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The development of knowledge management implementation at the Financial and Development Supervisory Agency (BPKP)

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ABSTRACT

The Financial and Development Supervisory Agency (BPKP), a pivotal public sector entity tasked with internal audit functions, recognizes the paramount importance of effectively managing auditors' experience and expertise. This study aims to delineate the Knowledge Management (KM) implementation stages within BPKP, a topic scarcely explored in Indonesian public-sector research. This study uses an abductive approach with a case study method by explaining a series of events over time with theory-based analysis. The results showed that the KM implementation in BPKP was carried out in four stages: preparation at the local level by conducting change management, work culture development, and initial research; implementation at the local level; implementation at the national level with a focus on the development of process, human, and technology aspects; and national development focuses on laying the groundwork for KM culture. There are KM implementation steps carried out by BPKP but not explained in the theory proposition: change management and developing a work culture that supports KM processes, initial research, benchmarking, and KM implementation regulations. BPKP needs to assess the maturity level of KM to determine the focus areas that need to be improved. This study contributes conceptually to KM frameworks tailored for public sector entities.

KEYWORDS:
Knowledge management; implementation stage; public sector; auditors

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INTRODUCTION

Knowledge is recognized as an organizational strategic resource beyond traditional resources, and various perspectives suggest that the ability to leverage knowledge in organizations is a source of competitive advantage (Nonaka et al., 2000). According to Joshi et al. (2016), public-sector organizations still lag behind the business sector in exploring the benefits of knowledge management (KM). The Financial and Development Supervisory Agency (Badan Pengawasan Keuangan dan Pembangunan, BPKP) is a public sector entity whose main task and functions is providing assurance and consulting services to stakeholders based on Presidential Regulation Number 192 of 2014. BPKP, whose main tasks and functions are based on knowledge, considers KM very important in supporting the achievement of performance targets.

The audit field must determine how to manage knowledge when setting engagement goals and objectives because it requires a deep understanding of the unit being audited (Mai & Nguyen, 2022). The need for expertise essential for supervisory activities spans diverse scientific backgrounds. This need for diversity intensifies with the growing complexity of the challenges encountered. Variances in educational background, experience, and individual expertise within the team collectively expedite the execution of necessary procedures for each assignment (Rahmasari, 2015). Ma'ayan and Carmeli (2015) attest to the role of internal auditors in the learning process by looking for ways that information and practices in one unit can benefit other areas of the organization to improve efficiency and effectiveness.

The experience and expertise auditors gain through best practices hold immense value for the organization, as they are acquired informally, beyond traditional education and training channels. However, auditors are characterized by high mobility, evident in frequent rotations, mutations, and promotions across different fields and work units throughout Indonesia. This extensive mobility pattern may lead to the loss of valuable knowledge and experience embedded in individuals during transitions. Setiarso (2007) underscores that 42% of organizational knowledge resides in the minds of employees. Considering this, the knowledge retained by each auditor needs an appropriate platform and medium for effective communication. Establishing such a mechanism is crucial to preserving knowledge, fostering its growth, and stimulating the generation of new ideas.

KM emerges as a strategic solution to address prevalent challenges by systematically aggregating and storing dispersed knowledge, facilitating accessibility for authorized users. The essence of KM lies in making knowledge readily available at all times (Ali, 2017), thereby fostering the transfer of knowledge acquired through formal education and training. KM extends beyond managing explicit knowledge derived from formal documents, including supervision reports, regulations, legal frameworks, Self-training Programs (PPM), training materials, seminars, workshops, and postgraduate research outcomes. It emphasizes the management of tacit knowledge, encapsulating the unique expertise and experiential insights accumulated by

employees during their work tenure. Tacit knowledge is unique because it is not written down in publications, journals, or other scientific research results, and it is difficult to share because it resides within employees' minds. It has not been systematically managed or documented, making KM instrumental in capturing and preserving this valuable tacit knowledge (Nonaka & Takeuchi, 1995). Organizations can bridge the gap between explicit and tacit knowledge through effective KM practices, promoting a comprehensive knowledge-sharing culture (Dalkir, 2017).

This study is situated in BPKP, considering that few ministries, agencies, or local governments in Indonesia have successfully implemented KM. BPKP stands out as an organization that has embraced the KM concept extensively, integrating it into business processes and focusing on enhancing human resource quality. Over time, since its establishment, BPKP has exhibited a proactive commitment to KM practices, evident in initiatives like intensified knowledge sharing through platforms like the Lotus Notes forum and the implementation of PPM. BPKP received the Dunamis Award in the Most Admire Knowledge Enterprise Activity in 2008 as a public sector institution that is able to transform its knowledge into daily business activities. This study aims to determine the implementation stages of KM development in BPKP, as no previous research specifically discusses the stages of KM implementation in a public sector organization. Topics related to KM implementation in Indonesian public sector organizations are still limited to readiness. The results of this study are expected to provide an overview to public sector organizations and stakeholders about the stages of KM implementation so that it is useful in mitigating the risks and obstacles that will be faced. Pradana et al. (2015) assessed the readiness level of KMS implementation at the Scientific Documentation and Information Center (PDII) of the Indonesian Institute of Sciences (LIPI) based on the concepts of people and organizational structure. Other research on the readiness level of KM implementation in the public sector has been conducted, including Fitriadi (2016), Mukhlasin and Budi (2017), also Hariyanto (2018). Meanwhile, Mitrovic et al. (2018) researched the existence of KM in Serbian local governments to identify and analyze the processes and infrastructure that support KM practices. Other research by Baporikar (2017) developed a comprehensive understanding of KM implementation in the public sector and provided case studies of Indian public sector organizations adopting KM.

Knowledge is generally categorized into two types: tacit knowledge and explicit knowledge (Nonaka & Takeuchi, 1995). According to Becerra-Fernandez and Sabherwal (2010), tacit knowledge resides in the head and is inherent in a person, including insight, intuition, experience, and expertise. This knowledge becomes contextual information or explicit knowledge after being communicated to others through the learning process in the form of writing. The purpose of KM is to manage this knowledge so that the right information is obtained and disseminated to the right people at the right time to help individuals share experiences and expertise to increase team productivity (Deloitte, 2015). Nonaka and Takeuchi (1995) explain that KM is a management tool for managing knowledge assets to increase the capacity of the organization to work more effectively. Effective implementation of KM can increase the

productivity and efficiency of services, innovation capabilities, competency development, decision-making, and sensitivity to change (Riley, 2005).

According to Godbout (2000), three main components make KM are (1) People play an important role in KM, so the main aspect that needs to be developed is competence and ensuring that individuals understand their role in carrying out the KM process; (2) Process, which includes stages in KM starting from identifying the knowledge needed by the organization (knowledge discovery), activities to capture the required knowledge (knowledge capture), selecting managed knowledge, storing selected knowledge, and sharing knowledge (knowledge sharing) so that it can be used at any time by employees (knowledge application); (3) Technology, tools that aid the flow of information and knowledge in the organization's KM process. The technology built in the form of an integrated system for storing and managing knowledge so that it can be accessed is called a knowledge management system (KMS). Nonaka and Takeuchi (1995) state that implementing KM is to build a culture of communication in business processes to support information exchange. KM is embedded in the organization's work culture (Leidner et al., 2006). Quink (2008) explains the relationship between organizational culture and KM in an indirect pattern, but it is interrelated with the relationship between KM and organizational performance, in which there is a KM process. An effective organizational culture is a prerequisite for KM development.

Bureaucratic reform in Presidential Regulation Number 81 of 2010 emphasizes the importance of implementing clean government and good governance as a necessary principle to provide excellent service to the community. In the context of good governance, KM is an important system for developing knowledge workers (Riley, 2005; Muluk, 2008). The issuance of Minister of State Apparatus Empowerment and Bureaucratic Reform (MenPAN-RB) Regulation Number 14 of 2011 encourages the application of KM to help improve organizational performance, which aligns with the objectives of implementing bureaucratic reform. Previous research by Al-Ahbabi et al. (2019) found a positive and significant correlation between KM and public sector organizational performance.

Meanwhile, Tiwana (2002) describes the stages of KM development in the 10-Step Knowledge Management Roadmap, which is divided into four stages to design and develop KM, namely: (1) infrastructure evaluation; (2) KMS analysis, design, and development; (3) deployment; and (4) evaluation. The ten steps in KM design and development, according to Tiwana (2002) depicted in Appendix. The KM implementation process involves ten key steps. Step 1 focuses on analyzing existing infrastructure to identify gaps and enhance components essential for KM. Step 2 aligns KM with the business strategy, connecting organizational plans at the strategic level with technical system development. Step 3 involves designing the KM infrastructure, selecting and integrating components like Web or Lotus Notes, considering cost and added value. Step 4 consists of auditing existing knowledge assets and systems to understand the organization's current knowledge landscape. Step 5 is about designing the KM team, identifying key stakeholders, and sources of expertise. Step 6 entails creating the KM blue-

print, outlining the plan for gradual improvement. Step 7 involves developing the KMS, converting the organization's internet network into a collaborative and integrated platform. Step 8 includes testing and deploying using the RDI methodology, ensuring user needs are met through staged implementation and analysis. Step 9 emphasizes managing change, culture, and reward structure, requiring cultural shifts and employee buy-in. Step 10 focuses on performance evaluation after KMS implementation to gauge improvements.

RESEARCH METHOD

This study uses a qualitative, abductive approach. Abductive is an approach carried out on unique cases where pre-existing theories are not necessarily the same as events and facts in the field, which can modify the theory. A case study method based on the formulation in Yin (2018) was used to identify the stages of development of KM implementation in one of Indonesia's public sector organizations, which was studied holistically, not just on certain aspects. At the data collection stage, a research grid containing a description of the indicators of the stages of KM implementation developed from the theoretical propositions according to Tiwana (2002) was prepared as a guide in collecting data and information in the field. The research location is at the Surveillance Research and Development Center (Puslitbangwas) BPKP, which acts as the unit in charge of KM at BPKP based on Head Decree Number 331 of 2019. The time period studied is limited to 2008-2021. Data collection methods for primary data were obtained through in-depth interviews with BPKP resource persons. The list of interview activities is presented in Table 1. The results of the interviews were developed to gain a deeper understanding by conducting observations to observe the facts about the stages of the development of KM implementation in BPKP. The list of field observations is presented in Table 2.

Secondary data used are report documents, internal regulations, and policies arranged in the form of categorization according to the field that supports the development of KM from 2008 to 2021. The collected data was analyzed abductively by comparing all findings to theoretical propositions to describe and modify them more easily. The development stages of KM implementation in BPKP from 2008 to 2021 were analyzed using a time series (periodization) to see their development over time. A triangulation of sources and time was used to corrobo-

Table 1. List of Interview Activity

Topic	Interviewee	Background	Time
KM Roadmap and early stages of implementation	RH	Coordinator of Supervisory Development and Innovation Puslitbangwas as Head of the BPKP KMS Management Team	August 5, 2022 at 15.45 WIB
KM management and development	MTR	Sub-Coordinator of Development, Innovation, and Knowledge Management Puslitbangwas	August 8, 2022 at 19. 45 WIB
KM practice	IJH	Auditor at the Deputy for Investigation	August 12, 2022 at 15.50 WIB
KM practice	SM	Auditor at the Supervisory Information Center (Pusinfowas)	August 15, 2022 at 13.20 WIB
Change management and KM	PH	Auditor at Puslitbangwas	October 11, 2022 at 07.40 WIB

Table 2. List of Field Observation

Activity	Detail	Observation Time
Grand Tour	Discuss with potential resource persons about KM practices that have been running and identify employees who know the history of KM development in BPKP	January 22, 2022
Observation of Infrastructure and environment that support the implementation of KM in BPKP	See the location of the Library Café (LC) and other places that encourage knowledge sharing activities Participated in one of the sharing session activities in the LC	October 14, 2022
Observation of KMS development	Exploration of KMS websites and applications developed by BPKP	November 22, 2022

rate the truth of the data so that the findings generated from this research could be guaranteed validity and reliability.

RESULT AND DISCUSSION

Implementing KM in BPKP is urgent because auditors' work always requires them to improve their knowledge and competence to support supervisory tasks across disciplines. This is in line with Government Internal Audit Standards (AAIPI, 2014), which state that auditors are required to improve competence through continuing professional education as part of continuous learning. BPKP's broad scope of functions requires auditors to absorb existing knowledge quickly when there is a transfer of fields or work units. The results of the data analysis can be formulated in four stages of the development of KM implementation at BPKP. The stages that occurred in the 2008-2021 timeframe consist of four stages: Local Preparation, Local Implementation, National Implementation, and National Development Stages.

Stage 1 Local Preparation 2008-2014

This stage includes preparations for implementing KM, which is driven by changes in the organization's business processes due to the influence of the external environment. BPKP experienced a strategic change in the role of internal auditors, which was initially only audit-oriented but was developed to improve auditee business processes through consulting services. The diversification of the main activities of supervision requires changes in the organizational and employee paradigms. The dynamics of BPKP due to changes in the strategic environment were triggered by the issuance of Government Regulation (Peraturan Pemerintah, PP) Number 60 of 2008, Presidential Regulation (Peraturan Presiden, Perpres) Number 192 of 2014, and Presidential Instruction (Instruksi Presiden) Number 9 of 2014. BPKP, as the internal auditor, is expected to be able to provide an early warning system and oversee the process of achieving the objectives of strategic development programs. BPKP implemented KM to transform it into a learning and knowledge-based organization to achieve these objectives. Programs and activities implemented in Stage 1 include culture development, change management, and conducting KM-related research.

Culture development

BPKP, in response to dynamic environmental conditions, has undertaken a strategic transformation from a static bureaucracy to an entrepreneurial organization, aiming to meet stakeholder demands. This transformation involves the development of a work culture, fostering positive attitudes and behaviors in line with BPKP's core values, encapsulated in the acronym PIONIR: Professional, Integrity, Orientation to Users, Conscience and Common Sense, Independence, and Responsibility (BPKP, 2010). Organizational values, known as the "5 AS" (hard work, smart work, thorough work, sincere work, and work full of integrity) (BPKP, 2011), further emphasize the commitment to excellence.

This cultivation of work culture aligns with BPKP's transformation into an organization prioritizing preventive aspects, providing consulting services, and partnering with various entities. Over a five-year period (2010-2014), BPKP implemented six programs spearheaded by role models among Echelon 1 officials (BPKP, 2011). These programs targeted the improvement of morals and ethics, enhancement of togetherness and welfare, increased effectiveness of policies and inspirational leadership, establishment of responsive and anticipatory organizations, and enhancement of organizational transparency. Integral to this transformation is the emphasis on developing a knowledge-based organization with effective work culture elements such as the PPM and knowledge-sharing through Lotus Notes, which play key roles in supporting KM initiatives at BPKP.

Change management

BPKP defines the core of bureaucratic reform as a change in mindset and governance. There are three important agendas implemented by BPKP: bureaucratic reform, SPIP, and work culture. Substantially, the three influence one another, necessitating a collaborative and integrated work mechanism to effect change in bureaucratic conditions to achieve good and clean government. All areas of change that are the objectives of bureaucratic reform are related to the elements of SPIP in PP 60 of 2008, which, in their application, are integrated and become an integral part of the activities of government agencies. One of the agendas for bureaucratic reform is change management through structuring the mindset and work culture of the apparatus in order to produce a bureaucracy that has integrity and high performance. The bureaucratic system makes employees only focus on rule-based work, so they sometimes ignore innovation.

The main obstacle is changing the culture in the bureaucracy. Change must begin with preparing human resources to accept change because, in essence, humans are the subject and object of change and have a resistant nature to change. Change management efforts in the KM process at BPKP include (1) creating a culture that recognizes the importance of data, information, and knowledge in carrying out tasks effectively; (2) facilitating access to the data, information, and knowledge required to carry out tasks; (3) providing flexibility to carry out tasks based on knowledge; (4) providing opportunities to apply new knowledge gained from education or training in the workplace; and (5) encouraging employees to apply their

knowledge, skills, and experience in providing audit justifications and making quick decisions (BPKP, 2016). Further, BPKP faces obstacles in implementing changes caused by internal and external factors. Internal barriers are related to human resources, human resource management, work mechanisms, the philosophy of change, resources, and infrastructure. The external barriers are that stakeholders do not understand the changing role of BPKP, and local government internal supervisory apparatuses (Aparat pengawasan Intern Pemerintah, APIP) still ask for BPKP assistance to carry out supervision because adequate capabilities do not support it.

Conducting KM-related research

This initiative aimed to offer an initial overview of the effective implementation of KM within BPKP, aligning with three crucial agendas: bureaucratic reform, SPIP, and work culture. Puslitbangwas researched three main topics: 1) managing KM-based risk, 2) KM in work culture, and 3) creating KM implementation design. The initial research on KM in 2008, led by Puslitbangwas, concentrated on risk management with a KM perspective. The objective was to generate discourse on effectively managing knowledge-based risks, ultimately minimizing and mitigating potential risks.

The second study, driven by the issuance of MenPAN-RB regulation Number 14 of 2011, sought to develop an instrument for measuring the relationship between KM and work culture. This study aimed to provide insights into how KM practices relate to and influence the prevailing work culture. In 2012, the third study took a sample of five work units to portray the landscape of KM and organizational culture at BPKP. This comprehensive examination aimed to understand the practical implications of KM implementation within different work units, contributing to a more nuanced understanding of KM's organizational impact.

Stage 2 Local Implementation in 2015

The implementation of local-level KM in the Puslitbangwas work unit began in early 2015, focusing on the three initial steps of Tiwana's theory (2002): infrastructure analysis, aligning KM with business strategy, and KM infrastructure design. Factors that encourage Puslitbangwas to implement KM include changes in the internal environment and the issuance of Presidential Regulation Number 192 of 2014, which repositions the duties, functions, and roles of BPKP. Changes in the internal environment include the movement of “hot spots” from meeting rooms to informal discussion spaces such as canteens and coffee shops where employees discuss supervisory assignments.

Puslitbangwas tried to capture this momentum by first formulating the purpose of building KM and then aligning it with BPKP's business processes according to Presidential Regulation 192 of 2014. The purpose of building KM is to provide a source of knowledge that can be accessed at any time, is relevant, and is able to encourage innovation. As a BPKP work unit tasked with conducting research and development in the field of supervision, much

knowledge has been created from these activities. Knowledge created during the research process can be stored and managed in the KMS to become best practice. KM development at Puslitbangwas consists of seven processes: identifying, capturing, selecting, storing, disseminating, applying, and creating knowledge. Puslitbangwas conducted benchmarking with Anecdote to see the best practices of KM implementation and identify lessons learned that can be applied in BPKP. Based on the analysis and mapping of problems in the current system, observation results, and benchmarking that have been done, Puslitbangwas proposes activities and services that must be provided in the system design, including functional and non-functional specifications. The second semester of 2015 entered the second phase of Tiwana's theory (2002), namely the analysis, design, and development of KMS, as well as the third phase, namely deployment, which became the foundation for programmers in building web-based applications because the initial design of KMS was built using a LAN network so that it was difficult to access from outside the office when employees were on duty in the field. The focus of management is not only on written knowledge but also on knowledge inherent in employees, such as experience and expertise. Activities carried out during stage 2 include evaluating KM infrastructure and building the KMS application.

Evaluation of KM infrastructure

Assessment of the KM infrastructure involves the following key components:

1. Analysis of available infrastructure: Puslitbangwas possesses various technological infrastructures that can be developed into a KMS. These include LAN and WAN computer networks, network bandwidth, remote access and connectivity, intranet, internet, video conferencing, decision support systems, computer platforms, groupware, mobile computing solutions, skills database, document management system (DMS), project management tools, and software licenses.
2. Alignment of KM with business strategy: This step focuses on aligning KM with Puslitbangwas's business strategy. It involves aligning with the organization's vision and mission, identifying knowledge needs for research and development, creating a knowledge map, utilizing Tiwana's personalization and exploration approach in KM development, and identifying the influence of knowledge gaps on business strategy.
3. KM infrastructure design: Successful KM implementation relies on the effective use of available infrastructure. Puslitbangwas follows the third step of Tiwana's theory by identifying internal and external resources to be integrated, selecting technology components for finding, creating, collecting, and implementing knowledge, and determining the appropriate platform.
4. Benchmarking to anecdote: Lessons learned from KM implementation at Anecdote are applied at Puslitbangwas. This includes incorporating an internal search engine, utilizing feedback for continuous KMS development, establishing a community of practice, using a weblog for externalizing tacit knowledge, and implementing a knowledge categorization

system based on subject matter.

5. Proposed system infrastructure: Based on the analysis, mapping of current system problems, observations, and benchmarking, Puslitbangwas proposes the inclusion of specific activities and services in the KMS design, encompassing both functional and non-functional specifications.

Building the KMS application

Puslitbangwas has established an internal programming team dedicated to constructing and enhancing the KMS application. The KMS infrastructure is integrated into the BPKP WAN network. While building and developing KMS within its work units, Puslitbangwas initiated several key activities. Firstly, a knowledge wealth audit was conducted to identify organizational knowledge as an initial assessment of knowledge assets. The results of the audit of knowledge wealth at Puslitbangwas are (1) The organization is a government agency; (2) The organization's core business is a service provider; (3) Employee roles are divided into structural, specific functional, and general functional job classes; (4) Knowledge is mostly explicit; (5) Problem-solving is done directly by the team in the field during the assignment or through a tiered review process; and (6) The level of need to carry out the digitization process is driven by the variety of high-service products.

Secondly, the KM team was designed and implemented, aligning with the fifth step of Tiwana's (2002) theory. A cross-functional internal team was organized to spearhead KM initiatives to address the absence of a dedicated IT or knowledge management department within Puslitbangwas. Third, System Analysis is the Basis for Building a KM Framework. Puslitbangwas uses The Unified Modeling Language (UML) modeling to carry out the sixth step of Tiwana's (2002); the activities include activity diagrams, use case diagrams, class diagrams, interface design, and sequence diagrams. Fourth, KMS Design. The seventh step of Tiwana's theory (2002), namely developing the KMS, is done by designing the system so that it is ready to be implemented based on the results of the analysis carried out in the previous stage. Puslitbangwas carried out this process by making a design in the form of:

1. Architecture Design. The web-based KMS developed by Puslitbangwas uses a three-tier architecture. The main reason for using this architecture is that if the KMS database continues to grow, adjustments in data storage techniques can be made without affecting computer clients.
2. Sitemap Design. This design provides ease of use and efficiency in the knowledge search process by utilizing a list of user requirements and specifications. The results of the analysis conducted by Puslitbangwas show that all classes in the interface automatically become one page in this diagram.
3. Interface Design. An interface was developed based on the sitemap design that had been

made to provide convenience for KMS users. The KMS interface consists of a) the login form design, (b) the main page design, and (c) the KM officer design.

4. User Page Design. Employees have access to view book and article knowledge, post explicit and tacit knowledge, search for knowledge, and provide feedback in the comments field.
5. Design the staffing officer page. Design forms to generate reports and edit employee data.
6. KM Activity Report Page Design. A system for printing KM activity reports that provide knowledge storage and user activity information.

Fifth, Measurement and Evaluation. Puslitbangwas implemented the tenth step of Tiwana's theory (2002) by formulating an assessment plan for KM implementation at the local level, serving as an initial evaluation of the established system. This process consists of the KM measurement with metrics, measuring the main objectives within four distinct categories—awareness, behavior, output, and outcomes—using specific metrics; and system analysis and design testing. The testing activity is carried out by comparing the system design with the predetermined requirements to ensure alignment and effectiveness. The evaluation stage of Puslitbangwas' local-level KM implementation has not been carried out because the KMS application that is being developed is then escalated to the BPKP level.

Stage 3 National Implementation 2016-2019

In 2016, a pivotal moment unfolded in BPKP's KM implementation when the initially internal KMS application, developed by Puslitbangwas, transitioned to the BPKP level under the directive of the then BPKP Head. Given the brief supervision days faced by BPKP auditors in the field, ranging from five to seven working days, a source of knowledge about the assignment is needed, one of which is through KM. Puslitbangwas crafted a roadmap for KMS development within BPKP from 2017 to 2019. The challenge surfaced during stage 3 regarding the management responsibility of the KMS post-escalation. In Stage 3, activities included determining the direction of KMS development, conducting a KMS prototype trial, evaluating the KM escalation process, creating the Knowledge Management Information System (KMIS) application, benchmarking for Telkom, inaugurating KMS Ambassadors, establishing an informal discussion space, creating KM management policies and procedures, and founding a Corporate University for Government Internal Audit (GIA Corpu).

1. Determining the Direction of KMS Development in BPKP

   The vision of the KMS in BPKP is to facilitate reliable knowledge management, foster innovation, and position BPKP as a world-class internal auditor and trusted advisor to the Government of Indonesia. The envisioned KMS is expected to deliver accessible knowledge tailored to assignment needs, promote innovation, offer unrestricted access, and cover a wide spectrum. This vision aligns with BPKP's broader vision of becoming a world-class internal auditor, empowering employees to enhance their competence and knowledge. The mission derived from this vision focuses on providing accessible knowledge, connecting knowledge

owners and seekers, encouraging innovation in internal audit and supporting processes, and expediting the expertise development of employees.

The three crucial elements in KM development for BPKP are people, process, and technology. A primary challenge faced in KM development is the reluctance of employees to document gained knowledge and experiences due to time constraints and varying sharing capacities. Despite a natural culture of knowledge sharing through activities like PPM and informal discussions, BPKP encounters difficulty in encouraging employees to write, a demanding activity that not everyone is inclined to undertake. To manage the human aspect, BPKP undertakes initiatives such as building awareness of KM's importance, fostering trust for knowledge sharing, establishing KM role models, and instituting a reward and recognition system for KM participation.

The process element includes the stages in KM, starting from identifying the knowledge needed by the organization, activities to capture the required knowledge, selecting knowledge to be managed, storing the selected knowledge, sharing knowledge so that it can be accessed by employees, applying knowledge, and creating new knowledge. The focus of developing technological aspects to support the KM process at BPKP is on three things: the right people, the right information, and the right tool. The developed technology should connect people with the right sources, filter information, and ensure authorization according to established rules. The developed technology serves as the right medium for employees to obtain information, contributing to the overall success of KM initiatives.

2. KMS Prototype Trial

Leveraging prototypes represents BPKP's strategy to mitigate risks and identify development opportunities. The prototype trial of the web-based KMS application took place at Puslitbangwas and several designated work units, including Pusbin JFA, Pusdiklatwas, the HR Bureau, Pusinfowas, and BPKP Representatives in Lampung, West Java, and Yogyakarta Provinces.

3. Evaluation of the KM Escalation Process

Puslitbangwas conducted an evaluation to see the extent of KM development in BPKP according to the roadmap that has been prepared. This evaluation focuses on three key aspects of KM development: people, process, and technology. The results of this evaluation provide input for the establishment of BPKP Head Regulation on KM Implementation Guidelines, the establishment of formal KM institutions attached to the duties and functions of the organization, as well as developing KM role models. BPKP's KM development strategy focuses on business process efficiency in supporting service, providing information, and gaining knowledge about audit results, evaluation, assistance, technical guidance, revenue optimization, review, calculation of state financial losses, expert testimony, and other audit activities.

4. Creating the KMIS App

BPKP has received funding from loan financing 2927-INO State Accountability Revitalization Project Knowledge Management System-2 (STAR KMS-2) through the Asian Development Bank (ADB). As part of the project's initiatives, the Knowledge Management Information System (KMIS) serves as a platform for information related to knowledge management in public sector accountability. Developed by the STAR Working Group Team, the KMIS application is designed to aid STAR student alumni in enhancing the competence of APIPs and financial managers. KMIS is a conduit for knowledge transfer in state financial management and internal audit.

5. Benchmarking

This activity is carried out periodically to see the best practices of KM implementation in other organizations and identify lessons learned that can be applied in BPKP. The benchmarking process for “Stage 2 Implementation at Local Level” was conducted at Anecdote, followed by this stage of KM implementation at Telkom company. Telkom is a strategic partner of BPKP in developing KM. This is demonstrated by BPKP inviting experts from Telkom to share their experiences in developing KM in the KMS Ambassador forum.

6. Inaugurating KMS Ambassadors

Advancing people's development is achieved through the strategic utilization of KMS Ambassadors. Comprising selected employees from diverse work units across Indonesia, these ambassadors play a crucial frontline role in the ongoing development of KM within BPKP. Their primary responsibility involves capturing the tacit knowledge embedded within the workforce of their respective units and transforming it into valuable organizational knowledge.

7. Creating an Informal Discussion Space

Knowledge sharing practices at BPKP have been carried out through joint prayer activities, coffee mornings, and PPM. These activities should be more organized to encourage KM by optimizing available knowledge spaces such as libraries. In 2018, BPKP created an informal discussion space called Library Café (LC) to create a pleasant atmosphere for knowledge sharing by combining the functions of a library and a coffee shop with the concept of a knowledge café. LC is included in the Top 45 Public Service Innovations in 2020, organized by the Ministry of PAN and RB. This innovation originated from the anxiety of the BPKP KM Team Leader about managing KMS as a knowledge-sharing medium that employees still underutilized. Based on KMS visitor data in July 2018, the percentage is only 3% of the total BPKP employees. LC is an activity routinely carried out to foster a culture of knowledge sharing in BPKP, capture it, and store it in KMS. LC is packaged with the concept of an informal and fun interactive discussion that is expected to be a glue between generations, eliminate silos, and create organizational social capital. Sharing sessions involve internal and external expertise and community of practices sharing their experiences and

expertise. This is useful to provide insight for participants through discussions for problem -solving in assignments and to serve as a means of informal briefing from the leadership. LC is expected to embody the spirit of the massively developed knowledge-sharing and management process among BPKP representatives.

8. Create KM Management Policies and Procedures

As a form of leadership commitment to the importance of KM, the Head of BPKP issued Decree No. KEP-331/K/LB/2019 concerning Guidelines for Implementing Knowledge Management in the Context of Improving Supervisory Innovation in the BPKP. The provision of a regulatory framework for KM governance is needed so that there is a legal basis and guidelines for implementing KM for all work units and employees within BPKP. The Chief Decree explains the three main components of KM in BPKP: people, processes, and technology. Important aspects regulated in BPKP Head Decree Number 331 of 2019 include KM Institutional structure, KM model and architecture, and KM cycle.

9. Create a Corporate University for Government Internal Audit

BPKP issued Head Decree No. Kep-205/K/DL/2019 on the Development of HR Learning Systems in the BPKP Environment, which states that KM is part of the foundation of managing the Government Internal Audit Corporate University, or GIA Corpu. This shows that BPKP realizes the importance of KM as a medium for managing internal audit knowledge. The GIA Corpu framework is a learning management system that includes foundations, pillars, units, and learning storefronts. KM is one of the pillars of learning focus, and it entails a structured and systematic effort in developing knowledge owned to aid in decision-making and improve organizational performance. The development of Corpus is anticipated to drive continuous learning within the organization.

Stage 4 National Development 2020-2021

BPKP acknowledges the evolving landscape marked by uncertainty, technological advancements, and heightened stakeholder demands. In response, BPKP has adjusted its methodology, processes, and approach to prioritize crucial issues. Embracing agile internal auditing and a data-driven approach aligning with the Supervisory Priority Agenda (Agenda Prioritas Pengawasan, APP) strategy, BPKP focuses on stakeholders and data awareness for a streamlined audit process. This reflects the third phase of Tiwana's (2002) theory—deployment. KMS is expected to provide information and initial knowledge for auditors for a flexible planning process according to priorities. Activities carried out at this stage include business process and standard operational procedures improvement, KM development, building the Data Analysis and Visualization (ADVIS) App and establishing the Community of Data Analytics (CoDA), also periodic benchmarking.

1. Business Process and SOP Improvement

BPKP updates business processes and SOPs based on BPKP Regulation Number 2 of 2021

concerning BPKP business process maps and BPKP Regulation Number 3 of 2021 concerning guidelines for preparing standard procedures for implementing activities within BPKP. In this activity, an ISO 9001:2015 assessment was also carried out by TUV NORD, a company that has a wide range of certification scheme services. The auditor provided the results as good practice with a digitization system in the form of a KMS application as a knowledge portal at BPKP (BPKP, 2021c).

2. KM Development in Support of the Supervisory Priority Agenda

KMS development is directed to support APP 2022 as a form of KM alignment with BPKP's business strategy through regulations on governance with related parties, data integration, and further application development. Knowledge management to improve supervisory innovation is carried out through KMS integration plans with the Learning Management System (LMS) and the Integrated Talent Management System (ITMS).

3. Building the ADVIS App and Establishing the CoDA Community

BPKP is expected to provide the president with immediate insight and foresight into national-scale problems and strategic issues. On the other hand, the way the audit team works in collecting data related to supervisory objectives still uses the old way of doing things and is not data-driven. On this basis, Puslitbangwas developed KMS that supports data-driven internal auditing so that BPKP can create knowledge conclusions based on available data more quickly. Puslitbangwas realizes that collecting, analyzing, and disseminating data through visualization requires an application, so ADVIS, which is a sub-application of the KMS, was developed to facilitate the capitalization of data into knowledge. The development of this application is based on the data awareness campaign and treating it as an asset in supporting the APP. This has encouraged Puslitbangwas to form a CoP called CoDa.

4. Periodic Benchmarking

Benchmarking was carried out to obtain additional information about KM implementation practices in other organizations and then determine the best practices that were successfully implemented. This activity has been carried out periodically since stages 2 and 3. In stage 4, the KM implementation benchmarking process was carried out in two public sector organizations: the Bank Indonesia Institute and the BPJS Employment Institute. This activity is carried out by exchanging KM practices that have been running, sharing about the obstacle faced, and looking for lesson learned that can applied in BPKP.

Cross-Stage Review

The progression from the local preparation stage to the national development stage has a number of drivers that have led to the transition from one stage to the next. The four stages have different focuses and challenges in the implementation process but are interrelated.

The transition from stage 1 to stage 2

The transition from the Local Preparation Stage to the Local Implementation Stage encountered delays due to other priority agendas such as SPIP and bureaucratic reform. The catalyst for this transition was the issuance of PP 60 in 2008, altering BPKP's authority and business processes, along with Presidential Regulation 192 and Presidential Instruction 9 in 2014, enhancing BPKP's strategic role. This prompted BPKP to undertake change management in organizational systems, mechanisms, mindset, and work culture, incorporating a knowledge-based approach as part of bureaucratic reform. To achieve this, BPKP established a role model in the work culture and implemented KM to improve the quality of knowledge.

The issuance of the Minister of PAN and RB Regulation Number 14 of 2011 further encouraged BPKP to implement KM in supporting supervisory business processes. Puslitbangwas began implementing KM within the organization's internal scope in 2015. Puslitbangwas conducted benchmarking with anecdote to see best practices in KM implementation and identify lessons learned that can be applied. Puslitbangwas possessed adequate technology infrastructure, including LAN/WAN networks, internet, remote access, video conferencing, groupware, and DMS, supporting KM implementation. Initial stages lacked specific budget allocations for KM activities, but with a dedicated working team and internal programmers, Puslitbangwas overcame this hurdle to kickstart KM implementation.

The transition from stage 2 to stage 3

The Head of BPKP conducted a thorough review of the KMS application developed by Puslitbangwas, directing the system's escalation to the national level. BPKP's KM implementation begins with fostering organizational commitment, particularly among leaders, through a strategic policy outlined in the roadmap. This approach encompasses the three key aspects of KM—processes, people, and technology—leveraging the role of research and development. The organization continues its efforts to construct the system and enhance employee awareness.

BPKP has human resources with adequate competence, both knowledge from education and experience gained during duty, that can contribute to enriching the KMS repository. BPKP also has many CoPs and expert employees who can be sources of organizational knowledge. Because the majority of BPKP employees are functional auditor officials, the barriers between individuals are reduced, and interactions are more fluid in order to share knowledge and experience. The website-based KMS application can be accessed and utilized by employees in all BPKP work units. BPKP relies on the Internal Programmer Team for the KMS application deployment process.

The transition from stage 3 to stage 4

The transition from Stage 3 to Stage 4 is propelled by BPKP's evolution as a government internal auditor, adopting an advisory role and embracing an agile internal audit approach, necessitating a shift towards a data-driven supervisory process. Another crucial factor driving

this transition is the observed apathy among employees regarding the use of the KMS to support supervisory tasks. Evidently, the KMS website has only garnered contributions from 221 individuals, representing approximately 3.92% of BPKP employees, primarily from Puslitbangwas employees, the designated unit for knowledge management within BPKP. While ongoing developments in the KMS application persist, the primary challenge lies not in technological infrastructure but in the human dimension, specifically in fostering a culture of knowledge sharing. This entails encouraging employees to articulate and disseminate knowledge in their minds, thereby contributing to the shared knowledge repository through the KMS.

One of the obstacles that causes employees to be less aware of KM is their workload and busyness in carrying out supervisory duties. Another underlying problem is that the role of the person in charge of managing the work unit's supervisory knowledge, namely the Head of Representation, has not been understood. The head of the work unit is the business process owner in BPKP and knows the organization's knowledge needs. System development has been built through the policy of making KMS and LMS the pillars of the formation of GIA Corpu. BPKP established the Principal Secretary as the Chief Knowledge Officer (CKO) and created a regulatory by issuing Chief Decree Number 331 of 2019 as a guideline for implementing KM practices in improving supervisory innovation and clarifying the parties' roles. BPKP also inaugurated the KMS Ambassador, the work unit's knowledge management frontline.

Comparison of Stages of Proposition Development with Findings

The theoretical propositions formulated at the beginning of the research as theoretical capital before going to the field contain a summary of the theory or concept of the stages of development of KM implementation in the organization. The propositions were then compared with the empirical findings in the field, resulting in improvements or modifications to the initial theory/concept. The results of comparing propositions with field findings are illustrated in Figure 1.

Based on Tiwana's (2002) proposition, ten steps are suggested for implementing KM in organizations in the four stages of KM implementation. Field findings show that BPKP has implemented nine of the ten steps tailored to organizational characteristics, infrastructure availability, and needs. The results of the analysis presented in Figure 1 show that the initial three stages of the theoretical proposition are part of Stage 2 of the empirical implementation of KM at the local level in the Puslitbangwas work unit as a pilot project. Stage 3 in the proposition, namely the deployment process based on field findings, is carried out continuously in Stages 2, 3, and 4. Stage 4 of the proposition, namely performance evaluation, is not carried out because an appropriate formulation has not been found to measure the level of KM maturity or assess the success of KM implementation in relation to the performance of public sector organizations. The comparison of activities carried out by BPKP in implementing KM

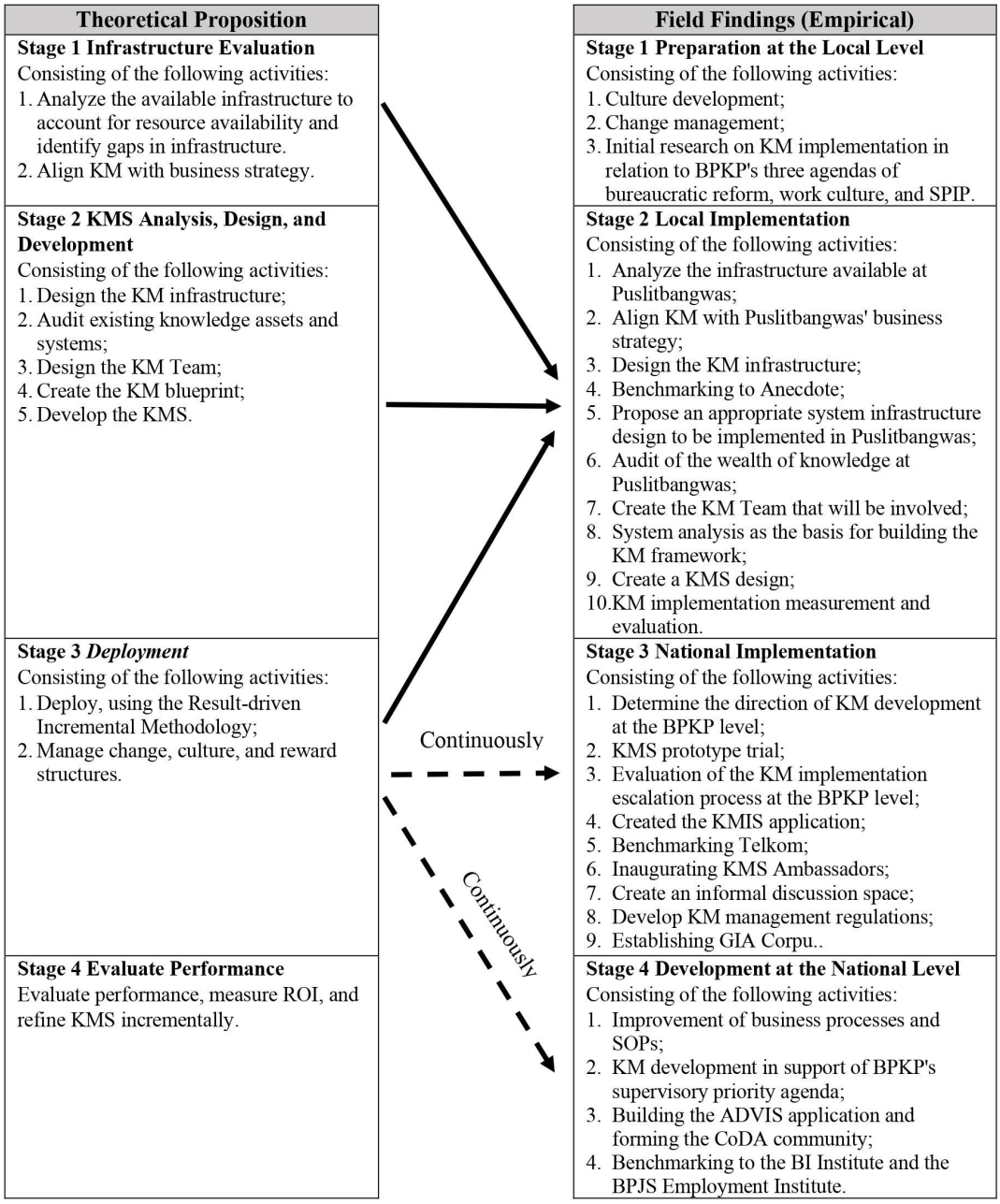

Figure 1. Comparison of Proposition Stages with Field Findings

with the proposition is presented in Table 3.

Table 3 shows there are KM implementation steps taken by BPKP that are not explained in the theoretical propositions, according to Tiwana (2002). This result can provide a conceptual contribution to modifying the theory of KM implementation, especially in public sector organizations. These steps include change management and the development of a work culture that supports KM processes, initial research on KM to guide the implementation phase, benchmarking, and developing KM implementation regulations. BPKP has CoP and expert employees as knowledge sources integrated into the supervisory business process. LC acts as a means for employees to interact and share case experiences and best practices in

Table 3. Comparison of KM Implementation Steps in Proposition with Field Findings

Steps in Proposition	Activity Field Findings
Analysis the existing infrastructure	An examination of the infrastructure available in Puslitbangwas
Align KM and business strategy	Align KM with Puslitbangwas business strategy of Puslitbangwas
Design the KM infrastructure	Design the KM infrastructure Propose an appropriate system infrastructure design for Puslitbangwas
Audit existing knowledge assets and systems	Audit of knowledge wealth in Puslitbangwas
Design the KM Team	Designing the KM Team involved
Create a KM blueprint	System analysis as the basis for building the KM framework
Develop the KMS	Create a KMS development design Design measurement and evaluation of KM implementation
Deploy, using the Result-driven Incremental Methodology	Determine the direction of KM development at the BPKP level KMS prototype trial Evaluation of the KM implementation escalation process at the BPKP level
Manage change, culture. and reward structures	Creating the KMIS application Inaugurating KMS Ambassadors Create an informal discussion space Establishing GIA Corpu Business process and SOP improvement KM development in support of BPKP's supervisory priority agenda Create the ADVIS application and the CoDA community
Evaluate Performance	--- not yet implemented ---

supervisory tasks. LC is a program to support the KM process by redesigning the library into a comfortable space for employees to share knowledge and document it in KMS. LC becomes a means for sharing knowledge to develop into an organizational culture. KM development supports APP in achieving BPKP's vision and mission through collaboration policies, data integration, and application development.

There has never been an assessment of the maturity level of KM in BPKP to determine the focus areas that need improvement. In addition, BPKP needs a policy to include employee activeness in KMS as a Key Performance Indicator (KPI) and increase the role of KMS Ambassadors as knowledge brokers in charge of collecting knowledge in the work unit. This research has limitations that allow further research to be carried out. First, the case study is only at BPKP, one of the public sector organizations in Indonesia that has duties and functions as an internal government auditor. Second, it only uses Tiwana's theory in describing and comparing the stages of KM implementation.

CONCLUSION

The KM implementation phase at BPKP is a long and holistic process consisting of four stages of development from 2008-2021. The results show that the initial three stages of the theoretical proposition are part of Stage 2 of the empirical implementation of KM at the local level as a pilot project. Stage 3 in the proposition, namely the deployment process based on field findings, is carried out continuously in Stages 2, 3, and 4. These stages occur in a structured manner because there are events that encourage movement between stages related to

the implementation of three interrelated concepts: technology utilization, cultural change, and the process of managing individual and organizational knowledge. KM development focuses on three aspects: process, people, and technology.

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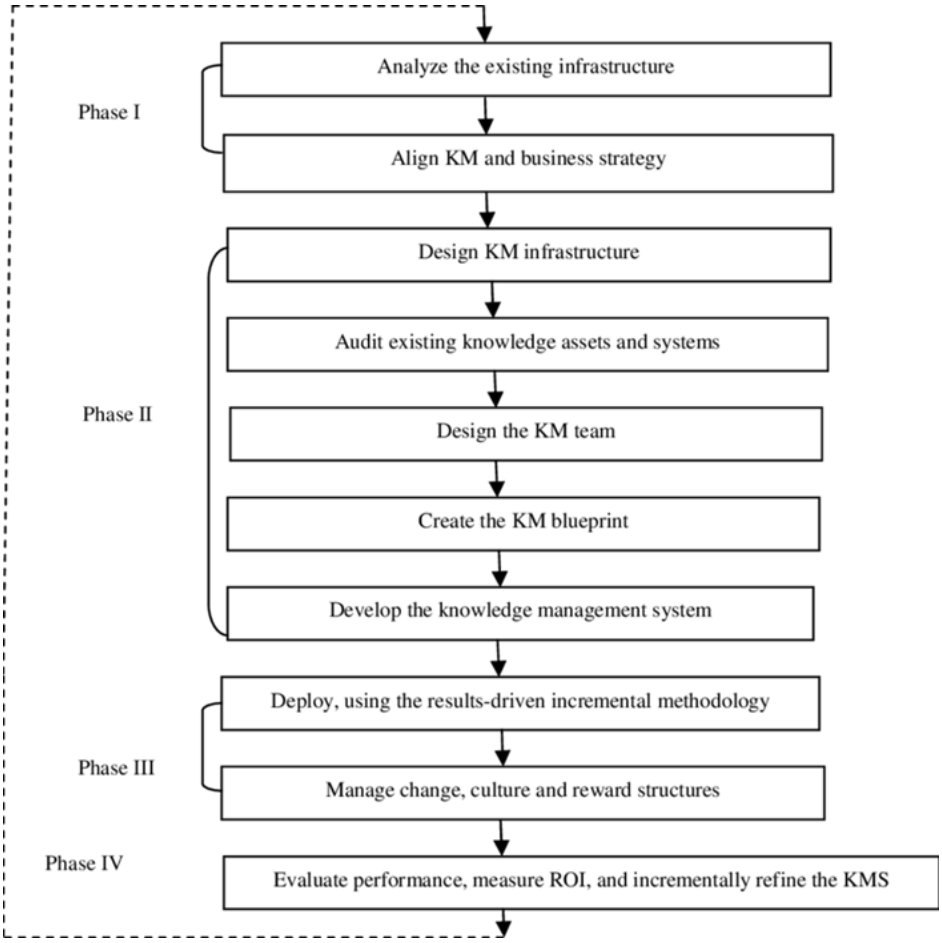
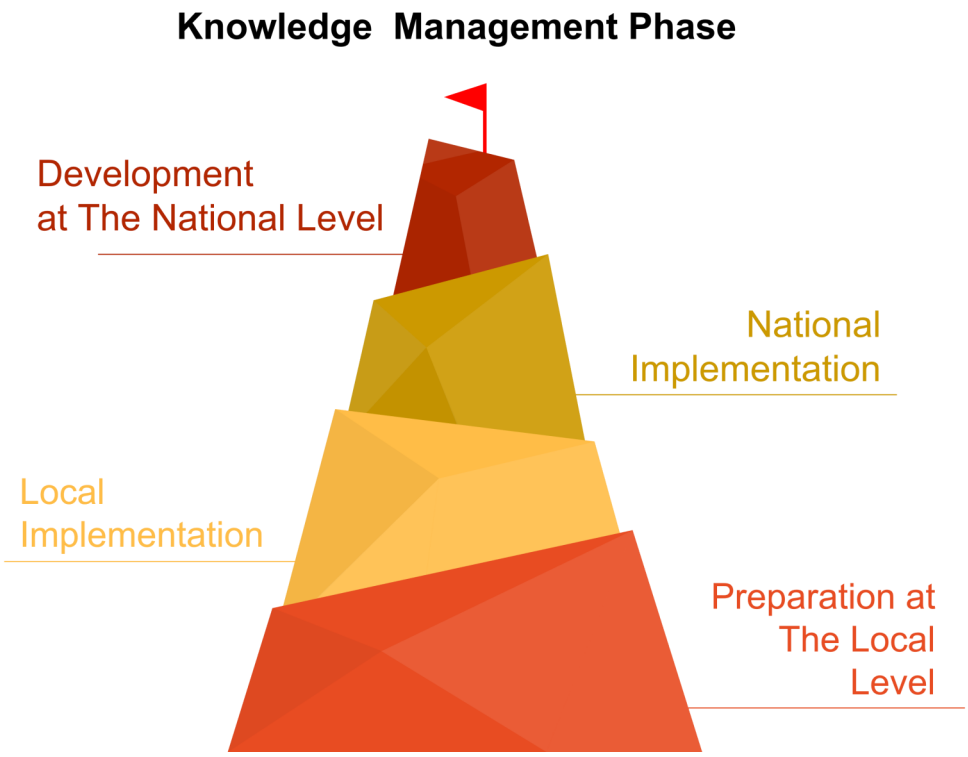
APPENDIX

Ten Step KM Roadmap



Source: Tiwana (2002)


Knowledge Management Phase
Development at The National Level
National Implementation
Local Implementation
Preparation at The Local Level