



A Proposed Acceleration Strategy for Knowledge Management Implementation at PT. Waskita Karya (Persero) Tbk.

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ABSTRACT: This research seeks to investigate the implementation of Knowledge Management (KM) in PT. Waskita Karya (Persero) Tbk. Through digitalization, organizations are attempting to operate effectively and efficiently to enhance their performance on a consistent basis. Moreover, this era of digitalization stimulates the rapid cycle of performance enhancement and innovation. For this acceleration to be successful, the management of knowledge must be optimized. This implies that information must be effectively stored, created, developed, managed, and utilized. One of the activities that can support business objectives and priorities in an organization with an effective knowledge management strategy is the correct application of knowledge.

KEYWORDS: knowledge, knowledge management, knowledge management strategy, KM strategy

1. INTRODUCTION

According to Oecd (2004), long-term growth and success of an individual and an organization are dependent on knowledge. Onyeagam et al. (2020) also stated that there are significant advantages of implementing knowledge management include improving the firm's competitive position, lowering risks, and fostering better collaboration, fostering innovation and profitability, accelerating problem-solving, improving project pricing, and increasing client satisfaction and loyalty. Through one of the 7 criteria specified in the Superior Performance Assessment Criteria (KPKU), PT. Waskita Karya (Persero) Tbk is one of the Indonesia state-owned construction companies that obliged to implement knowledge management. This is aimed to improve their competitiveness while simultaneously preparing for the free market future of the ASEAN Economic Community.

Waskita was established on January 1, 1961, and well known as the construction companies that have completed most of the infrastructure projects including toll roads and international airports in Indonesia. Through their vision and mission, knowledge management has become one of the supports on their mission, which is presenting the best quality products and services using the latest technology and integrated systems. Therefore, Waskita has a centralized department that oversees the knowledge management.

According to the 2022 organizational structure data, the Knowledge Management & Innovation (KMI) Department is under the Center of Excellence (CoE) Division, which is under the Director of Operational III. The KMI Department will have a QS, Engineering & Standardization Department in Business Unit Level and Site Engineering & Standardisation Manager under them. So, these units shall collaborate within their business processes. The KMI Department also regulates the coordination structure related to the collection of existing knowledge assets at each level through companies' procedural called Waskita Procedure (PW). Through this procedure, the KMI Department has a coordination line of SVP and HC & GA Manager at the Business Unit level and PM and Site Engineering & Standardization Manager at the Project level.

According to Becerra-Fernandez & Sabherwal (2010), some problems that often come up when knowledge management is put into place are that employees don't have time for it, the current organizational culture discourages sharing knowledge, people don't understand what knowledge management is and how it helps the company, and the financial benefits of knowledge management can't be measured. Hence, in order to formulize the business issue, a preliminary interview with the KMI Manager from KMI Department in CoE Division is conducted to understand the efforts were made and the obstacles were encountered in KM implementation in Waskita. The business issues are then categorized into three aspects, there are people, process, and technology.

The first business issue in process aspect is organizational structure and the coordination structure of knowledge management in the Procedure of Waskita are not the same. The difference between these structures may be seen on the following figure:

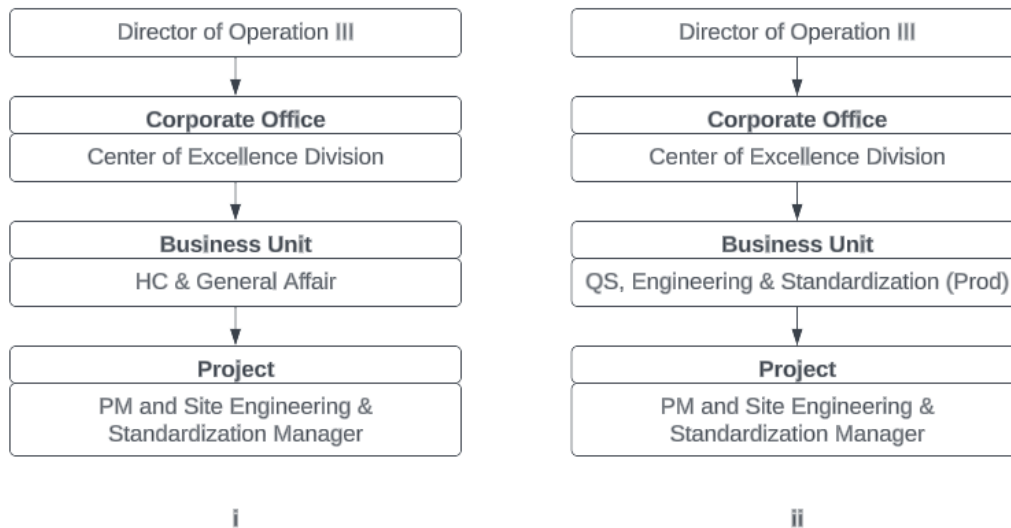


Figure I. 1 Coordination Structure of knowledge management’s PIC in Waskita Karya based on Organizational Structure (i) and Waskita Procedure (ii) (source: internal analysis)

According to the KMI Manager interview, this method was devised since the QS, Engineering & Standardization Department at the Business Unit level is more focused on tender implementation than on-going project implementation assistance. Then the HCM & GA Manager was chosen to coordinate knowledge management at the Business Unit level because this department has the authority to assign personnel to collect the knowledge assets, even though managing knowledge within their unit is not one of HCM & GA manager responsibilities.

The second business issue is in the aspect of the people. The persons directly involved in Waskita's knowledge management implementation are still only internally within the Company. Waskita has four work units: Board of Directors, Corporate Office, Business Unit, and Project. Each stakeholder has different interests and constraints when it comes to information management inside their various entities. In the Corporate Office (KMI Department) is focused on company’s regulations and tools that can be used in order to distribute knowledge. However, KMI Department does not have the knowledge that they needed as most of the knowledge assets come from the Project level. Then in the Business Unit they are focused on the bidding process, and they are also abundant regarding the existing tacit knowledge. In the Project level, they have the core knowledge of the construction company because they implement the most critical knowledge needed by the company. Yet, they are abundant about the new tacit knowledge because they do not know how documented the knowledge. Aside from the three work level units, there is also a possibility that the Board of Directors hasn't noticed the effects of KM itself. This is because the BOD is very concerned with the stability of the company, which can be gained from KM by putting it into practice.

The third business issue is in the aspect of technology. Technology is becoming one of the most used tools to distribute knowledge assets. Waskita conducts a user satisfaction survey regarding their Portal of Knowledge Management System (KMS) which is called WeShare as a premise for developing their portal. Every year’s assessment results will become their based to improve WeShare. The assessment summary that conducted in 2022 is as follows:

1. Reference of the work method and innovations are the most frequently accessed by the respondents.
2. Lesson learned, work method video and the updated of work method reference are the most requested to become new content in WeShare.
3. Around 22.08% of the total respondents are not aware of WeShare and uncomfortable with the website design.

From three business issues arised before, the research objectives will be as follows:

1. Analyse the effectiveness of knowledge management strategy that has been implemented.
2. Identify the opportunity of improvement in knowledge management implementation in Waskita.



3. Improving knowledge management implementation in the organisation so that knowledge management in Waskita will sustain.

From the research objectives, hence the questions of this research will be as follows:

1. How effective is the Knowledge Management & Innovation Department as a centre of knowledge in Waskita?
2. What are the necessary improvements required to ensure optimal functioning of KM implementation?
3. How can knowledge management be improved in Waskita to sustain?

The effectiveness of knowledge management implementation in the company will be evaluated through research on the company's regulations and the administration of inquiries to designated respondents. The study will center on the potential of knowledge management strategies to facilitate the effective implementation of knowledge management by key individuals, thereby expediting the advancement of knowledge management implementation within the business context. This study encompasses respondents from the Corporate Office, Business Unit, and Project levels who bear the responsibility of executing the knowledge management policies of the Company. The data collection for this study is scheduled to commence in the initial quarter of 2023.

2. LITERATURE REVIEW

According to Davenport & Prusak (1998), knowledge should be measured by the choices or decisions it leads, and managing knowledge in an organization has many benefits, including leveraging core business strengths, innovation acceleration, cycle time and decision-making improvement, boosting organizational commitment, and establishing long-term competitive advantage. And according to Ackoff (1989), it is important to understand the distinction between information and knowledge based on the knowledge pyramid as follows:



Figure II. 1 Knowledge Pyramid adapted from Ackoff (1989)

Ackoff (1989) stated that knowledge pyramid ascends as interconnected levels of a system that are constructed atop one another; the higher the phase, the greater the value of the initial data. Data consists of basic facts, whereas information is compiled and contextualized data. Knowledge is a deeper understanding of the facts and how to apply them, whereas wisdom is the ability to make sound decisions based on this understanding. To ensure that the Company can optimize the use of knowledge for its business processes, knowledge management must ensure that its employees can use and have the data, information, knowledge, and wisdom needed for their daily work. There is a KM life cycle models that is currently used by Waskita, that is The Nonaka and Takeuchi Models, which shown on the figure below:

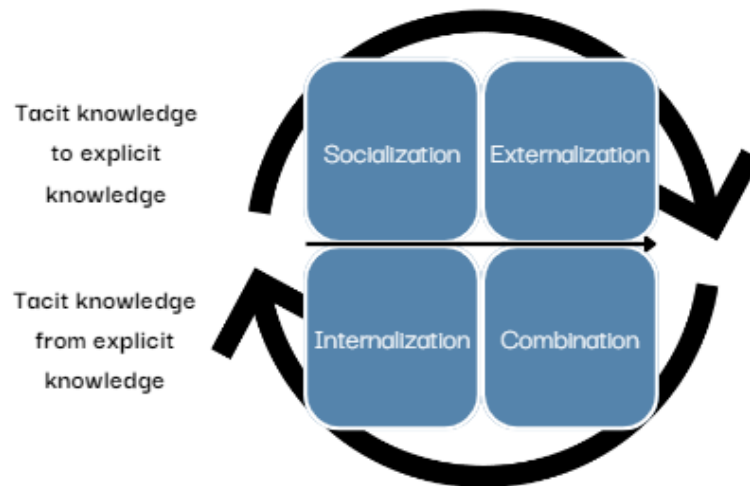


Figure II. 2 Knowledge conversion adapted from Nonaka and Takeuchi (1995)

According to the knowledge conversion of Nonaka-Takeuchi Model (1995), through processes such as socialization, externalization, and internalization, knowledge can be converted. Socialisation is a process consisting of social interactions that foster mutual understanding through the sharing of ideation sessions to generate new ideas, coachee-mentee interactions, etc. In contrast, externalisation is a process through which individuals can express their knowledge, expertise, and, in certain circumstances, their know-why and care-why. When information is externalized, it becomes palpable and durable. It can be more easily shared with others and utilized across the organization. Internalisation is the transformation or incorporation of shared and/or individual experiences and information into individual mental models. When new knowledge is internalized, other employees use it to broaden, expand, and reexamine their own tacit knowledge bases.

Stated by Anumba (2005), during most project phases, which include design and specification, the construction process, commissioning, and transfer, various disciplines and teams collaborate to achieve the project's objectives. Due to these disparate knowledge repositories, an important aspect of project KM in construction is the transmission of knowledge for the 'common benefit' of the project, as depicted in the figure below:

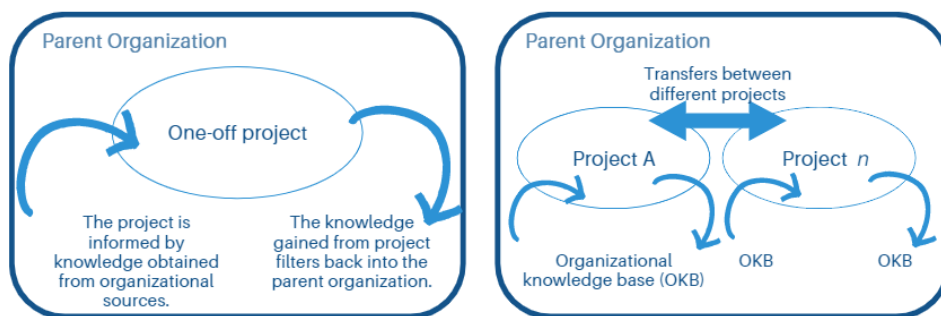


Figure II. 3 Projects and parent organisations in knowledge relationships (Source: Anumba et al. (2005))

The knowledge transfer that takes place during the the project is divided into three levels, the first level is the knowledge transfer between employees, the second level is the knowledge transfer between project phases and the third level is the knowledge transfer from the project to the organization at the end of the project. According to Project Management Institute (2017), there are ten knowledge areas that required during the construction processes, they are:

1. Project integration management
2. Project scope management
3. Project time management
4. Project cost management
5. Project quality management
6. Project resource management
7. Project communications management
8. Project risk management
9. Project procurement management
10. Project stakeholder management



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|--------------------------------|------------------------------------|
| 3. Project schedule management | 8. Project risk management |
| 4. Project cost management | 9. Project procurement management |
| 5. Project quality management | 10. Project stakeholder management |

According to Young & Organization (2018), through the Asian Productivity Organization, there is a framework that can be used in order to have a successful knowledge management implementation and it is shown on the following figure:



Figure II. 4 APO knowledge management framework (Young & Organization, 2018)

Stated by Young & Organization (2018), the organization will use its vision and purpose to identify its core competencies and development areas. The four accelerators will help the organization assess its drivers and enablers before implementing knowledge management. Implementation can employ five fundamental knowledge processes. stated that outputs must reflect enhanced learning and innovation that strengthens skills, leading to product and service quality, productivity, profitability, and growth. Each framework determined:

1. KM Leadership which will be examined in terms of the company's KM initiatives, guidance, and sustainability.
2. Process examined for controlling, implementing, and improving the company's major work procedures.
3. People which will be assessing the company's ability to foster a learning and knowledge-driven culture.
4. Technology which will be examined in terms of a company's ability to build and offer knowledge-based solutions like content management systems and collaborative tools.
5. Knowledge processes will be assessed based on the company's ability to locate, produce, store, disseminate, and apply knowledge methodically.
6. Learning and Innovation which will be assessed for the company's ability to promote, strengthen, and support innovation and learning through organized knowledge processes.
7. KM Outcomes which will be assessed based on the company's ability to create new and better products and services to add value for consumers and communities.



The following figure can be used to give an overview and make assumptions about important points that are directly linked to the results of this research:

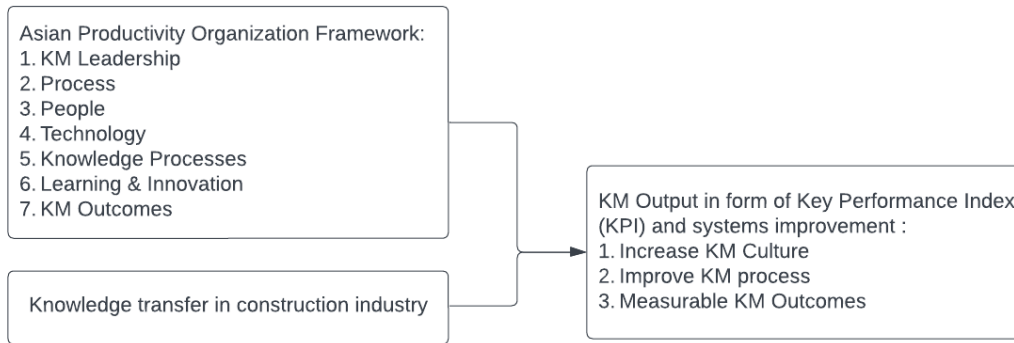


Figure II. 5 Research Conceptual Framework (Source: Internal analysis)

3. RESEARCH METHODOLOGY

The KM Assessment Tool helps companies find KM gaps. APO Framework questionnaires were used to assess company maturity. However, the questionnaire questions were modified to make some adjustment that suits the assessed company. Hence, the Author made several changes to the questions and broke down the scoring on answers to find if the knowledge management have been implemented optimally. A total of 43 employees were chosen as responders to this questionnaire who handle knowledge management in their unit according to the coordination structure in the applicable Waskita Procedure for Knowledge Management.

There will be six categories in the assessment, there are leadership, processes, people, technology, knowledge process, learning & innovation and outcomes. Each category will have six questions with rating answers between 1 to 5, so the total score with minimum of 6 and maximum of 30. However, to see the results better, the scores will be multiplied by 3.33 in order to see maximum score of 100 in each category and maximum score of 700 from all categories. The score will give the meaning on which level the Company knowledge maturity is positioned. The knowledge management maturity levels are shown on the following figure:

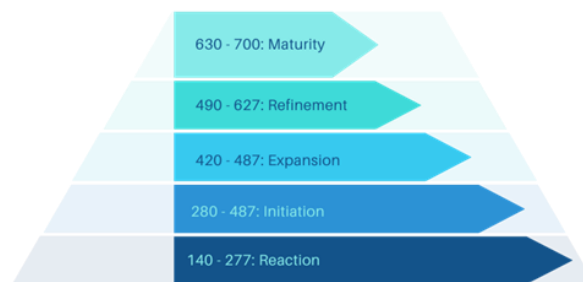


Figure III. 1 Knowledge Management Maturity Level based modified scores (Young & Organization, 2020)

The reaction level means KM and its role in productivity and competitiveness are unknown to the company. The initiation level means the company may be recognizing the need for KM or have started a pilot program. The expansion level means that the organizations have fully implemented KM. Refinement level means that the organizations regularly analyze and improve knowledge management. Then the highest level is the maturity level which means that the company integrates knowledge management.

4. FINDINGS: BUSINESS SOLUTION

APO Assessment Tools-adapted questionnaires were distributed and collected for analysis. Each response was scored, and the cumulative score for each category was multiplied by 3.33. The analysis result found that Waskita has the KM Maturity Level of Refinement, with a total score of 558.60 and category scores as follows:



Table IV.1 Averaged and summarized score of KM Maturity Assessment (Source: internal analysis)

No.	Category	PTS
1	Leadership	76.74
2	Processes	80.78
3	People	78.99
4	Technology	86.67
5	Knowledge Process	78.37
6	Learning & Innovation	80.62
7	KM Outcomes	76.43
Total KM Maturity Score		558.60

The current analysis shows that Waskita's KM Maturity Level is Refinement, meaning the company regularly implements knowledge management and evaluates and improves. For easier reading, the findings for each examined category have been inserted into the radar chart that appraises the total score. To determine category strengths and possibilities, the result must be viewed per category. The following matrix includes these strengths and opportunities from existing respondents. Each category's strengths must be identified to generate improvement initiatives.

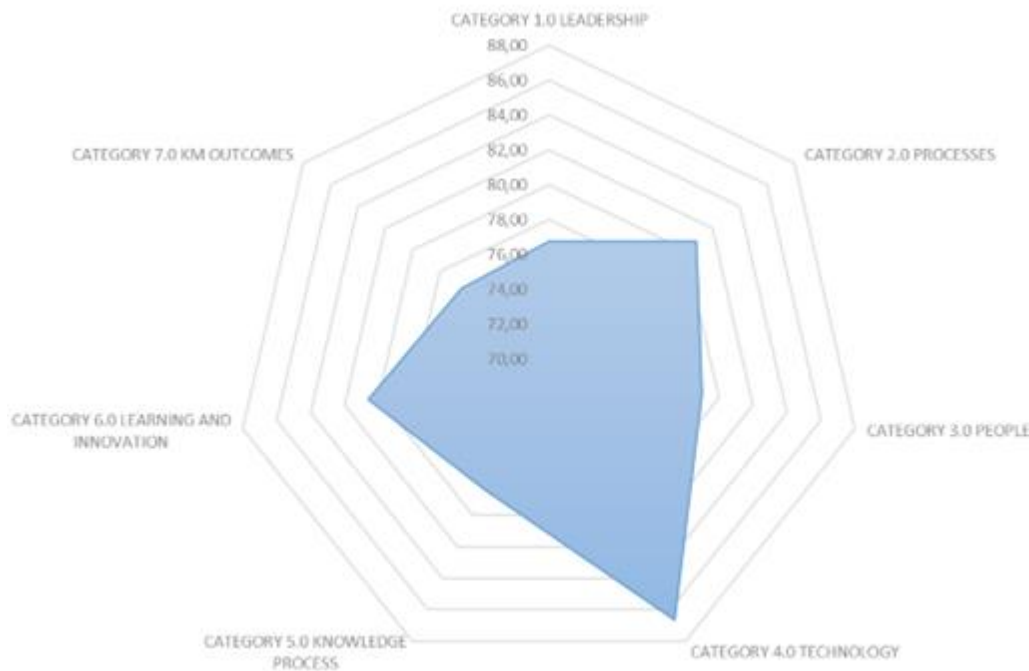


Figure IV.1 Radar chart of KM Maturity Assessment in PT. Waskita Karya (source: internal analysis)

The radar graphic above shows that Waskita's maturity assessment of KM implementation produces average ratings with significant strengths and weaknesses across areas. This evaluation can reveal areas for improvement in each category, which can help produce recommendations. An internal analysis is performed to identify potential areas for improvement in the three lowest categories and include the People category to ensure that the KM implementation process remains tied to existing employees so that it can become a corporate culture. The following is the analysis's results:



1. Leadership: Organizations must prioritize KM practices by naming leaders in each unit as KM Champions and managers and experts as KM Agents with the requisite skills and habits. These leaders will be role models, ensuring KM practices in their units survive.
2. People: Each organizational unit needs KM Champions and KM Agents to develop KM competences and a knowledge-based culture.
3. Knowledge process: The APO Framework defines knowledge processes as the company's ability to identify, generate, maintain, communicate, and use knowledge while evaluating it. Thus, each organizational unit must choose the best knowledge management systems to maximize knowledge process opportunities.
4. KM Outcomes: Organizational knowledge management objectives— “Transforming knowledge to support the highest quality of products and services which provide financial growth through human resources with AKHLAK’s core values”—determine KM implementation outcomes.

During questionnaire distribution, the author collected polling data on five KM activities that respondents believed may significantly impact their business processes in their units, and the activities in respective units are as follows:

1. Corporate office has the top five preferred KM activities such as learning and ideas capture, cloud computing, brainstorming, collaborative virtual workspaces, and digital library that integrated with learning management system portal.
2. Business unit level has the top six preferred KM activities due to the same rank score and the results are after-action review, brainstorming, learning reviews, learning and ideas capture, communities of practices and peer assist.
3. Project level has top six preferred KM activities as well such as video communication and webinars, collaborative virtual workspaces, learnings and ideas capture, cloud computing and digital library integrated with learning management system portal.

The KMI Department at Corporate Office, the company's centralized KM, must continue to socialize existing initiation activities annually and set standards for unit assessments to enable KM evaluations. Key Performance Indicators can be used to benchmark a company's actions. Critical actions that could affect project outcomes must include metrics and KPIs (Kerzner, 2013). KPIs are the ideal way for Waskita to accelerate adoption because they can be measured, analyzed, and developed in the future to ensure sustainability. The Author based the KM Objectives on these firm missions: “Transforming knowledge to support the highest quality of products and services which provide financial growth through human resources with AKHLAK’s core values.” This KM objective will guide KPI preparation. As the company's KM central hub, the KMI Department in the Corporate Office will manage knowledge processes to support all work units in producing high-quality products and services with improved business processes through improved employee talent and AKHLAK's core value. Financial, internal processes, customer, and organizational capabilities should be considered when preparing KPIs. The recommended KPI should consider these values.

The first aspect will be KM Leadership and People, the combining of KM Leadership and KM People assumes that leadership techniques will affect the organization's work culture. Milton & Lambe (2019) state that KM Leaders must demonstrate KM's value and integrate it into the organization's processes, culture, and workflow. Then, KM Leaders can demonstrate a stronger position to increase business process value. If they can prove speed and cost reduction, they must do so. Gather empirical proof of the financial consequences of not having a KM effort in the early stages. The Author suggests consolidating Waskita's Knowledge Management Procedures' coordination lines as follows:

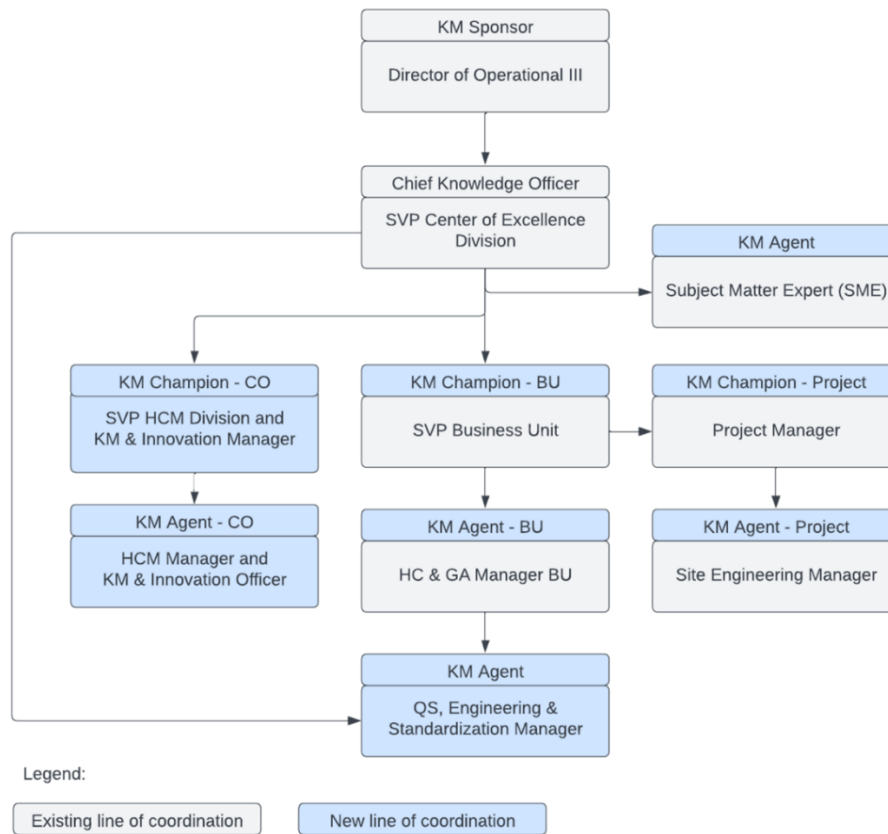


Figure IV. 2 Recommendation on the PIC of KM to be outlined in Waskita's KM Procedures

As each unit's KM Manager becomes the KM Champion, the coordination structure changes. Each unit's KM Officer became KM Agent. As leaders, KM Champions will ensure their units' business processes are connected with KM efforts. KM Agents help KM Champions integrate procedures, cultures, and workflows in their divisions. Due to its relevance to this initiative's success, the HCM Division was added to the Corporate Office line of coordination. As shown, most positions are senior management, which has Kotter (1996)'s four important qualities: power of position, expertise, credibility, and leadership.

The second aspect is KM Processes which will be the implementation of preferred KM initiatives from respective units. Anumba, et al. (2005) state that project knowledge must be valued enough to be documented and disseminated as organizational knowledge to start KM efforts. Therefore, the suggested KM efforts are:

1. Sharing information includes project-level video communication and webinars, business unit learning reviews, and a digital library coupled with a learning management system.
2. Project and Corporate Office digital libraries and Business Unit learning reviews will be considered for knowledge storage.
3. Applying knowledge will consider Project and Corporate Office collaborative virtual workplaces and Business Unit Communities of Practice.
4. Creating knowledge involves Project and Corporate Office learning and idea capture and Business Unit learning reviews.

These KM initiatives can be done for each work unit to convert knowledge. Since knowledge mapping and APO Framework assessment are familiar, the author recommends using them to determine the firm or division's strategic knowledge. This does not limit the Company if knowledge is identified through collaborative virtual workplaces and CoP.



The last aspect is KM Outcomes which shall be aligned with the KM Objectives. Centralized KM at Waskita stores knowledge in WeShare for all employees to access, share, and contribute. Using a Venn diagram, KPIs are chosen to meet the Balanced Scorecard's features for the four APO Assessment categories and shown on the following diagram:

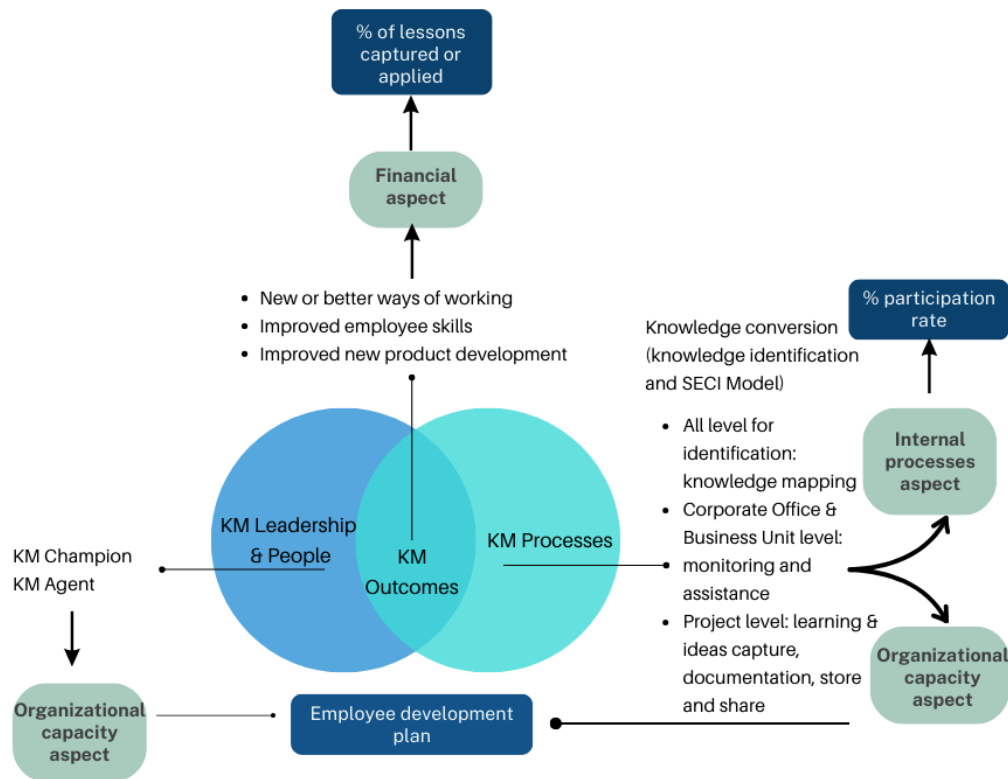


Figure IV. 3 Potential KPI in Venn Diagram (Source: internal analysis)

As the central center for KM in the firm, the KMI Department at Waskita cannot directly increase profitability or reduce operational expenses. KM is vital to maximizing knowledge use and improving internal business operations. Thus, KM Outcomes will increase new product creation, employee abilities, and working methods, which will indirectly help finances. The proposed financial KPI is Unit lesson capture/application %. This KPI should be applied at the project level and monitored by Business Units, which create profit.

Internal Processes, the BSC's second component, is similar to KM Processes. As mentioned, the KM Champion and KM Agent ensure knowledge conversion by recommending KM Initiatives in their Units. By regularly capturing and applying project-level lessons and sharing them with Business Units and Corporate Office via collaborative virtual workplaces, digital libraries, video communications, and webinars. For smooth process operation, the internal processes KPI should be each unit's Knowledge KM initiative participation rate.

Leadership skills and human resource development make up organizational capability, the third dimension. The Venn diagram shows knowledge mapping as a conventional knowledge management strategy. Knowledge mapping identifies strategic knowledge and recommends it to employees in specific roles to help them learn it. In the staff development plan, this practice is recommended. The KM Champion and KM agent must create a working culture that embraces the KM process to promote communication and collaboration throughout the organization, harmonizing with the Company's core values, AKHLAK.

Customer satisfaction is the Balanced Scorecard's last factor for KM implementation, which involves PT. Waskita Karya personnel. To optimise the KM Department's centralisation of KM, a customer satisfaction review is needed. This examination should happen annually. The evaluation questions must align with the present KM goals of transforming knowledge to support the highest quality products and services that offer financial growth through human resources with AKHLAK's fundamental values.



Company KM Maturity Index score can be this KPI's goal. With all the business solution mentioned above, the following is the implementation plan:

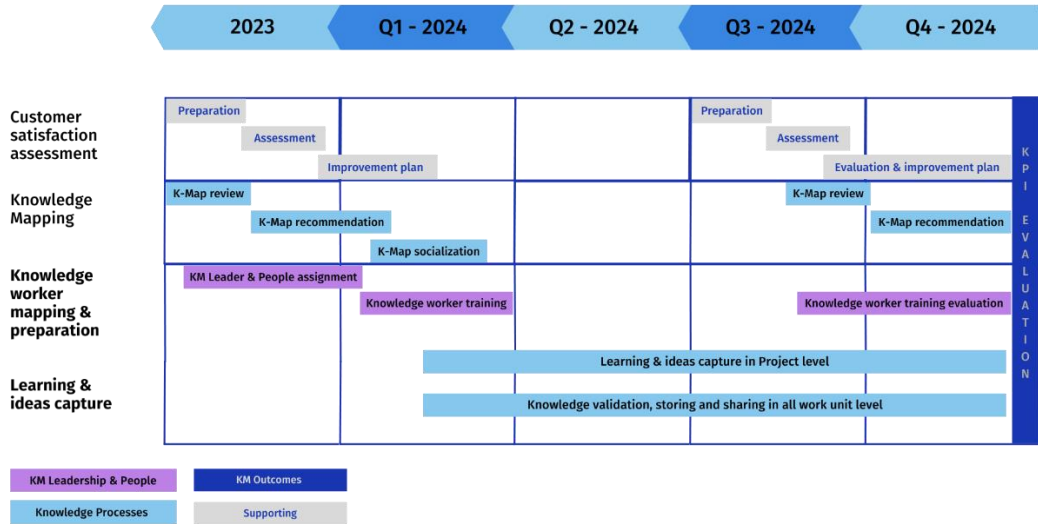


Figure IV.4 Implementation plan on KPI initiation

The timeline indicates plans to implement the work program until 2024. Next year's plans must be updated based on the 2023 KM Maturity Assessment. The Customer Satisfaction Assessment and KM Maturity Assessment can be done together. Both evaluations have different goals but can be done simultaneously. KMI Department can use the same method and list of questions as this research for KM Maturity Assessment questions and add Customer Satisfaction Assessment questions. This evaluation meets BSC Customer Satisfaction requirements.

Waskita needs a work program to build a knowledge map to gather strategic actions and knowledge for KM projects that meet the company's aims. All levels of Waskita's work divisions receive knowledge mapping findings, especially the KM Sponsor, Chief Knowledge Officer, KM Champion, and KM Agent. This can be reinforced by knowledge worker training. A knowledge map suggests an employee development plan that requires several levels of jobs to learn certain skills and knowledge. HCM receives this staff development plan to meet BSC Learning and Growth criteria.

Project-level learning and idea capture are done in a hybrid approach with the Corporate Office and Business Unit using Video Communications and Webinars to meet Internal Process and Financial aspects. CoP and learning reviews at the Business Unit level validate Project-level data. The Corporate Office may then help Waskita Karya's work units share recorded and certified knowledge. However, Corporate Office and Business Unit learning and idea capture should not be overlooked.

The effectiveness and progress of programs are evaluated till 2024. The following KPIs are assessed:

1. KM Maturity Index, a year-long growing value determined at the Corporate Office level.
2. Annual percentage of examined knowledge maps at Corporate Office, Business Unit, and Project levels.
3. Annual percentage of acquired or applied lessons at Corporate Office, Business Unit, and Project levels.
4. Percentage of knowledge workers involved in KM projects.

5. CONCLUSION AND RECOMMENDATIONS

According to interviews and analyses, the KMI Department at the Corporate Office is a highly efficient knowledge management hub for the Company. KMI Department corporate policies provide a solid framework for KM implementation at Waskita. WeShare is the KMI Department's digital distribution platform and Knowledge Management System (KMS). This platform works to distribute knowledge evenly across Waskita employees. The Company's Maturity KM assessment shows that Technology is most valuable. Overall, KM implementation at the Company is going well.



However, the study found certain areas that need improvement to guarantee the optimal and organic execution of present KM initiatives. Leadership, Process, and Outcomes are KM qualities. These three categories had the lowest values of the seven assessed. In these three categories, improvement is needed. To effectively use KM Leadership in the KM Process, the KM People category must be improved and integrated.

First, KM Leadership is very people-oriented. So these two components can be merged to target HR development to establish a sustainable personality and culture to support the KM Process in the company. The investigation showed that Waskita needs to understand the KM abilities and behavior of all leaders in each unit for all levels of work units to raise awareness and make KM a mindset and work practice in every business process. The study found that each unit should follow the company's rules to successfully manage knowledge and increase its value proposition. The KM Process—identifying, generating, distributing, and using information throughout each organizational unit—is under investigation. The knowledge of departing employees is of great interest. The SECI knowledge conversion model by Nonaka and Takeuchi is used in this investigation.

The fourth area, KM Outcomes, is vital for an organization starting KM. According to the report, Waskita should regularly assess its KM initiatives. This will help the company see the importance of KM adoption and develop plans for its long-term integration.

Key Performance Indicators (KPIs) ensure that planned and pursued actions achieve Knowledge Management (KM) goals in the PT context. Waskita Karya (Persero) Tbk. leverages knowledge to produce results. These KPIs should help the company build and sustain Knowledge Management (KM).

There are several KPIs recommended for the KMI Department to monitor and implement existing strategies, namely:

1. To track the percentage of knowledge applied or developed and executed across all work unit divisions and levels.
2. To track employee engagement in KM process activities in each division and work unit.
3. To use knowledge mapping review to learn about the company and staff development plan.
4. Conduct a customer satisfaction survey to assess the KM Department's position as the company's KM core hub.

The corporate office level has established multiple KPIs through the KMI Department. These KPIs can be cascaded to the Business Unit and Project levels through various activities as follows:

1. To record the percentage of knowledge applied or developed and executed across all work unit divisions and levels.
2. To record the percentage of employees in each division's KM process activities at all work units.

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