

Framework for Measuring Readiness of *Satu Data* Indonesia (SDI) Implementation

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ABSTRACT

According to Satu Data Indonesia (SDI) regulation, each government office should publish their public data or limited access data through a portal, and the data should be able to interchange digitally through a data interchange mechanism. The regulation also defines three-stage on data releases which are data collection, validation, and publication. Every government office or local government should assign a specific unit or department for handling the process and preparing the procedure and technology for supporting the process. Challenges in the implementation of SDI regulation will come from the variation of a local government office on their capability and readiness of existing conditions for supporting the implementation. This research aims to define the framework for assessing the readiness of local government agencies in implementing the SDI regulation. The framework is derived from SDI regulation aspect and refer to some previous model of readiness framework. The framework is tested to assess 10 local ICT government offices, and the result shows that the framework can help the stakeholder to locate the weakness of their organization and prepare the action plan to improve it.

Keywords: *Satu Data Indonesia (SDI), data interchange, framework, readiness, implementation.*

1. INTRODUCTION

Initiative for open data Indonesia, or “Satu Data Indonesia” (SDI) has been started since 2010, as a consequence of Indonesian of Open Public Information No. 14/2008. The real action for public data transparency was starting in September 2011 when Indonesia announced the collaboration with eight countries on the Open Government Partnership (OGP) initiative. Implementation of the OGP initiative was then realized with Open Government Indonesia (OGI) initiative, and Open Data Indonesia has been started following this initiative [1].

In 2014, OGI introduce the Indonesian Data Portal (www.data.id) that contains dataset and statistic information from several areas such as economy, public health, environment, and demography. At its first launching, the site has more than 700 datasets comes from 24 government agencies such as government ministry, government office, and local government office. The local government that promotes the open data was Jakarta, Bandung, and Bojonegoro [2]. All data in the portal are free and can be accessed through API. The site also provides features on displaying data in graphical format or geospatial format, based on a map

provided by the Geospatial Information Agency of Indonesia.

The awareness of open data and the need for data interchange is increasing rapidly. Many problems are caused by the lack of accurate data and the silo between government agencies [3] [4]. To solve and anticipate these problems, the government then launched the Indonesia One Data regulation (Satu Data Indonesia – SDI), President Regulation No.39 in 2019. The regulation serves as the legal basis for all initiatives related to data disclosure and data interchange. Although the regulation was already available, the detailed implementation in government agencies or local government is still experiencing some obstacles and challenges. There is a need for some detailed aspects to be considered before they can implement the regulation seamlessly.

The challenge in implementing SDI regulation is to understand the organization’s capability of government agencies. In the central government institution, such as the ministry’s level, the challenge might be quite different compare with local government agencies. In local government agencies or the state /province level, the responsibility of managing the back-end process of

SDI will be executed by the local ICT government office [5]. The condition and capability of local ICT government offices might vary among local government areas. There is, we need to assess the capability for making a better plan on implementing the regulation.

Based on the problem above, we consider proposing the framework for measuring the readiness of government agencies on implementing the SDI portal in their area, especially for preparing the main process which is collecting, validating, and publishing data. The framework will adopt the basic requirement from SDI regulation and is expected to help the organization to prepare the plan and strategy for realizing the SDI portal.

2. LITERATURE REVIEW

2.1. Related Works on ICT Readiness Frameworks

Some previous research that related to the framework for assessment ICT readiness can be summarized as follow:

1. Readiness can be divided into two categories: program readiness and project readiness. Program readiness can consist of three parts: organizational readiness, staff characteristics, and resource readiness. The resources readiness can include several aspects such as money, space, technology, availability of training, supervisor and consultation services [6]
2. In the e-health context, the readiness can be categorized into six groups which are core readiness, technological readiness, societal readiness, policy readiness, engagement readiness and acceptance, and use readiness [7]
3. Assessment of readiness can be done through qualitative (by observation or interview techniques) or quantitative (using a questionnaire). For conducting quantitative research, we need to develop a survey instrument, that can consist of five steps: item development, questionnaire administration, item reduction, scale evaluation, and replication with an independent sample [8]
4. ICT Readiness assessment consists of four aspects: software and information system, ICT hardware, people and human resource, and ICT infrastructure, and propose 5 levels of readiness which are initial, managed, maintained, concerned, and optimized [9]
5. The framework for measuring e-readiness assessment consists of four elements which are strategy, commitment, communication, and institutional change; human resource, infrastructure, and architecture. [10]
6. The STOPE (Strategy, technology, organization, people, and environment) framework is used for

building a tool for measuring the implementation of main roles on implementing e-government in Indonesia. The tools also proposed five-level for measurement results, 0-none, 1-poor, 2-average, 3-good, 4-excellent. The research shows some interesting results such as the readiness is sufficient enough, the potential constraint could be financial, management commitment, regulation, infrastructure constraint, and human resources. The constraint also includes the lack of a master plan, organization structure that specifically support e-government, and regulation. [11]

2.2. SDI Regulation

Satu Data Indonesia (SDI) is a government program to provide a single source of truth of data as a reference for some sectors in Indonesia and as a source for data interchange between government agencies. The Indonesian Government also launching the regulation named Peraturan Presiden no.39 the Year 2019 for Satu Data Indonesia [12]. The regulation required all government agencies to implement the data interchange and launch their own Data Portal as the common gateway for data sharing and data interchange

The SDI regulation consists of eight chapters as follows: General description, SDI principles, Stakeholder of SDI, Process of SDI, budgeting, participation of government and public agency, change management, and a closing statement.

There are three significant chapters from eight-chapter above, which are One data principles, Stakeholder of SDI, and SDI process. These three chapters cover the important issues related to subject, actors, and process on SDI as follows [12]:

1. SDI Principles consist of the policy for data definition, metadata, data classification, and standard data.
2. SDI stakeholders consist of the policy and responsibilities of stakeholders that are involved in SDI activity, which are: SDI forum, SDI board of management, Chief of Executive on SDI, SDI Secretariat, data custodian, and Data custodian support, and data producer.
3. SDI process consists of the activities that should conduct on SDI, which are: planning, collecting, validating, and distributing/publishing.

Figure 1 below shows the structure of the main issue in SDI Regulation.

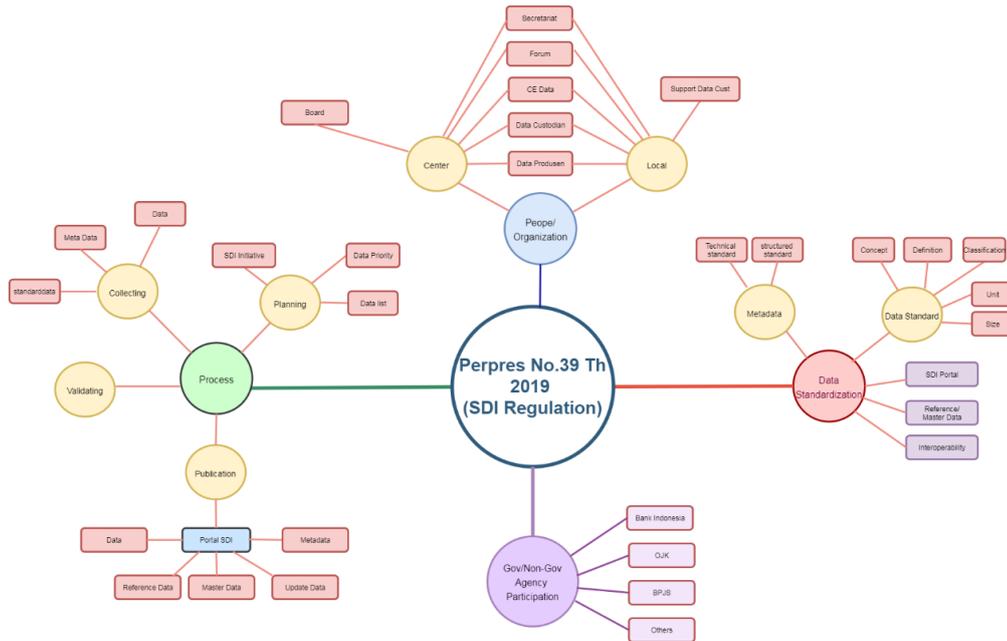


Figure 1 The Structure of SDI Regulation

3. METHOD

We follow the step below on developing the framework:

1. Define the scope of the framework
2. Analyze the components of the assessment
3. Interview the stakeholders, to assess the importance of each component
4. Adjusted the component using a weighted score
5. Identify the questioner set
6. Build the framework, consist of components, the questionnaire, and the calculation method.
7. Evaluate the framework by spreading the questionnaire for trial in some local ICT government agencies.

4. RESULT AND DISCUSSION

Based on the component and structure of SDI regulation, we can define the four domains of issues which are object, people, process, and technology. People, process, and technology (PPT) are chosen because they are widely recognized as the three key elements of process improvement [13]. The object is the target to be managed. We explain the coverage of each issue in the framework as follow:

1. Object, which is the object we need to manage. Refer to SDI regulation, the objects that we need to concern about are Data, metadata, data standard, master data, and Reference data.

2. People, refer to the person that has responsibilities for executing the SDI process. Based on the regulation, the people will consist of:
 - a. Satu data forum,
 - b. Data custodian,
 - c. Data producer/consumer.
3. The process consists of three phases of data publications, which are data collection, data formatting, and data publication.
4. Technology, covering the aspect of technology on data collecting, data formatting, and data distribution.

Based on the domain above, we propose six areas of assessment which are derived from the domain as follow:

1. Object: assessing the main objects that need to exist in the portal, which are data, metadata, standard data, and reference data.
2. People: assessing people who execute the process. We assess the availability, capability, and clear assignment for people in an organization. We cover this issue in areas "People and organization".
3. Process: assessing the readiness on executing the process of preparing data for SDI, which includes collecting, formatting, and publishing. We also assess the awareness of management on the regulation, because, without awareness, it would be hard for initiating the action. We cover these issues in two areas: management awareness and policy and regulation.

4. Technology: assess the availability of the portal itself and the technology needed for supporting the portal. We cover these issues in areas: supported technology and portal SDI.

Detail explanation of each area is described in Table 1. We also propose the proportion of each area as shown in the last column of Table 1.

Table 1. Six Areas of Assessment

No	Area	Description	Portion (%)
1	Management Awareness	Assess the awareness of management on SDI regulation	10
2	Content readiness	Assess the readiness of data content for filling the SDI portal	30
3	People and organization	Measuring the readiness of human resources as executor of SDI management	20
4	Policy and regulation	Assess the availability of local policy and regulation	20
5	Supported Technology	Measuring the availability of supported technology	10
6	SDI Portal	Assess the readiness of the SDI portal to promoting the data.	10
	Total		100

We set the portion of each area as shown in table 1 above, based on the consideration as follow:

1. We put the highest proportion on content readiness because this study aims to measure readiness. Commonly, the portal is published but lacks content updates. We often encounter the condition that the government's site is published quickly but slow in updating the content.

2. The second part that has a high proportion is people and organization and regulation and policy. These two areas have a significant role in managing the SDI portal. Without the policy, the organization will face the problem in executing the process of SDI management, which is collecting, checking, and validating, and publishing the data.

The three other areas were set with the same portion because they will play as an enabler in preparing the SDI portal

The framework above is then used as the basis for compiling a questionnaire with a funnel question approach. Although the questions are closed, the questions start from a general understanding of the SDI Regulations, then continue with the possibility of implementation in the respondent's environment.

The questionnaire is designed to measure some important aspects of each area. Table 2 shows the subject included in the questionnaire for each area.

We design the question for processing using Likert's scale, which is described as follow:

- a. The first option represented the best option, so it was set with the highest score (4)
- b. The last option represented the worst option, so it was set with the lowest score (1).

Table 2. Scope of Question on Each Area

No	Area	Scope of Question
1	Management Awareness	<ul style="list-style-type: none"> • Know the SDI regulation • Understand the content of regulation • Assess the environment readiness • Assess the people readiness • Assess the infrastructure readiness • Assess the policy readiness • Assess the time for preparing the implementation readiness
2	Content readiness	<ul style="list-style-type: none"> • Assess the data readiness • Assess the element of SDI content • Assess the solving problem approach in data • Assess the availability of

No	Area	Scope of Question
		data interchange
3	People and organization	<ul style="list-style-type: none"> Assess the organization for executing the SDI regulation Assess the availability of the role needed by SDI regulation Assess the capability of the existing employees in executing the role of SDI Assess the data priority readiness
4	Policy and regulation	<ul style="list-style-type: none"> Assess the availability of policy and regulation
5	Supported Technology	<ul style="list-style-type: none"> Assess the supporting application Assess the potential constraint on technological aspects
6	SDI Portal	<ul style="list-style-type: none"> Assess the availability of the SDI portal Assess the completeness and utility of the existing portal.

The result is derived from calculating each score and we classify it into 3 level readiness below. The level of readiness we made in simple scale because we put more emphasis on the efforts that have been made, not the final achievements. The level of readiness and its description can be seen in Table 3.

Based on the three-level of readiness, we can recommend some initiatives for helping the organization. By knowing the level of readiness, the local government can choose what program needs to be put in high priority for preparing for SDI regulation implementation

The recommendation will be summarized as follow:

1. Well prepared, on this type of organization, we recommend focusing the action on preparing the content, set some metadata and it can extend to data governance initiative
2. Ready, for this type of organization, we recommend some actions such as preparing the local regulation, preparing the data, and practicing some roles and processes in SDI.

3. Beginning, with this type of organization, we propose that the organization should prepare the plan and roadmap for implementing SDI, following on some initiative on preparing regulation and improve human resources capabilities.

Table 3. Readiness Level

No	Score	Status	Description
1	3.0-4	Well Prepared	The organization is ready for implementing the SDI regulation. The content and context of SDI regulation are understood by the management. The people, regulation, and technology has already been prepared
2	2.0-3	Ready	The organization has a good awareness of the importance of SDI regulation and has a strong will to implement it. Some preparation has already been made and the organization has a good plan for implementation
3	1.0-2	Beginner	Organization know about SDI regulation and has a good intent to implement, but there is lack of plan and direction on an implementation roadmap.

We test the framework by delivering the questionnaire for 10 local ICT government offices. We classify the respondent based on the ICT government office type which is: A, B, and C, and P for Province and K for City or district. AP means type A in Province, and BK means type B in city or district. We also distinguish the location of the office whether in Java (A) or outside Java (B). The reason why we put the classification above is to explore the impact of office-level and location on the status of readiness. Table 4 shows the result of the questionnaire from 10 respondents.

Table 4. Response of Questionnaire

NO	Location	Type	Area						Score	Status
			1	2	3	4	5	6		
1	A	AP	4	3	3	4	3	3	3.3	WP
2	B	AK	2	2	2	2	2	1	1.9	B
3	B	BK	2	2	2	2	2	1	1.9	B
4	A	BK	2	2	3	2	2	2	2.2	R
5	A	BP	2	2	3	2	2	2	2.2	R
6	B	BK	2	2	2	2	2	1	1.9	B
7	A	AK	3	2	3	2	2	2	2.3	R
8	B	AP	3	2	2	2	2	1	2	R
9	A	AP	4	3	3	3	3	3	3.1	WP
10	A	AP	3	3	3	3	2	2	2.8	R

As can be seen in the table above, we can identify some finding as follow:

1. Most type A office has better readiness than B level.
2. Readiness for province generally better than district or city
3. Readiness on the office located in Java is better than outside Java

We also calculate the average of each area, and the result is shown in Table 5 below.

Table 5. Average Score for Each Area

No	Area	Average Score
1	Management Awareness	2.7
2	Content readiness	2.3
3	People and organization	2.6
4	Policy and regulation	2.4
5	Supported Technology	2.2
6	SDI Portal	1.8
Average		2.4

The average score shows that the lowest score is on the SDI portal. If we look at the questioner answer, many respondents say that there is low attention on data usage published on the portal.

Based on the simple simulation above, we can see that we still face a long journey on implementing SDI Regulation, especially on local ICT government offices, because of a lack of regulation. We also did some interviews with the stakeholders and got some responses on a challenge such as there is no detailed instruction on how to implement SDI on the local government level, and lack of simulations and real examples of successful SDI implementations.

Despite the various problems above, the SDI initiative needs to be supported because it will become an enabler for the realization of service integration between government institutions.

5. CONCLUSION

Based on previous results and discussion, we can conclude some findings below:

1. SDI is an important issue to support interoperability and integration between various government services, thus the SDI initiative needs to implement immediately.
2. The implementation of SDI regulations at the local government level needs to review for readiness because it involves various aspects. Recently, there is no practical and ready-made framework for assessing this readiness.
3. This research proposes a measurement of readiness for the implementation of SDI regulations which examines the readiness of 6 areas sourced from the content of SDI regulations and combined with a framework for measuring readiness in general, which is: management awareness, content readiness, people, and organizations, policies, and organizations, supported technology and portals. SDI. Each of these areas is given a weight by considering the role of each area in the preparation process for implementing SDI regulations. The results of the readiness score are then divided into three categories that are: Well-Prepared, Ready, and Beginner. The purpose of this categorization is to provide recommendations to assist further preparation.
4. The framework then refers as a base for preparing a questionnaire which is then tested to measure the readiness of 10 local ICT offices, and the results

show the effect of office type and office position on level readiness.

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