**ISSN** 1816-6075 (Print), 1818-0523 (Online)
**Journal of System and Management Sciences**
Vol. 14 (2024) No. 10, pp. 111-129
DOI:10.33168/JSMS.2024.1007

# Exploring Knowledge Management System Success Factors: Evidence from an Indonesian State-Owned Enterprise Corporation

Dhia Muthi'ah, Wahyu Sardjono

Information System Management Department, BINUS Graduate Program - Master of Information System Management, Bina Nusantara University Jakarta, Indonesia 11480

*dhia.muthiah@binus.ac.id; wahyu.s@binus.edu*

**Abstract.** This exploratory study aimed to identify new factors that can maximize knowledge management system (KMS) usage in an Indonesian state-owned forestry corporation. Based on a survey of employees, exploratory factor analysis extracted five factors - holistic knowledge lifecycle integration, strategic organizational synchronization, expressive knowledge transfer paradigm, human capital enhancement, and collaborative growth. However, the small sample size from a single organization and lack of confirmatory analysis temper the generalizability of these findings. Further research using more rigorous scale development, sampling, and analytical techniques is required to substantiate the proposed factors. While this initial study provides some directions, theoretical contributions and practical implications for KMS usage need to be considered tentative pending additional empirical evidence.

**Keywords:** Knowledge, Knowledge Management System, SECI, KM Cycle

# 1. Introduction

In the contemporary business landscape, the effective management of knowledge has emerged as a critical factor for organizational success. Organizations, including state-owned enterprises (SOE) such as Perhutani, are increasingly recognizing the need to harness their internal knowledge resources to improve decision-making processes, enhance innovation, and ultimately achieve sustainable growth through the adoption of Knowledge Management Systems (KMS). Knowledge Management involves doing everything necessary to make the most of knowledge sources, making it an essential aspect of optimizing organizational performance (Becerra-Fernandez & Sabherwal, 2015). Within the context of Perhutani, Knowledge Management is a concerted effort to utilize the vast knowledge possessed by the company and its individual employees. It encompasses creating a knowledge management system that enables the optimal use of the acquired knowledge. This approach to knowledge management aligns with Nonaka and Konno (Nonaka & Konno, 1998) interpretation, viewing it as a technique to enhance and streamline the procedures for creating, sharing, distributing, and leveraging company knowledge.

The implementation of knowledge management extends beyond mere documentation. It involves increasing learning and individual understanding through the provision of information (Alavi & Leidner, 2001), and the use of information technology or KMS plays a pivotal role in providing means to access these knowledge sources. In this light, understanding the dynamics of Knowledge Management Systems becomes essential, especially within the unique organizational context of Perhutani. Theoretical frameworks, such as the SECI Model and Knowledge Management Cycle (Lee & Kelkar, 2013), have been foundational in shaping our understanding of knowledge management. While these models provide valuable insights, the study acknowledges the need to go beyond established indicators. Drawing on Alavi and Leidner's emphasis on the importance of managing experiences, the research aims to identify new factors that significantly impact the utilization of Knowledge Management Systems in Perhutani. Also to mention that in recent years, the evaluation of Knowledge Management Systems (KMS) has become increasingly pivotal as organizations recognize the profound impact it can have on various aspects of their operations (Budianto & Sardjono, 2022; Putri et al., 2023). This trend is evident in contemporary research efforts that delve into the assessment of KMS in diverse organizational settings, shedding light on the factors influencing employee performance and organizational efficiency.

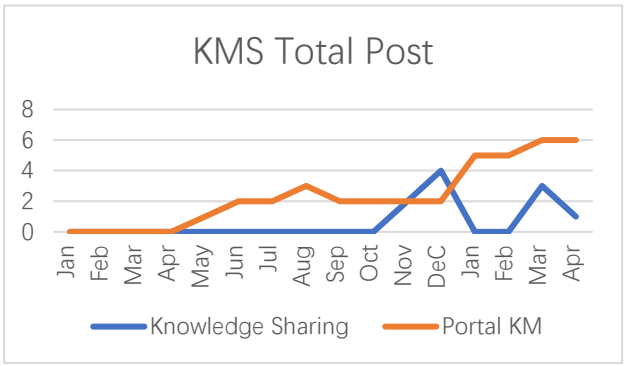


Fig. 1: Total Post in Perhutani's KMS

Perhutani's Knowledge Management System is manifested through a website, offering a multifaceted approach to knowledge sharing and creation. The KM Portal menu, the cornerstone of this system, contains documented documents encompassing both tacit and explicit knowledge. Complementing this, the Knowledge Sharing menu hosts various activities, including webinars conducted by professionals and experts from both within and outside the company. Additionally, the book review section, presented in the form of online webinars, focuses on relevant literature, contributing to knowledge enhancement within the organization. Lastly, the PeFI news section provides

the latest forestry-related updates, fostering employee awareness and knowledge enrichment. Despite these robust features, the data presented in the Figure 1 indicates a relatively low number of documents within the Perhutani KMS, both in the Knowledge Sharing and KM Portal sections. Notably, the KMS platform was initiated in the fourth quarter of 2021, and as of 2023, the data remains limited. Daily user access, since the platform's inception, falls short of the total employee count. Figure 2 illustrates the annual KMS access numbers, revealing that the proportion of KMS users stands at 23% of all active employees in 2022 and 9% in 2023 until April. Based on this comparison of data, it is necessary to study the KMS platform of Perum Perhutani to identify influence factors towards the lack of interest of employees in using or accessing KMS, in order to produce strategic recommendations to support the development of the KMS platform. KMS platform and knowledge sharing practices in perhutani companies.

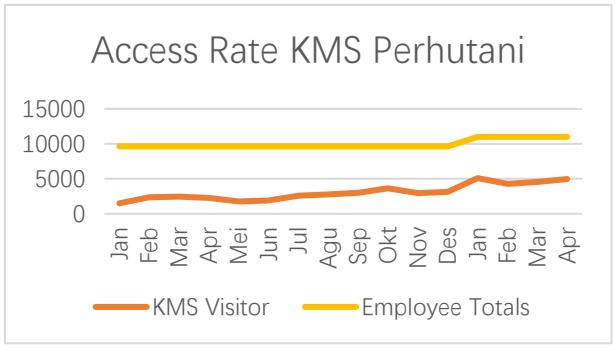


Fig. 2: Access Rate in Perhutani's KMS

The study will employ the exploratory factor analysis method to delve into these factors and determine their relevance within the organization. This approach supports Perhutani's learning center and human resource development by offering an in-depth understanding of employees' actual perceptions and advantages of KMS in supporting the business's sustainability. As the study progresses, it will be divided into three components: data collection, problem analysis using statistical tools, and research-based suggestions, ensuring a comprehensive exploration of the factors influencing the success of Knowledge Management Systems within Perhutani. Through this research, we aim to make a novel contribution of valuable insights to the discourse on KMS success factors within the field of an SOE, specifically forestry company. While our findings provide valuable depth and understanding within the context of Perhutani, we acknowledge the limitation of generalizability due to the single organizational sample. However, this intentional focus on an SOE, specifically a forestry company, serves as a distinctive feature of our research, addressing a notable research gap in the literature. State-Owned Enterprises often navigate a complex interplay of public and corporate interests, and our exploration of KMS success factors in this setting provides nuanced insights that extend beyond the typical private sector focus. As a novel endeavor, our research lays the foundation for future studies to further explore KMS dynamics within diverse State-Owned Forestry Enterprises and similar contexts. This recognition of the unique organizational structure and challenges opens avenues for broader applications, ensuring a more comprehensive understanding of KMS success factors in the forestry industry, particularly within the distinctive realm of State-Owned Enterprises. This research is expected to be references and suggestion input regarding on knowledge management system, also help organizations optimizing the use of knowledge management system in Indonesian state-owned enterprise especially by knowledge sharing practice.

# 2. Theoretical Background

## 2.1. Knowledge

Knowledge is a process to transform information and experiences from the past that become arelation that will be implemented and understood by each individual. Knowledge is considered important by most organizations because it could help them increasing the services towards stakeholders. According to Nonaka and Takeuchi, knowledge is divided into two types, which are tacit knowledge and explicit knowledge (Nonaka & Takeuchi, 1995).

### 2.1.1. Tacit Knowledge

Tacit knowledge refers to individualized and situation-dependent knowledge that is not easy to articulate or convey. It encompasses the assimilation of learning and experience that is hard to put into words (Juliarini et al., 2021). This type of knowledge is typically drawn from personal experiences and emotions, making it challenging to articulate or record (Ding et al., 2020). Nevertheless, when utilized effectively, it is seen as valuable for resolving issues within organizations (Burke, 2020).

### 2.1.2. Explicit Knowledge

Explicit Knowledge refers to information that can be conveyed or exchanged using formal and structured language. In contrast to Tacit Knowledge, which is hard to pass on, explicit knowledge can be easily articulated, organized, documented, and shared with individuals in an organization as information (Sandberg & Olsson, 2008). This type of knowledge can be formalized into process models or guidelines, while tacit knowledge encompasses practical skills and the ability to exercise sound judgment (CONRADI, 2012).

## 2.2. Knowledge Management

Effective organizational management heavily relies on knowledge management. Research indicates that approximately 10% of employees' time is dedicated to generating new knowledge. However, the remaining 90% is spent searching for or duplicating information that already exists (Jemielniak, 2012). Knowledge Management covers various practices, including identifying and documenting knowledge, knowledge database and network development, employee training in using and creating knowledge, as well as implementing technology that supports management (Hicks et al., 2006). Knowledge Management also involves strategic management practices implementation to make sure the knowledge that organizations owned was applied effectively in decision-making and strategy development.

## 2.3. Knowledge Management System

A Knowledge Management System helps organizations collect, share, and manage their knowledge and information effectively. It organizes knowledge for easy access and updates. Using this system has benefits like boosting efficiency, productivity, quality of products and services, fostering innovation and creativity, involving employees, and saving on operational costs (Alavi & Leidner, 2001).

## 2.4. Knowledge Sharing

Knowledge sharing is the act of exchanging experiences, insights, and information among individuals and organizations. It's driven by a person's willingness to help colleagues by sharing what they know. The goal is to enhance decision-making, foster learning and innovation, and promote a collaborative work environment. This can take various forms, like group discussions, training, mentoring, and creating a knowledge database accessible to all members. Following this, an assessment can be conducted to determine the effectiveness of the knowledge-sharing process.

## 2.5. SECI Model

The SECI Model, introduced by Nonaka and Takeuchi in 1995, explains how knowledge shifts between being implicit (tacit) and explicit. One important aspect analyzed in this study is knowledge conversion,

as depicted in Figure 3 of the SECI Model (Easa, 2012). Nonaka and Takeuchi highlight that the SECI Model is a useful tool for generating new knowledge, and many organizations have successfully employed it for this purpose (Nonaka & Konno, 1998).

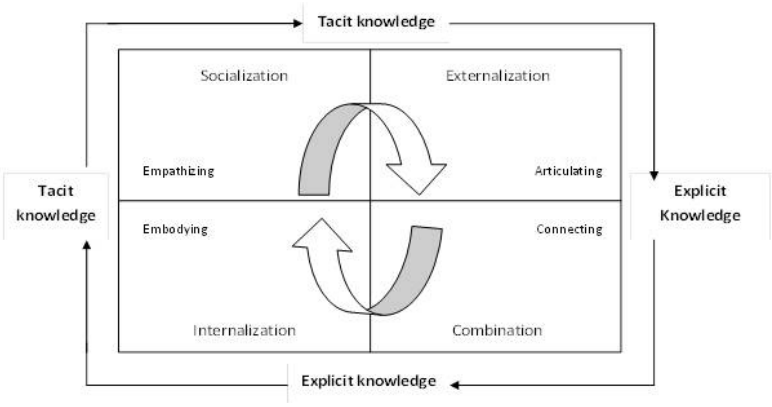


Fig. 3: SECI Model

The SECI Model encompasses four stages:

1. Socialization: Sharing tacit knowledge through direct interaction and experiences.
2. Externalization: Expressing tacit knowledge in explicit terms, often using metaphors, analogies, and models.
3. Combination: Integrating explicit knowledge into a system and framework.
4. Internalization: Applying explicit knowledge to create new tacit knowledge through practical application and experiences.

Our aim is not only to elucidate the intricacies of this model but also to provide a richer understanding by critically assessing its applications and limitations. By doing so, we seek to surpass the cursory overview commonly attributed to existing models like SECI.

## 2.6. Knowledge Management Cycle

### 2.6.1. Create Knowledge

The knowledge creation process is when a person obtains external knowledge or knowledge outside of their own understanding. The knowledge in question is lived experience, such as participation in seminar activities and interaction with customers or suppliers, knowledge from reading sources, as well as the process of sharing knowledge intentionally or unintentionally. From the knowledge creation process, new ideas, more effective business practices, even new patents can be created.

### 2.6.2. Capture Knowledge

Capture knowledge is a process when obtained knowledge is transformed into information that will be easily accessed by all individuals in an organization.

### 2.6.3. Refine Knowledge

Refining knowledge is done so that new knowledge is properly contextualized, where individual insights need to be captured or stored alongside explicit facts.

### 2.6.4. Store Knowledge

Valuable information needs to be organized in a structured manner to ensure it's accessible to everyone within the organization.

### 2.6.5. Manage Knowledge

Stored knowledge must be managed and reviewed for relevance and accuracy over time.

### 2.6.6. Disseminate Knowledge

As the last process of the KM Cycle, spreading knowledge is the most important part. Where the knowledge that has been collected must be easily accessible to anyone and anywhere within the scope of the organization.

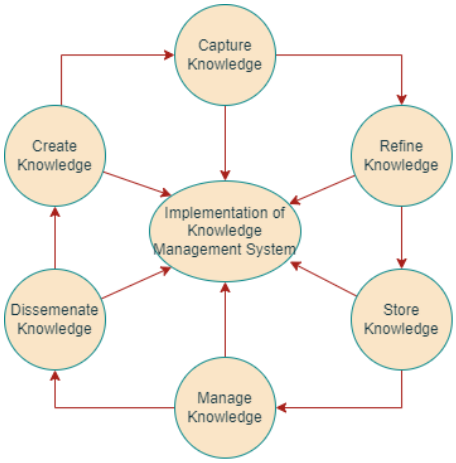


Fig. 4: Knowledge Management Cycle (Efraim Turban et al., 2011)

## 2.7. Previous Studies

Table. 1: Summary of Previous Studies

| Author | Title | Summary |
|---|---|---|
| (Putri et al., 2023) | Knowledge Management Evaluation Using Digital Capability Maturity Model in Higher Education Institution | This study in the higher education context employed a digital capability maturity model (DCMM) to evaluate the Knowledge Management (KM) maturity level. |
| **(Budianto & Sardjono, 2022)** | The Implementation of Knowledge Management System (KMS) Evaluation Model in Improving Employee Performance: A Case Study of the State Electricity Company | This study applied a summative evaluation model utilizing a questionnaire and statistical analysis (factor analysis). The analysis revealed that the three main elements of KMS—people, process, and technology—positively influenced employee performance. The study's findings suggest a significant impact of these KMS components on the overall performance of employees at PT PLN (SOE). |
| (Sardjono et al., 2020) | Improve Understanding and Dissemination of Disaster Management and Climate Change by Using Knowledge Management Systems | This study adopts the SECI model of KM cycle theory produced by KMS to disseminate knowledge on disaster preparedness and mitigation. |
| (Farnese et al., 2019) | Managing Knowledge in Organizations: A Nonaka's SECI Model Operationalization | This study uses the SECI Model as the basis for the SECI Knowledge Management Process Questionnaire (KMSP-Q) that was created to determine knowledge conversion. |

| | | |
|---|---|---|
| (Sardjono et al., 2022) | Development of Performance Evaluation and Control Models for the Company's Product Sales to Achieve Competitive Advantage | In this research, the factor analysis technique is employed, followed by regression analysis, to construct a model representing the occurring gap. This model can then be utilized for simulation purposes. |
| (Obeidat, 2019) | IT Adaption with Knowledge Conversion Process (SECI) | This study is keen to identify IT adaptations in knowledge conversion process at King Abdullah University Hospital. The results of the analysis with the adaptation of the SECI model show that IT has a significant influence on all knowledge conversion processes. |
| **(Riswanto & Sensuse, 2021)** | Knowledge Management Systems Development and Implementation: A systematic Literature Review | This systematic literature review study compares 17 methods or models used in KMS development, one of which is the SECI Knowledge Spiral. This study suggests that the SECI model, combined with use cases, is the most widely used KMS development method. |

# 3. Methodology

## 3.1. Research Concept/Model

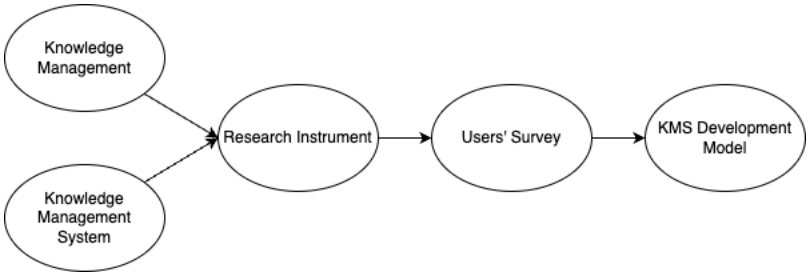


Fig. 5: Conceptual Framework

This study is based on Knowledge Management (KM) and Knowledge Management System (KMS) theory, grounding itself in established models such as the SECI Model and KM Cycle, as mentioned in the literature review. The overarching objective is to identify and explore new factors contributing to KMS usage in the context of Perhutani. To achieve this goal, research instruments will be derived from the identified factors within the models and theories. These instruments will be translated into various indicators, each serving as statements in the survey questionnaire administered to users.

It is important to note that this study will primarily employ exploratory factor analysis (EFA) as the chosen statistical technique for data analysis. EFA allows for the identification and exploration of underlying factors without predefining a specific factor structure. Unlike confirmatory factor analysis (CFA), which validates pre-established theoretical models, our focus on EFA will enable a more open-ended investigation into the factors influencing Knowledge Management System usage in Perhutani. The results of the questionnaire will be subjected to factor analysis using IBM SPSS Statistics, yielding a KMS development model with new factors that reflect their relevance to KMS usage within the specific organizational context.

## 3.2. Research Instrument

To collect data for this study, employees as users who access KMS in Perhutani must be asked for their comments about the system and contents. As a result, it can be used as a first step in gathering

information. A questionnaire is a type of survey that has been put together methodically and systematically. To acquire facts about the past, present, and future occurrences predicted by measuring what the researcher intends to measure from the sample group or target population. Questionnaires are usually used to study conflict within social relationships, whether in organizations or personal context (Kluwer & Nauta, 2005). Questionnaires are mostly employed in quantitative market research and social research, as a conclusion, a questionnaire is sets of questions that individuals are asked to answer to acquire statistically meaningful information about a specific issue. There are 26 questions developed based on factors from the theories are listed in Table 2.

Table. 2: Details of Questionnaires

| Factor | Item | Question | References |
|---|---|---|---|
| **Socialization** | S1 | KMS as experiences sharing media between employees | **(Lin & Lin, 2019)** |
| | S2 | KMS as knowledge transfer media from experienced employees to new employees by mentoring | (Farnese et al., 2019) |
| | S3 | KMS as media to store datas, documents, and informations to support self-learning through observation | (Farnese et al., 2019) |
| | S4 | KMS let employees to enhance relationship with superior | **(Lee & Kelkar, 2013)** |
| | S5 | KMS let business issues to be handled faster and more clearly based in previous knowledge and documents | **(Lee & Kelkar, 2013)** |
| **Externalization** | E1 | Experiences that shared on KMS through article are easy to understand | **(Kari-Pekka Heikkinen & Teppo Räisänen, 2015)** |
| | E2 | Knowledge transfer process through KMS is more clear using easy-to-understand language | (Farnese et al., 2019) |
| | E3 | KMS as media to store and manage previous' knowledge | (Farnese et al., 2019) |
| | E4 | KMS let employees access knowledge from experts in each field | **(Lee & Kelkar, 2013)** |
| | E5 | Learning previous' documents on KMS, preventing the same mistakes to be done in organization | **(Lee & Kelkar, 2013)** |
| **Combination** | C1 | KMS as communication media in organization to share information and latest news in organization. | (Farnese et al., 2019) |
| | C2 | KMS ease the creation of collaborative environment in knowledge sharing practice | (Farnese et al., 2019) |
| | C3 | KMS let bigger collaboration practice in organization to develop, design, and resulting new knowledge even new product | **(Lee & Kelkar, 2013)** |
| | C4 | KMS ease cooperation and coordination process within team internal or external. | **(Lee & Kelkar, 2013)** |
| | C5 | KMS increasing employees' awareness of organization's objective knowledge, even from different division or department | **(Lee & Kelkar, 2013)** |
| **Internalization** | I1 | KMS supports learning process like training as one of a way to understand new knowledges | (Farnese et al., 2019) |

| Factor | Item | Question | References |
|---|---|---|---|
| | I2 | KMS become one of the media for continuity learning as well as knowledge creation in organization as human resources development | (Farnese et al., 2019) |
| | I3 | KMS as media to evaluate and reflect the work result critically | (Schippers et al., 2015) |
| | I4 | KMS as virtual learning media | **(Lee & Kelkar, 2013)** |
| | I5 | KMS as media for self-learning by online mutually | **(Lee & Kelkar, 2013)** |
| **Implementation Knowledge Management System** | K1 | KMS is used to create new individuals knowledge as knowledge sharing process and continues interaction | **(Lin & Lin, 2019)** |
| | K2 | KMS let capturing knowledge become easily-accessed information for all individuals in organizations | (Abubakar et al., 2019) |
| | K3 | Collected knowledges are refined, so it cound be understand by all individuals through | (Sardjono et al., 2020) |
| | K4 | KMS as media to store new knowledges to be easily accessed and used effectively by all individuals | **(Lin & Lin, 2019)** |
| | K5 | KMS make sure contents are updated and relevant to be well utilized by organization | (Sardjono et al., 2020) |
| | K6 | KMS as communication media, knowledge sharing between individuals or groups | (Abubakar et al., 2019) |

### 3.3. Data Collection

The data was collected through three ways of information collection, company observation, interview with several employees, and questionnaire. Sampling technique in this study is Random Sampling, where collecting data is using a specific questionnaire from employees who used Knowledge Management System in Perhutani and must have used the system at least once since it launched, so respondent who doesn't know KMS at all will be terminated. Meanwhile, Interview is based on non-probability sampling techniques with purposive sampling for each relevant role. Both observation and interview are conducted directly at Perhutani Forestry Institute (PeFI). The survey using questionnare were conducted online through email and chatting groups with mandatory letter. The population of this study is 11000 active employees in Perhutani per 2023. The sample number is taken using the slovin formula. This formula is widely used in quantitative research calculations, especially for large enough populations. The following is the calculation of this research sample:

$$n = \frac{N}{1 + N(\alpha)^2}$$

$$n = \frac{11000}{1 + 11000(0.05)^2}$$

$$n = \frac{11000}{28.5} = 385.96 \sim 386$$

Based on the calculation result, to analyze the data properly, the respondents expected 385.96, rounded up into 386.

### 3.4. Data Analysis

According to the research model, the variables of the model must be explained with indicators. These indicators will become part of the questionnaire as a data collection method. To respond to these indicators, the responses of the respondents will be measured with a Likert Scale. A Likert scale from 1 to 5 is used to measure each variable, such as strongly disagree, disagree, neutral, agree, strongly agree. The data analysis method to be used in this study is quantitative analysis using IBM SPSS Statistics.

#### 3.4.1. Analysis Techniques

The questionnaire in this research is divided into 4 parts. The respondents' basic information is included in the first part. In totals there are 26 questions about user behaviour towards KMS Perhutani. Respondents can choose from a sequence of linear responses that increase or decrease the intensity using the Likert 5-point scale Nemoto & Beglar, (2014); Barua (2013), allowing researchers to collect data that provides differences and insight into the participants' perspectives. The Likert scale was developed by Rensis Likert in the 1930s and has become the more popular format, with range options from "Strongly disagree" to "Strongly agree" (ALTUNA & ARSLAN, 2016). This data is quantitative and can be statistically analyzed using factor analysis. Factor analysis is a statistical technique employed to condense the influencing factors of a variable into a concise set of indicators, retaining the essential information. The following are the outlined criteria for assessing adequacy:

1. Utilize Crobach Alpha, KMO (Kaiser-Meyer Olkin Measure), and Bartlett's Test to evaluate the correlation of each variable.
2. Subsequently, apply factor extraction techniques through regression analysis to generate one or more new factors.
3. Employ the varimax rotation method during the iteration process to simplify and enhance the comprehensibility of the matrix.
4. Assign names to the new factors based on the predefined variables. Choose a name that apply represents these variables.
5. A factor score is imperative for subsequent analyses.

#### 3.4.2. Validity and Reliability Testing

The research model consists of 5 factors and 26 indicators. The analysis was performed using the IBM SPSS Statistics software application.

Table. 3: Value Test Requirements

| Test | Parameter | Practical Rules |
|---|---|---|
| Reliability Test | Cronbach's Alpha | > 0.7 |
| Validity Test | Barlett's Test | < 0.001 |
| | Kaiser-Meyer-Olkin Measure | > 0.7 |
| Finding New Factors | Component Matrix | Generate new factors that represents independent variable (X1, X2, …) |

## 4. Result

### 4.1. Respondent Demographics

The questionnaires were distributed to the entire population of active employees at Perhutani, comprising 11,000 individuals. A total of 3,014 respondents completed the questionnaires, representing a diverse sample across various demographic factors, including age, gender, educational background, position, division or department, and understanding level of the Knowledge Management System at Perhutani. After an initial data cleaning process, which included the removal of responses with identical

Likert scale ratings for all questions (e.g., respondents consistently selecting '5' for all items), redundant and incomplete data. 1357 responses were deemed suitable for further analysis. This refined dataset serves as the foundation for subsequent analyses, ensuring that the results obtained are robust and reflective of the diverse perspectives within the organization.

Table. 4: Respondents Based on Understanding Level of KMS

| Scale | Understanding Level | Respondents | Percentage |
|---|---|---|---|
| **1** | Not understand at all | 74 | 5% |
| **2** | Very unfamiliar | 78 | 6% |
| **3** | Not familiar | 90 | 7% |
| **4** | Somewhat unfamiliar | 76 | 6% |
| **5** | Neutral | 278 | 20% |
| **6** | Slightly familiar | 187 | 14% |
| **7** | Fairly familiar | 189 | 14% |
| **8** | Familiar | 184 | 13% |
| **9** | Very Familiar | 97 | 7% |
| **10** | Extremely Familiar | 104 | 8% |
| | **Total** | 1357 | 100% |

The demographic overview of participants in this study on the utilization of the Knowledge Management System (KMS) at Perhutani provides nuanced insights into the contextual backdrop of this research. A discernible proportion, constituting 43% of respondents, exhibits a neutral to somewhat unfamiliar understanding of the KMS. In contrast, 35% demonstrate varying degrees of familiarity, while a notable 22% evince a high level of proficiency, scoring 8 or above on the comprehension scale.

Table. 5: Respondents Based on Length of Employment

| Duration of Employment | Respondents | Percentage |
|---|---|---|
| **< 2 Years** | 36 | 3% |
| **2 – 5 Years** | 48 | 3% |
| **6 – 10 Years** | 48 | 4% |
| **> 10 Years** | 1225 | 90% |

The demographic lens extends to employment tenure, revealing a seasoned workforce where 90% of respondents have served Perhutani for more than a decade. Conversely, 6% span employment durations ranging from 2 to 10 years, and a modest 3% represent the newest additions, employed for less than two years.

Table. 6: Respondents Based on Gender

| Gender | Respondents | Percentage |
|---|---|---|
| **Female** | 110 | 8% |
| **Male** | 1247 | 92% |

Table. 7: Respondents Based on Age

| Age Range | Respondents | Percentage |
|---|---|---|
| **20 – 30 Years** | 37 | 3% |
| **31 – 40 Years** | 93 | 7% |
| **41 – 50 Years** | 619 | 45% |
| **> 50 Years** | 608 | 45% |

Regarding gender representation, the workforce predominantly comprises males, constituting 92% of the respondents, while 8% identify as females. Age distribution manifests a balanced spectrum, with 45% falling within both the 41-50 and over 50 age brackets, while the remaining 10% is distributed across the 20-30 and 31-40 age cohorts.

Table. 8: Respondents Based on Education Attained

| Highest Education | Respondents | Percentage |
|---|---|---|
| **High School/Equivalent** | 1119 | 83% |
| **Diploma** | 56 | 4% |
| **Bachelor's Degree** | 170 | 13% |
| **Master's Degree** | 6 | <1% |

Educational backgrounds offer another layer of insight, portraying a workforce where 83% hold high school or equivalent qualifications. A distinct cohort, comprising 13%, has attained a bachelor's degree, and a fractional 1% possesses a master's degree. The demographic composition unveiled by this study underscores the pronounced tenure of a highly experienced workforce at Perhutani, with 90% of respondents having devoted over a decade to the organization. Notably, the age distribution reveals a predominant concentration (90%) of employees aged 41 years and above. This demographic dynamic accentuates the critical importance of strategic knowledge transfer initiatives within the organization, particularly as seasoned employees approach retirement or career transitions. The imperative to impart essential institutional knowledge to younger staff members becomes evident, necessitating a focused approach to bridge potential knowledge gaps. In light of these demographics, an in-depth evaluation of the Knowledge Management System (KMS) emerges as a pivotal avenue. The KMS, if optimized effectively, can serve as a catalyst in facilitating knowledge transfer across different age cohorts. By leveraging technology and tailoring strategies to address varying levels of KMS familiarity, Perhutani stands to enhance its overall organizational knowledge resilience and fortify its capacity for seamless knowledge continuity.

## 4.2. Reliability Test

The criteria for Cronbach's alpha are a value greater than 0.7. The reliability test of this data yielded a score of 0.965 for 26 factors, indicating that the results satisfy the testing criteria and can be continued to be use for the study.

## 4.3. Validity Test

A validity test that considered as valid need to have a Kaiser-Meyer-Olkin Measure value > 0.5 and Barlett's test of Sphericity < 0.001. The validity test result of 26 factors is, KMO = 0.983 and Barlett's test = 0.000 so that the result meets the requirements of valid data.

Table. 9: KMO and Barlett Test Results

| Name | | Value |
|---|---|---|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy | | 0.983 |
| Barllet's Test | Approx. Chi-square | 22819.954 |
| | df | 325 |
| | Sig. | 0.000 |

## 4.4. Factor Analysis Result

In this exploratory factor analysis, the analysis was performed using the IBM SPSS Statistics software application.

Table. 10: Rotated Component Matrix Result

| | Component | | | | |
|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 |
| K1 | 0.694 | | | | |
| K2 | 0.689 | | | | |
| I5 | 0.680 | | | | |
| K3 | 0.665 | | | | |
| K5 | 0.648 | | | | |
| K6 | 0.634 | | | | |
| K4 | 0.628 | | | | |
| I4 | 0.619 | | | | |
| C3 | | | | | |
| C1 | | 0.651 | | | |
| E5 | | 0.632 | | | |
| C4 | | 0.579 | | | |
| C5 | | 0.553 | | | |
| S5 | | | | | |
| E1 | | | 0.764 | | |
| E2 | | | 0.603 | | |
| E4 | | | 0.524 | | |
| E3 | | | | | |
| I1 | | | | 0.605 | |
| I2 | | | | 0.597 | |
| I3 | | | | 0.549 | |
| C2 | | | | 0.533 | |
| S1 | | | | | 0.760 |
| S2 | | | | | 0.698 |
| S3 | 0.518 | | | | 0.602 |
| S4 | | | | | 0.512 |

**Coefficients[a]**

| Model | | Unstandardized Coefficients B | Unstandardized Coefficients Std. Error | Standardized Coefficients Beta | t | Sig. |
|---|---|---|---|---|---|---|
| 1 | (Constant) | 5.913 | .061 | | 96.182 | .000 |
| | REGR factor score 1 for analysis 1 | .381 | .062 | .157 | 6.190 | <,001 |
| | REGR factor score 2 for analysis 1 | .384 | .062 | .158 | 6.236 | <,001 |
| | REGR factor score 3 for analysis 1 | .494 | .062 | .204 | 8.026 | <,001 |
| | REGR factor score 4 for analysis 1 | .183 | .062 | .076 | 2.977 | .003 |
| | REGR factor score 5 for analysis 1 | .422 | .062 | .174 | 6.856 | <,001 |

a. Dependent Variable: SeberapapahamandaterhadapKnowledgeManagementSystemPerhuta

Fig. 6: Coefficients Result

The outcome of data analysis revealed the connection between the variables that depend on each other, outlined as follows:

$$Y = 5.913 + 0.381x_1 + 0.384x_2 + 0.494x_3 + 0.183x_4 + 0.422x_5$$

With the following conditions:

$$-6.916 \leq X1 \leq 4.129$$
$$-5.549 \leq X2 \leq 8.519$$
$$-4.704 \leq X3 \leq 4.680$$
$$-7.229 \leq X4 \leq 4.629$$
$$-8.549 \leq X5 \leq 2.837$$

Description:

Y = Understanding level of Knowledge Management System at Perhutani

X1 = Holistic Knowledge Lifecycle Integration (HKLI)

X2 = Strategic Organizational Synchronization (SOS)

X3 = Expressive Knowledge Transfer Paradigm (EKTP)

X4 = Human Capital Enhancement (HCE)

X5 = Collaborative Growth (CG)

From the result, it can be concluded as follows:

1. Holistic Knowledge Lifecycle Integration. The factor related to the Holistic Knowledge Lifecycle Integration demonstrates a positive correlation with a coefficient of 0.386. This signifies that as the Holistic Knowledge Lifecycle Integration improves, the awareness of company's knowledge management system also increases. Holding other factors constant, a one-point enhancement in the Holistic Knowledge Lifecycle Integration factor leads to a 0.386 rise in the employees understanding. The value is deemed statistically significant if the significance value is no more than 0.05. In this case, the calculated significance value is <0.001, which is indeed less than 0.05. In conclusion, this factor exerts a significant influence.
2. Strategic Organizational Synchronization is positive with a coefficient of 0.384 The factor associated with Strategic Organizational Synchronization exhibits a positive relationship, characterized by a coefficient of 0.384. This signifies that as support strategy for organizational synchronization strengthens, the realization of company's knowledge management system will

also increases. Assuming all other factors remain constant, a one-point elevation in the support for Strategic Organizational Synchronization results in a 0.384 uptick in the employees' understanding. A value is considered statistically significant when its significance level is below 0.05. In this factor, the computed significance level is <0.001, clearly lower than 0.05. Thus, it can be inferred that this factor holds substantial influence.

3. Expressive Knowledge Transfer Paradigm shows positive correlation with a coefficient of 0.494, which means that knowledge transfer in expressive paradigm increases, then it will increase the employees' understanding in company's knowledge management system. A value is deemed statistically significant if its significance level falls below 0.05. In this particular factor, the calculated significance level is less than 0.001, which is markedly lower than 0.05. Therefore, it can be concluded that this factor exerts a significant impact.
4. Human Capital Enhancement with 0.183 coefficient value is positive, which that the more improve the human capital enhancement, employees will increasingly understand the company's knowledge management system. If the Human Capital Enhancement factors increase by one point, the employees' comprehension will rise by 0.183, provided the values of other factors remain unchanged. The computed significance values are 0.003, indicating that these factors hold notable influence since 0.003 is less than 0.05.
5. Collaborative Growth is positive with a coefficient of 0.422. It signifies that the boosts of collaborative growth will increase the company's knowledge management system insight. If the collaborative growth factors increase by one point, the understanding of the employees' will rise by 0.422, assuming all other factors remain constant. The computed significance values are <0.001, which is less than 0.05, indicating that these factors have a significant impact.

Table. 11: Simulation Result of KMS Understanding

| Condition | Constant | X1 | X2 | X3 | X4 | X5 | Y |
|---|---|---|---|---|---|---|---|
| Currently | 5.913 | 0 | 0 | 0 | 0 | 0 | 5.913 |
| Un-expected | 5.913 | -6.916 | -5.549 | -4.704 | -7.229 | -8.549 | -6.107 |
| Expected | 5.913 | 4.129 | 8.519 | 4.680 | 4.629 | 2.837 | 15.114 |

The calculation from model simulation in Table 2, reveals that prior to this study, the employees understanding of Knowledge Management System at Perhutani was 5.913. Nonetheless, if the company takes into account four new factors, this understanding would increase to 15.114. Conversely, neglecting these five factors will lead to a decrease in the understanding of KMS at Perhutani to -6.107. To achieve the maximum understanding score of 5.913 for the employees, the company should enhance factor X1 to 4.129, factor X2 to 8.519, factor X3 to 4.680, fantor X4 to 4.629, and factor X5 to 2.837

# 5. Discussion

This research aims to identify the new factors to maximize knowledge management system utilization at Indonesia State-Owned Forestry Corporation. To find the factors, this study use exploratory factor analysis using IBM SPSS 27 as the analysis tool. Then SECI model theory and Knowledge management system implementation cycle to develop base variables and indicator before regression. Data is gathered through a survey involving 3014 respondents, with 1357 valid data. The findings reveal that the maximization of knowledge management system utilization would be enhanced by elevating these factors to the maximum value, such as Holistic Knowledge Lifecycle Integration, Strategic Organizational Synchronization, Expressive Knowledge Transfer Paradigm, Human Capital Enhancement, and Collaboration Growth. In summary, this study yields the following conclusions.

## 5.1. Holistic Knowledge Integration

The company should enhance factor X1, which pertains to the holistic knowledge lifecycle integration, in order to attain the maximum value of 4.129. This can be achieved through various steps, such as encouraging in knowledge lifecycle activities by utilizing technology. Additionally, efforts and initiative should be made to enhance the employees' knowledge creation, with a focus on providing knowledge sharing and storing media, as this can be a crucial aspect of knowledge management system implementation. Augmenting the indicators that impact on the holistic knowledge lifecycle integration will lead to an increase in knowledge management support for employees' competencies.

## 5.2. Strategic Organizational Synchronization

From the simulation, it is found that X2 factor in this company need to be increase, which is strategic organizational synchronization, to reach 8.519 as the maximum value. The steps that can be taken to achieve that goal are:

1. Optimizing organization's up-to-date information sharing that will keep the organization synchronize.
2. Establishing comprehensive learning on organization's documented success and failure process to prevent making the same mistakes
3. Maintaining the cooperative in coordination within or outside the team.
4. Increasing the awareness on holistic business objectives, enhance the knowledge from other divisions.

## 5.3. Expressive Knowledge Transfer Paradigm

The company should aim to elevate factor X3, which pertains to the expressive knowledge transfer paradigm, to attain the maximum value of 4.680. This can be achieved through various steps, such as enhancing knowledge transfer process by fulfilling several things. The things that seem small but matter are, using a good articulation, metaphors, and analoty to help employees understand better. Additionally, the knowledge access from experts should be made easy to boost the eagerness of employee to learn, while also provide collaborative environment as it holds significant value in expressive knowledge transfer paradigm. Augmenting the indicators influencing the expressive paradigm will contribute to increasing the company's internal support for knowledge transfer process.

## 5.4. Human Capital Enhancement

The simulation results that factor X4 exhibits a favorable outcome. To strengthen the enhancement in human capital factor, the company should strive to elevate it to a peak value of 4.629. The company can implement specific measures to achieve this such as,

1. Integrate the process involve in human capital such as, human resources development and communication by utilizing technology to create open space for the employees.
2. Evaluate each other critically periodically as a self-reflection and learning opportunity from each member on the team.
3. Creating a collaborative environment by optimizing the usage of knowledge management systems as knowledge sharing tools.

## 5.5. Collaborative Growth

From the simulation results, it is found that factor X5, which is collaborative growth, is positive, means that the company needs to increase collaborative growth factor to reach maximum value of 2.837. Each individuals have unique knowledge that would create a big impact if it is being shared to the others. The steps that can be taken by the company to maximize each knowledge advantages for collaborative growth are,

1. Promoting knowledge sharing through KMS by uploading materials
2. Conduct mentoring program to ease knowledge transfer especially from experienced to

unexperienced employees.

3. Show appreciation and giveback to each other to in order to increase self-growth and team-growth.

The simulation outcomes regarding the employees' understanding of knowledge management system at the company has the potential to elevate their understanding of internal support to 15.114. Conversely, neglecting these five factors could lead to a drastic decrease in the employees' comprehension of the company's knowledge management system to -6.107. Consequently, it is imperative for companies to implement crucial measures to optimize each factor.

# 6. Conclusion

In conclusion, this exploratory study makes a preliminary attempt to uncover factors that can potentially impact knowledge management system adoption in an Indonesian state-owned enterprise. The findings suggest five factors such as Holistic Knowledge Lifecycle Integration (HKLI), Strategic, Organizational Synchronization (SOS), Expressive Knowledge Transfer Paradigm, (EKTP), Human Capital Enhancement (HCE), and Collaborative Growth (CG). However, given the limitations of the sample, research design, and analytical approach, considerable further research is needed to validate the generalizability and significance of these factors. Rigorous scale development and testing using confirmatory techniques would be especially valuable. While this research identifies some starting points, the practical implications would be premature without more robust empirical investigation. Thus, the contributions from this initial investigation should be considered tentative, and any organizational application should be approached cautiously. Nonetheless, this provides a foundation to build upon using more sophisticated methods.

# References

Abubakar, A. M., Elrehail, H., Alatailat, M. A., & Elçi, A. (2019). Knowledge management, decision-making style and organizational performance. *Journal of Innovation & Knowledge*, *4*(2), 104–114. https://doi.org/10.1016/J.JIK.2017.07.003

Alavi, M., & Leidner, D. E. (2001, March). *Review: Knowledge Management and Knowledge Management Systems: Conceptual Foundations and Research Issues*. MIS Quarterly. https://www.researchgate.net/publication/200772522_Review_Knowledge_Management_and_Knowledge_Management_Systems_Conceptual_Foundations_and_Research_Issues

ALTUNA, O. K., & ARSLAN, F. müge. (2016). Impact of the Number of Scale Points on Data Characteristics and Respondents' Evaluations: An Experimental Design Approach Using 5-Point and 7-Point Likert-type Scales. *İstanbul Üniversitesi Siyasal Bilgiler Fakültesi Dergisi*, *55*, 1–20. https://doi.org/10.17124/IUSIYASAL.320009

Becerra-Fernandez, I., & Sabherwal, R. (2015). *Knowledge management: Systems and processes: Second edition*. M.E.Sharpe. https://www.researchgate.net/publication/303422778_Knowledge_management_Systems_and_processes_Second_edition

Budianto, W., & Sardjono, W. (2022). The Implementation of Knowledge Management System (KMS) Evaluation Model in Improving Employee Performance: A Case Study of the State Electricity Company. *ComTech: Computer, Mathematics and Engineering Applications*, *13*(1), 35–43. https://doi.org/10.21512/COMTECH.V13I1.6873

Burke, D. (2020). Tacit Knowledge Revisited. *How Doctors Think and Learn*, 107–119. https://doi.org/10.1007/978-3-030-46279-6_14

CONRADI, R. (2012). FROM SOFTWARE EXPERIENCE DATABASES TO LEARNING ORGANIZATIONS. *Https://Doi.Org/10.1142/S0218194000000274*, *10*(04), 541–547. https://doi.org/10.1142/S0218194000000274

Ding, W., Aoyama, A., & Choi, E. (2020). An approach to the diffusion of tacit knowledge: Learning from imitation to creation. *International Journal of Knowledge Management Studies*, *11*(2), 103–116. https://doi.org/10.1504/IJKMS.2020.106276

Easa, N. F. H. (2012). *Knowledge Management and The SECI Model: A Study of Innovation in The Egyptian Banking Sector*. http://dspace.stir.ac.uk/handle/1893/5053

Efraim Turban, Ramesh Sharda, & Dursun Delen. (2011). *Decision Support And Business Intelligence Systems (9th Edition)*. Pearson Education India. https://archive.org/details/Decision-Support-And-Business-Intelligence-Systems_201808/page/n511/mode/2up?q=refine

Farnese, M. L., Barbieri, B., Chirumbolo, A., & Patriotta, G. (2019a). Managing knowledge in organizations: A nonaka's SECI model operationalization. *Frontiers in Psychology*, *10*, 2730. https://doi.org/10.3389/FPSYG.2019.02730/BIBTEX

Farnese, M. L., Barbieri, B., Chirumbolo, A., & Patriotta, G. (2019b). Managing knowledge in organizations: A nonaka's SECI model operationalization. *Frontiers in Psychology*, *10*, 2730. https://doi.org/10.3389/FPSYG.2019.02730/BIBTEX

Hicks, R. C., Dattero, R., & Galup, S. D. (2006). The five-tier knowledge management hierarchy. *Journal of Knowledge Management*, *10*(1), 19–31. https://doi.org/10.1108/13673270610650076/FULL/HTML

Jemielniak, D. (2012). The new knowledge workers. In *The New Knowledge Workers*. Edward Elgar Publishing Ltd. https://doi.org/10.4337/9780857933119

Juliarini, A., Lestyowati, J., & Diklat Keuangan, B. (2021). Building Knowledge Management Through the Tacit Knowledge Video. *Psychology and Education Journal*, *58*(2), 4574–4586. https://doi.org/10.17762/PAE.V58I2.2846

Kari-Pekka Heikkinen, & Teppo Räisänen. (2015). *(PDF) Knowledge Creation in LAB Studio Model Educational Settings*. https://www.researchgate.net/publication/284282918_Knowledge_Creation_in_LAB_Studio_Model_Educational_Settings

Kluwer, E., & Nauta, A. (2005). The Use of Questionnaires in Conflict Research. *International Negotiation*, *9*(3), 457–470. https://doi.org/10.1163/1571806053498760

Lee, C. S., & Kelkar, R. S. (2013a). ICT and knowledge management: Perspectives from the SECI model. *Electronic Library*, *31*(2), 226–243. https://doi.org/10.1108/02640471311312401/FULL/XML

Lee, C. S., & Kelkar, R. S. (2013b). ICT and knowledge management: Perspectives from the SECI model. *Electronic Library*, *31*(2), 226–243. https://doi.org/10.1108/02640471311312401/FULL/XML

Lin, X., & Lin, X. (2019). Review of Knowledge and Knowledge Management Research. *American Journal of Industrial and Business Management*, *9*(9), 1753–1760. https://doi.org/10.4236/AJIBM.2019.99114

Nonaka, I., & Konno, N. (1998). The concept of "Ba": Building a foundation for knowledge creation. *California Management Review*, *3*, 40–54. https://doi.org/10.2307/41165942/ASSET/41165942.FP.PNG_V03

Nonaka, I., & Takeuchi, H. (1995). Nonaka, I. and Takeuchi, H. (1995) | The Knowledge Creating Company. In *Oxford University Press*. https://www.scribd.com/document/258487259/Nonaka-I-and-Takeuchi-H-1995

Obeidat, A. M. (2019). IT Adaption with Knowledge Conversion Process (SECI)? *Management Science Letters*, *9*(Spceial Issue 13), 2241–2252. https://doi.org/10.5267/J.MSL.2019.7.029

Putri, N. K. S., Permatasari, D., Susanto, R., Lee, C. K., & Kurniawan, Y. (2023). Knowledge Management Evaluation Using Digital Capability Maturity Model in Higher Education Institution. *Electronic Journal of Knowledge Management*, *21*(2), 140–157. https://doi.org/10.34190/ejkm.21.2.3009

Riswanto, & Sensuse, D. I. (2021). Knowledge management systems development and implementation: A systematic literature review. *IOP Conference Series: Earth and Environmental Science*, *704*(1). https://doi.org/10.1088/1755-1315/704/1/012015

Sandberg, A. B., & Olsson, C. M. (2008). Explicit as enabler for understanding the tacit. *IFIP International Federation for Information Processing*, *287*, 63–82. https://doi.org/10.1007/978-0-387-87503-3_4/COVER

Sardjono, W., Harisno, & Perdana, W. G. (2020). Improve Understanding and Dissemination of Disaster Management and Climate Change by Using Knowledge Management Systems. *IOP Conference Series: Earth and Environmental Science*, *426*(1). https://doi.org/10.1088/1755-1315/426/1/012158

Sardjono, W., Kristin, D. M., Putra, G. R., Salim, G., Putri, E., & Julisar. (2022). DEVELOPMENT OF PERFORMANCE EVALUATION AND CONTROL MODELS FOR THE COMPANY'S PRODUCT SALES TO ACHIEVE COMPETITIVE ADVANTAGE. *ICIC Express Letters*, *16*(4), 441–448. https://doi.org/10.24507/ICICEL.16.04.441

Schippers, M. C., West, M. A., & Dawson, J. F. (2015). Team Reflexivity and Innovation: The Moderating Role of Team Context. *Journal of Management*, *41*(3), 769–788. https://doi.org/10.1177/0149206312441210