Knowledge Management Model for the Downstream Oil Energy Sector in the Philippines: A Grounded Theory Approach

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ABSTRACT

Knowledge management can guide the management of an enterprise in running the business with a greater degree of efficiency while decreasing business risks. This dissertation presented a Knowledge Management model as a simplified image outlining the relationships of the devised theory using the grounded theory approach of qualitative research. Through semi-structured interviews done by carefully determining the current preferences of organizational leaders of four oil major companies operating in the downstream oil business in the Philippines, of the relevant knowledge processes backed up by presented documents,

presentations, and policy manuals. The grounded theory inquiry developed a principle on modern Knowledge Management encompassing the specifics in the downstream oil sector in the Philippines. Theoretical saturation was achieved at ten participants. Thematic analysis generated patterns of modern knowledge. In the model, there were certain management prerequisites with several characteristics and for these characteristics to be effective, sources of knowledge were clearly identified. Once validated knowledge has been established and security of knowledge has been secured, utilization of the knowledge ensues. While using the knowledge, the model puts value on responsibility to work in collaboration with other knowledge managers. Collaboration means shared responsibility to ensure that the knowledge at hand will only be used in promoting common business goals. Predicaments like devaluation, mishandling, and manipulation of knowledge are always possible and extra caution should always be given. The model which can be replicated to other organizations with allied business structures will strengthen the resolve of a knowledge management system benefits by improving the business processes, making better decisions and short and long-term strategy formulation.

Keywords: Knowledge Management, Knowledge Management Models, Downstream Oil Energy Sector, Organizational Performance, Grounded Theory

INTRODUCTION

Knowledge management (KM) has been one of the most essential drivers in the downstream oil industry. KM is described as a process aimed at improving organizational efficiency and saving

knowledge for future use (Kianto et al., 2017). Proper KM, facilitated by the right KM system, is seen as crucial for achieving success and is beneficial to all industry participants (Deng et al., 2022; Chopra et al., 2021). Effective KM involves creating, disseminating, formulating, and auditing knowledge, maximizing the value of a corporation's collective knowledge and empowering staff to make informed decisions (Olujobi, 2021). The oil supply chain is divided into upstream, midstream, and downstream sectors, each with its functions (Lima C. et al., 2016).

In the Philippines, the downstream oil energy sector is governed by Republic Act 8479, which promotes market forces' independence and ensures supply reliability through unannounced inspections (Congress of the Philippines, 1998). This research explored KM in the context of the downstream oil energy sector in the Philippines, considering the sector's complex activities, from transportation and refining to distribution and marketing (Lee, 2000). Additionally, the research discussed the growing interest in knowledge management models (KMM) and the need for a more dynamic approach in the ever-evolving KM capabilities of companies in this sector (Hock-Doepgen et al., 2021; Durst et al., 2019; Spanellis et al., 2021; Yap et al., 2022).

This research aimed to address a notable gap in the study of KM within the downstream oil energy sector in the Philippines, offering insights into this unexplored area and its specific challenges within the Philippine market environment. The study focused on mid-to-high level managers of major oil companies, making it a novel contribution to the sector. It also highlighted the potential for broader application, including local and multinational companies with related business activities in the Philippine oil market. Furthermore, the research aligned with existing literature that underscores the organizational benefits of effective knowledge management, such as improved business processes, better

decision-making, and enhanced short- and long-term strategy formulation, as noted by Desai & Rai (2016). Additionally, it aligned with the idea presented by Hock-Doepgen et al. (2021) that competitive advantage can be gained by leveraging organizational knowledge for value creation and productive outcomes, emphasizing the importance of effective knowledge management in the industry.

This qualitative research, conducted using a grounded theory approach, aimed to understand KM processes in the Downstream Oil Energy Sector in the Philippines, focusing on four major oil companies: Total, Shell, Caltex, and Petron. The study had several objectives. First, it sought to analyze the existing KM processes, including the generation, exchange, use, and maintenance of information and knowledge. Second, it aimed to identify emerging challenges affecting KM processes within the industry. Third, the study aimed to assess the impact of these challenges and pave the way for smoother KM system implementation. Finally, it aimed to determine the factors influencing these challenges. The central goal was to develop a theory represented by a model that could be applied to these companies, specifically focusing on processes such as acquisition, refinement, repository and storage, socialization, exchange, and application of knowledge. The study also aimed to determine which KM processes were preferred and why, establish departmental responsibilities for KM, strategize defenses against organizational weaknesses, and ultimately create a model for a strategic KM system.

LITERATURE REVIEWS

Tacit and Explicit Knowledge

Knowledge can be categorized into two primary forms: tacit and explicit. Tacit knowledge encompasses individuals' insights,

experiences, ideas, and skills that are challenging to articulate or explain (Arnett et al., 2021). Sharing tacit knowledge typically requires prolonged personal collaboration and sustained interactions among stakeholders, and employees acquire it progressively through coaching and training sessions (Shakerian et al., 2016; Kimble et al., 2016).

Technological solutions that enable the documentation and dissemination of tacit knowledge are crucial for effective management (Edopkolor and Osifo, 2022; Jia et al., 2022). On the other hand, explicit knowledge is documented and easily transferable, including information like datasheets, research reports, white papers, and articles (Shakerian et al., 2016; Gil and Carrillo 2016). This type of knowledge can be readily accessed and communicated within an organization and is typically found in forms like sales scripts, handbooks, and coaching videos on learning management platforms, facilitating employees in their day-to-day operations (Maravilhas and Martins 2019).

Assumptions in Knowledge Management

KM is often associated with positive outcomes, but it rests on critical assumptions. Firstly, there's an assumption that knowledge is inherently valuable and worth managing. Secondly, that all organizations can benefit from KM, linking value creation to knowledge competency and employee insights. Lastly, that knowledge can be effectively managed, a dominant one despite challenges in defining and controlling knowledge. These assumptions underscore the need for a nuanced and context-specific approach to KM (Ahmady et al. 2016; Barão et al. 2017; Abbas & Sağsan 2019; Bolisani et al 2018; Tongsamsi and Tongsamsi 2017; Chiu and Chen 2016; Bouncken et al. 2021; Kimble et al. 2016).

Advantages of Utilizing Knowledge Management Systems (KMS)

Oli and Dhanasekaran (2023) highlighted the importance of KMS in improving decision-making capabilities and handling the increasing volume of information within organizations. In Saudi Arabia, where the economy relies heavily on oil production, Albassam (2019) underscores the need for KMS to support creativity, innovation, and sustainable development through research and development. Similarly, Pribadi et al. (2021) emphasize the role of KMS in mitigating earthquake risks and saving lives through infrastructure resilience programs in Indonesia. Zouari and Dakhli (2018) emphasize as key source of competitive advantage, and KMS is essential for organizational performance and survival in rapidly changing environments. Lastly, Santoro et al. (2018) suggest that KMS can make new opportunities more visible for exploration and exploitation within organizations, contributing to their overall success.

Established KMS: Towards the Development of a Contemporary Knowledge Management Model

The literature on KM underscores its critical role in modern organizations. Saadat & Saadat (2016) emphasize the importance of KM in ensuring that the right knowledge is available to the intended users in a timely and efficient manner. Uzelac et al. (2018) argue that organizations must consider KM issues to adapt to the dynamics of the global economy. Wątróbski (2019) suggests that through Knowledge Management Models (KMM), KM enables organizations to improve collaboration, gather information, and make informed decisions. Several empirical models are highlighted, including the WIIG Model, which focuses on structuring and synchronizing knowledge to make organizations intelligent (Zouari & Dakhli, 2018).

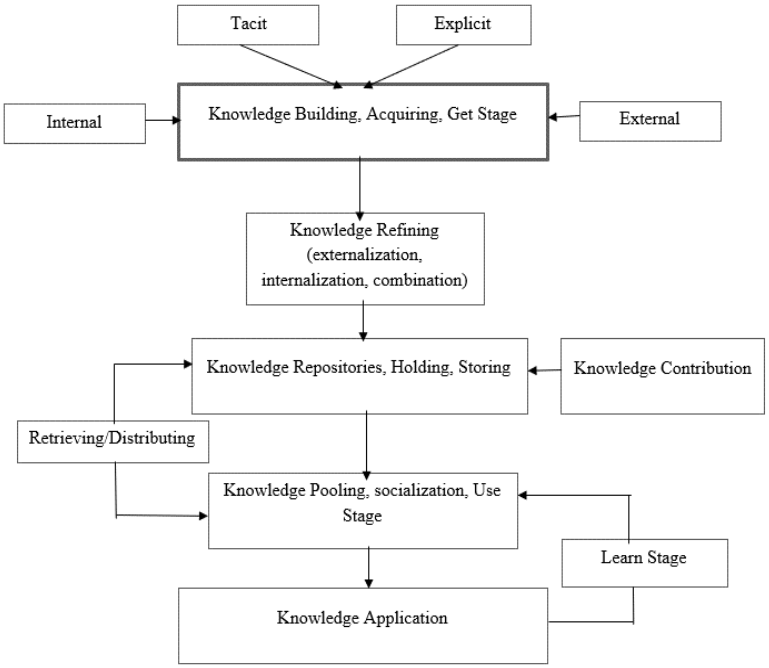

Figure 1. Synthesis of the 4 Models of Knowledge Management

The SPIRAL Model, introduced by Nonaka and Takeuchi in 1995, emphasizes the conversion of knowledge through socialization, externalization, combination, and internalization (Murase, 2021; Schniederjans et al., 2020). The ZACK Model emphasizes refining knowledge throughout the KM cycle (Gavrilova et al., 2017), while the Bukowitz & Williams Model outlines stages of obtaining, using, learning, and contributing knowledge for organizational value creation (Chiu and Chen, 2016). These models offered practical approaches to effective KM. Figure 1 illustrates the integration of these 4 models.

MATERIALS AND METHODS

Study Design

This study utilized the principles of the grounded theory approach. In this approach, the objective was to obtain a detailed understanding of a specific topic based on the first-hand experiences of the participants, and was also chosen for the researcher to use an emerging approach to qualitative inquiry. The grounded theory design was employed to develop a theory that explains the process of KM in the downstream oil energy sector in the Philippines, and as a method, emphasizes the inductive development of theory from collected data. Since existing KM models did not adequately address the specific context of the downstream oil energy sector in the Philippines, this approach was chosen to create a theory specifically to this industry. The resulting theory aimed to provide insights and recommendations for enhancing organizational performance in this sector, aligning with the interests of management and business scholars who find the grounded theory approach valuable for studying topics like decision-making, socialization, and change in organizational settings.

Participants

To ensure a comprehensive and varied perspective on knowledge management in the downstream oil energy sector in the Philippines, the researcher employed purposive sampling, specifically maximum variation sampling, guided by Hennink and Kaiser's (2022) recommendation to assess theoretical saturation. Fifteen participants were initially invited, representing various key positions across four major oil companies. However, theoretical saturation was achieved with ten participants, comprising seven

from Total and one each from Shell, Caltex, and Petron. The positions were selected due to their roles and significance in the industry. The study was conducted at the headquarters of each company, with some sessions held online through Online Zoom or Microsoft Teams platforms to accommodate participant preferences and access to relevant documentation and materials.

Instrumentation

The first part of a two-part data collection gathered demographic information such as age, gender, years of employment, and tenure in the current company. The second part consisted of semi-structured, in-depth interviews using a guide developed to aid the researcher, following Patton's approach (2015). Semi-structured interviews were chosen for their ability to provide greater control over the research areas covered compared to unstructured interviews (DeJonckheere and Vaughn, 2019). The interview questions and probes, aligned with the research questions, were designed to allow for the discovery of themes and ideas. Interview questions were posed, covering topics such as KM familiarity, preferences, practices/strategies, processes, knowledge sharing, technology, and organizational performance. This approach aimed to ensure a comprehensive understanding of the data collected from the participants while maintaining flexibility for emergent insights (Creswell and Poth, 2018).

Data Collection and Analysis

The researcher sought permission from the management of the four major oil companies (Total, Shell, Caltex, and Petron) to conduct interviews with selected participants. Invitations were sent to participants based on their full names and functions within these companies, and those who agreed to participate provided written and signed informed consent, including permission to

audio-record the interviews. Participants were assured of anonymity and the confidentiality of their responses. Biases were bracketed to maintain data integrity, and interviews, lasting a minimum of one hour and sometimes exceeding two hours, covered a range of questions and occasionally involved the examination of documentary evidence. Member checking and validation by correspondence were performed to confirm findings. Data analysis involved content/thematic analysis, beginning with open coding to identify codes and themes, followed by axial coding to establish relationships between codes and selective coding to construct a storyline and theoretical model based on categorical relationships, resulting in an original theory. This comprehensive research process adhered to ethical guidelines and rigorous data analysis methods (Braun and Clarke, 2021; Creswell and Poth, 2018; Naidu & Prose, 2018).

RESULTS

The researcher was able to collate and synthesize the participants' perspectives, perceptions and evaluation on matters concerning KM. From the cross analyses, key principles which can be illustrated through a model, outlined below on the relationships of the concepts that emerged. Remarkably, the theory or model presented seven elements on how KM should be managed at a level of the participants' purview, namely, Management Prerequisites, Sources of Knowledge, Validation, Security of Knowledge, Utilization of Knowledge, Collaboration, and Predicaments.

In this study, participants were asked to define, and their responses collectively described KM as a process involving the sourcing, storage, and utilization of validated information for the organization's benefit. Interestingly, KM was viewed as a collaborative function involving everyone in the organization, from

upper management to lower levels. This perspective emphasized that all employees are, in essence, knowledge managers, tasked with the responsibility of preserving and using information in line with the organization's principles and values. However, to be an effective knowledge manager, specific managerial prerequisites were explored in the study.

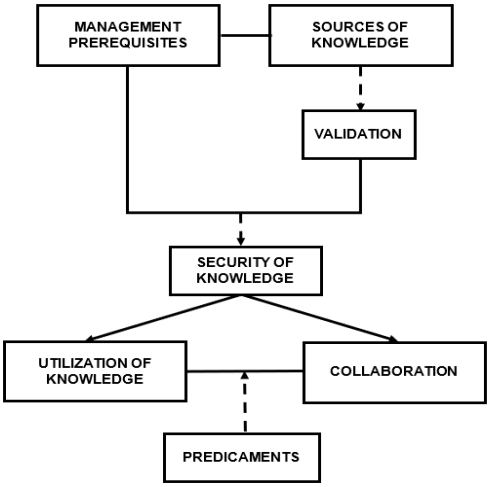

Figure 2. The Emergent Model

Managerial Prerequisites

The managerial prerequisites identified in this study include accountability, foundational knowledge, openness, foresight, limited trust, and digital command.

Accountability

Accountability was identified as a crucial prerequisite for effective KM. Participants emphasized the responsibility and accountability associated with safeguarding and protecting

entrusted knowledge. One participant highlighted the need to exercise discretion in sharing knowledge: *"Knowledge management is some system where you need to be responsible and accountable for securing and protecting the knowledge that you are entrusted with. Especially for the corporate environment like us... Hence, you do not just give this to anybody. Only on a need-to-know fashion."* They also stressed the importance of information protection policies, guidelines, proper documentation, and the accountability of knowledge custodians. Another participant underlined the responsibility and accountability involved in knowledge extraction and storage supported by digital technology. Accountability was viewed as a means to measure outcomes: *"I think, first and foremost, is accountability... You measure, and then accountability takes over."* Participants consistently emphasized that being responsible in knowledge handling is crucial, as it makes individuals accountable for their actions. Lastly, leadership roles in the organization were associated with a strong emphasis on accountability: *"As leaders in our organization, we're being taught to be accountable."*

Foundational Knowledge

Another requisite is the requirement of foundational knowledge. An effective knowledge manager should also be informed about the basic nature of the knowledge he or she is about to manage. As one participant on this verbalized: *"Of course, you should have a foundation of knowledge. The basic requirement for you to proceed to the next level. That is the time that you can be mentored, you can be trained, you acquire knowledge from other people which becomes explicit now. But basically, the knowledge that you acquired in the beginning serves as your foundation. So, you are trained on basic concepts and methodologies, on how you may be applied on your next level of employment. And that helps a lot."*

Openness

Participants emphasized that knowledge managers should have an open mindset, accepting the reality that they don't know everything: *"Demographics and at the same time should not be hierarchical. I mean it may be important that in a team, there should be no hierarchy of management when it comes to knowledge. It would be nice for the managers to have an open mind when receiving new knowledge and the subordinates will also have an open mind when given information. And coaching really needs time. There has got to be given time for that which will spell commitment on the part of management. So, open-mindedness is encouraged."* They stressed the importance of avoiding hierarchical barriers in knowledge sharing, with both managers and subordinates fostering open-mindedness. Openness to change and continuous improvement was also highlighted. Overall, openness was seen as essential for effective knowledge management and organizational growth.

Foresight

Participants emphasized the importance of not rushing decisions and having the ability to anticipate possible outcomes when managing knowledge. Experience-based knowledge was seen as valuable for faster decision-making, as it helps in foreseeing potential effects of decisions. One participant highlighted the importance of combining available information with feedback from field teams and analysts to make more concrete decisions: *"You have your experience already so you can make faster decisions on something that is unfamiliar territory. You have to know what the information on hand are. At least, at the end of the day, you will not be rushing on decisions and that those decisions are weighted. Add that to the feedback from your guys on the field and analysts,*

then decisions are more concrete." Managerial courage was also noted as a factor contributing to foresight, even when outcomes might not be certain. Gathering relevant data through measurements was seen as essential for informed decision-making. However, there can be also repercussions of unfit or mismanaged information, highlighting the importance of effective communication and information filtering to avoid negative consequences. Foresight was recognized as vital for ensuring that knowledge is used effectively and responsibly.

Limited Trust

Trust takes a different perspective, with a focus on data security and controlled information dissemination rather than interpersonal relationships. Participants emphasized that knowledge managers must prioritize responsible and accountable handling of knowledge, especially in a corporate setting where both corporate and personal information is at stake. They stressed the need to filter and tailor information distribution based on recipients' specific needs and functions. Trust in this context is seen as contingent upon the careful management of information, and some participants even expressed limited trust due to the assumption that information could leak. One participant aptly summarized this perspective: *"Yes, I filter. And I always assume that whatever I tell them, will leak out. It will definitely leak. So to a certain extent, my trust is limited."* Overall, this perspective highlights the importance of data security and control in effective knowledge management.

Digital Command

Digitalization emerges as a pivotal enabler for KM, as indicated by participants. They emphasized that technology plays a crucial role in acquiring, storing, and retrieving knowledge. Digital tools

were seen as essential for evolving with the changing nature of knowledge, preserving institutional memory, and improving processes. Furthermore, participants highlighted the importance of efficient communication facilitated by digital platforms, especially in the fast-paced and highly competitive corporate environment. Digitalization allows for quicker information sharing, both internally and externally, which is vital for decision-making and business growth. Additionally, digital tools aid in knowledge generation and capture, making it easier to collect and utilize valuable data and reports. As one participant aptly put it: *"The way we capture the knowledge, digital has a big help in data capture. We would not be able to capture that without digitalization."* Overall, technology-driven digitalization is recognized as a significant driver of effective KM in contemporary times.

Sources of Knowledge

The study revealed that knowledge can come from various sources.

Internal and External Training

Various sources of knowledge acquisition were highlighted in the study, underscoring the importance of training courses, both internal and external, as valuable avenues for KM. Participants emphasized that training, whether on-the-job or formal classroom sessions, plays a crucial role in enhancing competencies related to work responsibilities and career advancement. Internal discussions and interactions were also recognized as essential for decision makers. Additionally, participants noted the significance of external sources of knowledge, such as professional associations, customers, suppliers, and industry peers, as valuable contributors to expanding one's understanding of the industry and strategic

directions: *"You get knowledge from different people, different sources... It's important to learn from different sources."*

Mentorship

Participants emphasized the effectiveness of mentorship programs in helping young managers understand day-to-day responsibilities, client interactions, administrative tasks, and internal processes. They stressed the importance of having mentors who are willing to share their experiences and provide guidance to ensure the proper utilization of knowledge. Mentorship was seen as a valuable means of developing individuals within the organization, fostering a strong desire for knowledge acquisition, and planning for succession: *"Mentoring and coaching are a big part of the talent development process."*

Networks

Participants emphasized that knowledge acquisition extends beyond the organization, encompassing external experiences, internal training programs, cross-learning initiatives, dealer conventions, and interactions with competitors and peers. These networks enable knowledge sharing, retention, and cross-pollination of ideas. The insights garnered from these sources are instrumental in decision-making processes. *"The purpose is to look or see how the knowledge is being transferred within the organization."*

Peers

Peer interactions, facilitated by management, enable knowledge sharing, open-mindedness, and the exchange of best practices. Participants emphasized that these initiatives, such as weekly huddle meetings and coaching, contribute to a culture of continuous learning and improvement: *"It is very helpful because*

of the open-mindedness of everyone. Because with an open mind, there is listening on both sides. Everyone will also be open to criticism, then open to sharing information, and it becomes very helpful. It is a two-way learning."

Competitors

Participants highlighted the importance of gathering competitive information that can be used for benchmarking and strategic decision-making. They also emphasized the need for discussions to validate and analyze the insights obtained from competitors: *"So, meaning that, there has to be a lot of discussions first. Sometimes, I think the discussion has greater weight than any memo. I mean, you can read a memo, but, before you sign off, there has to be some discussion. Similarly, when I get information from them coming from our competitors' strategies, then we need to discuss as well. The repercussions, the counteroffers, etc. Then that's how I decide as well."* Competitor knowledge acquisition was seen as an essential part of the broader process of collecting and managing information and insights related to the industry and market.

Validation

There emerged three elements for validation to take place through their judicious use:

Documentations

Documenting processes and knowledge retention strategies play a crucial role in KM. One participant highlighted the importance of documenting processes to ensure that expertise does not leave the organization when employees depart: *"The other way to retain knowledge is putting process in place. Sorry, documenting processes. So that, even if the person leaves, there is a record of*

how things are done. Not like those that when a person leaves, he brings along his expertise."

Another stressed the value of turnover notes as a means of transferring knowledge from one employee to another. Proper documentation was seen as a way to capture both explicit and tacit knowledge, ensuring that it can be shared and utilized effectively within the organization.

Informants

Validation of knowledge emerged as a crucial aspect of knowledge management in the participants' statements. One member participant emphasized: *"All of these has its own sensitivities and importance. Of course, when you acquire knowledge, it has to be factual. It cannot just simply mean getting the information or knowledge that is not correct and the sensitivity of preserving it - to make sure it would not leak, be accessed by persons who are not entitled to that, and the third one is how you will be responsible to disseminate the information or applying the knowledge that you have that will really be constructive in a sense that it will build up the corporate environment."*

Another participant defined where validation can take place: *"From the experience of people surrounding you. From the suppliers, from the banks, the creditors, clients. Stakeholders and other 3rd parties. You can learn from them. You can obtain information from them."*

Feedback

The importance of feedback from significant individuals in the decision-making process was highlighted by participants. One participant stressed the impact of inadequate or inaccurate information on decision-making: *"Or there is a lack of information or over information. So that's the problem… or not sharing at all.*

So, there's a problem with communication. So of course, the decision makers may not produce a sound decision because of the knowledge that they got. That affects the organization." Another participant emphasized the role of feedback and information in making well-informed decisions: *"You have your experience already so you can make faster decisions on somethings that are unfamiliar territory. You have to know what are the information on hand. At least, at the end of the day, you will not be rushing to decisions and those decisions are weighted. Add that to the feedback from your guys on the field and analysts, then decisions are more concrete."*

Security of Knowledge

The concept of data security emerged as an innate function of KM. There are important principles to the security of knowledge that a knowledge manager should always take into consideration:

Sensitivity

The importance of treating knowledge as sensitive and securing it was emphasized. One participant highlighted the responsibility and accountability associated with knowledge management: *"Knowledge management is some system where you need to be responsible and accountable for securing and protecting the knowledge that you are entrusted with. Especially for the corporate environment like us and of course, the knowledge is not only corporate but even your personal matters and all knowledge."* Another participant emphasized the sensitivity of knowledge management and its role in preserving company information and the collective experience of employees, noting that knowledge is an asset. The need for care and preservation of knowledge at every stage of its acquisition and utilization was also discussed, with a focus on maintaining accuracy and preventing distortion.

Classification of Knowledge

The discussions on the security of knowledge revealed the importance of standardization and classification to maintain information integrity and restrict access appropriately. Participants highlighted the need for authorization and sensitivity in handling knowledge, emphasizing the responsibility of ensuring that information is factual and secure. One participant mentioned the subjectivity of security depending on the perception of the receiver. Classification of knowledge and boundaries between corporate and personal information were emphasized, with a focus on the need-to-know basis and guidelines for protecting and preserving knowledge. Participants also discussed the categorization of information, guidelines for classification, and determining levels of authority to access specific knowledge. Access levels were seen as crucial to preventing breaches of security and ensuring confidentiality. Overall, the notion of standardization and classification emerged as essential elements in securing knowledge.

Storage

Participants stressed the need for standardized formats, particularly for crucial data like Excel files, to ease knowledge transfer and ensure business continuity during employee transitions. For instance, one participant stated: *"So, I think that is the better thing for knowledge transfer, as since not everything can be passed on, at least the basic and empirical ones can be transferred."* They emphasized the importance of central repositories for processes, work procedures, contracts, and best practices, emphasizing their role in operational efficiency and adaptability: *"For us, we are reviewing the processes every two years."* This indicates that regular updates were essential to keep knowledge repositories relevant. Records management and

documentation were considered crucial for supporting data security and providing references, with one participant noting: *"These are all stamped in emails, so we have reference."* Continuous updates were viewed as vital for keeping knowledge up to date, especially for newcomers, as another participant stated, *"So I think, ideally, when someone leaves, the replacement should be ready."* The need for central management or a designated knowledge department to oversee repositories across different organizational departments, ensuring consistency, as one participant emphasized: *"There's a group who would manage that, I think it would be good."* In summary, centralization, ongoing updates, and active management of knowledge repositories were considered fundamental strategies to safeguard organizational knowledge.

Standardization of Procedures, Protocols, or Regulations

Participants stressed the need for structured processes and standard templates, not only for storing knowledge but also for documentation. One participant emphasized that standardization becomes the norm and an efficient way to handle knowledge transfer and utilization over time: *"So, we need to have a standard template for not just the storing of knowledge but also, for example, documentation."* Data protection regulations and guidelines were seen as essential in controlling and preventing misuse of company knowledge. Another participant highlighted the importance of sustainability and audits in driving the need for standardized processes and repositories: *"That the company should have processes but also a system for its review. And how can one review if there is no repository. Also, these processes are not forever there. They are all subject to change. For us, we review the processes every two years."* Some participants suggested that standardization could be effectively managed by an exclusive

department, making it easier to retain knowledge within shared services and ensure consistent processes across different regions.

Utilization of Knowledge

Following a system where centralization has been done and the repository has been set up for secured and validated knowledge, knowledge managers can now utilize the data for various purposes. But for the proper utilization of knowledge, certain themes actions emerged in the course of analysis.

Risk-Benefit Analysis

The participants discussed the importance of ensuring that the information or knowledge is accurate and protected, and how it is applied should contribute constructively to the organization: *"I think there should be structure. Particularly in the processes of transfer of knowledge. Though at first, it may not be applicable to some, if we pressed on for this process, it becomes now a norm. And when it became a norm it now also becomes the efficient way. So, we need to have a standard template for not just the storing of knowledge but also for example documentation."* Balancing knowledge streams to suit both the organization and its market was also highlighted. Responsible utilization and enabler processes were considered essential. Participants cautioned against the risk of losing valuable experience when overly relying on new knowledge infusion. Making sound decisions based on available knowledge and the benefits of proper utilization extended beyond the current organization to future employment opportunities.

Learning

The interviews revealed that there is learning engagements as they utilize knowledge, including learning from failures,

acculturation, experiential learning, and vicarious learning. Learning from failures was acknowledged emphasizing the importance of experiencing and learning from mistakes to improve procedures and decision-making. Acculturation involved adopting organizational ways and means, particularly among newer knowledge managers. Experiential learning was seen as a highly effective method, with participants gaining mastery through hands-on experiences. Vicarious learning, involving learning from the experiences of others, was also prevalent, with knowledge managers sharing and extracting wisdom from each other's successes and failures.

Contextualization

Participants highlighted the need for an open sharing culture within the organization. They also acknowledged the importance of tailoring knowledge sharing to different target stakeholders, understanding that customization is key to effective communication. The need to balance knowledge streams and avoid boasting about one's knowledge were also highlighted. Knowledge managers were cautioned against using knowledge inappropriately and were encouraged to engage in discussions to ensure the proper context and understanding of information. As one participant noted: *"The discussion has greater weight than any memo."*

Collaboration

Using knowledge for various purposes, however, is never easy as it is also not a one-man job. KM is collaborative work, and all the individuals involved in the organization become knowledge managers.

Upper and Lower Management

The interviews highlighted the importance of collaboration between upper and lower management in knowledge management processes. One participant emphasized: *"Of course, the information protection policies, the guidelines, the proper documentation, the accountability of the custodians of such information or knowledge. Yeah so, these are the enablers- of course the top management who is creating the information or knowledge as well. These are the important people in the realization."*This collaborative approach involves sharing strategic objectives, directions, and targets in formal meetings, with a clear cascade of mandates from higher management to lower levels. The efficient exchange of knowledge and the recognition that managers should understand their subordinates' roles, injecting knowledge when needed, contribute to a synergy of broader knowledge within the organization.

Shared Responsibility

Shared responsibility emerged as a crucial aspect emphasizing that all members of the organization bear the responsibility of ensuring the validity, security, and beneficial utilization of knowledge generated within the organization: *"Yes, collaboration is the name of the game nowadays. You have Teams, collaborative tools, hence it is commonly and widely used now. Everybody gets to pitch in. From different levels of higher or lower management functions."* Participants stressed the importance of a non-hierarchical approach to knowledge sharing, where no barriers should exist. Another participant highlighted the mutual responsibility of both sides, where individuals learn from each other's approaches and behaviors related to knowledge sharing, fostering a sense of custodianship. Formal meetings were described as a forum for sharing strategic objectives, directions,

and targets, facilitating knowledge exchange from higher management to lower levels.

Informal Meetings

Informal meetings played a significant role in fostering collaboration within the organization. These informal discussions were seen as more open and direct, allowing participants to express themselves freely. Participants noted that informal meetings led to less reservation and encouraged the generation of multiple perspectives: *"But sometimes, the informal discussions help as well to be more open, especially one to one discussion like this. It's more open to be discussing informally. You can say whatever you want to say. Unlike in a meeting that it's limited."* Others highlighted the differences between formal and informal meetings, with formal discussions sometimes leading to reserved responses due to diverse audiences and interests. In contrast, informal discussions were often directed toward specific issues and could lead to more effective resolutions. The informality was seen as conducive to spontaneous sharing and the exchange of valuable knowledge within the organization. One participant attributed the effectiveness of informal meetings to a lack of rigid structure and a cultural influence that had persisted over the years.

Knowledgeable Co-Managers

Knowledge managers play a crucial role in ensuring that their fellow managers are well-informed and knowledgeable about essential organizational knowledge: *"We meet every week, we set a meeting and discuss, particularly the pressing issues. Kind of quick. That is one. This is where we are aligned with our objectives and collaborate with our actions so they will also know each other's functions."* Another participant stressed: *"Yes, collaboration is the name of the game nowadays. You have [Microsoft] Teams,*

collaborative tools, hence it is commonly and widely used now. Everybody gets to pitch in. From different levels of higher or lower management functions." Another participant called for unity and equality among managers when it comes to collaboration and emphasized: *"It would be nice for the managers to have an open mind when receiving new knowledge and the subordinates will also have an open mind when given information. And coaching really needs time. There has got to be given time for that which will spell commitment on the part of management."*

Predicaments

There also surfaced certain difficulties that seemed to interfere with the success of the use of knowledge and collaborative efforts.

Devaluation of Knowledge

Effective KM heavily relies on the contribution of human resources and employees within an organization. One participant emphasized: *"I think the biggest enablers are the human resources, the members of the team, the employees. Because they are the ones, from their experiences, from how they know the company. These are the things that strengthen knowledge management. That's why it's very difficult when people leave, because a lot of these information, these are informal knowledge, most of these are not documented, and derived from experiences and there's no one to those who have received that passed on knowledge, once they leave. That creates a gap for the new employees, they will have to again, build up the story, you know the history. And that story from those experts loses its value, or at many times gets manipulated and tweaked."* Another participant highlighted the importance of timely updates and relevancy: *"Because for example, there are some practices, even some programs in marketing, relevant before but no longer relevant now."* However, there is a risk of devaluation

or mismanagement of knowledge, as data may become outdated or improperly transferred, as explained by other participants, ultimately affecting the credibility and value of knowledge within the organization.

Mishandling of Knowledge

Effective communication and knowledge transfer are pivotal for organizational success, and the participants' insights underscore the perils of communication breakdowns and mishandled information: *"Or there is a lack of information or over information. So that's the problem… or not sharing at all. So, there's a problem with communication. So of course, the decision makers may not produce a sound decision because of the knowledge that they got. That affects the organization."* These challenges include the potential for suboptimal decision-making due to insufficient or overwhelming information, knowledge gaps when employees depart without proper knowledge transfer, and a loss of knowledge credibility when information is not effectively communicated.

Manipulation of Knowledge

Effective KM depends on preserving the integrity of information and preventing the loss or manipulation of vital knowledge. As one participant noted, the departure of employees without proper knowledge transfer creates a gap for new employees, and the valuable knowledge from departing experts may lose its value or be altered, emphasizing that *"the biggest enabler is really the people of the organization."* However, there are instances where higher management may control and adjust information to be passed on, leading to situations where managers are pressured due to inadequate training, as another participant explained, *"managers are forced to control and adjust the information to be transferred."* This manipulation or tweaking of knowledge is

facilitated by evolving technology, as mentioned by the same participant. Such issues are not unique to one organization, with communication challenges, inaccuracies, and knowledge manipulation being common problems in many companies.

DISCUSSION

KM is a collaborative process involving all members of an organization, making everyone a knowledge manager. KM aims to source, store, and utilize validated information for the benefit of the organization. Effective knowledge managers should possess specific management prerequisites, including accountability, which entails taking full responsibility for knowledge management processes. Transparency is crucial, ensuring full disclosure of information to prevent incomplete data from influencing decisions. Foundational knowledge is essential to understand the information's origin, validity, and reliability. Openness involves acknowledging one's limitations and remaining receptive to learning. Foresight allows effective managers to anticipate outcomes and make informed decisions. Limited trust ensures that knowledge is shared only with authorized parties, and digital command involves leveraging technology for efficient communication and knowledge transfer. Knowledge may come from various sources, and validation is crucial to confirm its veracity. Security measures must protect knowledge, and classification aids in data management. Utilizing knowledge requires a risk-benefit analysis, and learning from failures, acculturation, experiential learning, and vicarious learning contribute to knowledge managers' growth. Contextualization ensures knowledge is used appropriately, and collaboration is essential, with all members participating in KM. However, challenges like knowledge devaluation, manipulation, and

mishandling can hinder KM success, emphasizing the importance of data security and responsible knowledge management practices.

The research employed a qualitative approach with a grounded theory design, primarily relying on in-depth interviews and documentary evidence as data collection methods. The main challenge anticipated was the availability of interview participants, complicated by the ongoing COVID-19 pandemic restrictions and the stringent security protocols surrounding company information. Additionally, the confidential nature of the data posed difficulties in obtaining permission to access the necessary information for addressing the research questions.

This research focused on participants from four major multinational oil companies in the Philippines, including Total, Shell, Caltex, and Petron, all of which have diverse business activities spanning retail, commercial, lubricants, and Liquified Petroleum Gas sectors. The study excluded other multinational companies with more limited business activities and local companies, even if they engaged in various aspects of downstream oil operations. Future studies can also explore the KM processes observed by other sectors of oil supply chain such as upstream and midstream sectors to provide a more holistic understanding of KM.

CONCLUSION

The research employed a grounded theory approach to create a comprehensive model that integrates key concepts of KM within four major oil companies operating in the downstream oil industry in the Philippines. The model highlights the essential principles of modern knowledge management, encompassing management prerequisites (such as accountability, transparency, foundational knowledge, openness, foresight, limited trust, and digital command), knowledge sources (including internal and external

training, mentorships, networks, peers, and competitors), knowledge validation processes (involving documentations, informants, and feedback), knowledge security (involving sensitivity, classification, storage, standardization, and more), knowledge utilization (emphasizing risk-benefit analysis, various forms of learning, and contextualization), and collaboration among knowledge managers. The study suggests that understanding this KM model can aid organizations in managing their knowledge effectively, improving organizational performance, and making informed decisions. However, the research has limitations, such as focusing only on major oil companies, and future studies could expand the scope to include local and non-full range activity companies or investigate changes over time due to the dynamic nature of the industry.

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