International Journal of Knowledge and Systems Science
Volume 13 • Issue 2

Knowledge Management Maturity Level of Indonesian Government Institutions and State-Owned Enterprises

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ABSTRACT

This qualitative study aims to examine the maturity level of Indonesian government institutions (IGI) and state-owned enterprises (SEO) in knowledge management (KM). KM maturity is measured using three KM components—people, process, and technology—and categorized using four levels—develop, standardize, optimize, and innovate. This research collected and analyzed various forms of qualitative data, such as secondary data, in-depth interviews, and observations. An integrative case study was conducted and resulted in a clear understanding of the implementation, level, and output of KM maturity in IGI and SEOs. Research findings can be broken down into two outputs: (1) The first is the identification of KM implementation in IGI and SEOs, which formed the basis of the authors' KM mapping plot. KM has become a strategy to manifest bureaucratic reform in IGI to become knowledgeable institutions in disruptive settings. (2) The second is a method to propose KM maturity level. Future research could incorporate the efficacy variables of KM implementation and develop KM maturity typology criteria.

KEYWORDS

Indonesian Government Institutions, Knowledge Management Implementation Mapping, Knowledge Management Maturity, State-Owned Enterprises

1. INTRODUCTION

Organizations must become knowledgeable organizations to survive in the digital disruptive era. A knowledgeable organization is conscious of the knowledge needed to function and is able to evolve its systems to ensure its people master this knowledge (Collins, 2004). As the literature has stated that innovation can answer the challenges of the digital disruptive era (Asawa, 2018), knowledge organizations must know how to innovate.

DOI: 10.4018/IJKSS.298010 *Corresponding Author

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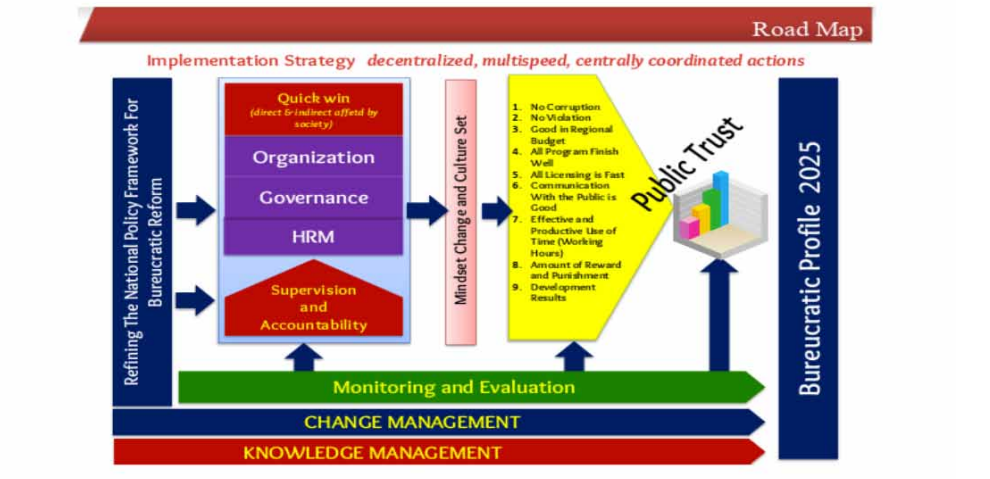
In the context of government or public organizations, changes in the disruptive era have become major challenges and responsibilities when carrying out public services. As government institutions are a specific kind of organization, with different problems and levels of representation, accountability, and responsiveness than enterprises in the private sector, these organizations should not import knowledge management tools and models from private companies without considering the context in which it functions as a government institution.

This research used Indonesian government institutions (IGIs) and state-owned enterprises (SEOs) as a case study. IGIs and SEOs are currently conducting bureaucratic reforms that have a pivotal role in making IGIs clean. The first movement of bureaucratic reform in Indonesia in 1998 was marked by the promotion of clean governance through a corruption, collusion, and nepotism program. Bureaucratic reform also had the major purpose of encouraging the establishment of effective and efficient organizations. To achieve this, every government institution had to utilize and empower their intellectual capital, including learning from best practices. However, a common obstacle is that knowledge and experience in an organization are often scattered and un-documented. Much of it might exist only in the minds of the individuals in the organization (tacit knowledge). To transform individual (tacit) knowledge to organizational (explicit) knowledge, the organization needs to use knowledge management (Herschel et al., 2001; Jones & Leonard, 2009).

Knowledge management can function as a tool in the process of organizational transformation because it helps to develop a culture of learning in an organization. Knowledge management is expected to give birth to a system for storing and exchanging knowledge within government institutions. The resulting system is then used to manage and maintain the existing knowledge in the organization to support various public activities, which can then be used as an instrument to bridge all stakeholders' needs. With such a system, the public space becomes more open and public services improve. This will enable the public to find the information they seek more easily and express their aspirations, resulting in improved public services.

Indonesia has initiated a program to implement knowledge management as stated in the Minister of Administrative and Bureaucratic Reform No. 14 of 2011. This program contains the guidelines for the Indonesian Knowledge management program, which refers to the Presidential Regulation No. 81 of 2010 about the Grand Design of Bureaucratic Reformation 2010–2025 as shown in Figure 1 below. The grand design roadmap for the Indonesian Bureaucratic Reformation 2010–2025 uses knowledge management combined with change management.

Figure 1. 2010-2025 bureaucratic reformation road map



Knowledge management is the basis that will help ministries, institutions, and local governments in their efforts toward bureaucratic reform. The Grand Design of Bureaucratic Reform 2010–2025 and the Road Map of Bureaucratic Reform 2010–2014 contain eight areas of change and achievement conditions to achieve these objectives, as knowledge management is the foundation for program implementation with public trust as output, not profit as output, which is the case in the private sector.

There have been several studies related to knowledge management maturity (Hubert & Lemons, 2010; Mehta et al., 2007; Oliva, 2014; Paulzen & Perc, 2002), as well as on knowledge management in the public sector (Asian Productivity Organization, 2017; Barquin, 2001; Cong & Pandya, 2003; McEvoy et al., 2016; Metaxiotis & Psarras, 2005; Moffet, 2014; Riege & Lindsay, 2006; Talisayon, 2011). However, there is a lack of empirical research examining knowledge management in IGIs and SEOs. Therefore, this study investigated the maturity levels of knowledge management at IGIs and SEOs by answering two core research questions: (1) What is the distinctiveness of knowledge management implementation? and (2) How does knowledge management maturity look in IGIs and SEOs? The answers to these two questions can help create a map of knowledge management implementation and the level of knowledge management required in government institutions in developing countries to demonstrate the level of maturity in IGIs and SEOs. The main advantage of the map and level is to provide wide, deep information to meet obstacles and challenges concerning knowledge management implementation in government institutions. The results also captured knowledge management best practices for government institutions, which should inform practitioners and academics in this sector and provide data for future research.

2. Knowledge Management Maturity and Government Institutions

2.1. Knowledge Management Maturity

Knowledge is defined in many ways: (1) a state of mind, (2) an object, (3) a process, (4) a capability, (5) a situation of gaining access to information (Alavi & Leidner, 2001) or "an understanding gained through experience or study; the sum or range of what has been perceived, discovered, or learned" (Schubert et al., 1998). When knowledge is viewed as an object, knowledge management must focus on building and managing the stock of that knowledge. If knowledge is viewed as a process, then knowledge management should focus on the flow of knowledge and how it is processed, created, shared, and deployed.

Collins (2004) stated that an organization is called a knowledgeable organization if it has the following indicators: (1) the organization acknowledges the importance of knowledge resources for business success; (2) the organization pays attention to improving business value through accessing and leveraging knowledge resources from both internal and external sources; (3) the organization understands that knowledge-related choices can cause tension, which, in turn, makes it difficult to obtain the expected results; for this reason, it is necessary to resolve conflicts of interest between various parties; (4) the organization is aware of integrated approaches to manage knowledge, seeing the choices of activity as part of an interconnected pattern in dealing with a competitive environment. A knowledgeable organization usually implements knowledge management to maximize its tacit and explicit knowledge, sometimes called capital.

There are various definitions of knowledge management, but three scholars have emphasized the following elements: knowledge management as a means, a function, and as a strategy, as described in the following statements. knowledge management is "developing [a] body of methods, tools, techniques, and values through which organizations can acquire, develop, measure, distribute, and provide a return on their intellectual assets" (Kamara et al., 2002). Knowledge management is the management function that creates or locates knowledge, manages the flow of knowledge within the organization, and ensures that the knowledge is effectively and efficiently used for the long-term benefit of the organization (Darroch, 2003). Other experts have highlighted knowledge management as a strategy to increase productivity (KPMG, 2000); Buren, 1999), improve employee skills (KPMG,

2000; Skyrme, 2007; Perkmann, 2002), and increase innovation (Skyrme, 2007; Perkmann, 2002; Allee, 1997) and organizational performance (Davenport, 1998; Massey, 2013; Nonaka, 1994; Lee & Choi, 2003)

This paper uses the definition of knowledge management from Garfield (2007) because it reflects the thought of the three scholars above. First, Garfield quoted the definition of knowledge management from Knapp (1998) as the art of transforming information and intellectual assets into enduring value for an organization's clients and its people. Then, he explained that the objective of knowledge management is to improve the use of intellectual capital, facilitate better decision making, and create the conditions for innovation. Knowledge management helps knowledge flow to the right people at the right time, allowing them to be more productive and innovative. Moreover, knowledge management has been successfully used in the variety business sector—including government sectors—for decades, since it improves decision making, thus boosting employee innovation and encouraging dynamic learning (Haque & Kohda, 2018).

Knowledge management implementation focuses on three aspects: people, process, and technology (Cong & Pandya, 2003). Some researchers found that, in implementing knowledge management, some organizations tend to apply 70% to people and 30% to process, whereas others are more focused on technology. Moffet (2014) stated that, aside from people, knowledge management also focuses on organizational culture to maintain knowledge sharing; processes or methods to improve knowledge creation; and technology to ensure knowledge accessibility.

This paper measure knowledge management using three systems: (1) human capital, which consists of two sub-aspects: soft skills (values, culture, behaviors, and attitudes) and hard skills (knowledge and skills). In this aspect, there is the principle that people are an intangible asset. (2) The organizational process, which consists of three sub-aspects: policy and rules; governance; system and procedures; and business processes. Principles in this sub-aspect are efficiency and motivation. (3) knowledge management tools and methods, which consist of information technology and infrastructure. Principles in this sub-aspect are ease of access, usability, collaborative tools, and discovery tools (Young, 2010).

The life cycle of knowledge management maturity is a model for analyzing how an organization develops knowledge management through different levels, with a focus on people, process, and technology (Oliva, 2014). Most knowledge management maturity models (KMMMs) consist of five levels that are based on the Capability Maturity Model established by the Software Engineering Institute in 1993. The existing model usually combines five characteristic maturity levels: initial, repeatable, defined, managed, and optimized (Paulzen & Perc, 2002); (Kulkarni et al., 2020; Hsieh et al., 2009; Hubert & Lemons, 2010). Related published knowledge management maturity models are the KMM Model by Infosys (Mehta et al., 2007); the Knowledge Management Framework Assessment Exercise: Knowledge Journey by KPMG (KPMG, 2000); and the 10-Step knowledge management Roadmap by Tiwana (Tiwana, 2002).

This paper uses the APQC Levels of knowledge management Maturity model, which presents a roadmap for knowledge management implementation. Its stages are initiate (growing awareness), develop (localized and repeatable practices), standardize (common processes and approaches), optimize (measured and adaptive), and innovate (continuous improving practices) (Hubert & Lemons, 2010). We refer to APQC's knowledge management maturity levels because (1) it provides knowledge management maturity mapping in five levels, starting from immature (level 1—initiate) to consistent knowledge management activities to mature and continuously improving knowledge management practices (level 5—innovate), (2) this model is suitable for describing the conditions under which government institutions in Indonesia have implemented knowledge management, (3) the 12 knowledge management capabilities (objectives, business case, budget, resources, governance and leadership, change management, communication, knowledge flow processes, knowledge management approaches and tools, measurement, content management process, and information technology) of APQC's assessment tools are robust and relevant to assess IGIs. Previous research has also shown

how knowledge is transferred and preserved in the government sector using the APQC approach (Dalkir, 2012).

2.2. Government Institutions and SEOs

A government institution is an element of the state that organizes elements of the regional government, which includes the ministries of the state and local governments. According to Law Number 5 of 2015 about the "State Civil Apparatus" for the Republic of Indonesia, the term "Central Government" "consist of[s] of Ministry, Non-Ministerial Government Agencies, Secretariat of State Institution, Secretarial Non-Structural Institution," whereas the term "Regional Agencies" refers to "Provincial Regional Apparatus and District Regional Apparatus, that include Regional Secretariat, Local Agencies, and Regional Technical Institution." In addition, a State-Owned Enterprise, according to Article 1 Paragraph 1 of Law Number 19 of 2003, is a "business entity whose capital is wholly or partly owned by the state through direct participation originating from separated state assets." This research includes SEOs because these organizations are included in the government's mission.

Bureaucracy reformation is pivotal for several reasons: (1) the manifestation of new approaches to carrying out public service functions in ways that are more managerial than simply administrative, (2) it has been used as a response to the scale of handling and scope of the government's duties. (3) it leads to changes in economic theories and problems, and (4) it promotes changes in the role of the private sector in the delivery of public services (Li et al., 2017). Previous research has covered many perspectives on bureaucracy reformation; from a public administration perspective, bureaucracy reformation is the effort to improve bureaucratic processes and the behavior of bureaucrats themselves with the aim of improving public services (Haning, 2018).

Indonesia implemented "Indonesia Satu Data" or the Indonesia One Data website at *data.go.id* to provide easily accessible quality data. This policy supported Law Number 95 of 2018 to fulfill the demands for data service and public information. Furthermore, according to the Grand Design of Bureaucratic Reform, IGIs and SEOs implemented nine programs to achieve eight areas of change in bureaucratic reform. One of those programs was to achieve good governance in Indonesia by reforming and changing governance systems related to institutional aspects, management, and human resources (Adi, 2018).

2.3. Relationship Between Knowledge Management Maturity and IGIs/SEOs

Applying knowledge management in IGIs and SEOs is almost the same as in private organizations. The difference is that the goal of a private organization is profit, while the ultimate goal of government institutions is the improvement of public services (Setiadi et al., 2011). The Asian Productivity Association (2017) stated that the role of knowledge management for the government was to provide a strategy to organize e-government content. The way to manage this content is by providing tools and techniques for organizational knowledge, supervising, and updating the contents of knowledge, and helping all necessary information to reach the citizens. Therefore, the benefits of knowledge management for governance are increasing governmental competence, maintaining the quality of government services, and facilitating the healthy development and promotion of e-government.

The purposes of knowledge management implementation in government institution and SEOs are (1) to maximize efficiency in all public services by integrating information silos at every government level and across borders, (2) to develop a new system, thus consolidating and upgrading obsolete information to enhance overall performance, and to broaden basic knowledge to be more integrated and accessible, (3) to improve accountability and mitigate risk by making decisions based on information and solving problems more quickly, supported by access to transparent and integrated information at all organizational boundaries, (4) to provide more effective constituent services, such as increasing partnerships with the public and being responsive to the public (Riege & Lindsay, 2006).

In essence, we intend to use maturity assessment to find the position of the IGI unit being analyzed. In addition, knowledge management implementation is indicated by current knowledge

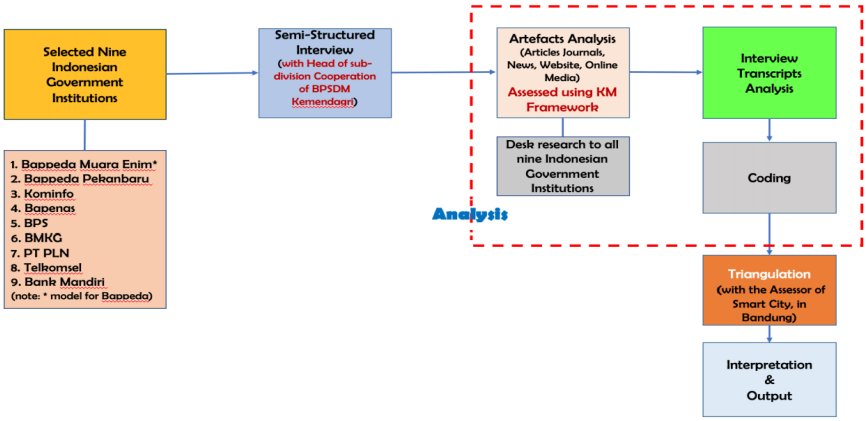
management applications to increase maturity or demonstrate existing conditions. Furthermore, knowledge management strategy is translated into knowledge management initiatives and ultimately mapped into a knowledge management roadmap.

3. RESEARCH METHODOLOGY

A case study was used to explore IGI and SEO knowledge management implementation. The study participants were nine IGI and SEO in three regions in Indonesia. We collected qualitative data through interviews, desk evaluations, and observations.The research design is shown in Figure 2.

To map the implementation, this study used nine samples of IGIs and SEOs that had already implemented knowledge management. The samples comprised three ministry institutions (Bappeda Muara Enim, Bappeda Pekanbaru, and Kominfo), three non-ministry institutions (BPS, Bappenas, and BMKG), and three SEOs (PT.PLN, Telkomsel, and Bank Mandiri). Table 1 provides additional information about the samples.

Figure 2. The exploratory research design flowchart



This research involved working with rich data, such as texts and secondary data (previous research, national news, websites, companies' annual reports, and statutory regulations (Sale et al., 2002). The logbook is shown in Table 1.

This qualitative study used semi-structured interviews conducted in December 2019 at the office of the Human Resources Development Agency in the Ministry of Home Affairs of the Republic of Indonesia in Jakarta. It was a preliminary study to obtain initial descriptions of knowledge management implementation in IGIs and SEOs. Semi-structured interview questions focused on 1) knowledge management implementation in IGIs, 2) challenges and obstacles faced when implementing knowledge management, and 3) how leaders and institutions support the knowledge management implementation.

The nine samples were assessed using the APO knowledge management framework (people, process, and technology) using a desk research method with three inter-raters to ensure the validity of the data. This process resulted in a table of knowledge management implementation in IGIs and SEOs as a basis for determining the maturity of an IGI or SEO. The knowledge management maturity life cycle was categorized using the APQC knowledge management Maturity model (initiate, develop, standardize, optimize, and innovate).

To counteract the subjectivity of the assessment, the desk review used multiple sources (websites, documents, previous research) conducted by two researchers and then discussed the results with all

Table 1. Samples of Indonesian Government Institutions and SEOs

Institution	Explanation
Bappeda	This is a Regional Development Planning Board, a technical institution in the field of regional development research and planning. It is led by the head of the agency, and it reports to the Mayor of Muara Enim City.
Bappeda Pekanbaru	This is the Regional Development Planning Board of Pekanbaru City.
Kemoninfo	The Ministry of Communication and Information is an apparatus of the Government of the Republic of Indonesia in charge of affairs. Its scope, namely information and communication, is stated in the 1945 Constitution of the Republic of Indonesia.
BPS	The Central Agency of Statistics is a non-ministry government agency that reports directly to the President of Indonesia. Its main task is to provide data to the government and the public.
Bappenas	This is the Ministry of National Development Planning/National Development Planning Agency. Its main tasks are formulating and determining the Government of Indonesia's development policies and building synergy between planning, budgeting, regulations, and institutions at the central and regional levels.
BMKG	The Meteorology, Climatology, and Geophysical Agency is an Indonesian non-departmental government agency.
PLN	The State Electricity Company is a corporation owned by the Government of Indonesia, or SEO. It has a monopoly on electricity distribution in Indonesia and generates the majority of the country's electrical power,
Telkomsel	The Cellular Telecommunication Company is a corporation owned by the Government of Indonesia, or SEO. It is a wireless network provider founded in 1995 and a subsidiary of Telkom Indonesia.
Bank Mandiri	Bank Mandiri is a corporation owned by the Government of Indonesia, or SEO. It is the largest bank in Indonesia in terms of assets, loans, and deposits and the result of the merger of four government banks.

Source: Various official websites

research teams. First, the researcher determined the criteria, which was based on the APO framework, then looked for various documents that contained information related to these criteria. Each researcher coded the data based on the criteria. Then, the results were cross-checked by the inter-raters. The cross-checked results were then confirmed via interview to various related sources, including knowledge management experts through Focus Group Discussion (FGD), practitioners such as the Ministry of Home Affairs, and assessors from the Ministry of Communication and Information.

To validate the in-depth interviews and secondary data desk research, a triangulation was conducted by the assessor of smart cities in Bandung—a subject matter expert (SME) in knowledge management implementation in IGIs.

4. FINDINGS AND DISCUSSIONS

4.1. Distinctiveness of Knowledge Management Implementation at IGIs and SEOs

This qualitative study analyzed nine IGIs and SEOs as samples using a knowledge management framework that comprised people, process, and technology. We used various sources of secondary data (websites, interviews, previous research, company reports) and two inter-raters to ensure the validity of the data. Each researcher performed a classification based on the indicators in the form of a table. Then, after the nine samples had been mapped, an FGD was conducted involving SMEs in the field of knowledge management as well as knowledge management in government. This FGD was conducted to ensure that the results of the mapping conducted by both researchers were objective

and followed the conditions of IGIs and SEOs. Table 2 shows the mapping of knowledge management implementation at IGIs and SEOs that resulted from this effort.

There are some insights from this table. The SEOs have implemented all aspects of the knowledge management framework. Some non-ministry institutions applied all aspects of knowledge management because they considered the functions of knowledge management to be important, whereas other non-ministry institutions applied only some aspects of knowledge management due to a government directive to implement knowledge management. Among ministry institutions, while some have not yet implemented knowledge management, three subjects were already committed to implementing knowledge management, although that implementation was not yet optimal.

Table 2 also illustrates that the ministry and non-ministry institutions prioritized the reformation of the apparatus by stressing soft skills to provide clean, accountable, and excellent service. Furthermore, the SEOs also prioritized the reformation of the apparatus, with a focus on the integrity of conduct, speed of service, and mutual and solid trust due to the institutions' nature to provide public service. Overall, the apparatus of the behavior and attitudes of the IGIs and SEOs refers to a main function known as *Tupoksi* (*tugas pokok dan fungsi,* an Indonesian term)— "*duties, principal, and functions"*— which is considered to be systematic and binding in the context of Indonesian institutions.

Table 2. The Mapping of Knowledge Management Implementation in Indonesian Government Institutions and SEOs

Implementation of KM in Government Institution			MINISTRY			NON-MINISTRY			SEO		
			Bappeda Muara Enim	Bappeda Pekanbaru	Kominfo	Bappenas	BPS	BMKG	PT. PLN	TELKOMSEL	BANK MANDIRI
PEOPLE	SOFT SKILL	Values	NS	NS	Serve "PROAKTIF"	NS	Clean and Accountable	To Serve and Innovation	Mutual Trust, E-Learning	Solid, Speed, Smart	TIPCE
		Culture	NS	Refer to GCG	BR	NS	Excellence Service	Integrity & Innov Leader	Using CPMIS	The Telkom Way	5 (five) new work cultures
		Behavior	NS	Related with Values	Learning is "Ready"	NS	Change Agent Network	Refer to MTF	PLN's Code of Conduct	Imagine, Focus, Action	13 (thirteen) main behaviour
		Attitude	NS	Apparatus Reform	Apparatus Reform	NS	Apparatus Reform	Apparatus Reform	Apparatus Reform	Always the Best	Independent
	HARD SKILL	Knowledge	Stated in Tuposki/NC	Knowledge Workers	NS	Stated in Job Description	Refer to BR	Knowledge for Innovation	Knowledge Sharing	KMS	Learner Mindset
		Skill	Stated in Tuposi/NC	Stated in MTF	Stabil, at all employees	Stated in MTF/NC	Excellence Leadership	Experience based Learning	HR Information System	IHSC	Talent Management System
PROCESS	Policy and Rules		As a BR model/ BR pilot project	NS	Receptive Level	Follow national planning	Based on Performance	Using "SAMI"	Encourage Transparancy	Digital Telecom Company	Governance Process
	Governance: system & procedurs		Strategic Planning	NS	Already established	Already established	Effective & Efficient	NS	Using IDMS	5 GCG Principles	Governance Soft Structure
	Business Process		Regional develpment Planning	NS	NS	NS	NS	Balanced Scorecard	NS	6 Portofolio Products	3 Business Area
	Principled: efficiency & motivated		Strategic Planning	NS	NS	NS	NS	Mobile App "Info BMKG"	Consumers Protection	Sustainable compt growth	Enabler Strategy
TECHNOLOGY	IT Tools		NS	Still not full utilize	Receptive Level	Receptive Level	KMS Portal	Integrated in BMKG Web	KMS Protal	Indonesian Digital Convergence	Fundamental IT Transform
	Infrastructure		Strategic Planning	Online to Subdistrict	Web 2.0	Strategic Planning		Online & E-Learning	KMS Protal	Indonesian Digital Ring	Digital Banking Services
	Principles: Easy to Access, Usability, Collaborative & Discovery Tools		NS	NS	NS	NS	Integrated KMS	Single Integrated Services System	COP and KSM	Indonesian Digital Ring	Integrated User-Friendly IT

Source: Author Analysis

NS	: Not Stated	IDMS	: Information and Documentation Management System	KSM	: Knowledge Search Management	CPMIS	: Company Performance Management Information System
BR	: Bureaucracy Reform			SAMI	: State Aparatur Management Information		
MTF	: Main tasks & function	NC	: Not Clear			KMS	: Knowledge Management System

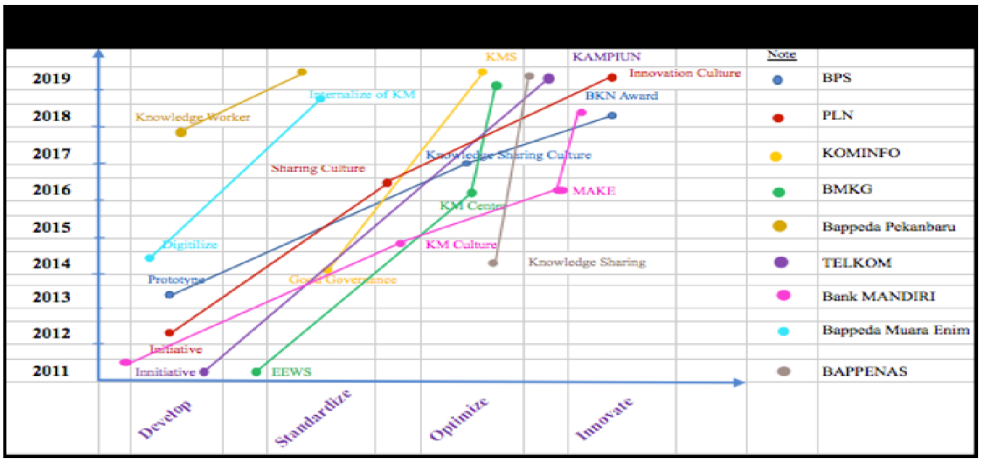
As noted above, the knowledge management framework consists of people, process, and technology. Table 2 shows that most institutions consider people to be central to knowledge management implementation. They have all invested in developing hard skills, and almost 80% of the subjects have invested in improving soft skills. However, this does not apply to the technology component. While the institutions have already set up information technology infrastructure, the ministry institutions have not yet reached the goals to make information easy to access and usable or develop collaborative tools and discovery tools. In terms of process, they have implemented policies,

rules, and governance structures, but the ministries and non-ministries have yet to fully implement the principles of efficiency and motivation.

4.2. The Knowledge Management Maturity Level of IGIs and SEOs

This research identified the levels of knowledge management maturity of the IGI and SEO samples by placing the axis between milestones and knowledge management maturity level at four stages: develop, standardize, optimize, and innovate. The results are shown in Figure 3.

Figure 3. The knowledge management maturity level



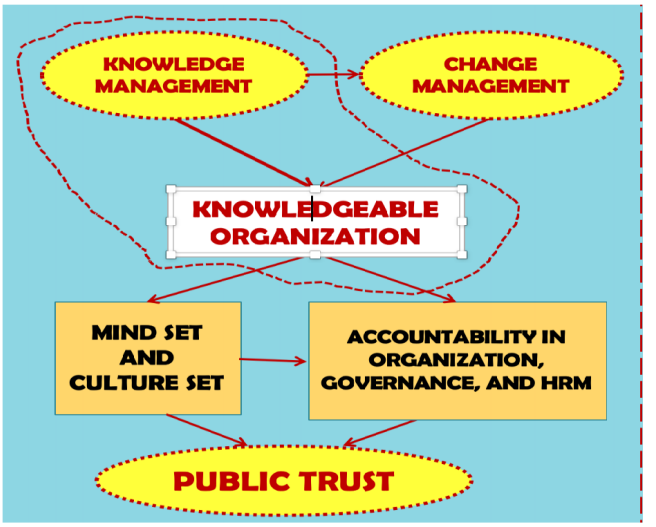
The x-axis in Figure 3 shows the five stages of maturity of knowledge management: initiate, develop, standardize, optimize, and innovate. We assessed and mapped knowledge management maturity level from nine IGIs using the 12 knowledge management capabilities from APQC (Asian Productivity Organization, 2017) with minor revisions. Then, based on knowledge events and programs conducted by each of the IGIs in our study, we identified and placed them by each knowledge management maturity level. Most of the institutions were still in the "knowledge sharing" stage (between standardizing and optimizing). While the two Bappeda institutions (Muara Enim and Pekan Baru, which are regional institutions) were most behind, compared to PT.PLN, PT.Telkom, and BPS, they have already made commitments to implement knowledge management. SEOs (PT. Telkom, Bank Mandiri, and PT. PLN) seemed to be the most advanced because their characteristics are similar to for-profit companies. In addition, non-ministries seemed to be more advanced than the ministries because their nature, functions, and tasks are to serve and provide excellent and accurate data for other institutions, enabling them to become better and more responsive in decision making.

This study aimed to investigate the knowledge management maturity of IGIs and SEOs by drawing a map of knowledge management implementation and the knowledge management life cycle. The results suggest that (1) knowledge management has become a strategy to manifest bureaucratic reformation of IGIs and SEOs to become knowledgeable institutions in disruptive settings; (2) the knowledge management maturity of IGIs and SEOs varies based on their implementation of knowledge management; (3) knowledge management implementation in this research uses the indicators of the

APO knowledge management framework, and it determines knowledge management maturity using the APQC stages. These results are further discussed in this section.

According to the Grand Design of Indonesian Bureaucratic Reformation 2010–2025, knowledge management is a base strategy for refining culture and bureaucratic reformation. The model that integrates knowledge management and bureaucratic reformation is illustrated in Figure 4. The output from bureaucratic reformation of the IGIs and SEOs is increasing public trust because the institutions' performance has become more efficient and effective, e.g., fast procedures for licensing, lack of corruption. This can be achieved with accountability, governance, and human capital in the IGIs and SEOs, which can change mindsets and culture-sets for the apparatus to give excellent service.

Figure 4. Knowledge management and bureaucratic reformation



In this model, the central point for refining culture and bureaucratic reform is becoming a knowledgeable organization. A knowledgeable organization is defined as a structure that knows what knowledge is needed and can develop the systems and people to master that knowledge (Collins, 2004). This definition has two implications. First, a knowledgeable organization has the knowledge it needs, such as its main tasks and functions and its customers. It must make sure that the system (organization and governance) is accountable and ensure that the human capital (the apparatus) has a service mindset and culture-set.

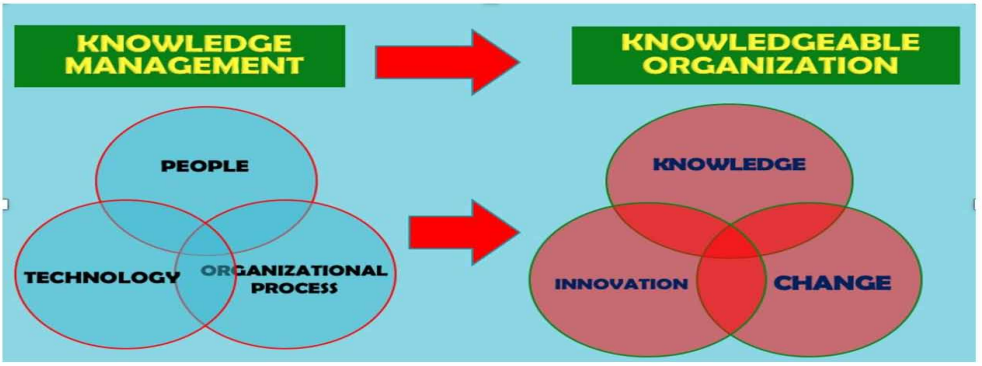
The other implication is that, to know the knowledge it needs, a knowledgeable organization must implement knowledge management. Knowledge management creates, shares, and improves organizational knowledge. Implementing knowledge management will create change that should be managed, which is known as change management (Imran et al., 2016; Maleki et al., 2013; Nurmandi, 2009; Wojewnik-Filipkowska et al., 2019; Zelenkov, 2016). Implementation of knowledge management alone is not sufficient. One must measure the level of knowledge management maturity to make sure that, by implementing knowledge management, an entity can become a knowledgeable organization. The relationship between knowledge management, change management, and knowledgeable organizations is illustrated in Figure 5.

In this paper, knowledge management maturity is measured against the APO knowledge management framework and the APQC knowledge management maturity model. Measuring

knowledge management implementation and knowledge management maturity demonstrates how both components function as proxies for a knowledgeable organization, as knowledge management implementation and maturity help an organization identify the knowledge it needs and master that knowledge.

After creating the knowledge management implementation map and maturity life cycle, this research found that knowledge management implementation can create a knowledgeable organization. However, the structure of a knowledgeable organization is different from knowledge management. This paper proposes three interrelated indicators—knowledge, innovation, and change—for the development of a knowledgeable organization, as shown in Figure 5.

Figure 5. Knowledgeable organization



An organization that is mature in knowledge management implementation promotes innovation (stage four), which changes the organization. In addition, innovation creates change in the organization and encourages the creation of new knowledge. Aside from its own changes, this promotes the creation of new knowledge and innovation to deal with the changes. As these three aspects illustrate the dynamics that shape a knowledgeable organization, this paper proposes that these components be used to measure knowledgeable organizations.

5. Conclusion

Implementation of knowledge management at IGIs and SEOs as a strategy to achieve bureaucratic reformation was officially launched in 2011. To initiate bureaucratic reformation in Indonesia, the Ministry of State Apparatus Utilization and Bureaucratic Reformation prioritized the reform of the Indonesian apparatus—the intangible assets that have pivotal roles as state organizers. This study found that the implementation of knowledge management as a strategy to achieve bureaucratic reformation at IGIs and SEOs was still sporadic, and that the implementation of knowledge management systems was incomplete. (For instance, some organizations implemented only knowledge sharing and transfer.) The implementation of knowledge management was not integrated between government institutions, even though they all had the same mission of bureaucratic reform.

knowledge management at IGIs and SEOs has been unstructured and unsystematic since 2011. As it has not used the knowledge management approach, knowledge management implementation in IGIs and SEOs does not yet have a pattern. Due to this condition, this paper recommends that IGIs and SEOs collaborate with other government institutions. Since knowledgeable organizations are the central point of refining culture and bureaucratic reform, IGIs and SEOs should transform to become

knowledgeable organizations by evaluating the maturity of knowledge management implementation and improving subpar knowledge management aspects.

The measurement of knowledgeable organizations using the knowledge management framework is sufficient to describe how knowledgeable IGIs and SEOs are. However, this research found aspects that are more appropriate for describing the dynamics of how an organization is categorized as a knowledgeable organization. These variables, knowledge, innovation, and change are interrelated and shape a knowledgeable organization.

This research has a limitation, namely the interview schedules that were carried out due to the COVID-19 pandemic. To overcome this, this study tried to maintain validity through triangulation in the form of FGDs with experts, subject matter experts, and practitioners.

There are several recommendations for future research relating to this subject matter. First, the next research could use three aspects of the knowledgeable organization to measure how knowledgeable an organization is. Three aspects of knowledgeable organization potentially more accurate in measuring knowledgeable organization but it needs empirical tests. Second, Further research could study the effectiveness of the knowledgeable organization in promoting bureaucratic reform at IGIs and SEOs. This paper has developed a map and a life cycle of knowledgeable organizations and has proposed a model to refine bureaucratic reform. In addition, it is important to investigate how knowledge management becomes effective and creates the foundation of the government's efforts to utilize the state apparatus. Finally, it is also recommended that future studies investigate additional variables that may help knowledgeable organizations obtain a broader understanding of this topic.

ACKNOWLEDGMENT

This research was supported by the P3MI (Program Penelitian dan Pengabdian Masyarakat dan Inovasi—Research, Community Service, and Innovation Program) Institut Teknologi Bandung Research Grant Scheme.

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