICT infrastructure and training. (3) the government's track record for investing in innovation.
National Technology Infrastructure and Skills	(1) Overall ICT ecosystem and skills. (2) Access to high-speed Internet and mobile phones. (3) Maturity of the government's ICT infrastructure and use of technology, especially the use of shared infrastructure and services. (4) ICT literacy among the population of SMEs.

Three indicators are used for the intervening variable, which is based on the United Nations' Guidelines on Open Government Data for Citizen Engagement. 1) Make government data and information available on the internet. 2) Establishing government institutions with an open culture; and 3) Creating a policy framework. The dimensions of 5 priorities are used as an endogenous variable. There are five main objectives: 1) Priority 1 is to involve stakeholders in OGD preparation and establish an OGD competency center, 2) Priority 2 is to establish a legal enforcement structure, 3) Priority 3 is to phase OGD implementation, 4) Priority 4 is to build collaboration features on the platform for communication and raising public awareness of OGD stakeholders, and 5) Priority 5 is to conduct training. The obtained data was analyzed using the SmartPLS software. Procedure 1 involved dividing the three groups of exogenous variables from the eight dimensions of ODRA. Group 1 consists of Leadership, Policy & Legal Framework, Government Institutional Structures, and Data Skills (X1, X2, X3), Group 2, namely X4, X5, contains data from the ministry in charge of SMEs policies, as well as a demand for open data from the SMEs society. Open Data Ecosystem, Funding and Open Data Program, National Technology Infrastructure and Skills are part of Group 3, namely X6, X7, and X8. Procedure 2 involves creating an intervening variable Y1 with three indicators and a priority endogenous variable Y2 with five indicators. Respondents to the questionnaire were Palembang-based SMEs with varying levels of education and business knowledge. This is evident when asked to complete a questionnaire. Many people did not fill it out completely.

The following data processing results show that many respondents are inconsistent.

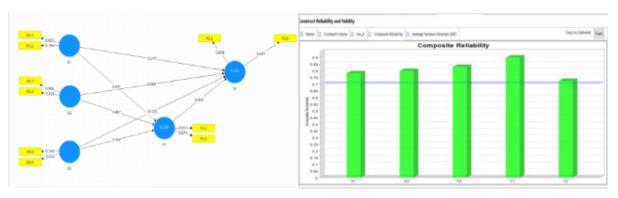


Figure 2: Group 1. The results of the validity test and reliability test

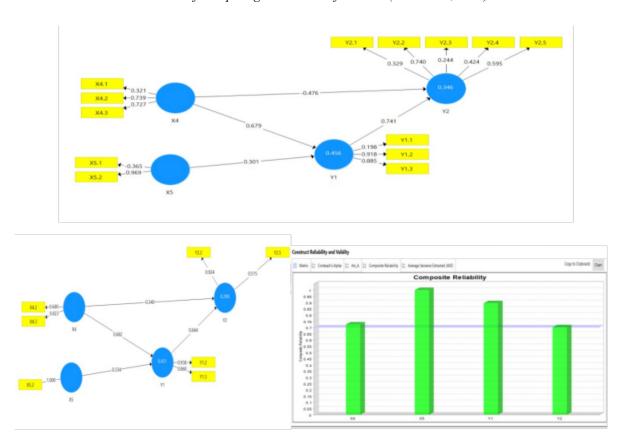


Figure 3: Group 2. The results of the validity test and reliability test

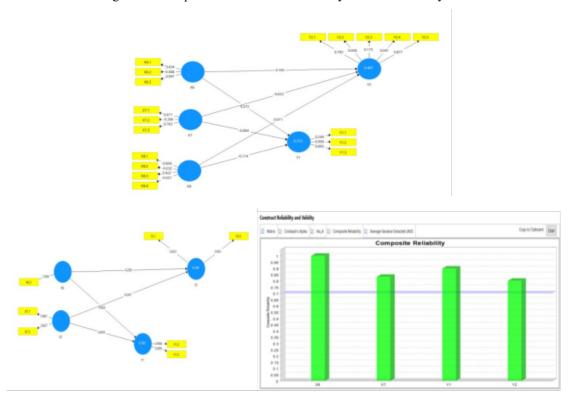


Figure 4: Group 3. The results of the validity test and reliability test Resumes

The results of data processing are as follows:

Table 3: Summary of The Perspectives of The SMEs' Actors

Variabel	Validity	Explanation
X1.1	0.833	Leadership/ Leaders have expressed publicly visible support for OGD.
X1.2	0.764	Leadership/ Support for OGD among key data-owning agencies.
X2.1	0.806	Policy & Legal Framework/ Existence and effectiveness of an access to information
		law.
X2.2	0.820	Policy & Legal Framework/ Privacy protection.
X3.2	0.749	Government Institutional Structures & Skills for Data/ Track record of inter-agency mechanisms coordinating major ICT for OGD initiatives.
X3.3	0.922	Government Institutional Structures & Skills for Data/ Existence and effectiveness of
		positions comparable to a CIO/CTO within agencies responsible for strategic ICT decisions and management.
X4.2	0.680	Data of the ministry responsible for SMEs policies/ The visibility of agencies into their
		data holdings.
X4.3	0.823	Data of the ministry responsible for SMEs policies/ The existence of key data-owning agencies with demonstrable capabilities in data management.
X5.2	1.00	Demand for Open Data from SMEs Society/ Existence of agency mechanisms in place to intake and respond to requests for data.
X6.3	1.00	Open Data Ecosystem/ Government promotion of reuse of the data.
X7.1	0.861	Funding an Open Data Program/ Existence of resources and personnel for an Open Data
		Program.
X7.3	0.827	Funding an Open Data Program/ the government's track record for investing in innovation.

The variables summarized in the tables are significant from the perspective of SMEs. These findings were also corroborated directly by three experts, who concurred with the conclusions. Additional variables not included in the table will be investigated further with a larger sample size and a broader distribution of questionnaires.

#### 5 Conclusion

OGD is an essential component of today's digital government. One of the concerns that the government must address is the use and benefits of data made available to stakeholders. As one of the pillars of the Indonesian economy, SMEs must be considered in terms of data availability that suits their needs. That is why this research is important in gaining their perspective.

Based on the data analysis findings, it is possible to conclude that the SMEs society has a demand for open data in terms of the existence of agency mechanisms for receiving and responding to data requests. Additionally, the Open Data Ecosystem is critical for SMEs in terms of government promotion of data reuse. The resume in Table 3 contains a list of additional variables that are critical to SMEs.

The findings of this study are expected to serve as a framework for subsequent research in several other countries. While significant variables may share some similarities, they may also be distinct. This is fascinating, given the cultural and national differences in each country's business practices. We recommend that researchers from other countries conduct research in their home countries on open government data and SMEs as well.

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### References

- Alismaili, S., Li, M., Shen, J., & He, Q. (2015). A multi perspective approach for understanding the determinants of cloud computing adoption among Australian SMEs. ACIS 2015 Proceedings 26th Australasian Conference on Information Systems.
- Alonso, J. M., Boyera, S., Grewal, A., Iglesias, C., & Pawelke, A. (2013). *Open Government Data Readiness Assesment Indonesia*. World Wide Web Foundation. http://labs.webfoundation.org/wp-content/uploads/2014/12/OGD Indonesia.pdf
- Antwi, S. K., & Kasim, H. (2015). Qualitative and Quantitative Research Paradigms in Business Research: A Philosophical Reflection. *European Journal of Business and Management*, 7(3), 217–225. https://www.researchgate.net/publication/295087782, www.iiste.org
- Bedini, I., Farazi, F., Leoni, D., Pane, J., Tankoyeu, I., & Leucci, S. (2014). Open Government Data: Fostering Innovation. *JeDEM EJournal of EDemocracy and Open Government*, 6(1), 69–79. https://doi.org/10.29379/jedem.v6i1.329
- Boyera, S., Schalkwyk, F. van, & Grewal, A. (2017). *Open Data in Ethiopia*. https://www.academia.edu/38416197/Open Data in Ethiopia
- Capri, A. (2017). Micro and Small Businesses in Indonesia's Digital Economy: Keys To Developing New Skills and Human Capital Table of Contents. *The Asia Pacific Foundation of Canada*, 56. https://apfcanadamsme.ca/sites/default/files/2019-03/Micro and Small Businesses in Indonesia's Digital Economy.pdf
- Chrzanowski, P., Herzog, T., & Holm, J. (2017). Open Data Readiness Assessment Prepared for the Government of Uganda (Issue May).
- Creswell, J. W., & Creswell, D. J. (2018). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches* (5th ed.). SAGE Publications, Inc.
- Enriquez-Reyes, R., Cadena-Vela, S., Fuster-Guillo, A., Mazon, J. N., Ibanez, L. D., & Simperl, E. (2021). Systematic Mapping of Open Data Studies: Classification and Trends From a Technological Perspective. *IEEE Access*, *9*, 12968–12988. https://doi.org/10.1109/access.2021.3052025
- Flick, U. (2013). *The SAGE Handbook of Qualitative Data Analysis* (1st ed.). SAGE Publications Ltd. https://doi.org/http://dx.doi.org/10.4135/9781446282243
- Geiger, C. P., & von Lucke, J. (2012). Open Government and (Linked) (Open) (Government) (Data). *JeDEM EJournal of EDemocracy and Open Government*, 4(2), 265–278. https://doi.org/10.29379/jedem.v4i2.143
- Gomes, L., & Soares, D. (2014). Open government data initiatives in Europe. *Proceedings of the 8th International Conference on Theory and Practice of Electronic Governance*. Published. https://doi.org/10.1145/2691195.2691246
- Gonzalez-Zapata, F., & Heeks, R. (2015). The multiple meanings of open government data: Understanding different stakeholders and their perspectives. *Government Information Quarterly*, 32(4), 441–452. https://doi.org/10.1016/j.giq.2015.09.001
- Hossain, M. A., Dwivedi, Y. K., & Rana, N. P. (2015). State-of-the-art in open data research: Insights from existing literature and a research agenda. *Journal of Organizational Computing and Electronic Commerce*, 26(1–2), 14–40. https://doi.org/10.1080/10919392.2015.1124007
- Huber, F., Wainwright, T., & Rentocchini, F. (2018). Open data for open innovation: managing absorptive capacity in SMEs. *R&D Management*, 50(1), 31–46. https://doi.org/10.1111/radm.12347
- Jacob, D. W., Fudzee, M. F. M., Salamat, M. A., & Rahman, N. H. A. (2019). Analyzing the Barrier to Open Government Data (OGD) in Indonesia. *International Journal of Advanced Trends in Computer Science and Engineering*, 8(1), 136–139. https://doi.org/10.30534/ijatcse/2019/2681.32019
- Kalampokis, E., Tambouris, E., & Tarabanis, K. (2011). Open Government Data: A Stage Model. *Lecture Notes in Computer Science*, 235–246. https://doi.org/10.1007/978-3-642-22878-0 20
- Kaplan, B., & Duchon, D. (1988). Combining Qualitative and Quantitative Methods in Information Systems Research: A Case Study. *MIS Quarterly*, 12(4), 571. https://doi.org/10.2307/249133
- Katbi, A. K., & Al-Ammary, J. (2019). Open Government Data in Kingdom of Bahrain: Towards an Effective Implementation Framework. *Advances in Intelligent Systems and Computing*, 699–715. https://doi.org/10.1007/978-3-030-16181-1 66

- Kubler, S., Robert, J., Neumaier, S., Umbrich, J., & le Traon, Y. (2018). Comparison of metadata quality in open data portals using the Analytic Hierarchy Process. *Government Information Quarterly*, 35(1), 13–29. https://doi.org/10.1016/j.giq.2017.11.003
- Myers, M. D. (1997). Qualitative Research in Information Systems. *MIS Quarterly*, 21(2), 241. https://doi.org/10.2307/249422
- Neuroni, A. C., Riedl, R., & Brugger, J. (2013). Swiss Executive Authorities on Open Government Data -- Policy Making beyond Transparency and Participation. 2013 46th Hawaii International Conference on System Sciences. Published. https://doi.org/10.1109/hicss.2013.19
- Nugroho, R. (2013). A comparison of open data policies in different countries: Lessons learned for an open data policy in Indonesia | TU Delft Repositories. Http://Resolver.Tudelft.Nl/Uuid:Ae4e0a64-579d-40c4-Bed0-D51614ddea9c.https://repository.tudelft.nl/islandora/object/uuid:ae4e0a64-579d-40c4-bed0-d51614ddea9c?collection=education
- OECD. (2005). OECD SME and Entrepreneurship. https://stats.oecd.org/glossary/detail.asp?ID=3123
- Open Government in Indonesia. (2016). OECD Publishing. http://dx.doi.org/10.1787/
- Ojeda, M., & Juárez-Cerrillo, S. (1996). Biplot display for diagnostic in a two-level regression model for growth curve analysis. *Computational Statistics & Data Analysis*, 22(6), 583–597. https://doi.org/10.1016/0167-9473(96)00013-8
- Okamoto, K. (2016). Introducing Open Government Data. *The Reference Librarian*, 58(2), 111–123. https://doi.org/10.1080/02763877.2016.1199005
- Oktaba, H., & Piattini, M. (2008). Software Process Improvement for Small and Medium Enterprises: Techniques and Case Studies (H. Oktaba & M. Piattini (eds.)). *Information Science Reference*. www.igi-global.com
- Parung, G. A., Hidayanto, A. N., Sandhyaduhita, P. I., Ulo, K. L. M., & Phusavat, K. (2018). Barriers and strategies of open government data adoption using fuzzy AHP-TOPSIS. *Transforming Government: People, Process and Policy*, 12(3/4), 210–243. https://doi.org/10.1108/tg-09-2017-0055
- Purwanto, A., Zuiderwijk, A., & Janssen, M. (2018). Group Development Stages in Open Government Data Engagement Initiatives: A Comparative Case Studies Analysis. In P. Parycek et al. (Ed.), Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics): Vol. 11020 LNCS. Springer International Publishing. https://doi.org/10.1007/978-3-319-98690-6
- Rachman, S. (2017). The role of information and communication technology services within small and medium enterprise as a growth factor affecting Indonesia's economy (Issue September) [RMIT University]. http://researchbank.rmit.edu.au/view/rmit:162274
- Rahemtulla, H., Custer, S., Tisacova, I., Jhalla, K., Gigler, S., & Brigham, C. (2012). *The Journey of Open Government and Open Data Moldova*.
- Rahmatika, M., Krismawati, D., Rahmawati, S. D., Arief, A., Sensuse, D. I., & Fadhil Dzulfikar, M. (2019). An Open Government Data Maturity Model: A Case Study in BPS-Statistics Indonesia. *2019 7th International Conference on Information and Communication Technology (ICoICT)*. Published. https://doi.org/10.1109/icoict.2019.8835352
- Safarov, I., Meijer, A., & Grimmelikhuijsen, S. (2017). Utilization of open government data: A systematic literature review of types, conditions, effects and users. *Information Polity*, 22(1), 1–24. https://doi.org/10.3233/ip-160012
- Saxena, S. (2017). Prospects of open government data (OGD) in facilitating the economic diversification of GCC region. *Information and Learning Science*, 118(5/6), 214–234. https://doi.org/10.1108/ils-04-2017-0023
- Saxena, S., & Janssen, M. (2017). Examining open government data (OGD) usage in India through UTAUT framework. *Foresight*, 19(4), 421–436. https://doi.org/10.1108/fs-02-2017-0003
- Sayogo, D. S., & Yuli, S. B. C. (2018). Critical Success Factors of Open Government and Open Data at Local Government Level in Indonesia. *International Journal of Electronic Government Research*, *14*(2), 28–43. https://doi.org/10.4018/ijegr.2018040103
- Srimuang, C., Cooharojananone, N., Tanlamai, U., & Chandrachai, A. (2017). Open government data assessment model: An indicator development in Thailand. 2017 19th International Conference on Advanced Communication Technology (ICACT). Published. https://doi.org/10.23919/icact.2017.7890110

- Styrin, E., Luna-Reyes, L. F., & Harrison, T. M. (2016). Open Data and Open Government. *Proceedings of the 17th International Digital Government Research Conference on Digital Government Research*. Published. https://doi.org/10.1145/2912160.2912161
- Syarif, A., Salamat, M. A. B., & Syafari, R. (2020). A Comparative Analysis of Open Government Data in Several Countries: The Practices and Problems. *Advances in Intelligent Systems and Computing*, 346–357. https://doi.org/10.1007/978-3-030-36056-6 33
- Syaripul, N. A., & Bachtiar, A. M. (2016). Visualisasi Data Interaktif Data Terbuka Pemerintah Provinsi DKI Jakarta: topik ekonomi dan keuangan daerah. *Jurnal Sistem Informasi*, 12(2), 82. https://doi.org/10.21609/jsi.v12i2.481
- Talukder, M. S., Shen, L., Hossain Talukder, M. F., & Bao, Y. (2019). Determinants of user acceptance and use of open government data (OGD): An empirical investigation in Bangladesh. *Technology in Society*, *56*, 147–156. https://doi.org/10.1016/j.techsoc.2018.09.013
- United Nations. (2017). Guide on Lessons for Open Government Data Action Planning for Sustainable Development. https://publicadministration.un.org/en/ogd
- Veljković, N., Bogdanović-Dinić, S., & Stoimenov, L. (2014). Benchmarking open government: An open data perspective. *Government Information Quarterly*, 31(2), 278–290. https://doi.org/10.1016/j.giq.2013.10.011
- Vracic, T., Varga, M., & Curko, K. (2016). Effects and evaluation of open government data initiative in Croatia. 2016 39th International Convention on Information and Communication Technology, Electronics and Microelectronics (MIPRO). Published. https://doi.org/10.1109/mipro.2016.7522380
- Wirtz, B. W., & Birkmeyer, S. (2015). Open Government: Origin, Development, and Conceptual Perspectives. International Journal of Public Administration, 1–16(January), 37–41. https://doi.org/10.1080/01900692.2014.942735
- Wirtz, B. W., & Birkmeyer, S. (2015). Open Government: Origin, Development, and Conceptual Perspectives. *International Journal of Public Administration*, 38(5), 381–396. https://doi.org/10.1080/01900692.2014.942735
- World Bank Group. (2017). The Malaysia Development Experience Series Open Data Readiness Assessment (ODRA) Report (Issue May). wbg.org/Malaysia
- World Bank Group. (2020a). Bangladesh Open Data Readiness Assessment Report Open Data for Economic and Social Development and Improving Public Services.
- World Bank Group. (2020b). Open Data Readiness Assessment Prepared for the Government of Sierra Leone.
- Yin, R. K. (2009). Case Study Research: Design and Methods. In L. Bickman & D. J. Rog (Eds.), *Essential guide to qualitative methods in organizational research* (Vol. 5, Issue 5). Sage Publications.
- Zhu, X. (2017). The failure of an early episode in the open government data movement: A historical case study. *Government Information Quarterly*, 34(2), 256–269. https://doi.org/10.1016/j.giq.2017.03.004
- Zijlstra, A. (2015). Open Data Readiness Assessment the Kyrgyz Republic.
- Zuiderwijk, A., Romer, M., & Kroesen, M. (2019). Open data policy development. *Proceedings of the 15th International Symposium on Open Collaboration*. Published. https://doi.org/10.1145/3306446.3340819