Inderscience Publishers: Article accepted for publication - EG-65453

1 message

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To: cantikayu@gmail.com, firdaayu@um.ac.id, agungpnw@um.ac.id, dsayogo@um.ac.id

Dear Dr. Djoko Sigit Sayogo,

(Co-authors are copied into this email for information purposes.)

Ref: Article title: "Analyzing Information Policy Gap for Interagency Information Sharing: the Case of Indonesia"
Submission code: EG-65453

I am pleased to inform you that your article has been accepted for publication in Electronic Government, an Int. J..

You now need to upload the final revised version for this article and your author copyright agreement form(s) or your Open Access order form.

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With kind regards,

Prof. June Wei (Editor for this submission)

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REVIEWER 1

Review date: 01 Apr 2021

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MANUSCRIPT FEATURES

**************************

Originality of the work: Acceptable

Subject relevance: Good

Professional/industrial relevance: Good

Completeness of the work: Marginal

Acknowledgement of the work of others by references: Marginal

Organisation of the manuscript: Poor

Clarity in writing tables graphs and illustrations: Acceptable
Likelihood of passing the 'test of time': Marginal

QUALITY AND RIGOUR

Have you checked the equations and/or statistics? (if applicable): yes

Are you aware of prior publication or presentation of this work?: no

Is the manuscript free of commercialism?: yes

Is the article too long?: no

RECOMMENDATION: NOT ACCEPTABLE

REVIEW COMMENTS:
Changes which must be made before publication:
Inter-agency information sharing is an interesting topic. However, I have some concerns as follows:
1. The language needs to be edited by a professional proofreader. It is very hard for me to understand your paper.

2. The motivation behind the study is not clear at all. The introduction section is too generic and did not describe the Indonesia condition that drove the need for this study. As this is a country-specific study, the authors should describe the study context, such as:
   . forms of information being shared inter-agency
   . Policies and regulations related to inter-agency information sharing in Indonesia, such as "Indonesia One Data", "Open Data", etc.
   . current practices in inter-agency information sharing in Indonesia
   . Political and technological barriers toward an effective interagency information sharing

3. The references are out of date. For example in the literature review section, most of references are below year 2010. Given the progresses of technologies and best practices, most of discussions are not relevant right now. For example, you wrote "The preservation of ownership rights, content management, and personal information handling are the three vital areas that information policies should focus..", Is it still relevant right now in the big data era?

4. How about the literature related the challenges in data integration? The authors never discussed it. It is essential to discuss the states of the art related to your topic.

5. The methodology is not clear at all. For example:
   . how long did the interview last for?
   . why did you only employee two rater? how to handle disagreement between the raters?
   . what were the points being asked during the interview?
   . how did you analyze your data?
   . why did you select Bojonegoro as the case study?
   . etc.

6. You classified your indicators into 9 categories. What are the definition of each category? For example, I’m confused with the role of preservation regarding information integration. What are the samples of policy content of each category? without providing such sufficient information, it is very difficult to understand your findings.

7. Regarding data integration challenges from the interview, how did you come up into four categories? For example, both b and d discussed about lack of information sharing policy.

8. The discussion is absent at all. The authors just presented their findings. What are the relationships of your findings with the previous studies?

9. The implications of this study, both for practices and theories were not discussed.

Suggestions which would improve the quality of the article but are not essential for publication:

REVIEWER 2
Review date: 08 Dec 2020
MANUSCRIPT FEATURES

Originality of the work: Good
Subject relevance: Good
Professional/industrial relevance: Good
Completeness of the work: Good
Acknowledgement of the work of others by references: Honours
Organisation of the manuscript: Good
Clarity in writing tables graphs and illustrations: Honours
Likelihood of passing the ‘test of time’: Good

QUALITY AND RIGOUR

Have you checked the equations and/or statistics? (if applicable): no
Are you aware of prior publication or presentation of this work?: no
Is the manuscript free of commercialism?: yes
Is the article too long?: no

RECOMMENDATION: Acceptable

REVIEW COMMENTS:
Changes which must be made before publication:
IIS in the abstract should not be abbreviated

Suggestions which would improve the quality of the article but are not essential for publication:
Tables and figures could be presented to help the readers better understand the in-depth writing.
Conclusion could be also written with some propositions, which future research may use as hypotheses.

REVIEWER 3
Review date: 18 Feb 2021

MANUSCRIPT FEATURES

Originality of the work: Good
Subject relevance: Good
Professional/industrial relevance: Good
Completeness of the work: Acceptable
Acknowledgement of the work of others by references: Good
Organisation of the manuscript: Marginal
Clarity in writing tables graphs and illustrations: Acceptable
Likelihood of passing the 'test of time': Acceptable

QUALITY AND RIGOUR

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Are you aware of prior publication or presentation of this work?: no
Is the manuscript free of commercialism?: yes
Is the article too long?: no

RECOMMENDATION: Acceptable with major revisions

REVIEW COMMENTS:

Changes which must be made before publication:
This paper discusses the Information Policy Gap for Interagency Information Sharing for a case study of Indonesia. The authors apply a combination of two methods, namely content analysis of the statutory regulations and deep interviews with public managers and public officials.

For the Indonesian study case? In my opinion, the authors are too broad to take the case study of Indonesia, even though it was only conducted by the author of deep interviews in Bojonegoro regency, which of course cannot be generalized as Indonesia. As for content analysis, it could be true because the rules on ICT were issued by the ministry which apply to all of Indonesia, but the deep interviews conducted by the author were only in Bojonegoro regency which is difficult to generalize as Indonesia.

In another part, the authors mention 25 indicators related to the stewardship and usefulness principle in Dawes’ (2010) framework. The author needs to discuss this framework first in the theory background or related work before being used for content analysis. Authors also need to detail how content analysis is carried out?

Suggestions which would improve the quality of the article but are not essential for publication:

n/a

REVIEWER 4
Review date: 19 Mar 2021

MANUSCRIPT FEATURES

Originality of the work: Marginal
Subject relevance: Marginal
Professional/industrial relevance: Marginal
Completeness of the work: Marginal
Acknowledgement of the work of others by references: Poor
Organisation of the manuscript: Poor
Clarity in writing tables graphs and illustrations: Poor
Likelihood of passing the 'test of time': Poor

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Is the manuscript free of commercialism?: yes
Is the article too long?: no

RECOMMENDATION: NOT ACCEPTABLE

REVIEW COMMENTS:
Changes which must be made before publication:
Need Novelty

Suggestions which would improve the quality of the article but are not essential for publication:
Referensi

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Analyzing Information Policy Gap for Interagency Information Sharing: the Case of Indonesia

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ABSTRACT

Technology – policy gap diminishes legal and policies’ vital role as the critical determinant of interagency information sharing. This study used a combination of content analysis of existing legal and policies and in-depth interviews with 15 public officials in the Regency of Bojonegoro to evaluate the sufficiency and roles of legal and policies to support interagency information sharing in Indonesia. Legal and policies are in place to govern data and information sharing that showcase their critical roles to support interagency information sharing. The findings indicate the government enacts legal policies supporting the sharing of data and information in Indonesia despite concentrating only on a
limited number of issues. The number of legal and policies endorsing the stewardship is higher than those ensuring data and information usefulness. The findings further demonstrate the challenges concerning the sufficiency, depth, coverage, and synergy of existing policies supporting interagency information sharing.

**Keywords:** Interagency information sharing; technology – policy gap; legal and policies; stewardship; usefulness; information policies

**INTRODUCTION**

Interagency information sharing (IIS) is widely regarded as the vital element and foundation of smarter and more responsive public services (Scholl & Scholl, 2014). The exchange of information across different agencies facilitated by IIS enables government to find efficient solutions for complex social issues (Johnston & Hansen, 2011; Scholl & Scholl, 2014). The transformation of organization communication channels and structures bring forth by the IIS expand the capabilities to work collaboratively across different agencies and units (Dawes, 1996). The abilities to share and integrate information from various sources ease, expedite, and ensure effective interaction and management of the collaboration among public officials from separate agencies and units (Zheng, Yang, Pardo, & Jiang, 2009). Collaboration supported by IIS thus resulting in higher efficiency by reducing the cost from: a) shared development of systems (Dawes, 1996; Kwon, Pardo, & Burke, 2009), b) pooling and sharing of resources and technical expertise (Fedorowicz, Gogan, & Williams, 2007; Gil-Garcia & Pardo, 2005), and c) cost-effective data collections and storage (Dawes, 1996).

Nonetheless, assuring the success of sharing and integrating information in a multi-jurisdictional setting is confronted by challenging socio-technical factors (Dawes, Cresswell, & Pardo, 2009). Public officials need to consider the challenges related to the technology, organizational, and political contexts in a multi-organizational project such as IIS (Dawes, 1996; Dawes et al., 2009). Lack of incentives to collaborate, power struggles among the participants, resistant to organizational changes, data and technical incompatibility across different agencies are among the specific challenges facing public officials involved in the IIS project (Pardo, Gil-Garcia & Burke, 2008; Gil-Garcia et al., 2007, Yang & Maxwell, 2011).

Legal and policies are vital for IIS. The number and variety of participants increase the complexities of work in IIS (Atkinson et al., 2001). Public officials accustom to working independently based on the “need to know” than working collaboratively based on the “need to share” culture (Dawes et al., 2009). The culture, professional identities and practices, the division of labor, and specialization in government complicate trust development, a critical component in an information sharing and integration project such as IIS (Pardo & Burke, 2008). Explicit policies, regulations, and strategies are thus vital for developing capabilities to support the IIS collaborative works (Estevez, Fillottrani, Janowski, & Ojo, 2012; Estevez, Fillottrani, & Janowski, 2010).

Besides, the IIS needs a legal foundation, supportive policies, and regulations to ensure sustainability as organizational forms (Dawes et al., 2009). Policies, laws, & regulations anchor the legitimacy of the IIS participants in developing the alignment of the participants’ interests (Dekker, 2004; Sayogo, Gil-Garcia, & Cronemberger, 2018). Legal and policies are also needed to govern information exchange and usage (Dawes, 2010). Furthermore, as a government project, IIS is nested within and significantly affected by political contexts (Dawes et al., 2009; Pardo, Gil-Garcia & Burke, 2008; Gil-Garcia et al., 2007; Yang & Maxwell, 2011). The significance of politics, legal and policies is further amplified in developing countries. ICTs development projects such as IIS are rooted in politics and complex institutional environments in developing countries such as Zimbabwe (Ruhode & Owei, 2010). The embeddedness of agencies in rigid bureaucratic and autocratic structure and political instability significantly challenged IIS in Indonesia (Sayogo, Yuli & Wiyono, 2020).

Considerable attention has been given to the IIS challenges and determinants from organizational and technical perspectives. However, little consideration has been paid to building a systematic analysis of the existing information policies supporting IIS and how such policies, rules, and regulations affect
the ISS. There are a technology and policy gap where information policies' development falls further behind technology development and use (Jaeger, Lim, & Grimes, 2008). The gap is even more prevalent in the Developing Countries. Often, the IIS project emerges from a political agenda from the winning party enforcing top-down political pressure to invest in technology, deepening the technology and policy gap (Bellamy et al., 2008).

For that reason, the objectives of this study, thus twofold. First, this paper describes Indonesia's information policy's adequacy by outlining the existence and non-existence of legal and policies supporting IIS. For the first objective, this study employs Dawes's (2010) information stewardship and usefulness framework to frame the analysis. This paper's second objective is to highlight the existing information policy's role as a catalyst or inhibitor of IIS development in Indonesia. This paper also only evaluates the sufficiency and roles of information policies, which are the policies to manage the content, preservation, and use of data and information. This study employs two methods for data collection purposes: content analysis and in-depth interviews with 15 public officials in Bojonegoro regency, East Jawa, Indonesia.

The remainder of this paper is organized in the following manner. Section two introduces previous studies on the roles and challenges of information policy for interagency information sharing and integration. The research methods are described in section three. Section four discusses the results and findings, and finally, section five outlines the concluding remarks.

THE ROLES AND CHALLENGES OF INFORMATION POLICY IN IIS

The collaborative activities represent a vital component of information integration and sharing (IIS) development projects (Dawes, 1996; Dawes et al., 2009). IIS necessitates public officials from legally separate agencies and across policy domains to collaborate and work across each agency’s boundary by exchanging information (Dawes, 1996; Williams, 2005). In such collaborative works, alignment of interests and reducing conflicts among the variety of participants become vital (Dekker, 2004). The number of participants significantly increases the complexities of the works (Atkinson et al., 2001). Therefore, clear legal and policies are needed to provide legitimacy and a formal control mechanism for the IIS participants (Dekker, 2004).

Well-constructed information policies are significant determinant, and the lack of thereof inhibit the operation and achievement of IIS project (Zhang & Dawes, 2006; Wang, 2018). Lack of information policies resulted in inadequate information sharing across agencies presumed to lead to the World Trade Center terrorist attack (Relyea, 2004). The information policies are needed to encourage the participants' trust in the sharing and prevent breaches of confidentiality and privacy (Raab et al., 2005; Bellamy et al., 2008). Achieving information collaboration's success in the IIS, the participants need to anchor their authority and rightfulness to participate in the legal and policies (Dawes & Prefontaine, 2003). The influence of sound legal and policies manifest in creating necessary governance conditions for better sharing experiences (Gil-Garcia & Sayogo, 2016), particularly for governing the protection of sensitive data and information (Manda & Backhouse, 2016). The issue is more prevalent in the developing countries; learning from Indonesia's case, the need to have sound legal and policies should precede the needs of technology in IIS, especially in the Developing country (Sayogo, Yuli, & Wiyono, 2019).

However, defining information policies to support IIS is challenging (Estevez, Fillottrani, & Janowski, 2010). The government often did not place data and information releases as part of the objective in collecting data in the first place. As a result, the format and structure of the data and information often inhibit sharing and reusing the data and information (Dawes, 2010). For instance, providing metadata is not yet a common practice that results in difficulty understanding the data and information and inhibiting data reuse (Dawes, Pardo, & Cresswell, 2004). Lack of metadata leads to data producers' concern over the misinterpretation of data and information once released for others to use; the matter further prevents the data owner from publishing the data (Dawes et al., 2004; Sayogo & Pardo, 2013).
Besides, there is an issue of data and information quality. Truthful representation of the collected government data and information - a condition whether the data and information truly represent the things it intends to represent - is in question (Banister, 2007). Ensuring the integrity, quality, and usefulness of data and information are a significant challenge in sharing and using government information and data (Karr, 2008). Particularly in the developing countries, where the lack of awareness about information security and privacy and the political environment resulting in insufficient legal and policies governing information security and privacy (Alfawaz, May, & Mohannak, 2008; Shalhoub, 2006; Manda & Backhouse, 2016).

The preservation of ownership rights, content management, and personal information handling are the three vital areas that information policies should focus on (Reidenberg, 1997). Information policies should also encompass information flows and usage as a focus (Braman, 2009). In contrast, establishing parameters for information access preoccupy a large portion of the existing information policies (Jaeger, 2007). Consequently, the need for sound legal and policies to guide proper management of data and information, including policies to ensure the security, privacy, usage, and preservation of data and information (Alfawaz, May, & Mohannak, 2008; Shalhoub, 2006; Coertze & von Solms, 2012).

Dawes (2010) classifies the information policies into two categories: information stewardship and information usefulness. Stewardship focuses on handling information by ensuring quality, security, management, and preservation. According to Dawes (2010), stewardship entails two primary functions: a) guarding information against misuse, loss, or destruction and b) ensuring that information is “fit for use” (Dawes, 2010 p. 380). Concerning the first function, ensuring that information is free from misuse, loss, or destruction signify that government must maintain information quality (accuracy, validity, integrity), legitimacy of a data source, privacy, and security, management, ownership, acknowledgment, and clarity of jurisdiction and preservation of information. Likewise, better management, better quality, and reliable information will enable the government to fulfill the second function of safeguarding the information users to ascertain that information is fit for their use (Dawes, 2010).

The usefulness focuses on providing rules and procedures for sharing and using government data and information (Dawes, 2010). Usefulness focuses on access, comprehension, ease of use (formatting), fit for use, interoperability (data standardization), and sharing of information (Dawes, 2010). Still, according to Dawes (2010), usefulness manifests in four (4) aspects of policies (Dawes, 2010). First is encouraging access to information through, for instance, easing the use of data and easing searching for data. The second aspect of policies is supporting “public-private information partnerships” by governing data standardization and encouraging collaboration. The third aspect is policies to foster novel reuse of information by encouraging data-driven decision-making and pursuing costs saving from sharing data. The fourth aspect is improving data use through interagency and intergovernmental information sharing. The improvement is by governing procedures for sharing data, metadata, machine-readable format, and sharing protocol (Dawes, 2010).

**RESEARCH METHODS**

This paper combines structured content analysis and in-depth interviews for the methods. For the first objective to evaluate the current information policy's adequacy, a structured content analysis was conducted. Identifying the policies, laws, and regulations about information integration and sharing was performed using the Ministry of Information and Communication Technology's legal product search website. We analyzed laws, government regulations, Presidential regulations, Presidential decree, Presidential instruction, Ministerial Regulations, Ministerial decree, Ministerial instruction, and circular. In total, there are fifteen (15) policies, laws, and regulations at the National level encompassing the Legislative (3 documents), Executive (3 documents), and Ministerial (9 documents) pertains to governing information and communication (table 1).

The conducted content analysis was based on 25 indicators inferred from the stewardship and usefulness principle in Dawes’ (2010) framework. Of the 25 indicators, twelve (12) indicators pertain
to information stewardship. The twelve indicators are information quality (accuracy, integrity, legitimacy), data management, data jurisdiction, privacy and confidentiality, ownership, acknowledgment, protection against misuse, and preservation. The twelve indicators consist of one (1) indicator on fit for use and ten (11) indicators relates to guarding the information (Dawes, 2010).

The thirteen (13) indicators are: data standardization, integration, data/information sharing, format for fostering sharing and collaboration (metadata, data standardization, machine-readable format, protocol for sharing), data-driven decision making, costs saving from data sharing, incentives to collaborate, ease of use, and ease of searching for data pertain to information usefulness. These thirteen (13) indicators inferred from the four (4) aspects of use policies of the Dawes (2010) framework that consists of policies encouraging access, policies to supporting partnership, policies to fostering novel reuse of data, and interagency information sharing (Dawes, 2010 p. 380-381).

We focused on examining the occurrence of the 25 selected indicators/terms (conceptual analysis) of the content analysis. The rules are for the raters to stick with the pre-defined 25 indicators/terms and focused on coding for an indicator's existence. Thus, raters only counted an indicator once if it appeared at least once in the data, disregarding its frequency. Furthermore, in ensuring the result's validity, we employ two raters that independently evaluate the legal documents. Comparison of the result indicates similarity from both raters despite independent evaluation, thus confirming the findings' validity.

Table 1. The Number of Policies & Regulations Analyzed

<table>
<thead>
<tr>
<th>No</th>
<th>Level of Policies &amp; Regulations</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Legislative / Senate &amp; House of Representatives</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>Executive/Presidential</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>Ministerial (Ministry of Information &amp; Communication)</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>15</td>
</tr>
</tbody>
</table>

Furthermore, to ascertain the roles of legal and policies as the enabler or inhibitor of IIS, the study conducted In-depth interviews with eight (8) public managers and other public officials at the Regency of Bojonegoro, Indonesia. The selected interviewees are those involves in IIS projects from two cases of the legal & statutory office and public health. The composition of the interviewees is presented in table 2.

Table 2. Composition of the Interviewees

<table>
<thead>
<tr>
<th>No</th>
<th>Department</th>
<th>Position</th>
<th>Number of Interviewees</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Office of Legal &amp; Statutory Regulations</td>
<td>Unit Manager</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Department of Public Health</td>
<td>Unit Manager</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>Department of Information and Communication</td>
<td>Head of Department</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Unit Manager</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Staf</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>Information and Technology Board</td>
<td>Head of Board</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td></td>
<td>8</td>
</tr>
</tbody>
</table>

ANALYSIS & RESULTS

This section substantiates the sufficiency and roles of legal and policies supporting IIS. The first subsection highlights the existence of legal and policies supporting IIS in Indonesia at the National level.
The second sub-section authenticates legal and policies' roles as the catalyst or inhibitor of IIS development in Indonesia.

1. Sufficiency of Legal and Policies Supporting IIS

We classified data generated from the 25 indicators pertaining to the stewardship and usefulness used in analyzing the content of the existing National policies into nine (9) categories, in which five (5) categories fall into stewardship, and four (4) categories relate to usefulness principles.

The result presented in table 3 below signifies that there are more policies governing the stewardship of data and information than those governing the usefulness. On average, 10 out of 15 (67%) of the legal documents being analyzed presented policies related to data management, ownership and acknowledgment, privacy, and confidentiality. In contrast, policies governing information quality is 7% lower. On the other hand, there are only a few policies, specifically governing data preservation in terms of archiving and storing, with only three (3) documents out of 15 (20%). The ministerial enacted most of the legal documents (60%), while the rest is authorized by the legislative (Senate or House of Representatives) and Executive (the President).

In terms of usefulness principles, only policies governing the sharing and integration of information are prevalent, with 12 out of 15 (80%) of legal documents pertaining to information sharing and integration. The policies managing the usage of the data, in general, are moderately available, with 7 out of 15 (47%) of documents authenticating usage. The policies, laws, and regulations endorsing ease of use are not satisfactory; only 5 out of 15 (30%) documents detailing data standardization, and 2 out of 15 (13%) documents ratifying the format that supports ease of using and sharing data.

Table 3. The Number of IIS Laws, Regulations, & Policies per Indicator

<table>
<thead>
<tr>
<th>No</th>
<th>Indicators</th>
<th>Policies, Laws, &amp; Regulations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Legislative</td>
</tr>
<tr>
<td>1</td>
<td>Data management</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>Information quality</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>Ownership and acknowledgment</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>Privacy &amp; Confidentiality</td>
<td>3</td>
</tr>
<tr>
<td>5</td>
<td>Preservation</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>Information sharing and integration</td>
<td>2</td>
</tr>
<tr>
<td>7</td>
<td>Data standardization</td>
<td>2</td>
</tr>
<tr>
<td>8</td>
<td>Format for sharing (API, machine-readable)</td>
<td>1</td>
</tr>
<tr>
<td>9</td>
<td>Usage</td>
<td>1</td>
</tr>
</tbody>
</table>

* The number of document analyzed is 15

We then analyzed the number of clauses in each legal document that authorize the stewardship and usefulness of data and information in table 4 to provide a more in-depth examination of the sufficiency of policies governing data and information supporting IIS. Again the result corroborates the previous result in table 4, in which clauses related to stewardship are on average more than clauses about usefulness.

A similar pattern also emerges within each principle in which clauses about information quality, data management, ownership and acknowledgment, and privacy and confidentiality are more than clauses on preservation. Thus, the legislative branch, executive branch, and ministerial are less concerned about proper archiving and storing the collected data and information with only three clauses available from 15 legal documents. On the other hand, while table 3 indicates that documents related
to information quality are less than those related to data management, ownership and acknowledgment, and privacy and confidentiality, table 4 shows different results. The clauses authorizing information quality (17 clauses) are more than clauses for data management (13 clauses). The clauses sanctioning information ownership & acknowledgment are the highest with 17 clauses, signifying the government's focus on acknowledging said information's proprietorship.

Table 4. The Clauses Pertaining to Stewardship & Usefulness

<table>
<thead>
<tr>
<th>No</th>
<th>Indicators</th>
<th>Clauses Related to Policies, Laws, &amp; Regulations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Legislative</td>
</tr>
<tr>
<td>1</td>
<td>Stewardship</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>Data management</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>Information quality</td>
<td>5</td>
</tr>
<tr>
<td>4</td>
<td>Ownership and acknowledgment</td>
<td>5</td>
</tr>
<tr>
<td>5</td>
<td>Privacy &amp; Confidentiality</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>Information sharing and integration</td>
<td>2</td>
</tr>
<tr>
<td>7</td>
<td>Usage</td>
<td>1</td>
</tr>
<tr>
<td>8</td>
<td>Data standardization</td>
<td>2</td>
</tr>
<tr>
<td>9</td>
<td>Format for sharing (API, machine-readable)</td>
<td>1</td>
</tr>
</tbody>
</table>

The results in table 4 signify slightly different results from table 3 concerning the clauses related to usefulness principles. Comparable to the number of documents, the number of clauses endorsing sharing and integrating information are the largest with 19 clauses. Likewise, the number of clauses supporting data standardization and format that supports ease of using and sharing data are low with only 6 clauses for data standardization and 2 clauses for data format. In contrast, there are more clauses supporting data usage (15 clauses) despite of only seven (7) legal documents.

2. The Roles of Legal and Policies for IIS in Indonesia

The findings presented in the previous section indicate the imbalance proportion of attention given to stewardship than usefulness of information. The findings thus lead to questioning the effectiveness of legal and policies to promote IIS in Indonesia, particularly whether the different number of clauses and documents is helpful or detrimental for IIS development in Indonesia. This section outlines the roles of legal and policies for IIS in practice through the lens of government officials and staff. As of note, the results described in this section were based on the interview results with government officials and staff at the regency level. Thus it should be interpreted as the roles of legal and policies for IIS applicable at regency or municipality level and not at a national level.

a. Lack of Clarity of Data Ownership and Acknowledgment Inhibit IIS

The interviews’ findings point to several issues where the legal and policies or lack thereof inhibit IIS in Indonesia, particularly concerning ownership and acknowledgment. The interviewees indicate that certain policies are not comprehensive enough to support information sharing, citing an example of data producers' definition. One of the interviewees stated that "...the Presidential Decree no. 39 of 2019, in there the definition of data producers only refer to the government organ and not including citizen or private entities as data producers. The narrow definition of data producers inhibits the government from collecting and use data. Often, the policies by the national government are not fully understood or conveyed to the local government. The municipalities did not know the terms of the agreement on a project commissioned by the national government and carried out by the 3rd party. Some of these terms restrict the ability of the local government to use the data. As stated by an interviewee, "...who owns this, how to use it...so I try to identify and trace it and found that it was
commissioned by the central government and was made (collected) by the vendor, there are restricting terms specified by 3rd party that we do not know in advance that restrict sharing..."

Clarity of data ownership is also an issue put forward by the interviewees. The imprecise definition of data ownership in the policies inhibits agencies from asking for data or information from other agencies under different ministerial jurisdictions. As stated by one of the interviewees, "...after we trace, the data belong to the Ministry of Health, so they don't share, absolutely positive they won't, as a result, we can not integrate the data..." These jurisdictional barriers are backed by legal and policies from the National government. An interviewee points out, "...it is backed by regulations...for example to obtain and use data of population and civil registration, an MoU is needed, then permit from the province, then from the ministry...it just takes too much time to share...". The issue with ownership clarity is further confounded with the non-specific guidance on the acknowledgment of data usage. As a result, the staff is less willing to share, out of concern that the others will get the acknowledgment instead of the data producers. One of the interviewees argues, "...if I give the data, and for example, the program is successful, ...it is not my unit who painstakingly collect the data that get the glory..."

b. Legal and Policies on Data Usage Restrict Information Sharing
The existing legal and policies governing data and information usage often unintentionally restrict data and information sharing. According to the interviewee, the regulations and policies are sometimes puzzling because they restrict usage and sharing to the government organizations but permit usage and sharing for private entities. Taking an example of regulation no. 61 of 2015 enacted by the Ministry of Home Affairs, one of the interviewees, noted that "...the usage of population and the civil registry is allowed according to the policies, [xxxx] company use it, but it restricts us, government, to use it..." The interviewees also conform to the lack of policies and clauses governing the ease of use of the data, specifically in formatting the data. They stated that despite several clauses encouraging sharing data and information, the data is not formatted to support easier sharing due to the non-existent policies and clauses. As pinpoint by one of the interviewees from the Department of Information and Communication, "...the data is there in the agency's own repository, it is not interoperable and it certainly also not integrated...there is no policy on data convention and standardization..."

c. The Gap between the Technology and Legal and Policies Obstruct Information Sharing
The disparity between the existing technology infrastructure and the legal and policies hamper the ability to share data and information. Our findings also highlight the condition where the legal and policies were drafted and enacted by the National government without considering the conditions at the local level—especially the case with the technology infrastructure gap. Often, the technology infrastructure at the local level is not yet there to support the terms specified in the legal and policies enacted by the National government. The interviewees stated the situation in which the clauses in the laws, regulations, and policies are often too advanced for the agencies at the local level to follow. One of the interviewees emphasized, "...as stated in the Ministry of Home Affairs decree; it only recognizes the sharing of data online, and not offline...some units do not know how..." Given that the laws and regulations specified only sharing data online, the information systems are then re-constructed to accord to the terms, which further complicate the local government to share data. As argued by the interviewee, "...it prohibits sharing data offline, it is sanction by regulations...so the system is protected, the network is protected and close...so some unit found it troublesome to share..."

d. Lack of Policies Inhibit Standardization of Data Preservation Across Agencies
Finally, deficient legal and policies result in varying preservation protocols and complicate data and information sharing. Up to recent in Indonesia, there are no laws, regulations, and policies governing data and information preservation, specifically in terms of archiving and storing the data and information. As results, each agency and unit have their own procedures and timeline to archive and store the data and information. The different timeline leads to the non-standardization of reporting, some agencies or units reporting later than others, which then complicate the peer performance review efforts. As stated by an interviewee, "...each unit have their own; they did not have standard operating procedures on data archiving and storing...So some back data up once a week while others when they remember to do it...it is even very rare to have those who have fully running standard operating procedure..."
CONCLUDING REMARKS

Information policies keep falling further behind the rapid advancement of information and communication technologies. The technology – policy gap undermines the vital role of Legal and policies as the critical determinant of IIS. This paper evaluates the sufficiency of existing legal and policies to support IIS using Dawes's (2010) information stewardship – usefulness framework; and then highlighting the significant roles of the legal and policies for the development of IIS using the case of Indonesia.

Although concentrating on a limited number of issues, the findings indicate the government's acceptable efforts to enact legal policies supporting the sharing of data and information in Indonesia. There are significant efforts to endorse legal and policies governing the stewardship compared to ensuring data usefulness. The upholding of data and information stewardship, managing acknowledgment, securing privacy and confidentiality, and ensuring information quality are among the primary concerns for Indonesia's government. The findings demonstrate that the existing legal and policies concentrate on governing the information quality, data management, privacy, confidentiality, and ownership and acknowledgment. The result, thus conforming the arguments for the need for sound legal and policies to guide proper management of data and information, foremost policies to ensure the security, privacy, usage, and preservation of data and information in the developing countries (Alfwaz, May, & Mohannak, 2008; Shalhoub, 2006; Coertze & von Solms, 2012).

In some way, the results are foreseeable, given that stewardship is a conservative principle about the responsibility to safeguard the information as a public good within government care (Dawes, 2010). It is almost a given that government should responsibly manage the information that they collected. Presumably, the government is more prepared to enact policies related to stewardship given their experiences. However, the results showcase the small number of legal and policies endorsing the data and information preservation in archiving and storing the information, despite the acceptable number of legal and policies with a focus on stewardship.

There are two plausible causes of the imbalance proportion of legal and policies focus. First, the limited technology infrastructure's realization probably influences how the information policies are drafted and enacted. Second, the use of ICTs, resulting in faster accumulation of data, hamper the local government's capability to cope, thus limiting the information policies' extent. In either way, the findings point to the venue for future research to ascertain the reasons behind the imbalance of focus in information policies. As such, this study purports the following proposition:

Proposition#1: Limitation in technology infrastructure negatively influence the extent of information policies enacted in developing countries

The coverage of information policies endorsing information usefulness to promote innovative solutions through IIS is less than stewardship. There are significant numbers of legal and policies that mention information sharing and integration, but it is contradicted by the small number of policies endorsing ease of use and share. For instance, while the legal and policies claim to endorse information sharing, there is a lack of policies governing data standardization to support interoperability or policies supporting data format to ease sharing (e.g., machine-readable). Although the government often did not place data and information releases as part of the objective in collecting data in the first place (Dawes, 2010), it is probable that policies endorsing data format that ease sharing and use are not yet within the consideration of policymakers. As evidence in the US, less than two decades ago, the provision of metadata is not a common practice, which results in the difficulties of data reuse and sharing (Dawes, Pardo, & Cresswell, 2004). Hence, it is valid to argue that it takes time for the policymakers in the Developing country to draft and enact policies endorsing data standardization and format that ease data reuse and sharing takes time. Based on the justifications as mentioned above, this study proposes the following proposition:

Proposition#2: Information policies governing the use of information develop gradually in the Developing countries
Finding from the interviews further augment the issues associated with the roles of legal and policies supporting IIS. While the number of policies and regulations that pertain to the stewardship of data and information are acceptable, their coverage and depth are narrow. For example, despite the existence of data ownership policies, the definition of data ownership is imprecise. Another example brought forth by the interviewees are the policies on the acknowledgment of data reuse are unclear. As a result, the data owners/producers are less willing to share and use the data because of the lack of clarity in defining ownership and acknowledgment.

The findings also show that some policies are conflicting with other policies at the implementation level. The situation is probably due to the top-down approach in enacting policies. Additionally, the lack of socialization often challenges the local government in implementing such policies. While clauses encouraging data sharing and integration are adequate, other enacted policies indirectly restrict sharing. For instance, many policies encourage sharing, such as policy endorsing de-bureaucratization of sharing procedure. However, the policies that promote formatting and standardization of data and information to ease sharing and usage are lacking. There is also an issue of local government lacking in technological infrastructure to implement the National government's top-down policies. For example, a policy enacted by the Ministry of Home Affairs only recognizes data and information sharing in electronic form online. Not every unit in the local government is sufficiently equipped to transact fully online. This study thus proposes the following proposition:

Proposition #3: Jurisdictional conflicts, lack of technological infrastructure, and obscurity of data ownership and acknowledgment are the critical challenges affecting the development of information policies.

Legal and policies are in place to govern data and information sharing in Indonesia that showcase the critical roles of legal and policies to support IIS. However, there is still room for improvement concerning the sufficiency of policies, to improve the depth, coverage, and synergy of existing policies supporting IIS. Our study showcases the imbalance proportion of policies supporting stewardship in contrast to the usefulness of the information. The findings also demonstrate that specific clauses' obscurity and narrowness often indirectly restrict sharing. On the other hand, the finding also signifies that developing robust policies governing IIS emerge gradually. In a developing country such as Indonesia, the policymakers almost certainly started from the policy area they are familiar with, hence the focus on stewardship. This study calls for further exploration of policymaking processes and implementing the resulting policies in the developing country to understand better the necessity of legal and policies supporting IIS in the developing country.

As a final point to conclude, our content analysis pertains to Indonesia's national regulations and laws governing information. However, the interviews to ascertain legal and polices' roles predominantly only focused on one of Indonesia's regions. Although since 02 October of 2015, all regional government administration and affairs are regulated by Law Number 23 of 2014. As such, the perspectives of personnel and staff of Bojonegoro regency on the government administration and affairs presumably not different from other regencies and municipalities in Indonesia. Albeit, the authors acknowledge the possible influence of social norms, values, and regional culture affecting the daily application of the regulations. Hence, as a limitation of this research, the results concerning legal and polices' roles should be interpreted as only applicable to regencies and municipalities instead of a whole county. Thus, the authors call for future research to ascertain the applicability of the results to other regencies and municipalities in Indonesia or other Developing countries.

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