AN INVESTIGATION OF INTER-AGENCY RELATIONSHIP RESPECTING ONE MAP POLICY: DOES THE INDONESIAN OPEN SPATIAL DATA POLICY REINFORCE INNOVATION OR DISRUPTED BUREAUCRACY?

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ABSTRACT

OpenStreetMap and Wikimapia or even Google have opened a new era in terms of spatial data sharing through creating an easy, inexpensive, bureaucratically fast and open-source platform. The existence of their spatial information has moved the market direction of the community that previously relied on the official spatial data and information providers to the non-governmental organization spatial data and information provider. Responding to these disruptive phenomena, the Indonesian government must immediately innovate to gain public's trust back through open data or data sharing, through which not only provided by the Indonesian Geospatial Information Agency (BIG; Badan Informasi Geospasial) but also by other government agencies that produce spatial data or information. This research focused onto spatial data and information shared by government institutions to explore the question regarding the relationship between spatial data with the growth and disruption of innovations under the One Map Policy.

This study was conducted through qualitative methods by means of discourse analysis with specific analysis technique using in-depth interview to elites and legal documents analysis. The research findings from fieldwork proposed a new theory suggesting that open spatial data practices under the One-Man Policy Agenda at the Indonesian central government level today are enhancing democracy atmosphere amongst governments under the single-sectoral work process (trans-vertical relationships). Meanwhile, creating valuable trans-horizontal inter-agencies still need disruptive bureaucracy that adopt current disruption era in order to achieve collaboration, cooperation and coordination.

Keywords: open data; spatial data sharing, One Map Policy, inter-agency relationship, disruptive innovations

1. INTRODUCTION:

In 1997, Clayton M. Christensen introduced the theory of Disruption. Disruption became very popular because it ran simultaneously with the emergence and development of information technology applications and the change in social form and governance of a country [1]. Disruption era in Indonesia has had massive influence since around 2011 when the birth of GO-JEK (The transportation online platform in Indonesia) took place [2]. The impact of the disruption phenomena in Indonesia has indirectly influenced the planning and development sectors, for instance, competitions between public and private services to fulfill basic demands of people, i.e. food, transportation, and communication [3].

Initially, the Indonesian government's bureaucracy regarding public services had to involve a long and convoluted process with expensive cost [4]. For example, in regard to spatial data and information requests that are public right, long bureaucracies were required. Sometimes, the results do not necessarily meet the expectations of the public as the consumers of information. In response to the situation, some non-governmental spatial data and information providers have created an easy, inexpensive, and fast bureaucracy of collecting data by means of spatial data or information obtained from open-source platforms, such as OpenStreetMap and Wikimapia, or even google map.

The existence of spatial information provider has moved the market direction of the citizen—who previously relied on the official spatial data and information providers—to the non-governmental organization spatial data and information provider. responding to this disruptive phenomena, the Indonesian government must immediately innovate to gain public's trust back through open data or data sharing, through which not only provided by the Indonesian Geospatial Information Agency (BIG; *Badan Informasi Geospasial*) as the official provider of topographic based map spatial data and information in Indonesia, but also by the establishment of collaboration and connectivity regarding open data of the ministries and other agencies. Thus, this study examined the process of open spatial data under the One Map Policy progress.

2. MATERIALS AND METHODS:

This study was conducted through qualitative methods by means of discourse analysis with specific analysis technique using in-depth interview to elites and content analysis. Ten interviews were carried out within the senior and middle managerial levels in the spatial data management of two ministries: Indonesian Ministry of Agrarian Affairs and Spatial Planning (*Kemen ATR*) and the Indonesian Ministry of National Development Planning (*Bappenas*). The interviews were accustomed to underlie the perspective of the government concerning their current strategy and initiatives for supporting open data through spatial data sharing under the One Map Policy agenda. The content analysis of legal document was used to gain a comprehensive understanding related to basemaps status under the One Map Policy agenda.

In this study, the interviewees clarified their current jobdesc and their involvement with Geographical Information Systems (GIS) along with their anticipation and risk towards spatial data sharing inter-agencies. For the sake of facilitating the mechanism of interview and guaranteeing the protection of their entire information, note-taking with anonymous identity and the assistance of digital voice recording with transcription afterwards were used. In addition, official document collections were carried out to provide the aim of essential background within the policy's context.

3. RESULTS AND DISCUSSION:

3.1. ONE MAP POLICY

One Map Policy (OMP) has been mandated under the Law no. 4 of 2011 on Indonesian Geospatial Information. The policy organised the principles of legal certainty, alignment, transparency, accuracy, usefulness, and democracy [5]. Furthermore, the policy serves a purpose to give comprehension on the implementation of geospatial information management in valuable and productive ways through cooperation, coordination, integration, synchronization, and encouragement between government programmes and in various community activities. The idea behind OMP is that various thematic spatial data produced by the ministries and government agencies are commited to be integrated into a single reference map, with single standard, on single spatial database and single geoportal.

In excess of the implementation of Indonesia's 2015–2019 National Medium-Term Development Plan (RPJMN) and orders issued by President Joko Widodo in Economic Policy Package VIII, the recognition of OMP's achievement by the Indonesian government is a gradual action that started with a purpose of creating single geospatial data standard, spatial reference, and geoportal within the next five years (2015–2019) [7] (See Figure 1).
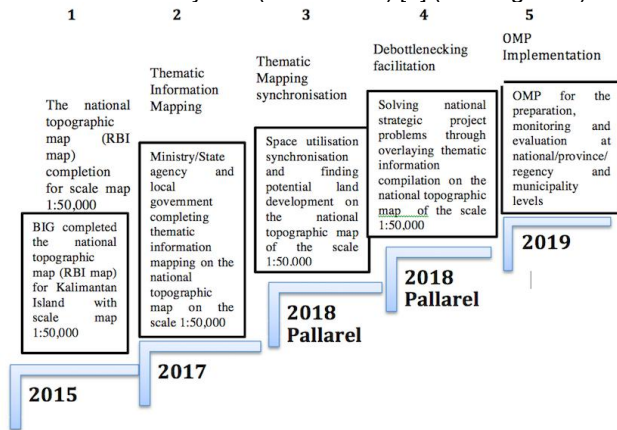
Source: Mungkasa (2015) pp. 14 [6]

Figures 1. The Indonesian One Map Policy Roadmap (2015–2019)

The Presidential Decree No. 9 of 2016 on Accelerating the Implementation of OMP of Map Accuracy at The Scale 1:50,000 strengthen the application of Geospatial Information for government programmes. The regulation may help synchronize government programmes in various levels, from central up to local governments, and vice versa [7].

Initially, this OMP was issued as part of the government's economic policy package with the aim of overcoming various conflicts and overlapping land use issues. OMP is based on the issuance of Presidential Regulation Number 9 of 2016 concerning the Acceleration of Implementation of the One Map Policy at the Level of Accuracy of a Map Scale of 1: 50,000 which aims to create one map that refers to one geospatial reference, one standard, one database, and one geoportal. However, the demand for geospatial data, namely the basemap and thematic geospatial information, for national development needs are not only limited to the medium and small scales but also on large scales such as the 1: 10,000 map scale and the 1: 5,000 map scale.

In fact, in the future data analysis for policy making will start at a large scale and then aggregate to medium and small scales. Information needs on a by name and by address basis have to be prepared and built from the begining. The prediction of the need for spatial data is prepared with the preparation of the Grand Design of One Map Policy and the implementation plan in the form of a road map to achieve the goals in the 2020–2045 time period [8].

This Master Plan was created to support national development, with reference to the Sustainable Development Goals (TPB) or the 2020–2030 Sustainable Development Goals (SDGs) [8]. For this reason, The Indonesian National Geospatial Information Agency (BIG) has prepared a road map as a basis for implementing the One Map Policy for the period 2020–2045 (See Figure 2)

3.2. RELEVANCE OF CURRENT BASIC DIGITAL GEOGRAPHIC INFORMATION STATUS TO THE INDONESIAN SPATIAL PLANNING SYSTEM

The availability of a base map as data source for thematic spatial maps in BIG is available from scale map 1:5,000 to 1:1,000,000. However, some map scales still haven't covered all areas of Indonesia, especially Detailed Spatial Plan (*Rencana Detail Tata Ruang* -RDTR) Maps. This is not yet in line with the needs for the RDTR preparation, which is now increasing. This can be seen from the status of the assistance meeting held at BIG (See Table.1).

Table 1. *The National Base Map Availability (Status updated up to January 2020)*

MAP SCALE	Indonesian Land Area (km^2)	Area covered by RBI in km^2 (*Rupabumi Indonesia-* The Indonesian official basemap) Status as of January 2020	Not yet covered	Available maps in percentage (%)
1:5,000	1897629.8	35817.897	1861811.903	1.888
1:10,000		17232.461	1880397.339	0.908
1:25,000		808413.274	1089216.526	42.601
1:50,000		1690770.165	206859.635	89.099

Source : Center of Mapping for Spatial Planning and Atlas, BIG 2020

The role of geospatial information in this mapping is considered significant and beneficial to the improvement in the quality of development planning in Indonesia. With the existence of assistance and supervision process, it can be ascertained that every attachment of local government regulations, i.e. map, is guaranteed of having acceptable quality in terms of its data source, geometry, regulation, classification, cartography, topology, and synchronization with the draft of local government regulations.

3.3 Substantial Issues regarding Spatial Data Management in the Ministry of Agrarian Affairs and Spatial Planning (Kementerian Agraria dan Tata Ruang/BPN-Kemen ATR/BPN)

The extent of the amount and significance of land information through spatial data or information context as a base for spatial planning and the requirement for high degrees of precision, data and information security, simplicity of dispersal of data and the viability of information preparing raise numerous spatial information administration consequences in the *Kemen ATR/BPN*, namely:

1. Acceptance of applicable international standards
   The goal of receiving worldwide standards is to accomplish institutionalisation as per universally-acknowledged measures, with particular parts of the land organisation framework in Indonesia.

2. Application of Information technology
   Kemen ATR through BPN (*Badan Pertanahan Nasional*, The Indonesian Land Agency) has started to apply information technology since the Land Office Computerization Project in 1998. In 2000, BPN has carried out digitizing land data and information digitizing deliberately. The fundamental motivations of BPN to use Information technology for land management are:

   • Budget Efficiency
   Local authorities of *Kemen ATR/BPN* are dispersed all through, starting from urban areas to the local districts. The centralised mechanism advances productivity which covers hardware, software, and maintenance system particularly essential for remote areas.

   • User-friendly software and data management
   Computer equipment is introduced at the central government level, with the goal that local *BPN* authorities situated at the regency and municipality levels do not have to update if there are any changes to the application. The progressions are frequently caused by several elements, for example, database updates, changes in policies, or application mistakes.

   • Access to land information
   Alongside the centralised computer equipment, land records from all local BPN authorities offices are put away in a solitary national land database. Seeking information by the registered land number, the proprietor, the estimation of land transactions, wastelands, land in dispute, the estimation of security rights and others classifications can be directed rapidly at all levels and between offices.

   • Data Security
   Catastrophic events, which regularly occur in a few areas of Indonesia, for example, flames can result in harmed or lost physical and electronic information. A centralised system makes it less demanding to perform information reinforcement for the majority of the local BPN authority offices. And yet, the centralised database has additionally should be supported up to envision conceivable catastrophes that may influence it.

3. Challenges
   In-depth interviews with senior and middle management staff of *Kemen ATR* show that spatial data development and sharing have been regularly challenging. Various issues have been noted during interviews:

   1. "*To be honest, we can initiate data sharing between working units through trans-horizontal relationships; the motivation is to achieve one vision or one main goal of the institution. However, due to different political commitments of each working units, eventually, data sharing could not be implemented. Here, data sharing is organised to do single-sectoral work processes only.*"
   (Kemen ATR/BPN Middle Administration Staff: interview on 19 January 2015)

   2. "*None of the Kemen ATR working units are allowed to share data without permission from higher officials at the level of Ministry. The problem is that the Kemen ATR has not prepared a data sharing procedure. Therefore, spatial data sharing cannot operate yet.*"
   (Kemen ATR/BPN Middle Administration Staff: interview on 19 January 2015)

   3. "*The obstacle of spatial data sharing in the Kemen ATR is that spatial data sharing as a concept is unclear as to how the data sharing procedure is, what type of data can be shared, and who is collecting the data. In other words, the data sharing protocol in Kemen ATR itself is still not firm yet.*"
   (Kemen ATR/BPN Middle Administration Staff: interview on 19 January 2015)

3.4   Substantial Issues regarding Spatial Data Management in the Ministry of National Development and Planning (Kementerian Perencanaan dan Pembangunan Nasional/Badan Perencanaan dan Pembangunan Nasional (BAPPENAS))

General issues that spatial data or information management encounters in BAPPENAS depended on the assorted staff members in certain working units who had expertise concerning GIS or experience in joint efforts outside the government organisations for GIS application improvements. Lamentably, GIS advancement has been embraced by specific working units and database have been made in disengaged 'silos', and have not been incorporated with other working units inside the hierarchical structure of the Ministry.

Based on information collected from interviews affirms lack of spatial data management encountered within BAPPENAS. The circumstance is outlined in this survey with an affiliate from middle administration staff at BAPPENAS.

"In BAPPENAS itself, there are numerous data related to the urban and regional development theme. However, most of them are stored in their respective working units. Thus, this situation becomes a primary constraint when working between internal units to BAPPENAS. And when the public wants to collect data related to planning and development in particular areas, it would take them a long time because of the bureaucracy involved, from the General Directorate to the a particular Directorate."
(BAPPENAS middle administration staff: interview on 5 February 2015)

BAPPENAS is a Ministry with the obligation to use and oversee information advancement in spatial plans. Unfortunately, there is less consideration for spatial data or information handling. The evolution of GIS in the working unit of the Ministry is put away in data 'silos'. This has prompted the insufficiency of data or information sharing and has brought about duplication.

Hearing from senior and middle administration staffs, they pointed out that spatial data sharing were frequently hard to execute. Various issues were prominent amid dialogues:

1. *"To perform spatial data sharing, there must be a functional position (Jabatan fungsional) of spatial data operator and manager under the Indonesian government career system to take care of spatial data management. And there are urgent needs to maintain and control spatial data quality."*
(BAPPENAS Senior Administration Staff: interview on 5 February 2015)

2. *"During early development of internet infrastructure in Indonesia, the amount of bandwidth ranged from 3 Mbps to 5 Mbps. We have already reached 10 Mbps (and even then, it was not stable in 10 Mbps, which sometimes [the speed] goes down). This capacity is still not enough for implementing data-sharing operations because uploading and downloading large amounts of spatial data using large memory capacity is affected by the low speed*

and is time-consuming. And, sometimes, if [it] fails and there has to be a repeat in uploading or downloading the data."
(BAPPENAS Senior Administration Staff: Interview on 5 February 2015)

3. *"The main obstacle is the character or nature of the individuals or the institutions that are against being open for sharing. Until now, most people take the attitude that the data or information are commodities or goods that have value. If the data or information has entered the public domain, then the commodity had no value. Various bureaucratic regulatory barriers were put in place by individuals and institutions unwilling to share data."*
(BAPPENAS Senior Administration Staff: interview on 5 February 2015)

Review of hearings and spatial data sharing consequences confronting BAPPENAS can be recap as pursues:

- Poor human resource management;
- Poor innovation;
- Organisation habit is not appropriate for implementing open data policy;
- Numerous administrative and bureaucratic impediments.

3.5.   FINDING

The study of spatial data management in the two ministries acquire put all of efforts toward application and action of spatial data and information for spatial planning mechanism, accomodate a common examination of the noteworthy spatial open data consequences in trans-horizontal and trans-vertical agency relationships. Although the case studies in this study have not covered the entire Indonesian government agencies, the following indications are expected to illustrate the general conditions related to open spatial data in Indonesia.

The open spatial data issues in trans-horizontal relationship can be described as follows:
Coordination mechanisms are not clear yet, which is the coordination involving ministries, institutions, and working units including working units with different subject matters. Coordination is required in data management, instrument design activities, data collection, and data validation, dissemination of results and utilising official data. Although coordination mechanisms have been regulated in the data-related provisions and regulations, this coordination has not worked well because the coordination procedures are not clearly described yet.

Communication among ministries is not optimal yet. One implication of the problem of coordination is the inability of communication between the institutions responsible for the methodology of data processing and geospatial information with the agency responsible for the substance of the data collected. This is one of the important causes of data-related issues. Less communication results in different perceptions, methods of analysis or methodology, and data collection procedures (such as differences in definitions, classifications, units, or sampling frames) used among ministries leading to inconsistent data.

Many access for request data and information. Data and information can come out of various permits in

the Ministries, not through one integrated service gate (*Pusat pelayanan satu Pintu*), thus allowing various data types in each ministry. Data and information center (*Pusat Data dan Informasi* (PUSDATIN)) has not been the only latest gate for data and information transaction. Many data and information access cause data and information to be not verified or agreed upon.

Data harmonization mechanism does not exist yet. Not all ministries / agencies have mechanisms to synchronize among parties when having data discrepancy occuring in different ministries or agencies. The absence of this mechanism makes it difficult to establish consensus on the data used as a common reference.

In contrast, the phenomenon of common open spatial data issues through trans-vertical ministry level relationship can be described as follows:

Most institutions are organised to do single-sectoral work processes. Work procedures regarding spatial information acquisition, presentation, and dissemination are frequently characterized vertically in vertical organisations, and are characterized as ad-hoc team (*Organisasi Perangkat Daaerah* (OPD)) in trans-horizontal relationship.

Most of Indonesian government agencies at the central level reacted that they were following guidelines and business forms that are dominantly set-up vertically. Adherence lies basically inside the organisation itself. An aftereffect of this is anyway heterogeneity of technological presentation of spatial data at central level. In addition, most respondents affirmed that while the requirements for trans-horizontal data and information sharing appeared tangible, the ensuing reasons were given why this didn't happen:

a. Anxiety for consequence – breaking the vertical directions
b. Convoluted bureaucracy to contact trans-horizontal units/office/organisations.

At the end of the presentation, the researchers have theorized the easiness and difficulty of data and information sharing through trans-horizontal and trans-vertical relationship (See Figure 3)
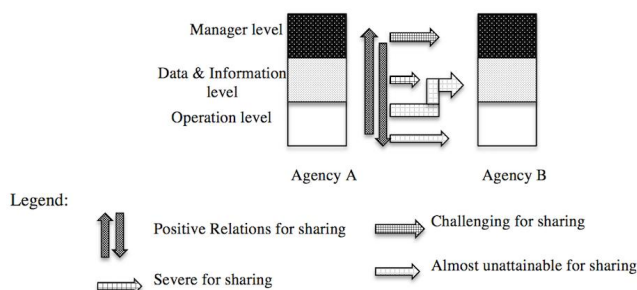

Figure 3. The easiness and difficulty of data and information sharing through trans-horizontal and trans-vertical relationship

In terms of data transaction, flows through trans-vertical relationship will have positive response for sharing, i.e. the operational level produces spatial data. Afterwards, at the middle level, analysts will transform spatial data into spatial information and knowledge. At the highest level, executive will prepare strategic policies. Evaluation from spatial information analysis is approach order from official to be actualized as strategic activities by public.

On the other hand, spatial data sharing among Ministries / government agencies is not presenting satisfactory performance through the trans-horizontal relationship due to lack of coordination among them. This is because of unclear protocol of the Ministry / central government agency's role as the data custodian for a particular theme. Inadequancy of credibility among Ministries / central government agencies induce convoluted data transactions and inhibits the dissemination and optimal data application. All and all, it was also noticed that trans-vertical information exchange hardly ever occurred as opposed to trans-horizontal.

CONCLUSIONS:

The identification of spatial data management issues at central government agencies may emerge as a premise for investigating spatial data exchange and sharing. The findings from empirical study related to the main issues of spatial data management present an insight that open spatial data practices under the One Man Policy (OMP) Agenda at the Indonesian central government level today are enhancing democratic atmosphere amongst governments under the single-sectoral work process.

Meanwhile, to create valuable trans-horizontal inter-agencies, disruptive bureaucracy disruptive bureaucracy that adopt current disruption era is still needed to achieve collaboration, cooperation, and coordination among government institutions to gain public's trust back through open data, especially spatial data and information.

ACKNOWLEDGMENTS:

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