

CHAPTER 2 BUSINESS ISSUE EXPLORATION

2.1 Conceptual Framework

Conceptual framework is created to understand the flow of evaluation of knowledge management until the implementation plan. In general, to evaluate the knowledge management, researcher need to know the input and knowledge process. Then, the output can be define as the implementation of knowledge management.

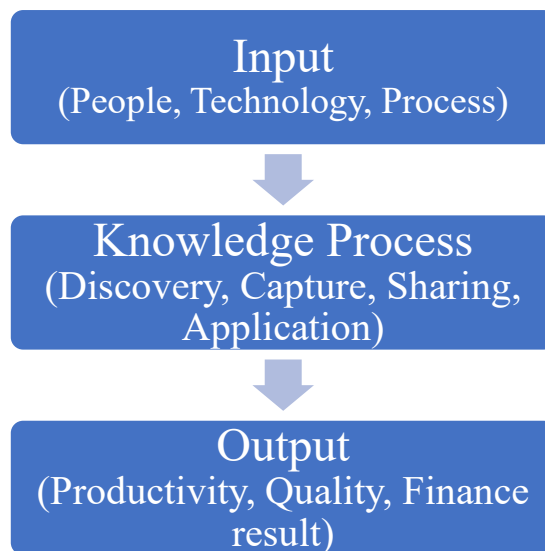


Figure 5 Conceptual Framework

1. Input

(Dalkir, 2011), knowledge is a valuable commodity which embedded in product (high technology product) and in tacit knowledge of highly mobile employee. In addition, knowledge management was initially defines as the process of applying a systematic approach to the capture, structuring, management, and dissemination of knowledge throughout an organization to work faster, reuse best practices, and reduce costly rework from project to project (Nonaka and Takeuchi, 1995; Dalkir, 2011).

In the other words, it is believed that technology, people and process are becoming the input in knowledge management system

2. Knowledge Management Process

Becerra-Fernandez and Sabherwal (2015) defines knowledge management process that is performing the activities involved in discovering, capturing, sharing, and applying knowledge. Knowledge discovery is a development of new tacit or explicit knowledge. It is involving the

process of combination and socialization. Then, those explicit and tacit knowledge that resides within people, technology and process are captured. It can be helped by doing the internalization and externalization process. After the knowledge is captured, it should be communicated to the other individual. This process called knowledge sharing. After the sharing, the knowledge can be applied and utilized within the organization to achieve the goal of the implementation of knowledge management.

3. Output

The output of the knowledge management can be seen from its contribution toward organization goals. The contribution can be measured in some ways, such as productivity, growth, innovation, quality, and others. Dalkir (2011), measure by using three approach: benchmarking, balance score card and house of quality. From those approach, the contribution/benefit can be taken as follows:

- a. Overall productivity/ business process result
- b. Service quality
- c. Customer satisfaction
- d. Cost, profit, margins
- e. Learning and innovation

2.2 Literature Review

2.2.1 Knowledge

Knowledge is information that is organized, synthesized, or summarized to enhance comprehension, awareness, or understanding (Bergeron, n.d.). That is, knowledge is a combination of metadata and an awareness of the context in which the metadata can be applied successfully. Knowledge assets are intangible and quite different from tangible asset (Nonaka and Teece, 2001).

Some expert defines the definitions of knowledge as follows (Tjakraatmadja and Kristinawati, 2017):

1. Knowledge is information which can change person to act or person/institution to act more effective
2. Knowledge is believing of organization to increase the capacity or capability to act more effectively
3. Knowledge is a capacity to act

Nonaka and Teece (2001) mentioned that there are two type of knowledge: explicit knowledge and tacit knowledge.

Explicit knowledge : knowledge that is expressed in formal and systematic language and shared in the forms of data, scientific formulas, specifications, manuals and such. It can be processed, transmitted and stored relatively easily.

Tacit knowledge : highly personal and hard to formalize. Subjective insights, intuitions and hunches fall into this category of knowledge. Tacit knowledge is deeply rooted in action, procedures, routines, commitment, ideals, values and emotions. It is difficult to communicate tacit knowledge to others, as it is an analogue process that requires a kind of ‘simultaneous processing’.

Knowledge, in term of knowledge management, have 3 (three) characteristics as follows (Tjakraatmadja and Kristinawati, 2017):

1. There is correlation between information and knowledge
2. Knowledge that embedded in human capital should increase the capacity or capability of more effective work
3. There is correlation between knowledge and innovation

2.2.2 Knowledge Management

Bergeron, 2003 in his book mentioned that Knowledge Management (KM) is a deliberate, systemic, business optimization strategy that selects, distills, stores, organizes, packages, and communicates information essential to the business of a company in a manner that improves employee performance and corporate competitiveness.

From this definition, Knowledge Management is fundamentally about a systematic approach to managing intellectual assets and other information in a way that provides the company with a competitive advantage. Knowledge Management is a business optimization strategy, and not limited to a technology or source of information.

2.2.3 Knowledge Management Framework

2.2.3.1 Asian Productivity Organization (APO)

APO KM Framework is designed based on the practical experience in KM from several countries in Asia as well as best practices from America, Australia and Europe. It is simple and

comprehensive to address all relevant elements of KM solution. The framework is aimed to improve organization's performance through knowledge management (Nair, 2011).

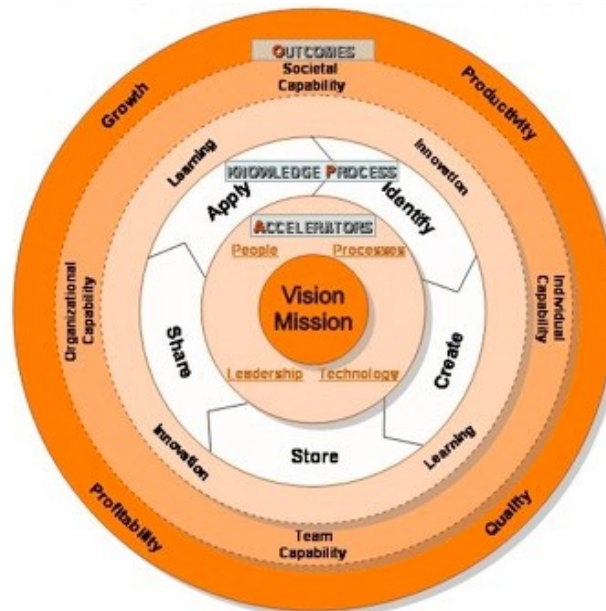


Figure 6 APO KM Framework

Source: Nair (2011)

The core of APO framework is about understanding the vision and mission of the organization. It provides strategic directions and help to identify core competencies required to achieve business objectives. There are three levels in the framework:

a. Accelerators

The Accelerators comprise both drivers and enablers of knowledge management. The four accelerators are leadership, process, people and technology. Leadership is the driver that propels KM initiative in the organization. Processes, people and technology enable the organization to accelerate the KM initiative and implementation.

1) Leadership

Leadership categorize as the driver of knowledge management. It will make the knowledge management strategies and project align with vision and mission. It would be beneficial for the leader to choose champions in order to make sure the implementation of knowledge management is running well. Leaders also should show their commitment and support by providing sufficient resource to implement the knowledge management. Knowledge management also should be institutionalized through the development and implementation of policies and structures to build a knowledge enabled work environment which encourages the acquisition, sharing and application of knowledge.

2) Technology

Technology provides various effective tools and technique which can accelerates the knowledge process. It assists in all knowledge process since the discovery, creation, store, share and the implementation. In managing explicit knowledge, technology that can be used such as search engines, storage media, intranets and extranets. In tacit knowledge, technology is the media to facilitate the collaboration, communication and sharing process both in formal and informal ways, also through online and offline. By the using of technology, the organization can use it as a platform to manage and retain the organizational knowledge.

3) People

People are the generators of knowledge and have very important role in the knowledge process. People act as a respiratory of tacit knowledge and also the explicit knowledge until it is documented. People are part of human capital which involve in creation, sharing and application of intellectual capital within the organization. People have value added to transforms data and information into knowledge by their context, experience, and interpretation which embedded in their self. Employee's willingness to share is one of the greatest factors of the successful of KM projects. Thus, the organization should create the culture or climate which enforce employee to have the willing by giving them mutual trust and benefit.

4) Processes

Flow of event which describe how things work in organization is called processes. Social and technological steps can enhance the contribution of knowledge in organization. To improve the organizational productivity, profitability, quality and growth, the organization should have a systematic and effective designed process. It can be useful for the organization to check known assumptions in design of processes and incorporate learnings from best practices.

b. Knowledge Process

The core activities of knowledge process are: identify, create, store, share and apply knowledge.

Identify

Identify is the initial crucial stage of the knowledge process. This is a stage of identification of the critical knowledge needed to build the core competencies of the organization. Also, to

define the knowledge gaps and the types of knowledge required in the various areas of the organization.

Create

Knowledge gaps can be addressed through creation by conversion and generation of new knowledge. Some ways to create new knowledge are training (at the individual and team level), learning by doing, joint problem solving or brainstorming activities. New knowledge can be useful to create products, services, the internal process and procedures. Hence the activities of creation should be well documented or recorded for learning or reuse.

Store

This stage involves the collection and preservation of organizational knowledge so that it can be retrieved quickly and easily. However, the storage process of tacit knowledge never been easy and a big challenge for the organization to manage, such as the individual experience and expertise.

Share

Sharing can be happened among employees when there is regular and sustained exchange of knowledge. It can create the climate of continuous learning to achieve business goals. To foster those climate, mutual trust and benefit are necessary. In addition, technology can be used to enhance the sharing.

Apply

Apply the knowledge management can be seen as the use and re-use of the knowledge within the organization. The application of knowledge means translate knowledge into action. The utilization of knowledge is still low.

Those five core activities of knowledge process enable learning and innovation at all levels and areas in the organization.

The discovery of new insights is called learning, the affirmation of what is already known and the realization of the need to unlearn. It can lead to innovation which could be in the areas of new products, services, processes, markets, technologies and business models.

Learning and innovation helps to build individual and organizational capability which in turn leads to societal capacity.

c. Outcomes

The outcome which expected from knowledge management initiatives are enhanced Individual, Team and Organizational Capability, also increased Societal Capacity. These outcomes will improve quality of products and services and contribute to profitability and growth.

1) Individual Capability

By the process of learning and innovation, the knowledge and skills of individuals will increase. The result can be seen in enhanced performance of the individuals. The foundations of individual capability development are positive attitudes, strong moral and ethical values. In collective, individual capabilities can contribute to team capabilities, organizational capability, and societal capacity.

2) Team Capability

Team capability can be enhanced by the process of sharing knowledge. Team's capability will be good only as the individuals who make up the team. Team capability is enhanced when individuals in a team are constantly learning and sharing knowledge with each other.

3) Organizational Capability

It focuses on core competencies, improving internal processes and systems, and designing innovative strategies to achieve sustainable growth and competitive advantage. Organizations need to leverage on individual and team capabilities, and collaborate with external stakeholders like suppliers, customers and partners to do this.

4) Societal Capacity

It refers to the collective knowledge of individuals, organizations, and institutions. Society must prepare for the transformation as the world moves toward the knowledge economy. Government and private sector also have to work collectively in raising awareness and provide impact on the importance of knowledge and technology. To stimulate creative potential of individuals and organizations to seize the enormous opportunities in the society for growth and development, need networking and collaboration.

5) Productivity

The focus of the productivity is effective and efficient use of resources to produce the optimum output. Productivity can be achieved through the collective capabilities of individuals and teams, technology, improved work processes and systems and enhanced collaboration and better decision making.

6) Profitability

If the organization improved their productivity, it would lead to profitability. Profitability means wealth for individuals, organizations, and society. Knowledge helps the organization in value creation leading to increased the profitability.

7) Quality

It means better products and services which leads to higher customer satisfaction. Improvement in quality is the result of application of knowledge, learning and innovation.

8) Growth

Higher gross domestic product can yield from higher productivity, increased profitability and better-quality product and services. All of this and the improved societal capacity can bring inclusive growth and better quality of life. This is the objective of all productivity movement' in the world. The use of knowledge can enhance productivity, quality, profitability, and growth.

The APO KM Framework will help organizations to achieve an efficient and successful implementation of knowledge management. The framework provided by the APO assures that no important aspect will be overlooked while reducing the variety and complexity of the knowledge management to manageable task.

There are several methods and tools developed by the APO in order to define the KM solutions:

Non-IT Methods and Tools:

a. Brainstorming

Way to generate new and unusual ideas. It can be organized quickly and consist of two stages: divergence and convergence. In the divergence stage, the members agree to delay their judgement. Then, in the convergence stage, the member will give the judgement in a positive manner.

b. Learning and Ideas Capture

To capture the learning and ideas, the organization can take advantage from the technology. There are many ways to do it for example by using smartphone, notepad, PDA< blog, voice recorder, etc.

c. Peer Assist

The purpose of this method is to shorten the learning curve of the project team. The team enforced to learning before doing by discussing the project and provide the solutions.

d. Learning Reviews

Learning reviews can be conducted at any time with the aim to make the team and individual learning during the work process. It has purpose to continuously learn while carrying out the project.

e. After Action Review

Meanwhile, the after-action review is conducted only after the project finished. It aimed to evaluate the project and take the lesson learn from it.

f. Storytelling

Storytelling is a means of conveying events in words, images, and sounds, often by improvisation or embellishment. Storytelling has since its inception been used as a powerful way to share and transfer knowledge, especially experiential and tacit knowledge.

g. Collaborative Physical Workspaces

It allows human interactions by face to face meeting to discuss, dialogue, or ask question as the process of sharing and/or knowledge creation. A good physical workplace, for example the dynamic one, should take into consideration to make the sharing or creation run effectively.

h. APO Knowledge Assessment Tool

This tool is conducted by a survey questionnaire that need to distribute to the minimum 70% of the total respondents. There are 42 questions from 7 categories. The questions then will be followed up with the interview regarding the strength and opportunities of improvement regarding the KM in its organizations.

The result of the questionnaire then will be used to calculate the KM maturity level.

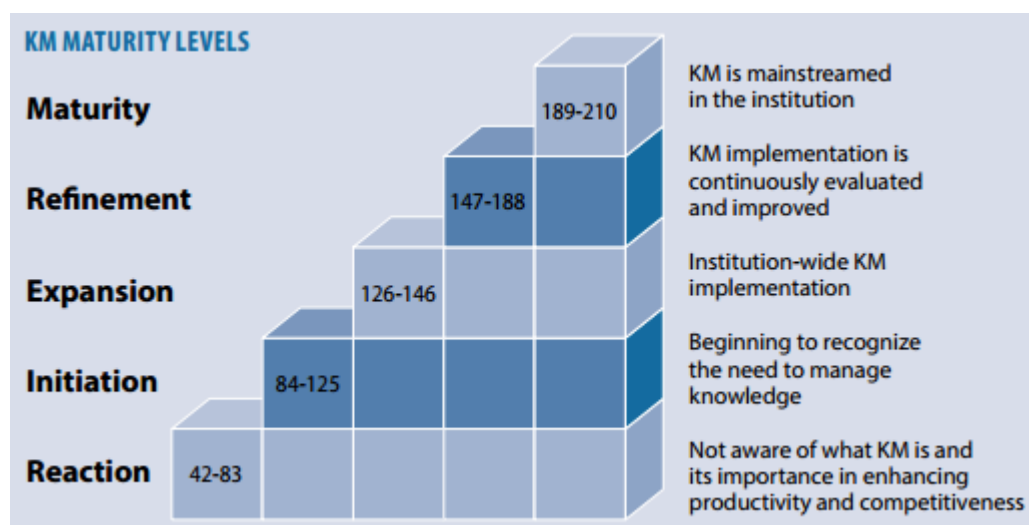


Figure 7 KM Maturity Level

This may range from the “reaction” level at its lowest to the “maturity” level at its highest. The conditions describing each of these levels correlate to the presence, absence, or weakness of the four KM accelerators, learning and innovation, and the KM outcomes in the organization.

There are five levels in the maturity framework:

Level 1: Reaction Level

The organization is not aware of what KM is and its importance in enhancing productivity and competitiveness.

Level 2: Initiation Level

The organization is beginning to recognize the need to manage knowledge or may already be initiating a pilot KM project.

Level 3: Expansion Level

KM is fully implemented and deployed.

Level 4: Control Level

Implementation of KM is continually evaluated for continuous improvement.

Level 5: Maturity Level

KM is fully mainstreamed within the organization.

i. Knowledge Café

A knowledge café is a way to have a group discussion, to reflect, and to develop and share any thoughts and insights that will emerge, in a very non-confrontational way. A knowledge café suspends all judgment and normally leads to developing deeper insights and sharing than usual.

j. Communities of Practice

COPs are groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly. In the context of knowledge management, COPs are formed, either intentionally or spontaneously, to share and create common skills, knowledge, and expertise among employees.

IT Methods and Tools:

k. Cloud Computing

l. Document Libraries Leading to a Document Management System

m. Knowledge Bases (Wikis, etc.)

n. Blogs

o. Social Network Services

p. Video Communication and Webinar

q. Advance Search Tool

r. Building Knowledge Clusters

s. Expertise Locator/Who's Who

t. Collaborative Virtual Workspace

2.2.3.2 KM Maturity Models

Siemens AG has developed a KM methodology which successfully applied. The methodology called KM Maturity Model (KMMM). KMMM comprises three components i.e. analysis, development, and auditing process (Langen & Ehms, 2002). The analysis model helps the organization to take account of all-important aspects of knowledge management and reveals which key areas and topics should be developed in future. The development model provides information as to how the respective key areas and topics can be best developed to reach the next maturity level. The assessment process structures all relevant steps from assessment definition to result interpretation.

The procedures of KMMM is divided into six phases as follow:

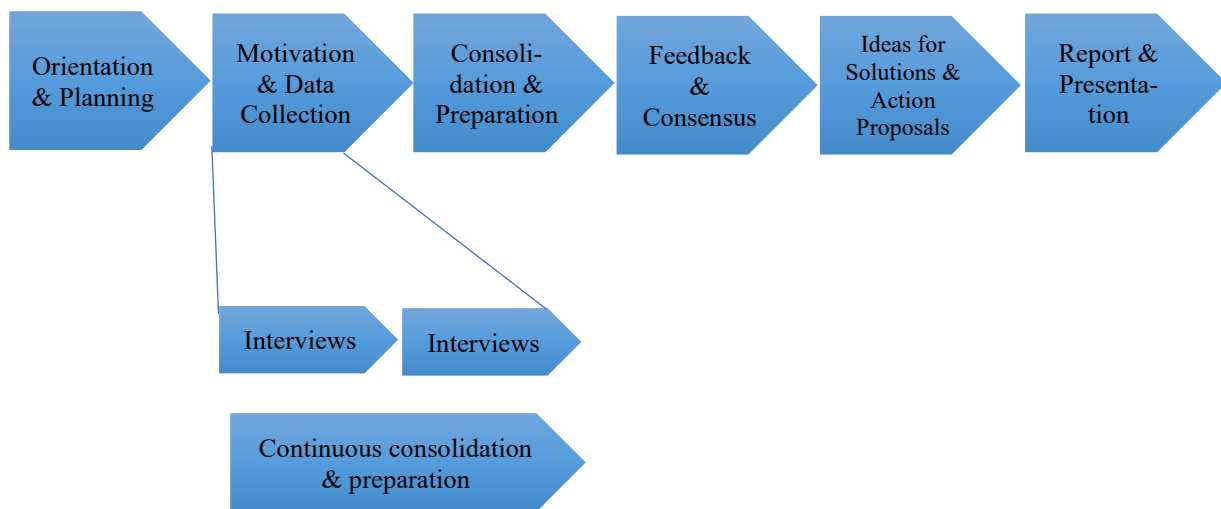


Figure 8 Process of KMMM Assessment

Source: Langen & Ehms (2002)

In the first stage, the expectation of the organizations is clarified. The procedures should be defined and planned exactly; also, sufficient information must be provided. It can be acquired through workshops and interviews (including in-depth interviews) from various members of the investigated organization. After the data collection is completed, the maturity level will be assessed, the feedback presentation should be prepared, and consensus is reached, if possible, between the interpretations made by the organization member and the researcher/consultant. In this overall process, detail identification of the causes and further project planning are not included. KMMM project is intervention-oriented by nature, the first ideas and suggestions emerge as starting points for maturity level specific KM interventions. After the discussion of the results, the final report is drawn up. This serves as background information for the closing presentation and as important input for any subsequent knowledge management projects.

There are five maturity level of knowledge management in the development model as follows:

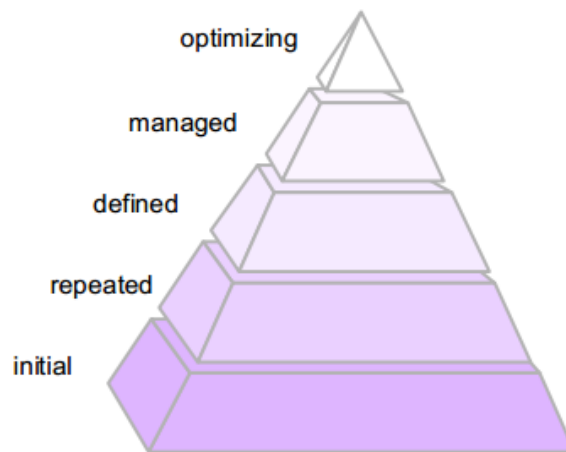


Figure 9 The Five Maturity Levels of Knowledge Management

Source: Langen & Ehms, 2002

Initial

This level indicates that knowledge management processes in the organization are not consciously controlled; "successful" knowledge related activities are the luck of the organization and not as the result of goal setting and planning. Tasks and phenomena which are knowledge intensive are not seen in connection with survival and success of an organization. There is no language in place to describe phenomena or problems from a knowledge perspective.

Repeatable

At this level, organizations have recognized the importance of knowledge management activities for their business. Organizational processes are partly described as knowledge management tasks and, by virtue of ideas from individual "KM pioneers", pilot projects on KM typically exist. The topic of discussion typically about the success or failure of these projects. If conditions are favorable, these individual activities can serve as the seeds of further, integrated knowledge management activities.

Defined

At this level, a stable and "practiced" activities support the KM of individual parts of the organization effectively. These activities are integrated in the day-to-day work processes. The corresponding technical systems are maintained. Individual KM roles have been defined and filled.

Managed

At this level, the features are a common strategy and standardized approaches to the subject of knowledge management. The solutions found at level 3 have flowed into organization-wide

standards or adjustments. Indicators relating to the efficiency of these robust KM activities are regularly measured. The activities are secured in the long term by organization-wide roles and compatible socio-technical KM systems.

Optimizing

A level-5 ("optimizing") organization has developed the ability to adapt flexibly in order to meet new requirements in knowledge management without dropping a maturity level. These challenges are mastered even in the case of larger external or internal changes. The measuring instruments already introduced at level 4 are used in combination with other instruments for strategic control. There are no challenges left which cannot be solved with the established knowledge management tools. The motto is: "Hold onto your maturity level (hands off the KM budget!) and enjoy the profits!"

2.2.3.3 KM Self-Assessment

According to Knowledge Sharing Tools and Methods Toolkit - KM Self Assessment (2020), the matrix of the knowledge management self-assessment as follow:

Table 2 Knowledge Assessment Matrix

	KM Strategy	Leadership Behaviours	Networking	Learning before, during and after	Capturing knowledge
Level 5 (The way we work)	Clearly identified Intellectual assets. KM strategy is embedded in the business strategy. Framework and tools enable learning before, during and after.	Leaders recognise the link between KM and performance The right attitudes exist to share and use others' know-how. Leaders reinforce the right behaviour and act as role models.	Clearly defined roles and responsibilities. Networks have a clear purpose; some have clear deliverables others develop capability in the organisation. Networks ensure time is set aside for social interaction.	Prompts for learning built into business processes. People routinely find out who knows and talk with them. Common language, templates and guidelines lead to effective sharing.	Knowledge is easy to get to, easy to retrieve. Relevant knowledge is pushed to you. It is constantly refreshed and distilled. Networks act as guardians of the knowledge.
Level 4 (Consistently apply)	Discussions ongoing about organisation's Intellectual assets. A KM strategy exists but is not yet linked to business results. A clear framework and set of tools for learning is widely communicated and understood.	KM is everyone's responsibility; a few jobs are dedicated to managing knowledge. "Knowledge sharing is power." Leaders set expectations by "asking the right questions" and rewarding the right behaviours.	Networks are organised around business needs. Networks have clear terms of reference. Systems and technology are in place and are well used	Learning before, during and after is the way we do things around here. "Customers" and partners participate in review sessions.	Just-in-time-knowledge is current and easily accessible. One individual distils, condenses and updates it, though many contribute. That individual acts as the owner.

	KM Strategy	Leadership Behaviours	Networking	Learning before, during and after	Capturing knowledge
Level 3 (Act)	There is no framework or articulated KM strategy. Some job descriptions include knowledge capture, sharing and cascading. People are using a number of tools to help with learning and sharing.	KM is viewed as the responsibility of a specialist team. Some leaders talk the talk, but don't always walk the walk!	People are networking to get results. Networks are created	People can easily find out what the organisation knows. Examples of sharing and using are recognised. Peers are helping peers across organisational boundaries.	Networks take responsibility for the knowledge, collect their subject's knowledge in one place in a common format. Searching before doing is encouraged. Little or no distilling and condensing.
Level 2 (React)	Most people say sharing know-how is important to the organisation's success. People are using some tools to help with learning and sharing	Some managers give people the time to share and learn, but there is little visible support from the top.	Ad hoc networking to help individuals who know each other.	People learn before doing and schedule review sessions. They capture what they learn for others to access. In practice few do access it.	Teams capture lessons learned after a project. Teams look for knowledge before starting a project. Access to lots of knowledge, though not summarised.
Level 1 (Awareness)	A few people express that know-how is important to the organisation. Isolated people with a passion for KM begin to talk and share how difficult it is.	KM viewed as a management fad. Leaders are sceptical as to the benefits. Leaders think networking leads to lack of accountability. "Knowledge is power"	Knowledge hoarders seem to get rewarded.	People are conscious of the need to learn from what they do but rarely get the time. Sharing is for the benefit of the team.	Some individuals take the time to capture their lessons in any number of cupboards and databases. They are rarely refreshed, few contribute, even fewer search.

2.2.3.4 Baldrige Excellence Framework

The Baldrige framework empowers the organization to reach its goals, improve results, and become more competitive. The framework consists of criteria, the core values and concepts, and the scoring guidelines (Baldrige Excellence Framework (Business/Nonprofit), 2020).

They also define seven criteria for performance excellence i.e. leadership; strategy; customers; measurement, analysis and knowledge management, workforce, operations, and results.



Figure 10 Criteria for Performance Excellence

Source: (Baldrige Excellence Framework (Business/Nonprofit), 2020)

In Baldrige, knowledge management is conducted to examine the management, use, analysis, and improvement data and information to support key organization processes as well as how the organization reviews its performance. The item in Baldrige asks how the organization ensures the quality and availability of data and information. Also, how the knowledge assets are managed and built. The focus is on the knowledge that the people need to do their work such as improve processes, product & services and innovate to add value for the customer and your organization.

The knowledge management system should provide the mechanism for sharing the people's and organization's knowledge to ensure that high performance is maintained through transitions. The critical knowledge should be determined at the beginning and then implement systematic processes for sharing this information.

2.2.3.5 ISO 30401:2018

According to ISO (2018), there are five activities in order to manage knowledge effectively through systematic activities and behavior, supporting the objectives of knowledge management system:

1) Acquiring new knowledge

Providing the organization with the knowledge which previously unknown or unavailable in the organization

2) Applying current knowledge

This activity is integrating the current relevant knowledge in order to enable improved actions and decision making within the organization

3) Retaining current knowledge

This activity is safeguarding the organization from the risks of knowledge loss

4) Handling outdated or invalid knowledge

It is activity to protect the organization from making mistakes or inefficient working due to the use of knowledge inappropriately within the current organizational context

2.2.3.6 European Framework

KM assessment of European framework aimed to provide a high-level structure of a model and tool to assess European organizations towards knowledge management maturity.

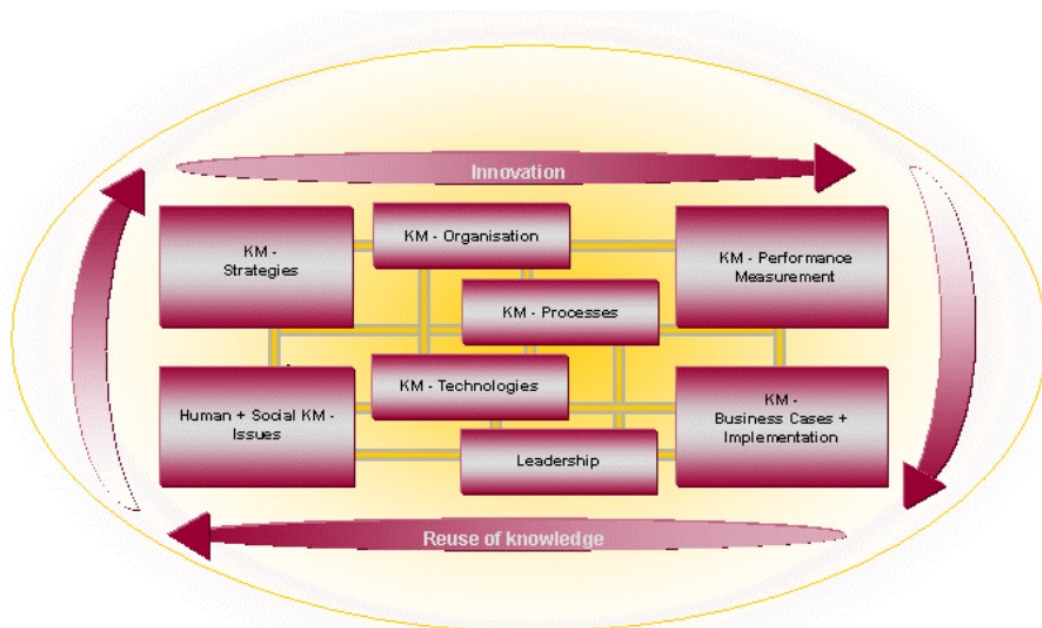


Figure 11 KM European Framework

The framework of knowledge management which developed by the European KM Forum at the first time consist of seven major modules i.e. KM strategies, Human & Social KM issues, KM organizational aspects, KM processes, KM technologies, KM performance measurement and KM business cases & implementation aspects. These modules are closely linked together to support on the one hand side the innovative ness of the whole system, on the other side to secure the aspect of reusing existing knowledge within the system. Specifications of the modules will be described in the following paragraphs.

Looking at several KM frameworks above, APO framework is the most suitable with the conceptual framework defined in Chapter 2.1. The conceptual framework define input, knowledge management process and output. Meanwhile in the APO framework, it defines accelerators, knowledge process, and outcomes.

In the APO framework, the input can be figure out in the accelerators (leadership, people, process, technology). Then, the knowledge management process also similar. If the conceptual framework has discovery, capture, share and application; the APO framework has activities i.e. identify, create, store, share, and apply. Moreover, the output also can be figure out in outcomes. If the conceptual framework has several examples of output such as overall productivity/ business process result, service quality, customer satisfaction, cost profit margins and learning & innovation; the APO framework defines outcomes such as social capacity, individual capacity, team capability, organizational capability, productivity, growth, profitability and quality.

2.2.3 Knowledge Management Strategy

Dalkir (2011) points out that KM strategy is an issue-based approach. It will define the operational strategy and objectives. The result of the knowledge management strategy is about the method to leverage the knowledge resources.

Dalkir (2011) define several questions to easier addressing the KM strategy as follows:

1. Which KM approach, or set of KM approaches, will bring the most value to the organization?
2. How can the organization prioritize alternatives when any one or several of the alternatives are appealing and resources are limited?

KM strategy usually started with the knowledge audit or assessment. In this research, the assessment is shown in the methodology. After the audit or assessment, the organization should do the gap analysis. Gap analysis will show the difference between existing and desired KM. Then,

the organization should create a road map as solution and recommendation of the strategy to address issues as follows Dalkir (2011):

1. How will the organization manage its knowledge better for the benefit of the business?
2. Content (management of explicit knowledge) and community (management of tacit knowledge) prioritize
3. Identification of processes, people, products, services, organizational memory, relationships, knowledge assets as high priority knowledge levers to focus on
4. What is the clear or direct link between KM levers and business objectives?
5. What are some quick wins (i.e., early relatively inexpensive KM successes)?
6. How will KM capability be sustained over the long term? (e.g., defined KM roles)?

2.3 Methodology

Methodology used in this research are explanatory sequential mixed method. It is a mixed methods design that appeals to individuals with a strong quantitative background to qualitative approaches. It is firstly conducting quantitative research, followed by the result analysis, then builds on the results with qualitative research to explain them in more detail (Creswell, 2014). This research is use template questionnaire developed by the Asian Productivity Organization. That is one reason to use explanatory sequential mixed method rather than exploratory sequential mixed method. Exploratory usually use to develop measurement instrument that fit a sample by first exploring qualitatively and using the information to design an instrument that then can be tested with a large sample. Meanwhile the explanatory aim to understand a data more detail by using qualitative method to follow up or further explain the quantitative database which acquire from questionnaire. Here are the detail methods:

1. Quantitative method using questionnaire

According to the APO KM Assessment Tools, there are seven category of framework that will be used to identify the knowledge management in an organization. Each of category consist of 6 questions. Hence, in total there is 42 questions in a questionnaire. Here are the categories, developed by APO (2020):

1) KM Leadership

This category evaluates the leadership capacity of CQSEM in responding the knowledge challenge, assess the KM policies and strategies, also assess the CQSEM effort to initiate, guide, and sustain KM practices.

2) Process

In the 'process' category, the questions used to assess how knowledge is used in managing, implementing, and improving the key work processes. It also assesses the extent to which the organization continually evaluates and improves its work processes to achieve better performance.

3) People

In this category, the questions will assess the CQSEM ability to create and sustain the knowledge driven and learning culture also evaluate the knowledge sharing, collaboration and knowledge worker.

4) Technology

Technology category reviews the organization's ability to develop and deliver knowledge-based solutions such as collaborative tools and content management systems. The reliability and accessibility of these tools are also assessed.

5) Knowledge Processes

The organization's ability to identify, create, store, share, and apply knowledge systematically is evaluated. Sharing of best practices and lessons learned to minimize reinventing the wheel and work duplication is also assessed.

6) Learning and Innovation

This category determines the organization's ability to encourage, support, and strengthen learning and innovation via systematic knowledge processes. Management's efforts to inculcate values of learning and innovation and provide incentives for knowledge sharing are also assessed.

7) KM Outcomes

The KM Outcomes category measures the organization's ability to enhance value to customers and citizens through new and improved products and services. The organization's ability to increase productivity, quality, profitability, and sustainable growth through the effective use of resources and as a result of learning and innovation is evaluated.

Each of the questions can be rated from 1 (doing poorly or nothing at all) to 5 (doing very well). The maximum value of each question is 30 points.

According to APO (2020), the assessment questionnaire should be answered by 70–80% of employees in the organization at all levels and all departments with the minimum length of work is six months. Since the length of work of 39 employees in CQSEM is more than six months, all the employee can be respondent of this questionnaire.

The questionnaire is created in Google forms and the link spread by using social media. The result of the questionnaire will be used to draw the radar chart as follows:

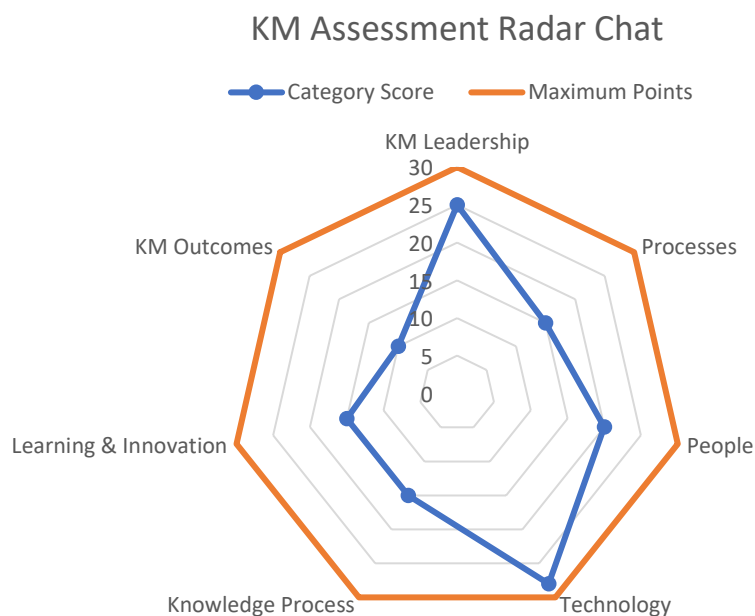


Figure 12 KM Assessment Radar Chat

Source: APO (2020)

2. Qualitative method by interview

After spread the questionnaire and get the results, an interview is conducted to elaborate more about the strength area of CQSEM in managing knowledge, which area have opportunities for improvement and what kind of KM initiatives that the organization should focus on.

The interview was conducted to three respondents. Each respondent has different positions in CQSEM and different length of work. The interview was conducted to the three employees in CQSEM as follows:

Table 3 Respondent List of Interview

No.	Position	Length of Work	Date of Interview
1.	Vice President Corporate Quality, Safety & Environment Management	20 years	14 December 2020

2.	Manager Safety Reporting System	09 years	04 December 2020
3.	Safety Analyst	11 years	04 December 2020

The interview is conducted offline. However, to keep comply with the health protocol during this pandemic era, the interview is conducted one by one. It takes 10 - 20 minutes for each respondent.

2.4 Data Collection and Analysis

2.4.1 Questionnaire Result & Analysis

There are 39 employees in CQSEM as per November 2020. 33 employees (84.62%) have filled the questionnaire during November 13th – 24th, 2020. The questionnaire profiled the respondent by their positions and length of work. There are four level position in CQSEM. There is at least one respondent for each position had filled the questionnaire.

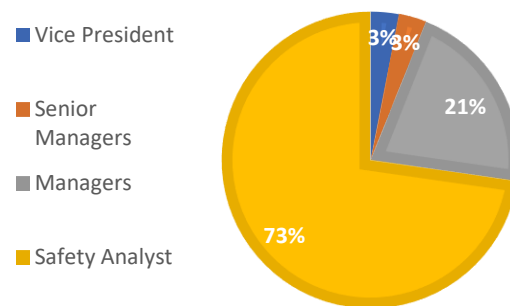


Figure 13 Respondent by Positions

In addition, no respondent has working experience in CQSEM less than 1 year. Hence, all the respondents are met the requirement. Based on the questionnaire's result, 67% respondent are working in CQSEM for more than 3 years and the rest of it (33%) are between 1-3 years working experience.

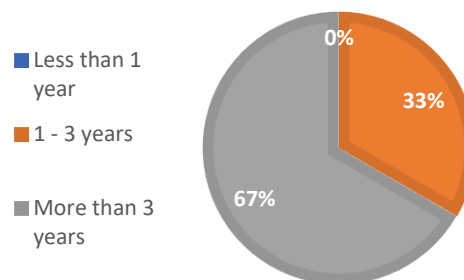


Figure 14 Respondent by Length of Work

The answer of the respondent to the 42 questions are compiled and calculated by sum up result score of each category. Then, find the average score of each category by divide it with the total number of respondents.

Table 4 Calculation of Maturity Level

Category	Category Score
KM Leadership	21.88
Processes	23.48
People	22.00
Technology	25.64
Knowledge Process	21.94
Learning & Innovation	22.27
KM Outcomes	22.18
TOTAL	159.39
LEVEL	4
REMARK	Refinement

The average score of each category score above are summed up to define in which level CQSEM are. 159.39 point indicates that CQSEM is in the maturity level 4 (Refinement/Control level). According to that, the implementation of knowledge management in CQSEM is continually evaluated for continuous improvement. Then, radar chart is made to have better picture of the maturity level in each category.

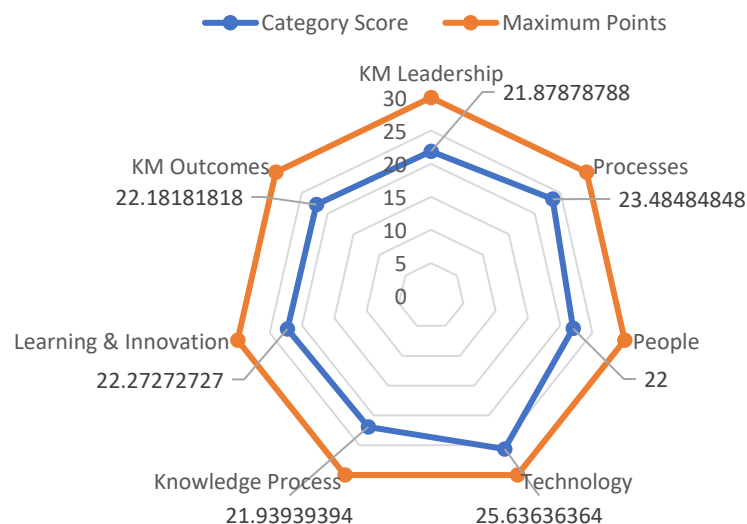


Figure 15 Knowledge Management in CQSEM

The radar chart represents the maturity level of each category. The orange line represents the maximum point for each category that is 30. The blue lines represent the maturity level of each category. Based on the above chart, found that the maturity level of the seven categories

are almost the same. The technology category takes the highest point with average 25.64 and KM Leadership as the lowest point with average 21.88.

In order to have the better understanding regarding the maturity level of each category and know the breakdown score of each category and questions, the data is presented below:

1) KM Leadership

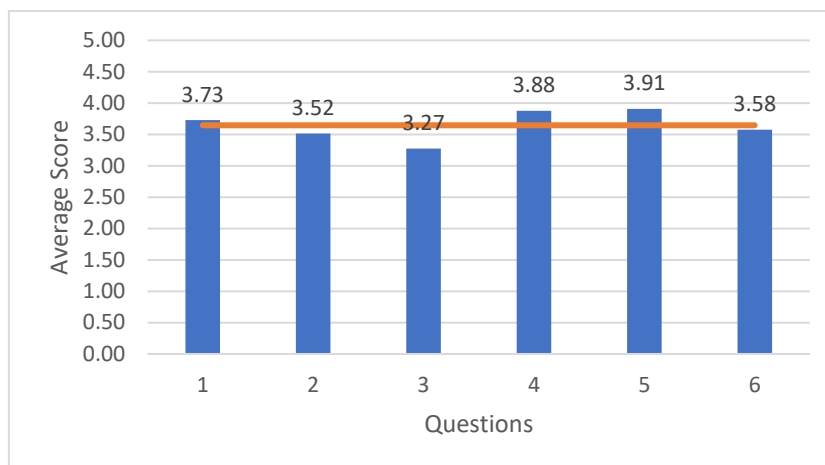


Figure 16 Calculation of KM Leadership

From the data above, found that the average score of each question is almost the same. The range of score is between 3 – 4. The average score of all question is 3.65. There are 3 questions have average score below 3.65 i.e. questions number 2, 3 and 6. The lowest score was question 3 “*Financial resources are allocated for KM initiatives*”. Followed by question number 2 “*There is a central coordinating unit or person for knowledge management*”, and the last is question number 6 “*Management promotes, recognize, and rewards performance improvement, organizational and employee learning, sharing of knowledge, and knowledge creation and innovation.*”

2) Processes

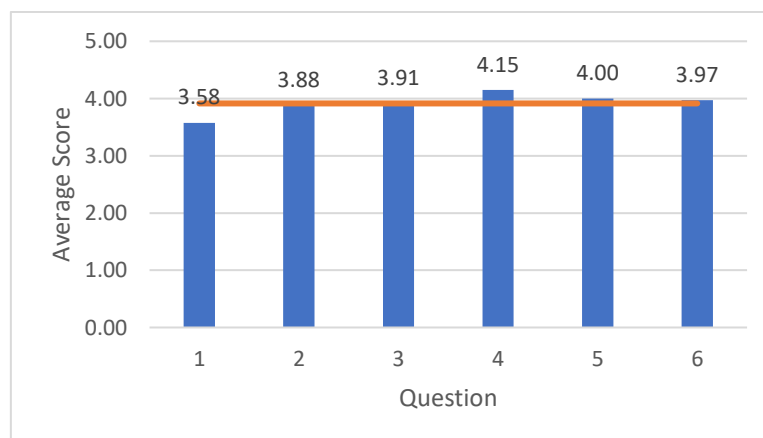


Figure 17 Calculation of Processes

In the process category, the average score of all question is 3.91. There are also 3 questions have answer below or equal to that point i.e. question number 1, 2 and 3. The lowest score was question number 1 “*JKTDV determines its core competencies (strategically important capabilities that provide a competitive advantage) and aligns them with its mission and strategic goals.*”. Followed by question number 2 “*JKTDV design its work systems and key processes to achieve performance excellence*” and question number 3 “*New technology, knowledge shared in the organization, flexibility, efficiency, and effectiveness are factored into the design of process*”.

3) People

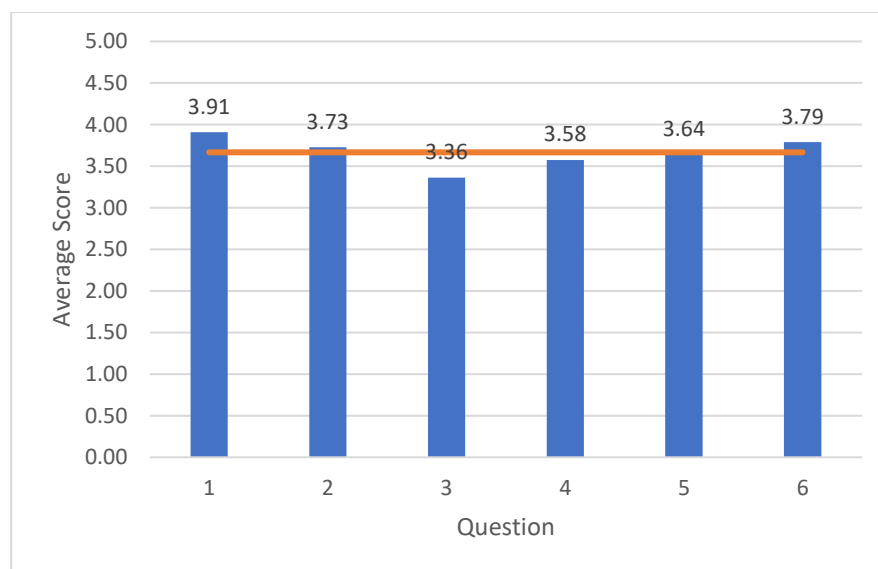


Figure 18 Calculation of People Category

In the people category, the average score off all question is 3.76. Question number 2,3,4 and 5 have the average score below that point. The lowest was the third question “*JKTDV has formal mentoring, coaching, and tutoring processes.*” Followed by question number 4 “*JKTDV has an update database of staff competencies*”. Question number 2 “*JKTDV has a systematic induction process for new staff that includes familiarizing them with KM and its benefits, the KM system, and tools*” and number 5 “*Knowledge sharing and collaboration are actively encouraged and rewarded/corrected.*”

4) Technology

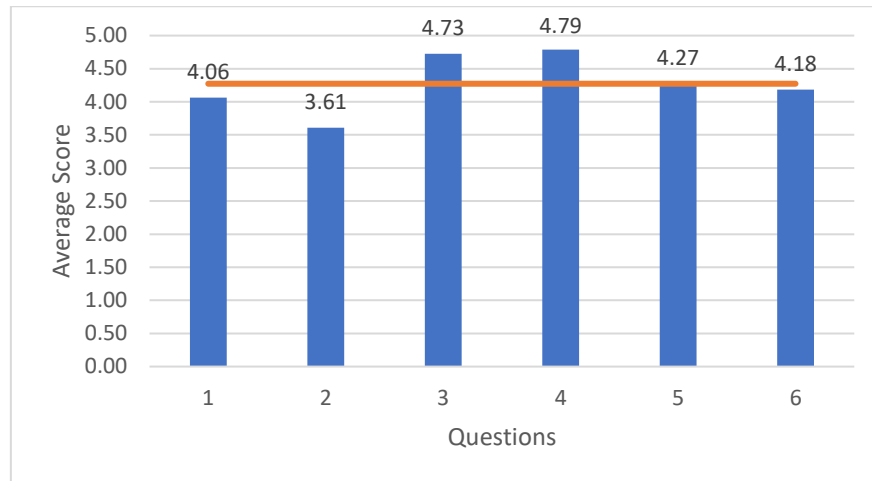


Figure 19 Calculation of Technology Category

In technology category, the average score of each question are pretty high compare to the other category. The number is 4.27. The lowest score was question number 2 *“The IT infrastructure is aligned with the organization’s KM strategy”*. Followed by question number 1 *“Management has established an IT infrastructure (i.e. internet, intranet, and website) and has developed capabilities to facilitate effective KM.”* and question number 6 *“An intranet (or similar network) is used as a major source of organization-wide communication to support knowledge transfer or information sharing”*.

5) Knowledge Process

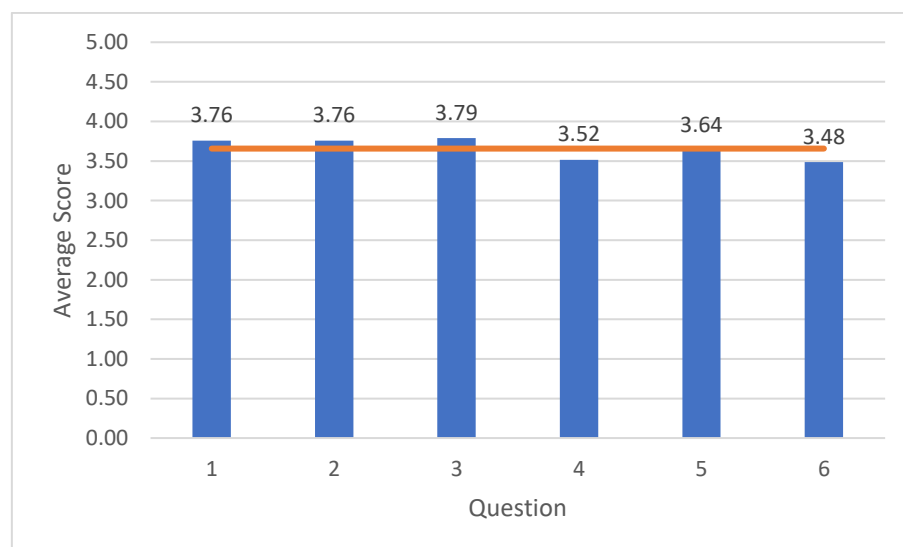


Figure 20 Calculation of Knowledge Process

In this category, the lowest average score was question number 6 *“Benchmarking activities are conducted inside and outside the organization, the results of which are used to improve organizational performance and create new knowledge.”* with 3.48 point.

Meanwhile the average score of all question is 3.66. Question number 4 “*Critical knowledge from employees leaving the organization is retained*” also have score below average.

6) Learning & Innovation

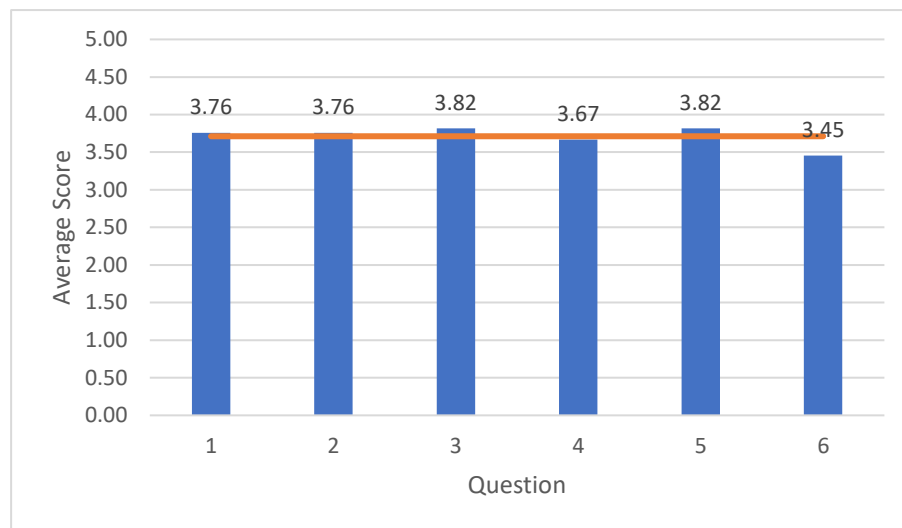


Figure 21 Calculation of Learning & Innovation

In this category, the lowest average score was question number 6 “*Individuals are given incentives to work together and share information.*” with 3.48 point. Meanwhile the average score of all question is 3.71. Besides, question 4 “*People feel empowered and feel that their ideas and contributions are generally valued by the organization.*” Also have score below average.

7) KM Outcomes

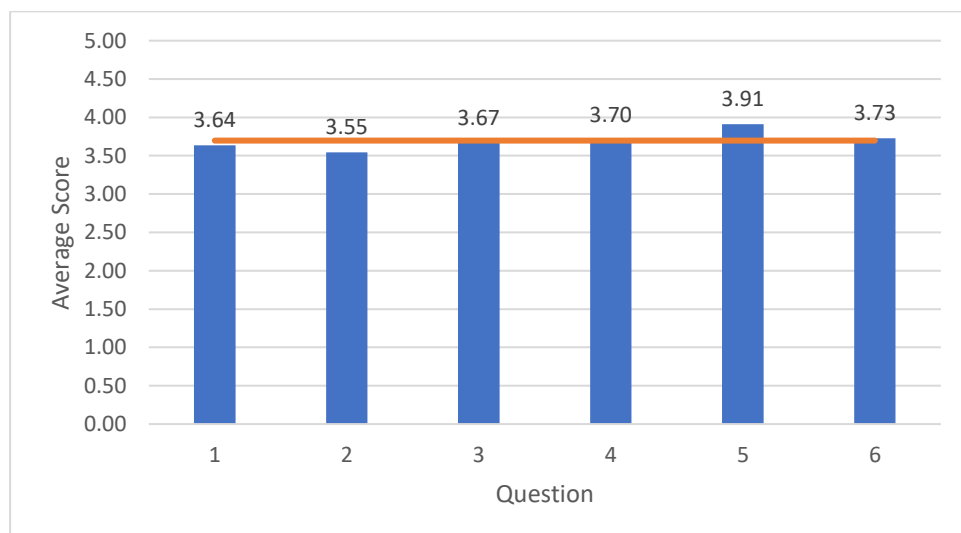


Figure 22 Calculation of KM Outcomes

In this category, the lowest average score was question number 2 “*Measures are in place for assessing the impact of knowledge contributions and initiatives.*” with 3.55 point. Meanwhile the average score of all question is 3.70. Then, question number 1 “*The organization has a history of (and maintains measures for) successfully implementing KM and other change initiatives*” and question number 3 “*JKTDV has achieved higher productivity through reduced cycle time, bigger cost savings, enhanced effectiveness, more efficient use of resources (including knowledge), improved decision-making, and increased speed of innovation*” also have score below average.

2.4.2 Interview Result & Analysis

The interview activity is conducted to several employee with vary background. There are three main questions to ask:

- 1) What is the area of strength in CQSEM related to knowledge management?
- 2) How is the knowledge management in CQSEM in your opinion? Is there any area of opportunity of improvement in CQSEM?
- 3) What is your suggestion to improve the knowledge management system in CQSEM?

The transcripts of the interview are available in Appendix 4. The answers of the interview session are summarized below:

Strength		OFI	
Key Point	Category	Key Point	Category
Multibackground	People	Low utilization of knowledge	KM Process
Teal learner	Learning & Innovation	Not being Subject Matter Expert	People
Willingness to share	People	Choose person according to their job description or only availability personnel	People
Mandatory to be knowledgeable	Process	KM unstructured	Knowledge Process
		No responsibility to share	People
		No knowledge sharing (not systematic)	Processes
		No retaining process for knowledge accrued from completed task	Knowledge Process
		Top management participations and support	Leadership
		Sharing culture	People
		Dedicated person for KM	Leadership

Prior Sharing Knowledge in CQSEM

According to the interview result with Manager Safety Reporting System, there was a knowledge management program which running in CQSEM called sharing session. This sharing session allow any employee to share any knowledge they have to a forum which attends by the top-level management until the bottom level.

Previously, the initiator of this program is a Senior Manager, which it was proofed that the top management participation and support in knowledge management were exists. This program also conducted routine once a week and can be held in formal or informal situation by face to face meeting. To documented what they share, management provide “Pustaka Slamet” as cloud system to put any knowledge to share hence anyone can access it anytime.

Moreover, when employee participate in formal training outside the organization, the participant shall create report to the director regarding the knowledge they receive during the training and what kind of contribution they can make from the training. From this process, the management can identify the knowledge within their organization.

Currently, this program does not exist anymore but will be good to re-create in CQSEM.

2.5 Root Cause Analysis

Root cause analysis is conducted by analyze the area of opportunity for improvement (OFI). The areas are question which having score below average score for each category. There are 20 out of 42 questions have score below average. However, this research will focus to analyze the three lowest category that is leadership, knowledge process and people. The analysis will be combined with the interview result. The opportunity for improvement area in CQSEM as follows:

Category	OFI	Q No.	Avg Score	Remark
Leadership	Central coordinating unit/person	2	3.52	There is no employee has role and responsibility as Chief of Knowledge or Knowledge Manager nor appointed as dedicated person in charge to handle the knowledge management in CQSEM. It managed by each of sub-unit itself, but without any standardize. It resulted to the ineffective and inconsistency of the knowledge management.
Leadership	Financial Resource	3	3.27	The budget allocation for KM related (program, initiative, training, or else) are minimum. It because of the underperformance of company financial condition for several years. However, the

Category	OFI	Q No.	Avg Score	Remark
				budget should still allocate properly in order to support the organizational performance.
Leadership	Management commitment to promotes, recognize and rewards	6	3.58	There is no reward program created as a form of appreciation/recognition from the leader regarding the performance improvement, organizational and employee learning, sharing of knowledge, and knowledge creation.
Knowledge Process	Retaining knowledge	4	3.52	Retaining knowledge in the employee who left the organization (CQSEM) due to their movement to another department, resign, or pension should be consider. As mentioned from the interview result that the employees are multi-background and equip with many kind of skill and knowledge in order to comply with the regulations, hence if the CQSEM do not retain the knowledge, it will be disappear along with the employee.
Knowledge process	Knowledge sharing across the organization	5	3.64	Best practices and lesson learned from airline community usually adopt as necessary in CQSEM. However, the implementation was inconsistent and have opportunity to improve the process.
Knowledge process	Benchmarking	6	3.48	The benchmarking result is used to improve the performance of CQSEM. However, it has a further opportunity to be created into the new knowledge.
People	Formal mentoring & coaching	3	3.36	The program to coach and mentor the subordinate is in there. However, there is an inconsistency of the implementation and evaluation of the program.
People	Induction process of new staff	2	3.73	The lack of resources enforces the management in CQSEM to allow the new staff to immediately able to perform their work. Hence, the induction process of new staff usually forgotten and let the new staff learning by doing.
People	Update database of staff competencies	4	3.58	The database of staff competencies is filed in a hardcopy for the sake of audit. Hence, the data is not utilized unless for

Category	OFI	Q No.	Avg Score	Remark
				the audit purpose/evidence. The updating data also done for the sake of audit purpose only. It has an opportunity to improve by using the technology, such as filed it in the computer or cloud system.
People	Knowledge sharing & collaboration	5	3.64	Currently, knowledge sharing is not being part of Key Performance Indicator (KPI) nor the culture in CQSEM. Employees rarely share the knowledge they have to others for the sake of busy, high workload, and other. Especially during this pandemic situation, which the employees are rarely meet face to face. The knowledge sharing and collaboration between employee and/or cross department is still minimum. There are minimum encouragement and reward from the management personnel toward their subordinate regarding the knowledge sharing and collaboration. Meanwhile, the sharing and collaboration may increase the performance of the organization.

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