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MATURITY ASSESSMENT OF KNOWLEDGE MANAGEMENT AT DIRECTORATE GENERAL OF ELECTRICITY, MINISTRY OF ENERGY AND MINERAL RESOURCES

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Abstract. The need for electricity globally will increase very rapidly, so is in Indonesia. The Directorate General of Electricity (DGE) has the task of organizing the formulation and implementation of policies in the electricity sector. Yet the DGE faces challenges related to its human resources, of which almost half of the current active employees are having tenure under 10 years. Whereas employees who play a key role and have critical knowledge will end the term of service in the next 5 years. This study aims to find the knowledge management (KM) practices in DGE and measure the KM maturity level to develop KM planning at the DGE. This study utilizes APO's framework and SECI Model from Nonaka. KM implementation strategies from APQC helps to develop KM planning in DGE. This study found that KM maturity level in DGE is in refinement level. To reduce the KM maturity gap, several factors need to be improved: (1). leadership's support; (2). employees' involvement; (3). organizational culture; (4). Integration of KM processes in organizational business processes; and (5). Application of technology. This study proposes: (1). formalization of KM implementation; (2). Integrated KM programs and tools; (3). Establishment of the KM team within the DGE.

Keywords: Electricity; Government Institution, Human Resources, Knowledge, Knowledge Management.

INTRODUCTION

The introduction section should (1) present the scope and objective of the paper and state the problem, (2) briefly review the pertinent literature, (3) describe the methods, and (5) provide an overview of the main results of the work. The global electricity demand in 2040 is projected to reach more than 20 trillion KWh from around 13 trillion KWh in 2015 for non-OECD countries, whereas in OECD countries, the increase tends to be sloping from 10 trillion KWh in 2015 to only 13 trillion KWh in 2040. This dramatic increase in non-OECD countries is caused by the huge population of the non-OECD countries, along with rising of personal incomes and urban migration (IEO, 2017).

To meet these needs, countries in the world invest in building electric power plants to meet their electricity needs. Along with the development of power plants, the countries are also obliged to fulfil the Paris Agreement that was agreed in 2015, where world leaders have committed to maintain an increase in the earth's temperature not more than 2 degrees Celcius above pre-industrial level and make various effort to limit the increase to no more than 1,5 degrees Celcius. These efforts has produced result in the construction of renewable energy-based power plants. Yet the development and utilization of renewable energy for electricity is still low. China only generates 26% of the total electricity production from renewable resources, compared to the United States, India, Japan, and Russia which generate 17.7%, 16.3%, 17.8%, and 17.5% respectively, of their total electricity production from renewable resources (Global Energy Statistical Yearbook, 2018).

In Indonesia, Electricity sector is one of the major drivers for the economic growth to achieve national development target. Electricity is also a precondition to increase economic growth. Electricity consumption per capita is also one indicator of the nation's welfare.

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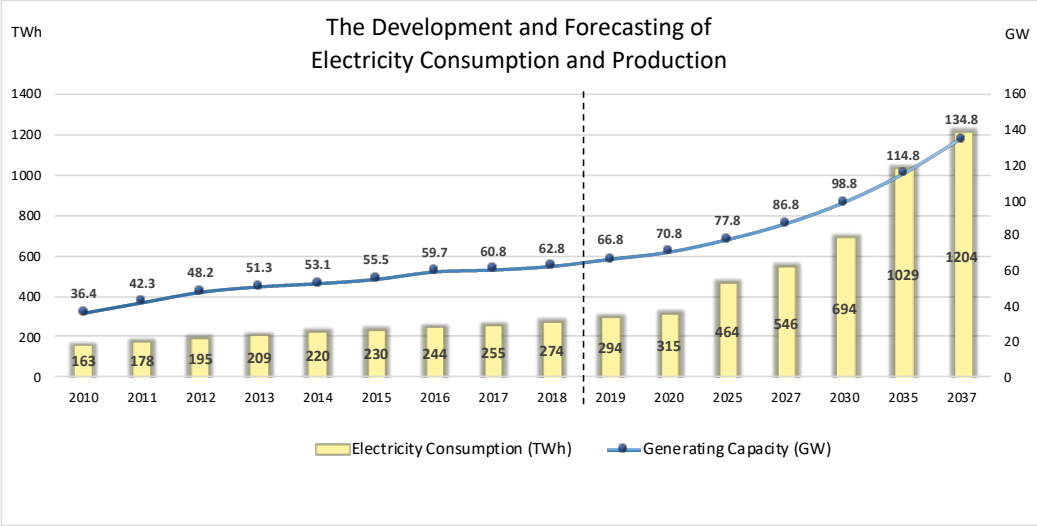

Figure 1. The Development and Forecasting of Electricity Consumption and Production in Indonesia (Source: General Plan of National Electricity 2018-2037)

Figure 1 shows the development of electricity consumption from 2010 until 2017 and the total generating capacity installed until that period. This forecast also tells us the projection of electricity consumption and electricity capacity target that must be built to meet the demand. Moreover, according to National Energy Policy, the government targets a portion of new and renewable energy in the national energy mix of at least 23% in 2025. The implication in national electricity sector that it is expected that the new and renewable resources in electricity generation in 2025 at the minimum of 23%, while the coal portion is a maximum of 50%, oil is at most 1%, and gas around 26%. Then in 2037 it is expected that the portion of new and renewable energy will increase to around 27%, coal at most 48%, oil at most 0.5%, and the remaining gas around 24.5% (GPNE, 2018-2037).

In the 2015-2019 National Medium-Term Government Plan (RPJMN), the priority of the electricity sector is to increase electricity access and infrastructure, reduce energy subsidies, and increase the mix of new and renewable energy. These priority programs are operationalized as strategic objectives of the Directorate General of Electricity, Ministry of Energy and Mineral Resources.

Directorate General of Electricity (DGE) is an Echelon 1 unit under the Ministry of Energy and Mineral Resources which has the duties and function of managing the electricity sector in Indonesia. It was established in 1978 and was originally called the Directorate General of Power in accordance with the Minister of Mines and Energy Decree No 734 Year 1978. The vision of DGE is *"to manifest a reliable, safe, environmentally friendly, high quality, efficient and rational electricity sector to strengthen sustainable national development so as to provide maximum benefit for the people's prosperity"*. To pursue this vision, the Government takes the following missions: (1). organizing the construction of facilities for supplying and distributing electricity to meet regional and national electricity needs; (2). implement arrangements for supply business and electricity support businesses; (3). carry out electricity and environmental protection safety arrangements; (4). make optimal use of primary and renewable energy sources by paying attention to their economics; (5). realizing equitable welfare of the community. In carrying out its duties, employees of DGE shares the values of (1). honesty; (2). professional; (3). to serve; (4). innovative, and (5). meaningful.

In order to support the achievement of organizational goals, the Directorate General of Electricity utilizes organizational resources, in which one of them is human resources.

Table 1. Employee Distribution by Education and Age (Source: DGE, 2018)

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No	Educational Background	Age (Year old)				Total
		24-35	36-45	46-55	>55	
1	Junior High School			3		**3**
2	Senior High School	1	13	26	13	**53**
3	Diploma III	1	8	4	2	**15**
4	Bachelor Degree	109	22	30	6	**167**
5	Magister Degree	22	42	13	2	**79**
6	Doctoral Degree		1	1	2	**4**
Total		**133**	**86**	**77**	**25**	**321**

As can be seen on Table 1., almost half of the total employees are in the age of 24-35 years old, with average tenure of 10 years or below. On the other hand, 25 employees will be retired in the next three to five years. Many of the currently hold important positions and have experience and expertise that are not owned by many other employees. When an employee retires, resigns, and has a transfer/moving work unit, then he brings with him the knowledge he has. Moreover, rotating officials and employees are now carried out regularly based on performance evaluation after 6 months in the position. Rotation will also be carried out for those who held the same position for 3-5 years, both moving internally within organizational units and between Echelon I unit in Ministry of Energy and Mineral Resources. This policy requires human resources to be more agile and flexible in the face of changing working conditions and demands for rapid adaptation. Still, managing knowledge is become crucial under this condition. Until now there has been no formal mechanism for the transfer of knowledge from former holders to new office holders, so that every time there is a change of staff/officials, there will be a slowdown in performance because new office holders need to master their new tasks, starting from administrative matters to analytical matters that require information and experience.

Furthermore, the implementation of Knowledge Management in government organizations in Indonesia is regulated in Minister of PAN and RB Regulation Number 14 of 2011 concerning Guidelines for Implementing Knowledge Management. The implementation of Knowledge Management in government institutions is aimed at facilitating the process of creating, collecting, storing and sharing knowledge, diluting knowledge gaps between employees, and increasing organizational capabilities in managing existing intellectual assets, knowledge and experiences. However, the implementation of Knowledge Management has not yet touched all governmental units. For example, there is no legal basis and formal guidelines on how to implement knowledge management in Ministry of Energy and Mineral Resources (MEMR), although the practices and activities related to knowledge management have begun to be echoed and applied independently by units in MEMR.

LITERATURE REVIEW

Davenport & Prusak define knowledge as *"a fluid mix of experience, values, contextual information, and expert insight that provide a framework for evaluating and incorporating new experience and information"* (1998:5). Based on its definition, we understand that knowledge is originally sourced in the minds of person; it is fluid as well as structured; it is intuitive and therefore hard to capture in words or understand completely in logical terms. In organizations, knowledge often embedded not only in documents or repositories, but also in organizational routines, processes, cultures, practices, norms, and relationships that have been formed in a long time and experienced improvements from time to time with new knowledge that complements existing one. Knowledge enable us to make judgement, decision, generating new idea, and innovation.

Talisayon defines *knowledge management* as *sourcing and deploying knowledge in a manner that creates most value for an organization, individual, or society* (2005:12). The knowledge management process has at least five basic processes for managing organizational knowledge, as follow: (1). Knowledge identification; (2). Knowledge storing; (3). Knowledge sharing/transfer; (4). Knowledge usage; (5). Knowledge creation/development. Effective business processes and good organizational capacity allow organizations to have innovative capabilities that can increase organizational value (Tjakraatmadja, 2017:32-33). The Nonaka and Takeuchi knowledge management model focuses on the knowledge transformations between tacit and explicit knowledge. These interactions model, also called "knowledge conversion", is known as the SECI spiral as shown on figure below.

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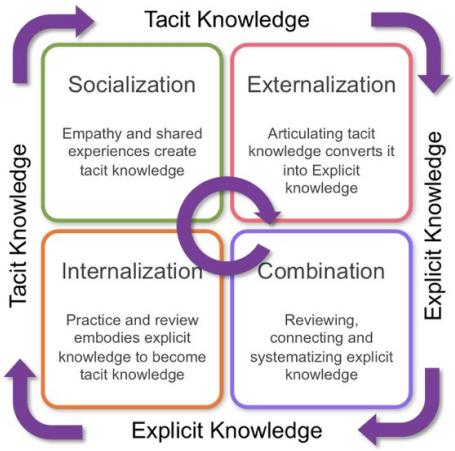

Figure 2. Knowledge Conversion and SECI Spiral Model (Source: Nonaka & Takeuchi, 2015:62)

Socialization is a conversion process from tacit knowledge to tacit knowledge. It is sharing experiences, thoughts, feelings, and emotions in typical social interactions. These interactions create tacit knowledge such as shared mental models and technical skills. It involves mutual understanding through sharing, brainstorming, discussion, apprenticeship and mentorship interaction, and so on.

Externalization is a process of articulating tacit knowledge into explicit concepts, taking the shapes of metaphors, analogies, concepts, hypotheses, or models. In this process, individuals are able to articulate the knowledge in written form, taped, documented, or made tangible. Once externalized and tangible, knowledge can be shared to others and disseminated throughout organization.

Combination is a conversion process from explicit knowledge to explicit knowledge. This knowledge conversion involves combining different bodies of explicit knowledge to create new form of knowledge. Individuals exchange and combine knowledge through documents, meetings, telephone conversations, or computerized communication networks. Reconfiguration of existing information through sorting, adding, combining, and categorizing of explicit knowledge can lead to new knowledge.

Internalization is a process of embodying explicit knowledge into tacit knowledge. It is closely related to “learning by doing”. Internalization is when experiences through socialization, externalization, and combination are internalized into individuals’ tacit knowledge bases in the form of shared mental models or technical know-how.

Tjakraatmadja (2015) propose four main components of framework as enabler to sustain KM practice in an organization. The first component is people, which is the main role of the KM topic. KM is about setting up the system to manage the knowledge possess by individual to be utilize by other people who needs it to improve organizational performance. The second component is process, that is the core activity of knowledge management, including identification of knowledge needed by the organization, knowledge creation, storing, sharing, distribution, and applying knowledge in the organization. The people and the process need to be supported by technology, which is the third component, which is allows knowledge to be stored, categorized, found, and accessed for re-utilization. Governance system is the fourth component that shade the other three components and has a role as a system to support the operation of the other three components. Without a governance system that promotes and recognizes sharing and the re-use of knowledge, any attempts to introduce KM are going to be a hard struggle.

Researcher summarize several literature of KM success factors, that is critical success factors in knowledge management implementation from Chong and Choi (2005), Akhavan, Jafari, and Fathian (2006), and Cahyaningsih et. al (2015) as follow: (1). Leadership support and commitment; (2). Organizational cultures and values; (3). Employee training and development; (4). Empowerment and reward; (5) Performance measurement; (6). Information technology infrastructure; (7). Organizational structure; (8). Knowledge strategy and architecture.

Asian Productivity Organization (APO) is one of the mentioned organizations that consider all of the KM success factor. They made a KM framework based on 4 major elements (Organization Vision and Mission, Accelerators, Knowledge Process, and KM Outcomes) which are generic enough to be applied in all organization. As part of the framework, there is KM maturity tools to assess the maturity level of KM in organization, which is used in this research.

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There are seven audits categories in the APO KM Assessment Tool based on the 4 major elements of the framework (Young R, 2010:28), as follow: (1). KM Leadership, to evaluates the organization's leadership capability to respond to the challenges of a knowledge-based economy; (2). Process, to assess how knowledge is used in managing, implementing, and improving the organization's key work process and also the extent to which the organization continually evaluates and improves its work processes to achieve better performance; (3). People, to assess the organization's ability to create and sustain the learning culture, knowledge sharing, collaboration, and knowledge worker; (4). Technology, to reviews the organization's ability to develop and deliver knowledge-based solution, collaborative tools, and content management systems; (5). Knowledge process, to assess the organization's ability to identify, create, store, share, and apply knowledge systematically; (6). Learning and innovation, to determine organization's ability to encourage, support, and strengthen learning and innovation process, as well as the incentives that follow; (7). KM Outcome, to measure the organization's ability to enhance value to customers through new and improved products and services, increase of productivity, quality, profitability, and sustain growth through the effective use of resources and as a result of learning and innovation.
The instrument used to assess the maturity level of KM is a questionnaire consists of 42 questions covering the seven audit categories with a maximum score of 210 points and minimum 30 points. Each of the questions can be rated from 1 (doing poorly or none at all) to 5 (doing very well) as describe in Table below.

Table 2. Rating Level and Description

Level Description	Scale Rating
Doing very poorly, or none at all	1
Doing poorly	2
Doing adequately	3
Doing well	4
Doing very well	5

The result of APO KM maturity assessment provide an understanding of the level of KM readiness in an organization (Young, 2010:31). The figure below shows the knowledge management maturity level in 5 stage.

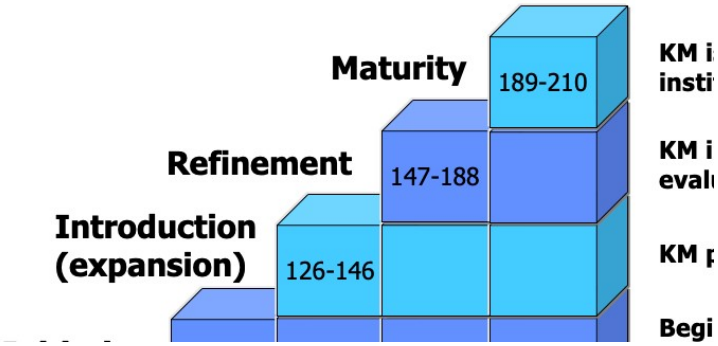

Figure 3. KM Maturity Level (APO, 2009:145)

The average score for each category is then tabulated. The scores show categories that are healthy and those that require improvements. Based on the assessment results, the areas of strengths and opportunities for improvement are identified. The opportunities for improvement highlight the areas where the KM initiatives should focus.

METHODOLOGY

The main purposes of this research is to develop knowledge management strategy implementation based on the current knowledge management condition of DGE. This research aimed to answer 3 research questions that would be used as a basis to develop KM implementation in DGE: (1). Is there any KM initiatives in DGE?; (2). What is the current KM maturity level in DGE?; (3). What are the recommendations for KM planning and strategy should be implemented in DGE?

Interview and observation are conducted to answer the first research problem. This research is using APO's Framework of KM maturity level to answer the second research questions. KM Maturity Assessment is done by questionnaire data collection that consist of 42 items covering seven key elements of knowledge management maturity assessment. Purposive sampling is chosen as researcher choosing the sample target on employees who are considered to understand the subject of the research and is expected to provide a representative answer to the research questionnaire.

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By determining the maturity level of KM in DGE, the researcher will discover what key elements are necessary to be improved to close the maturity gap and increase maturity level. These findings along with organizational strategic objectives will be used as a basis to develop KM implementation in DGE.

To find out the KM maturity level in DGE, online survey is conducted. It will discover the employee's maturity level for each variable (Leadership, People, Process, Technology, KM Process, Learning and Innovation, and KM Outcomes). This research is using radar chart to measure each variable and find out the maturity gaps of each variable. Fishbone diagram will be used to find out the root cause of KM maturity gap in DGE. Recommendation to improve maturity level will be based on the maturity gaps combined with KM critical success factor.

FINDINGS AND ANALYSIS

a. Qualitative Data Analysis

Interview and observation are done to obtain responses and opinions about knowledge management implementation and to find out KM practices that has been done in accordance to answer the first research question. The key points of findings are:

Respondents understand the organizational strategic objectives, yet the top management and core unit have a better understanding than supporting unit. All respondent can align their task, duty, and function to achieve organizational objectives. The main internal challenges are people, budget, and business process. On the people factors, the problems are there is a significant knowledge gap between officials and senior employees with junior employees, employees competencies in carrying out tasks are also still considered not showing satisfactory results and need improvement, the work attitude of employees must be passionate and seeking continuous improvement, with good mentality, integrity, and loyalty. In 2019, DGE is facing a huge budget cutting that affect employee development program, IT development, and library activities. Respondent also view that there are some business process issues caused by conflicting duties and function done in one working unit. From the external factors, the main challenges are public demand of electricity, electricity business demand of competitive business and attractive investment scheme, and electricity technology to be more efficient, safe, and sustainable.

All respondents have understood the importance of knowledge to support the implementation of their tasks and duties. In interviews and observations made, it was found that all respondents had carried out knowledge management activities in their respective units. Even so, they realize that this knowledge management activity has not been properly managed, has not been routinely implemented, and has not been formalized into organizational strategy. Most respondent indicates that organizational culture is already supportive. Top management sees young employees are more open, collaborative, and tech savvy than their predecessor.

In the current situation, there is rapid officials and employees' rotation. Knowledge management will play a significant role, in which it will minimize knowledge loss and slow down performance due to adaptation periods. By systematic knowledge management implementation, it will pertain the quality of public services and achievement of the organization's strategic goals.

All interviewees agree to about the importance knowledge management to bring positive outcome in achieving organizational strategic objectives . This research found KM practices in DGE both electronic and non-electronics as follows: (1). library service; (2). knowledge sharing activities; (3). regular management meetings and discussions; (4). "Buku Pintar" as guidance book for all of task, duty, and strategic issue within DGE; and technology utilization as (5). DGE website; and (6). whatsapp groups for information exchange and knowledge storing.

Knowledge sharing activity is done within the working unit or between employees with the same functional position, for example knowledge sharing session between electricity inspector officers which have legalized through the Decree of Director of Technical and Environmental Electricity. However, these KM practices are not integrated one to another. They also don't have any clear KM process in storing and preserving the knowledge created, dissemination and reutilization. There is no policy in organizational level which regulated the procedures and implementation of these KM practices for all DGE employees. There is also no measurement and evaluation on how effective these practice in achieving organizational goals.

b. Quantitative Data Analysis

The survey conducted at DGE on 4-15 April, 2019 through online tool and returned with 114 valid responses.

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To ensure the instrument used in the project is valid and reliable, a validity and reliability test is conducted. Validity of the instrument is analysed by comparing the value of corrected item to total correlation for each variable with r-table, using Pearson Product Moment. Analysis shows the value of corrected item to total correlation for each variable are between 0.655 – 0.905, compared with the r-table at significant level of 5% and 2-tailed with df=112 (114-2) which is 0.184 are all above the r-table or in the other word, valid.

Reliability of the instrument measured with the Cronbach's Alpha coefficient, with the result in 0.976, which is more than 0.7 (Nunnaly, 1978), or in the other word, the instrument is reliable. The overall result is shown in the table below, which it shows the most frequently appeared is the refinement level.

Table 3. Summary of Research Total Score Appearance

No	Maturity Level	Range Score	n	%
1	Maturity	189-210	11	9.65%
2	Refinement	147-188	45	39.47%
3	Expansion	126-146	25	21.93%
4	Initiation	84-125	32	28.07%
5	Reaction	42-83	1	0.88%

Based on gender perspective, majority respondents of both genders perceived that KM maturity level at DGE is in refinement level.

Table 4. Maturity Level Score Based on Gender

Maturity Level	Range Score	Male	Female
		%	%
Maturity	189-210	8.33%	13%
Refinement	147-188	41.67%	33%
Expansion	126-146	22.62%	20%
Initiation	84-125	27.38%	30%
Reaction	42-83	0.00%	3%

In line with the summary of total score based on gender, table 5 shows the maturity level in job position group is in refinement level.

Table 5. Maturity Level Score Based on Job Position

Maturity Level	Range Score	Echelon III	Echelon IV	Functional Officer	Staff
		%	%	%	%
Maturity	189-210	0.00%	15%	12.07%	3.70%
Refinement	147-188	66.67%	35%	36.21%	40.74%
Expansion	126-146	33.33%	25%	20.69%	18.52%
Initiation	84-125	0.00%	25%	29.31%	37.04%
Reaction	42-83	0.00%	0%	1.72%	0.00%

Meanwhile, for age and working period classification, there is variation in maturity level, whereas those in the age of 36-45 with 16-20 years of working period is in initiation level, and the rest group is in refinement level as shown in the tables below.

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Table 6. Maturity Level Score Based on Age

Maturity Level	Range Score	24-35	36-45	46-58
		%	%	%
Maturity	189-210	7.94%	6%	22.22%
Refinement	147-188	38.10%	33%	55.56%
Expansion	126-146	23.81%	18%	22.22%
Initiation	84-125	28.57%	42%	0.00%
Reaction	42-83	1.59%	0%	0.00%

Table 7. Maturity Level Score Based on Working Period

Maturity Level	Range Score	<5	5-10	11-15	16-20	>20
		%	%	%	%	%
Maturity	189-210	11.11%	5%	14.29%	0.00%	16.67%
Refinement	147-188	41.67%	34%	33.33%	28.57%	66.67%
Expansion	126-146	13.89%	26%	28.57%	28.57%	16.67%
Initiation	84-125	33.33%	32%	23.81%	42.86%	0.00%
Reaction	42-83	0.00%	3%	0.00%	0.00%	0.00%

When divided by working unit (Echelon II) it is found that there are variation in maturity score in two Directorates. Directorate of Electricity Business Supervision (DEBS) is in initiation level and Directorate of Environmental and Technical Electricity (DETE) which has balance score between refinement level and initiation level, as shown in table below.

Table 8. Maturity Level Score Based on Working Unit (Echelon II)

No	Maturity Level	Range Score	SDGE	DEPS	DEBS	DETE
			%	%	%	%
1	Maturity	189-210	16.22%	10%	4.55%	5.71%
2	Refinement	147-188	37.84%	60%	31.82%	34.29%
3	Expansion	126-146	18.92%	20%	22.73%	25.71%
4	Initiation	84-125	24.32%	10%	40.91%	34.29%
5	Reaction	42-83	2.70%	0%	0.00%	0.00%

Based on APO KM Framework, KM maturity gap is obtained from a comparison between the ideal and current KM maturity level per each KM key elements presented in radar chart. In order to get the data, average score of each question category is calculated and shown in the table below.

Table 9. The Average Score of KM Maturity Level of Each Key Element

No	KM Key Element (Category)	Maximum Score	Average Score (*n*=114)
1	Leadership	30	19.59
2	Process	30	22.96
3	People	30	21.39
4	Technology	30	21.84
5	Knowledge Process	30	20.16
6	Learning and Innovation	30	20.32
7	KM Outcome	30	19.64

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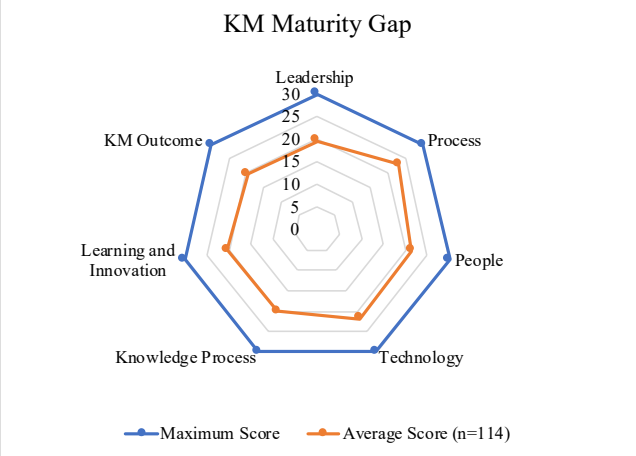

Figure 4. Radar Chart of KM Maturity Gap in DGE

From the radar chart, it is found that the KM maturity gap for each category is almost similar in the average score between 19.59 – 22.96. The category with the highest maturity gap is Leadership with an average score of 19.59 and the category with the lowest maturity gap is Process with an average score of 22.96. Even so, these gaps indicate that all categories have the same opportunity to become the subject for KM improvement.

Both People and Technology category are having adjacent score around 21-22 with average score for each question is 3.5. This conclude that DGE is quite good at executing employee development program, learning culture, and organizational culture that support knowledge management. Yet it is found that DGE has a low score on knowledge manager and KM activities have not become part of KPI. In technology category, the majority of DGE employees consider that their organization has utilized information technology to do day-to-day working activities. They use "Appsurat" as an online correspondence to accept job instruction, disposition from their superordinate, and also to submit their work to their superordinate. For example, the distribution of "Buku Pintar" as an internal guidance is also through "Appsurat" application. Yet the information technology utilization in DGE has not become an appropriate KM portal to measure the accountability of KM implementation within the organization.

Knowledge Process and Learning-Innovation category are having tie score between 20-20.5. In Knowledge Process, almost all questions were responded by the score of 1, 2, or 3 by the majority of respondents. This is because knowledge management has not implemented yet in DGE, so there is no formal guidance that rules all employee, though in some working unit, there is SOP and Director General Decree that regulate KM activities for particular small working unit. In Learning-Innovation category, respondents also give a low score to DGE's attempt to strengthen the culture of knowledge sharing, innovation, and there is a little opportunity for cross-unit working program. As the KM has not implemented in DGE, the reward system question is also scored low.

Leadership and KM Outcome category are having tie score between 19.5-20. In Leadership category, respondents feel the participation of their leader in KM and also as a role model in doing KM process. Yet there is not certain KM unit, particular budget for KM implementation, and there is no program and effort to protect organizational knowledge as intellectual asset. KM Outcome category is assessing organization's ability to create value and improve productivity, profitability, and growth through innovation by utilizing KM. Almost all questions get low scores, unless there is a positive belief from the respondents that KM implementation can improve organizational capabilities in doing innovation and give added value to the stakeholders.

In this research, Process category gained the highest maturity level with score of 22.96. Majority of respondents agree that DGE has adequately utilizing knowledge in creating, evaluating, and improving organization's business process. Yet the organization has not defined and mapped the critical knowledge needed for the organization in a comprehensive document that can be learned by all employees.

In order to develop effective KM implementation strategy as a business solution, first we must identify KM key success factor based on the findings of qualitative and quantitative data using fishbone diagram. The problem is KM maturity gap in DGE whereas the four KM component (People, Process, Technology, and Governance) as the main cause as seen on Figure 5.

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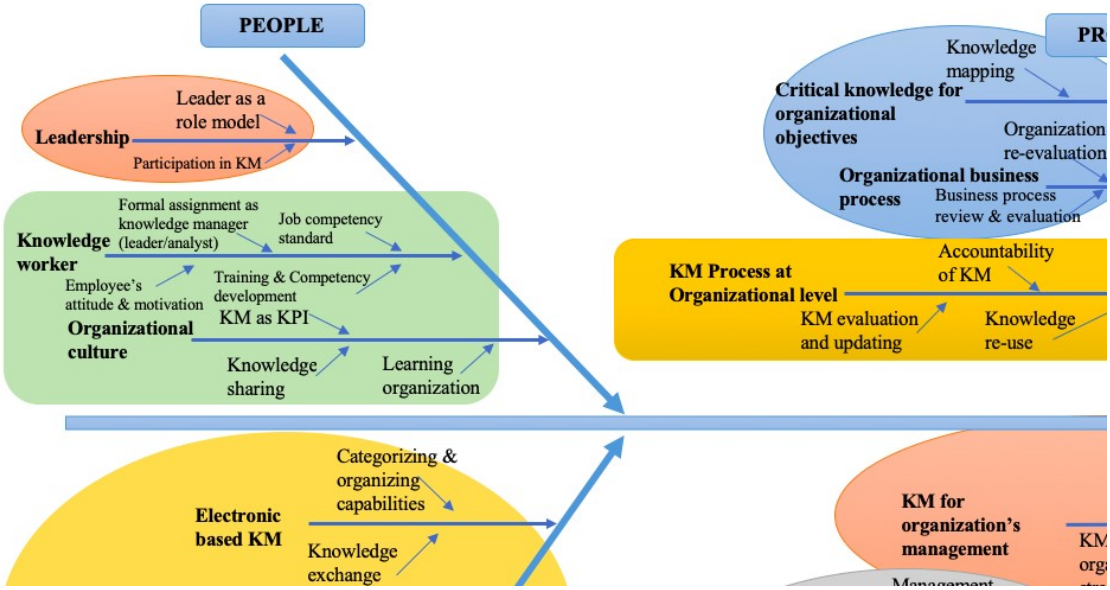

Figure 6. KM Key Success Factors Identification at DGE

To setup KM implementation plan, the list of key success factor found above is mapped into KM framework and KM SECI Model and the researcher prioritize KM improvement program into the following categories of KM framework:

Governance

- Formalization of knowledge management implementation in specific policy or regulation; or
- Forming knowledge management team;
- There should be a budget allocation for KM implementation;
- Knowledge management should have clear strategic objectives that derives come from KM direction by organization's leader;
- KM road map and implementation planning derived from KM strategic objectives;
- To increase employees' motivation, reward and incentive must also be improved.

People

- Increase DGE leaders' participation in KM activities, to become role models in knowledge management;
- KM practice can be linked as individual and working unit KPI;
- Formal assignment of knowledge manager/leader/analyst in each working unit to ensure the KM implemented in each unit;
- Improve learning cultures and collaboration;
- Improve employees' motivation and attitude towards learning cultures.

Process

- Knowledge mapping to identify organizational critical knowledge;
- Evaluation and updating of organizational business process must be done regularly;
- Mechanism to retain the knowledge in the transition period of employee rotation;
- Formal guidelines to implementing KM activity and accountability.

Technology

- Reliable and accountable KM portal as a center of KM activity and storage;
- Reliable network connection and periodical maintenance;
- Statistically measurable KM portal to report KM effectiveness.

According to Tjakraatmadja and Kristinawati (2017), KM implementation must be contextual, which means that every KM implementation must have specific objectives which are in line with the organizational objectives. This research will use APQC Step of KM Strategic Planning as follow:

1. *Establish strategic objectives for KM*

   By considering organizational objectives and challenges, researcher propose KM strategic objectives as follow: (1). Optimize the decision process for top management and maximize employee performance; (2). Improve the competency and capability of employees on their current job and overall DGE business process; (3). KM culture within

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DGE to transform individual knowledge into organizational knowledge.

2. *KM Strategy*
   This KM strategy is focusing on KM maturity gap removal and using DGE strategy map on Learning and Growth perspective that is improving human resources management, realizing adaptive organizational management, and improving IT system. By this baseline, the researcher propose KM maturity gap removal strategy as follow: (1). Formalization of KM Program in DGE; (2). Structure, duty, role, and responsibility of KM in organizational level; (3). Integrated KM programs and tools for doing KM process; (4) Organizational knowledge mapping.
3. *Program Priorities*
   The researcher proposes 3 KM program priorities in DGE as follow: (1). Formalization of KM Program in DGE through regulation and integrity pact; (2). Integrated KM program and tools for doing comprehensive KM process; (3). Formalization of KM team, structure, role, duty, and function with particular budget.
4. *Knowledge Management Scope*
   As the strategic objective of knowledge management is to help organization achieve their strategic goals, so the scope of knowledge management implementation in DGE is all working units and civil servants who carry out the duties of the DGE. In doing so, this KM implementation should be ruled in organizational level lead by Director General of Electricity.
5. *KM Team, Duty, and Roles*
   Researcher propose the KM team is consist of: (1). Chief Knowledge Officer (CKO), hold by Director General of Electricity; (2). Knowledge Manager, hold by Echelon II; (3). Knowledge Leader, hold by Echelon III of all working units. The KM Unit is an Ad Hoc position that consist of: (1). Head of KM Unit; (2). Head of KM Program and Evaluation; (3). Head of KM Information and Technology; (4). Head of Communication; (5). KM Analyst; (6). KM IT Analyst; (7). KM Communication Analyst.
6. *KM Measurement and Evaluation*
   Measuring the knowledge management level of performance is important in order to control it and to track the progress on the KM program. To ensure the strategic objectives of KM is achieve by the current KM program, a performance indicator should be generated in order to find out whether the program being run out is increasing or not. The researcher modified KM measurement of Categorization Matrix of Performance Indicator by Shannak (2009:251) based on KM framework (People, Process, IT, and Governance) with the performance indicator from KM programs that has been described on section 3. Program Priorities.

CONCLUSIONS

People is the main driver for the organization to achieve its strategic objectives. Managing the people's knowledge into the organizational knowledge will give benefit and sustainability for the organization to improve its performance and innovation. Based on findings on previous section, it is found that DGE has already carried out KM initiatives. DGE leaders have initiated monthly meetings, there are utilization of DGE library, DGE website, OneSearch digital online library, Appsurat, and "Buku Pintar" as knowledge repositories, some working units have done knowledge sharing activities and it has been formalized. Discussion and information exchange in Whatsapp group and official email.

Based on the survey findings, the current KM maturity level in DGE is in refinement level. This means that the implementation of KM is continually evaluated for continuous improvement. It involves expanding KM initiatives throughout the organization, working together in creating an organizational capability. KM effort are in line with organization's objectives and focus. It is confirmed through interview that the leader of the organization has aware and execute KM initiatives in their unit in order to create organizational capabilities.

To establish systematic KM implementation in DGE, researcher has proposed KM strategic planning that consist of (1). Establish KM strategic objectives; (2). KM strategy; (3). Program priorities; (4). KM scope; (5). KM Team, Duty, and Roles; (6). KM Measurement and Evaluation.
To ensure that this KM implementation is going smoothly and getting buy in from the leaders and employees of DGE, researcher recommend several important actions as follow:

1. KM pilot project;
2. KM socialization and discussion to top management;
3. KM campaign;
4. Periodic report to top management to maintain their commitment and support.

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