

A Case Study on the Critical Success Factors for Knowledge Management Implementation

Himawan Kunto Dewoto Aji ¹, Kenedi Binowo ¹, Dana Indra Sensus ¹, Jonathan Sofian
Lusa ^{2*}

¹Faculty of Computer Science, University of Indonesia

²STP Trisakti

himawan.kunto02@ui.ac.id, kenedi.binowo@ui.ac.id, dana@cs.ui.ac.id, sofian.lusa@stpтрisakti.ac.id

Abstract. Many organizations face significant challenges in implementing Knowledge Management (KM) during and after a pandemic. In the pandemic era, KM can be used to boost organizational resilience against pandemic-related disruptions. Using KM during a pandemic will assist organizations in maintaining operations and continuing to provide services to customers. The aim of this study is to assess (evaluate) KM factors that have been successfully implemented in a company or organization. Thematic Analysis (TA) method was chosen as the primary technique to analyze qualitative research and the interpretive structure modeling (ISM) method will be used in this study to analyze the implementation of Critical Success Factors (CSF) for KM at bank XYZ. Based on the findings seven CSFs were identified as the result of thematic analysis, namely: leadership, organizational culture, technology, organizational structure, KM strategy, employee training and education, and team working. As a result of the findings in ISM analysis, leadership (CSF1) is one of the most important determinants of success factor in implementing a KM strategy at XYZ bank. As well as recommendations for implementing KM elsewhere during or after a pandemic, seven CSF must be considered during the conceptualization, design, and implementation stages of the program KM. Prior to implementation, managers (leaders) should create a proper plan such a responsible change management plan in order to prevent these failures.

Keywords: Knowledge Management, Critical Success Factors of KM, CSF KM Implantation, ISM, Thematic Analysis.

1. Introduction

Knowledge Management (KM) is a critical component for organizations to survive and grow in this era of digital transformation (Gunasekera & Chong, 2018). This is due to the potential of KM to assist organizations in becoming more agile, productive, and competitive (Gunasekera & Chong, 2018). Organizations are beginning to recognize that knowledge management is about more than just gathering knowledge; it is also about how to use it to create new value.

XYZ Bank is one of the largest state-owned banks in Indonesia. To support business operations and positive growth from year to year, the company has implemented Knowledge Management within its organization for several years. The application of knowledge cannot be done directly but requires a long process. XYZ Bank implements a ten-step organizational learning process namely measuring the extent of learning in the organization, promote positive issues within the organization by using clear and applicable thinking concepts, ensuring the organization is safe and comfortable for thinking, provide positive appreciation of risk-taking action, forming and making individuals in the organization a source of knowledge so that they can complement and interact with each other, giving confidence to every individual in the organization that the power to learn is an expensive and unlimited resource, put out the real vision and ensure that the achievement of the vision must follow all the potential in the organization, describe a real vision, repairing the system because the problematic activity starts from the wrong system, and introducing the process.

The use of KM during and after a pandemic is an important topic for researchers to discuss. This article discusses the significance of knowledge management in today's world and how it can be used to assist in knowledge management (Liberati, 2009), (Pandey, Dutta, & Nayak, 2018), (Khazieva, Tomé, & Caganova, 2018). Due to the pandemic, companies all around the world were forced to adopt the rule of working from home (WFH) which creates a sudden change for employees because they have to work remotely for the first time (Kniffin, 2021). Because of the COVID-19 epidemic, many knowledge workers are required to complete their work from home, with little to no face-to-face interaction (Brem, Viardot, & Nylund, November 2020). They are forced to replace their former co-located interactivity with digital platforms because face-to-face engagement for knowledge transfer is no longer possible. Knowledge workers are connected to one another in real-time via digital platforms, which are shared, common sets of communication and collaboration tools. Employees who contracted WFH during the epidemic have embraced and are heavily utilizing a variety of technologies, including video conferencing tools (like Zoom, Skype, and Google Meet), business social media platforms (like Slack, and Workplace), and file-sharing applications (Brem, Viardot, & Nylund, November 2020). (e.g., SharePoint, Dropbox, Google Drive). Employees who contracted WFH during the epidemic have embraced and are heavily utilizing a variety of platforms, such as file-sharing tools, workplace social media, and video conferencing services (e.g., Zoom, Skype, Google Meet) (e.g., SharePoint, Dropbox, Google Drive). According to (Elia, Margherita, & Passiante, October 2019), academic research, digital platforms are widely utilized to foster professional relationships and have an impact on employees' creative performance (CP) and knowledge sharing (KS).

In the pandemic era, KM can be used to increase organizational resilience to pandemic-related disruptions (Teixeira, Tenório, Pinto, Matta, & da Cruz Uripia, 2023). Using KM during a pandemic will assist organizations in maintaining operations and providing services to customers. Of course, after the pandemic, KM will be required to assist organizations in recovering from the disruption caused by the pandemic[9]. Furthermore, KM can provide organizations with critical information about how they manage their operations before, during, and after a pandemic. Alternatively, what resources are used, and what processes are implemented[10]. Knowledge management is an important aspect for any organization because it aids in the improvement of organizational performance, the development of new products, and the acquisition of a competitive advantage (Gunasekera & Chong, 2018), (Mousavizade & Shakibazad, Jan 2019)[3], (Pandey, Dutta, & Nayak, 2018), (Amelia, Endrastaty, & Sensuse, 2022).

The process of capturing, organizing, and sharing corporate knowledge is referred to as knowledge management. It's an important part of organizational learning and performance.

We also made use of earlier research on KM CSF. Contrarily, the CSFs in knowledge management (KM) can be seen as the behaviors and actions that must be faced in order to ensure the implementation's success (Pandey, Dutta, & Nayak, 2018). If these practices are formed and constructed or already part of the system, they must be improved. A comprehensive set of CSFs for KM practice in the sector does not yet exist. Therefore, when planning and implementing KM projects, it is crucial to have a suitable set of CSFs that will help organizations recognize the crucial issues they must address [9]. Depending on the topics covered, this study identified CSFs as the internal elements within certain organizations that are under their control. Since there is little that the organization can do to address these external concerns, other external influences including the environment and bureaucracy issues are not included in this study (Aldehayyat, Almohtasb, & Alsob, 2021). According to the literature, there are a number of critical success factors that may affect the implementation of knowledge management, including knowledge leadership, a culture of knowledge creation and sharing, a comprehensive technology infrastructure, a close connection to a business imperative, a compelling architecture and vision, and continuous learning. These variables will be influenced by the knowledge gained from earlier research into the methods and experiences of top organizations that apply KM (Amelia, Endrastaty, & Sensuse, 2022).

According to research conducted by (Artini, Wati, & Afrizal, 2020), (Othman, Ismail, Yahya, & Ahmad, 2018), (Mathew & Rodrigues, 2019), (Singh & Singh, 2019), (Sensuse, Qodarsih, Lusa, & Pri, 2018), (Mousavizade & Shakibazad, Jan 2019), the leadership factor is a very important factor, including the important CSF, because it has a significant level of influence on the implementation of KM in an organization. Their research also suggests that in order to implement KM, every organization or company must have a leadership dimension. Based on (Amelia, Endrastaty, & Sensuse, 2022), (Artini, Wati, & Afrizal, 2020), collaboration and rewards are important factors in KM implementation because they fall under the organizational culture dimensions. In contrast, according to (Pandey, Dutta, & Nayak, 2018), (Amelia, Endrastaty, & Sensuse, 2022), (Artini, Wati, & Afrizal, 2020), IT infrastructure, quality systems, and the Internet and information technology are important factors in the implementation of KM in organizations (this is because these factors are included in the Technology dimension). During a pandemic, no CSF KM implementation was found in the last 5 years of research.

During the pandemic, CSF KM research was scarce and difficult to find. As a consequence, it is crucial to investigate the critical factors of KM that have been successfully implemented in the post-pandemic era and the previous two years where no pandemic occurred (Teixeira, Tenório, Pinto, Matta, & da Cruz Urpia, 2023). We will answer the following research questions (RQ) based on the formulation of the described problem.

- RQ1: What are the critical success factors in pandemic era that influence KM implementation in Bank XYZ?
- RQ2: What recommendations or solutions can be used in KM implementation to avoid potential failures?

The objective of this study is to provide an answer to the proposed RQ and to evaluation successful KM implementation factors in Bank XYZ. The paper is organized as follows: For the purposes of this paper's setting, Section 2 explains the theoretical background. Section 3 is discussion of methodology takes into account the literature review. And part 4 discusses the result analysis, explained three methods of analysis namely SLR, TA, and ISM. Section 5 contains the discussion as well as a presentation of related literature. Part 6 presenting conclusions.

2. Literature Review

2.1. Organizational Knowledge

Knowledge is defined as an ever-changing combination of framed experience, values, contextual information, and expert insight that serves as a foundation for assessing and integrating new knowledge and experiences (Jennex, 2007, pp. 1–417.). Knowledge is the process of presenting and expanding knowledge created by people, and also clarifying and integrating it to a firm's knowledge system (Von & Nonaka, 2009). According to Bacerra-Fernandez (Fernandez,, 2015), knowledge refers to information that enables action, such as subject matter experts within an organization. Knowledge is utilized to discover what a particular situation implies and how to interact with it. Organizational knowledge is a conceptual construct that attempts to identify one of the emergent features of knowledge intensive organizations. Organizational knowledge, like knowledge and knowledge management, has been present in organizations from their inception, but its relevance and role have been largely overlooked. Organizational knowledge was transformed into a strategic resource by the new knowledge dense organizations, and knowledge management was identified as a viable path to a sustained competitive advantage. In this new world of intangibles, organizational knowledge is vital not only for its strategic potential, but also for envisioning a new relationship between employee and organization as a result of synchronizing his knowledge field with the organizational knowledge field. Individual and organizational knowledge fields are dynamically combining three basic fields: cognitive knowledge, emotional knowledge, and spiritual knowledge. The organizational integrators, such as management, leadership, and organizational culture, generate integration energy.

Organizational knowledge can be divided into two categories. Organizational knowledge is generated by people in a social environment, transferred, stored, retrieved, and used according to the demands of the company. It is a straightforward procedure, but it does not illuminate the special nature of organizational knowledge. in a more formal sense that organizational knowledge is the capability members of an organization have developed to draw distinctions in the process of carrying out their work, in particular concrete contexts, by enacting sets of generalizations whose application depends on historically evolved collective understandings. Organizational knowledge is a distinct operational domain from the employee's personal knowledge domains, and it was generated through a process other than a linear aggregation of the personal knowledge domains. Organizational knowledge can be divided into two categories. Organizational knowledge is generated by people in a social environment, transferred, stored, retrieved, and used according to the demands of the company. It is a straightforward procedure, but it does not illuminate the special nature of organizational knowledge. in a more formal sense Organizational knowledge is the capability members of an organization have developed to draw distinctions in the process of carrying out their work, in particular concrete contexts, by enacting sets of generalizations whose application depends on historically evolved collective understandings. Organizational knowledge is a distinct operational domain from the employees' personal knowledge domains, and it was generated through a process other than a linear aggregation of the personal knowledge domains.

2.2. Knowledge Management

While many organizations have made every effort to implement KM, they do not place a lot of emphasis on choosing the most effective strategy to do so. Understanding CSFs for KM adoption can assist a business in achieving its objectives (Othman, Ismail, Yahya, & Ahmad, 2018). In comparison, the CSFs in knowledge management can be seen as the practices and activities that must be faced in order for the implementation to be effective. If these practices are formed and constructed or already part of the system, they must be improved. A comprehensive set of CSFs for KM practice in the sector does not yet exist. Therefore, a suitable set of CSFs that will help companies recognize the crucial challenges they must address is highly recommended (Mathew & Rodrigues, 2019).

Knowledge management is a methodical strategy to optimizing a company's knowledge economy. Human resource techniques, technology, culture, and organizational structures are all part of it. Several knowledge management models propose that knowledge management enablers and procedures be included in the knowledge management framework. A fundamental grasp of knowledge operations and infrastructures to support organizational activities should be present in the knowledge management framework. Knowledge management enablers, in my perspective, are strategies used by organizations to promote consistent knowledge consumption. Based on the simplicity of coding and transmitting available knowledge, Knowledge Management divides knowledge into "Tacit" and "Explicit" knowledge. Explicit information is easily transportable and coded, whereas tacit knowledge is deeply embedded in the organization's system. Knowledge is meaningless in its passive form; yet, when activated through creative processes for application, replenishment, and sharing, it can lead to exceptional performance. In this context, knowledge management is defined as the process of activating passive knowledge for the benefit of organizations and gaining a competitive advantage.

It is vital to note that the definition of KM does not mention technology; while IT is frequently used to assist KM, technology by itself does not constitute KM. As millions of people prepare to retire over the next five or ten years, knowledge management (KM) has taken on a near-central role in the business world in recent years. KM primarily focuses on organizational goals such as improved performance, competitive advantage, information flow, and continuous firm improvement. These initiatives complement organizational learning and can be distinguished from it by a higher emphasis on knowledge management as a valuable asset and a focus on increasing knowledge sharing.

2.3. Critical Success Factors (CSF) of KM Implementation

Knowledge Management (KM) has emerged as an important component of business continuity and innovation (Aldehayyat, Almohtasb, & Alsob, 2021). KM is a systematic approach to classifying, managing, utilizing, and sharing an organization's information about assets such as repositories, regulations, methods, and documents, as well as unexpressed expert knowledge within its existing and former employees. KM is definitely performing what is necessary to maximize the value of knowledge resources. Although KM can be used by individuals, it has recently caught the interest of businesses. KM is regarded as an increasingly important competency that encourages the creation, sharing, and capturing of a company's knowledge (Fernandez, 2015). KM is defined as the process of selectively applying knowledge in various decision-making perspectives to present and future situation practices in order to improve the organization's performance (Jennex, 2007, pp. 1–417.).

The success of knowledge management can be viewed as a measure of an organization's ability to process knowledge in the organization. Knowledge management success criteria can help an organization or corporation implement knowledge management. As a multifaceted term, knowledge management success can be characterized as a tool for capturing the correct knowledge and delivering the right knowledge to the right users. The goal of applying this knowledge is to help businesses and individuals perform better. Knowledge management success can be measured in a variety of ways that affect strategy, business processes, knowledge content, and leadership. The dimensions of knowledge management success are divided into three categories: technical success, strategic success, and cultural and human success. The success model of knowledge management is separated into six dimensions: integrated technical infrastructure, knowledge strategy, organizational culture, shared enterprise wide knowledge structure, motivation and commitment, and senior management support. Other key elements include leadership, corporate processes, knowledge content, and knowledge management strategy. Some dimensions of knowledge management success factors include technology, people, and organizations. Every dimension of success factors has CSFs, which will be discussed in this study.

3. Research Methodology

To answer the research objectives, we used three analytical methods in this study: systematic literature

review (SLR), thematic analysis, and ISM analysis. We will go over each one by one. Fig.1 shows the overall flow of this research.

3.1. SLR Approach

The PRISMA methodology is used in the SLR stage. This systematic review took two months to complete and adhered to PRISMA's reporting guidelines. The types chosen for this study are open access articles, English articles, research articles (not books or web blogs), articles published within the last five years (2018-2022), and articles published in journals or conferences. We are focus on KM Success and Failure Factors, because it helps to answer the research aims. The next step is validating the CSF implementation of KM for research results from the SLR paper. We will validate the CSF in the SLR paper with these experts using semi-structured interviews.

3.2. Thematic Analysis Procedure

In this study, the Thematic Analysis (TA) method was chosen as the primary technique to analyze qualitative research. TA method is suitable for answering inquiries regarding experience, meaning, and perspective from the informant's point of view. Therefore, in this study TA was used to discover the success factors in KM implementation. Ten experts must be chosen. Of course, experts are chosen based on their position within an organization that is already well-versed in KM

TA requires time to become familiar with and knowledgeable about the data that has been obtained before conducting the next stages (Zhou, Yip, Ren, & To, December 2021). For more detail, the following are the stages of TA suggested (Clarke & Braun, 2018), as presented in Fig.2. At the stage of deepening the data through the perspective of the participant, recorded interviews are a crucial source in the analysis process to gain insights through conversations with participants. The main goal of this first stage is to understand the content of the data that has been obtained from the interview.

The second stage is code compilation process. According to Heriyanto (Heriyanto, 2018), code is considered a label. The code formulation in this stage is based on the records generated at the previous step. At this point, researchers will organize the code into groups according to a common theme (Clarke & Braun, 2018). The third stage is the theme identification which is the beginning of the analysis. At this point all those codes with the same meaning will be integrated. The fourth stage is finding the theme, which is in accordance with the research objectives (Clarke & Braun, 2018), (Heriyanto, 2018). The fifth stage involves an in-depth analysis of themes that can be integrated into one since they have similar meanings. Then, the theme that has been selected and utilized as a CSF of KM implementation is written in the final stage and next to ISM analysis.

3.3. ISM Analysis

To analyse quantitative research, the interpretive structure modelling (ISM) method will be used in this study to analyse the implementation of CSF KM at bank XYZ. ISM is a method that works in tandem with both qualitative and interpretive approaches (Watson, 1978), (Palit, Bari, & Karmaker, 2022), (Renukappa, Suresh, Al Nabt, Sarraikh, & Algahtani, 2020). This interpretation refers to expert judgment or being based on an expert's point of view (Watson, 1978), (Palit, Bari, & Karmaker, 2022), (Kaswan & Rathi, 2019). As a result, the experts in this study were chosen using a purposive sampling method. We are based on purposive sampling because the evaluation of a system or CSF necessitates a subjective assessment.

So, in the following stage, we will perform an ISM analysis to investigate the direct and indirect relationship between CSF dimensions (Watson, 1978), (Palit, Bari, & Karmaker, 2022), (Kaswan & Rathi, 2019). The experts will be contacted again for this ISM analysis to complete a questionnaire containing questions about the level of influence between the CSF dimensions. We use indicators from ISM itself to fill out the questionnaire for assessing the relationship between CSFs, which is to make comparisons between matrices (dimensions). As a result, the following is a step-by-step procedure that

we will follow from the beginning to the end. The steps we will take to evaluate the CSF of KM implementation are as follows (Watson, 1978), (Kaswan & Rathi, 2019).

- Step 1: At this stage, we choose the CSF for KM implementation based on the findings of SLR research or a review of the literature.
- Step 2: Using a purposive sampling technique, we will validate the results of the CSF identified in the SLR paper with the sources or experts we have chosen. As a result, we will use the validation results for further analysis at this point. CSF that does not match the validation results will be eliminated.
- Step 3: All CSFs that have been validated will be modeled to be linked to one another.
- Step 4: Create a structural interaction matrix based on the relationships of all CSFs.
- Step 5: Creating the reachability matrix
- Step 6: Following that, the reachability matrix is divided into levels.
- Step 7: Create a mapping diagram model based on the results of the ISM analysis. The graph is intended to depict the relationship links between nodes (dimensions).
- Step 8: The modeled diagram will be used to develop the ISM CSF model.
- Step 9. The consistency of each ISM model will be assessed.

3.4. Data Collection

Data was initially collected from paper SLRs and validated by a selected expert before being used in the next step. Prior to using TA, data were gathered through interviews because it enabled the collection of more information and more reliable data (Paradis, O'Brien, Nimmon, Bandiera, & Martimianakis, 2016). The interviews utilized both open-ended and closed-ended questions by involving ten sources as informants. The interview was conducted for two months, starting from October 2022 to November 2022. Each interview was carried out using video conferencing technology (Zoom Meeting). The qualitative questions asked to the interviewees were about their opinion regarding the implementation of KM in the organization, the CSF KM that has been and still needs to be improved, the components of the CSF KM found in their organization, the level of influence of each CSF on the implementation of KM, and the relationship causation between CSFs. The data obtained is the result of an investigation recommended by experts based on the level of influence in the organization namely management level, human resources, corporate university, and information technology representatives. After receiving these recommendations, the next step is to identify CSFs through the stages of the TA method and then compile relationships between CSFs to evaluate their level of efficiency and impact in organizations during a pandemic. Then as a result, an ISM analysis was carried out to better understand the relationship between CSFs in KM implementation.

4. Results Analysis

4.1. SLR Analysis

During the initial stage, the search results from 7 selected database data (Scopus, Science Direct, IEEE Xplore, ProQuest, EBSCOhost, Emerald Insight, Semantic Scholar) yielded a total of 2,965 studies written in English from 2018 to 2022, with this selection being filtered based on predetermined keywords. In the following stage, the articles are chosen based on their title, abstract, and keywords. At this time, 201 articles have been reviewed in full text (meaning read the whole text).

As a result, we discard 2,764 articles because they do not fulfill the criteria (most of those articles does not discuss the success and failure factors of KM implementation). In the final stage, a total of 20 articles were selected based on full text analysis; however, we did not proceed to the reference list screening stage in this study because there were no additional reviews as a result of scanning the reference list. The process data collection and data analysis are reported in Fig.3. The CSF KM model is observed and identified in this SLR. According to the findings of the SLR, the aspect or dimensions of leadership, culture, technology, organization structure, and KM strategy are the most frequently

utilized CSF KM for adopting KM. The results of the SLR, namely CSF KM, were then validated by experts in the field of knowledge management from the Faculty of Computer Science, University of Indonesia.

4.2. Thematic Analysis

Following data recognition and initial inspection, coding and theme identification are performed. The interview results are used to identify data and to gain knowledge about the factors that contribute to successful KM implementation. To identify themes, the author employs an inductive approach. The inductive approach begins with the initial coding process, followed by theme identification and refinement (Berebkova, Uysa, & Assaf, April, 2021).

This study's thematic analysis is based on data from interviews with the ten informants. 58 codes were obtained as identification results. The codes are classified into seven major themes based on the author's analysis using the second and third steps of the TA (see Fig.2). The seven themes are as follows: Leadership, organizational culture, technology, organizational structure, KM strategy, employee training and education, and team working.

4.3. ISM Analysis

In this study, the data collection tool was a questionnaire based on seven key success factors in KM implementation. In addition to describing the findings of the analysis, we will hold discussions on critical issues concerning research gaps and research objectives, as well as relate them to related work (Heriyanto, 2018), (Watson, 1978), (Palit, Bari, & Karmaker, 2022), (Renukappa, Suresh, Al Nabt, Sarraikh, & Algahtani, 2020).

- Verification of CSF for KM implementation at bank xyz. In this study, confirmed experts were interviewed and asked to list and describe the CSFs for implementing KM strategies in their organizations. The seven CSFs for implementing KM strategies in the banking sector are shown in Table I.
- Model of ISM Development. In this study, the ISM method in conjunction with Matrix of Cross Impact Multiplications Applied to Classification (MICMAC) is used to establish the interrelationships between the identified CSF for KM and their driving and dependent power. The interviews were thoroughly examined for any existing pair-wise relationships. The Structural Self-Interaction Matrix (SSIM) is based on the interdependence of the seven CSFs identified in Table II. The relationship between the CSFs was defined using four symbols (see Table III).

Matrix of Reachability. The SSIM is used to generate the initial reachability matrix shown in Table IV. The final reachability matrix is created by incorporating transitivity into the initial to n , then i must be related to n as well. Access matrix (see Table V). For example, if a CSF i (row) is related to j (column) and j is related to n , then i must be related to n as well. Level-Based Partition. This level partition is useful for diagraph modeling. Table VI displays the CSFs' reachability, antecedent, intersection, and levels. Based on the row of each CSF in the table final reachability matrix, the reachability table is filled in. The antecedent is filled in based on the column. The intersection is then determined by the intersection of the reachability and antecedent columns. For levels based on driving power.

Modeling of ISM. The final reachability matrix yields a preliminary diagraph with the transitive links shown in Fig.4. After removing all indirect links, the final diagraph is formed. The top-level CSFs are at the bottom of the diagraph, followed by the second-level CSFs, and so on. As shown in Fig.4, there are five levels, which explains A1 is the highest level because it has a large influence on all variables. Meanwhile, the lowest level is A6, which requires special attention to remain visible. Based on Fig.4 from Table VI shows that CSF leadership (A1) is found at level 1. Therefore, leadership is a significant CSF for implementing the KM strategy in the XYZ bank sector, this is because the CSF is at the base level of the ISM model. The

leadership factor has the most influence, followed by the teamwork factor, which is at level 2. Level 5 (Employee Training and Education) necessitates serious handling in order to maximize KM implementation at XYZ bank. Fig.4 shows how the relationship (arrow) is the implementation of Table II, which is the average result of expert judgment. The elaboration of the value of driving power is to create a hierarchy from level 1 to level 5. As we can see, CFS1 (A1) is a very influential factor, so it is ranked first in the hierarchy. The value of driving power and dependence power is the link between Fig.4 and Fig.5. Fig.4 shows factor A1 (Leadership), which is at Level 1. Based on the assessment of driving power, A1 has a significant level of influence. In Fig.5, A1 is described as belonging to an independent cluster with high driving power and low dependence power to other factors.

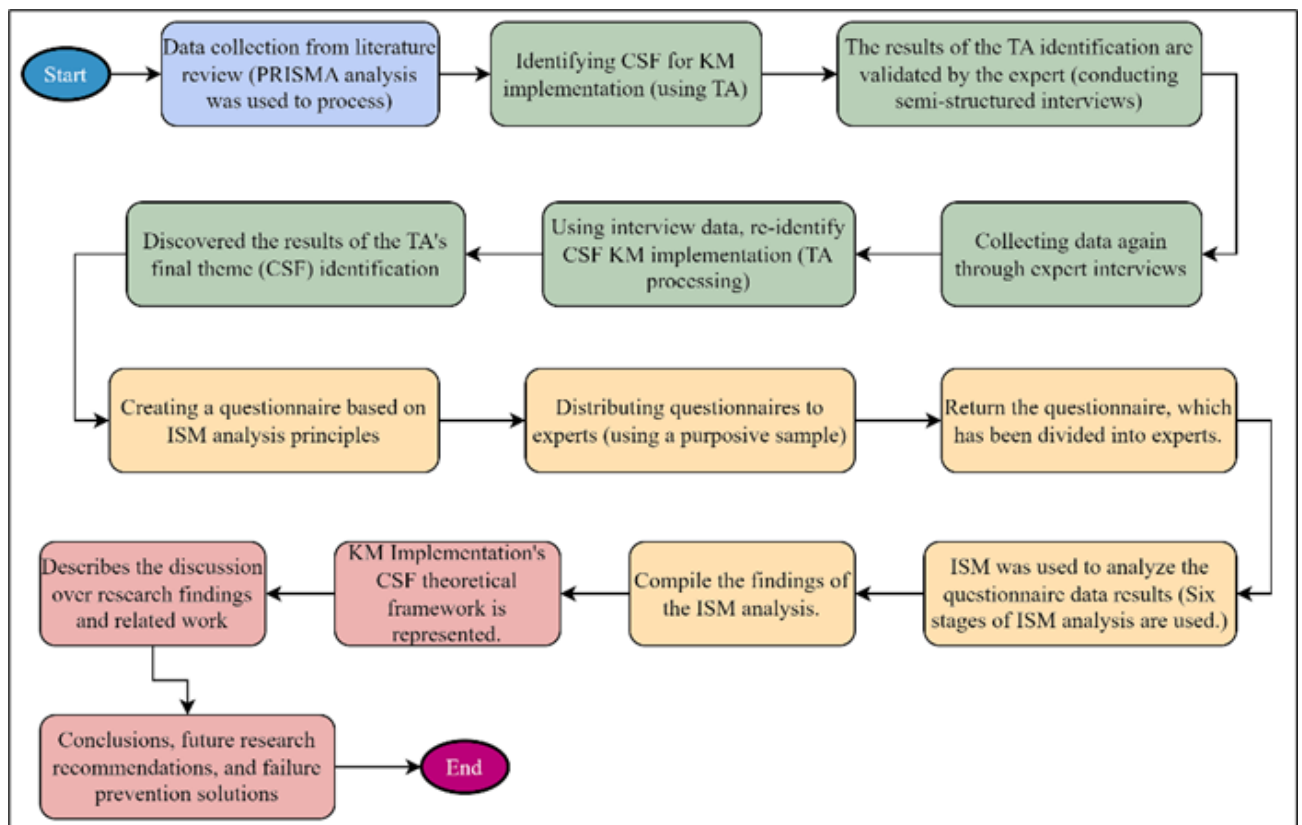


Fig.1. Research Methodology Framework

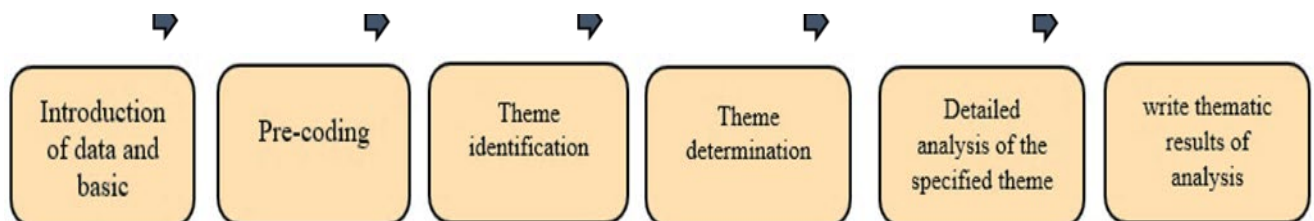


Fig.2. Stages of Thematic Analysis

Source: Adopted from (Clarke & Braun, 2018)

- CSF Classification for KM Implementation. Modeling of ISM. The CSFs for implementing KM strategies in XYZ bank were classified into four clusters (autonomous, dependent, linkage, and driving factors) based on the driver power and dependence power generated in Table V, as

shown in Fig.5. Here is the explanation, Autonomous cluster, these parameters have low drive power and low power dependence. These factors are relatively disconnected from one another. This cluster includes the technology factor (A3), according to Fig.5. A3 (CSF3) has a driving power of 3 and a high dependence power of 2. Linkage cluster, there is one CSF in the cluster of linking factors, namely team working (CSF7), with a dependency and driving power value of 5. There are three CSFs in the dependent cluster, including A4 (CSF4), which has a driving power of 3 and a dependence power of 4. A2 has a driving power of 3 and a dependence power of 5.

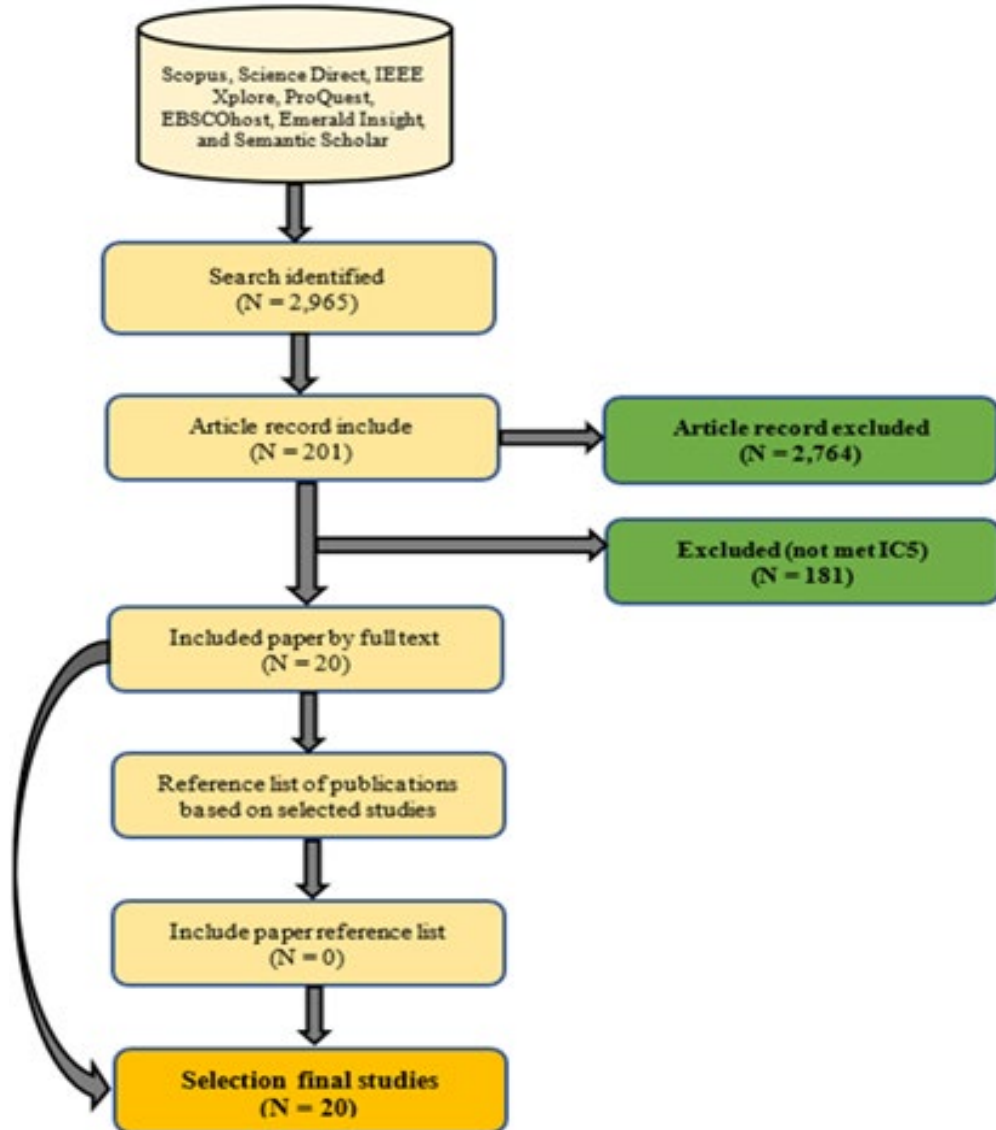


Fig.3. Research Methodology Framework

A6 has a driving power and dependence power value of 5. A5 is located between the linkage and dependent clusters because it has a driving power and a dependence power of 4. In the cluster of driving factors, leadership (CSF1) has the highest driving power of 7 and the lowest dependency power value of 2. The factors in this cluster are very important for decision and policy makers because these CSFs have a lot of influence and are less reliant on other CSFs. In the current study, XYZ Bank has the initiative to develop a Knowledge Management culture through what they call the Corporate University (CorpU). XYZ Bank, transforming the education system through the XYZ Smart application. XYZ Smart is a digitalization product of

XYZ Bank which contains a variety of educational materials to support digital learning. Students can access this material anywhere via their respective cellphones or laptops. However, prior to carrying out this initiative, XYZ Bank appointed a Chief Learning Officer to ensure that this initiative was implemented. Thus, XYZ Smart is able to become an efficient and effective learning tool.

Table 1. CSFs For Implementing KM Strategies in XYZ Bank

CSFs for effective implementation of KM strategies	Percentage of interviewees cited (N = 10)
Leadership	100% (10/10)
Organizational culture	90% (9/10)
Technology	80% (8/10)
Organizational Structure	70% (7/10)
KM strategy	70% (7/10)
Employee Training and education	70% (7/10)
Team working	60% (6/10)

Table 2. Structural Self-Interaction Matrix (SSIM) of the CSFs

CSF No.	Critical success factors	CSF1	CSF2	CSF3	CSF4	CSF5	CSF6	CSF7
CSF1	Leadership	—	V	V	V	V	O	X
CSF2	Organizational Culture	—	—	O	X	A	O	X
CSF3	Technology	—	—	—	O	O	V	V
CSF4	Organizational Structure	—	—	—	—	A	O	V
CSF5	KM Strategy	—	—	—	—	—	X	A
CSF6	Employee Training and education	—	—	—	—	—	—	A
CSF7	Team working	—	—	—	—	—	—	—

Table 3. Four Symbol Define Direction

V	CSF i more influential than CSF j
A	CSF j more influential than CSF i
X	CSF i and j equally influential each other
O	CSF i and j no influential each other

Table 4. Initial Reachability Matrix of The CSFs

CSF No.	Critical success factors	CSF1	CSF2	CSF3	CSF4	CSF5	CSF6	CSF7
CSF1	Leadership	1	1	1	1	1	0	1
CSF2	Organizational Culture	0	1	0	1	0	0	1
CSF3	Technology	0	0	1	0	0	1	1
CSF4	Organizational Structure	0	1	0	1	0	0	1
CSF5	KM Strategy	0	1	0	1	1	1	0
CSF6	Employee Training and education	0	0	0	0	1	1	0
CSF7	Team working	1	1	0	0	1	1	1

Table 5. Final Reachability Matrix for CSFs

CSF No.	Critical success factors	CSF1	CSF2	CSF3	CSF4	CSF5	CSF6	CSF7	Driving Power	Rangking
CSF1	Leadership	1	1	1	1	1	1	1	7	1
CSF2	Organizational Culture	0	1	0	1	0	0	1	3	4
CSF3	Technology	0	0	1	0	0	1	1	3	4
CSF4	Organizational Structure	0	1	0	1	0	0	1	3	4
CSF5	KM Strategy	0	1	0	1	1	1	0	4	3
CSF6	Employee Training and education	0	0	0	0	1	1	0	2	5
CSF7	Team working	1	1	0	0	1	1	1	5	2
Dependence Power		2	5	2	4	4	5	5		

Table 6. The Reachability Matrix's Level Partitions

Code CSF	Reachability set	Antecedent set	Intersection	Level
CSF1 = A1	A1, A2, A3, A4, A5, A6, A7	A1, A7	A1, A7	1
CSF2 = A2	A2, A4, A7	A1, A2, A4, A5, A7	A2, A4, A7	4
CSF3 = A3	A3, A6, A7	A1, A3,	A3	4
CSF4 = A4	A2, A4, A7	A1, A2, A4, A5	A2, A4	4
CSF5 = A5	A2, A4, A5, A6	A1, A5, A6, A7	A5, A6	3
CSF6 = A6	A5, A6	A1, A3, A5, A6, A7	A5, A6	5
CSF7 = A7	A1, A2, A5, A6, A7	A1, A2, A3, A4, A7	A1, A2, A7	2

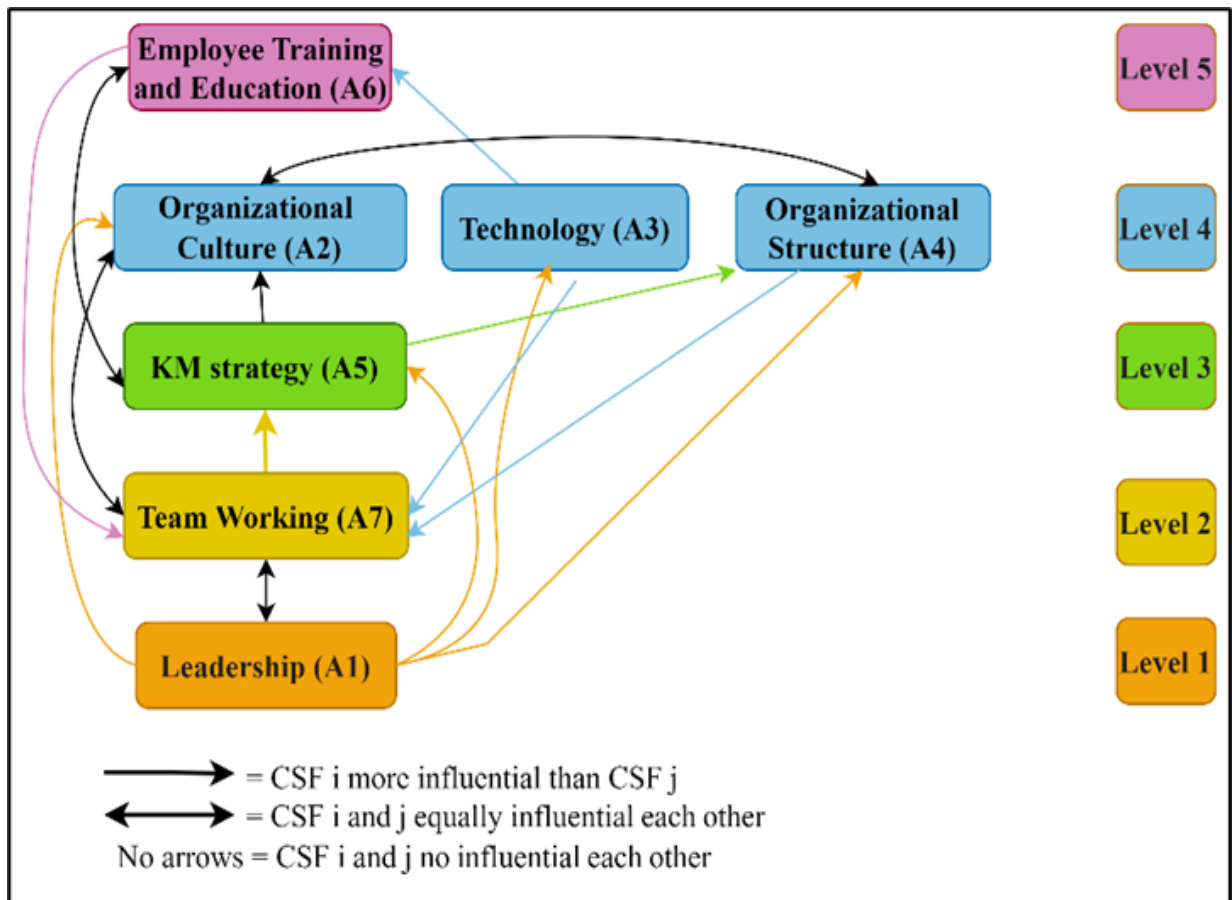


Fig.4. CSF Model Based on ISM

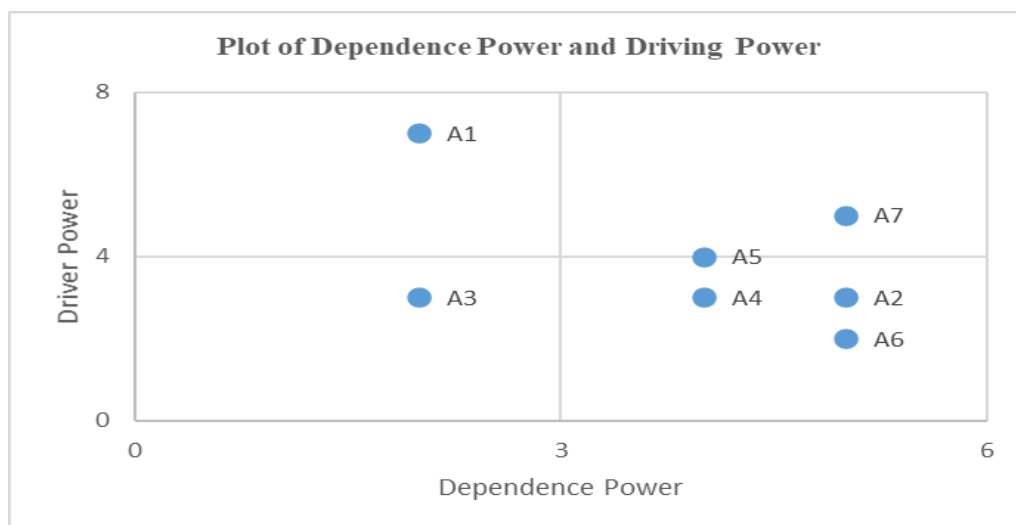


Fig.5. CSF Driving and Dependence Power Diagram.

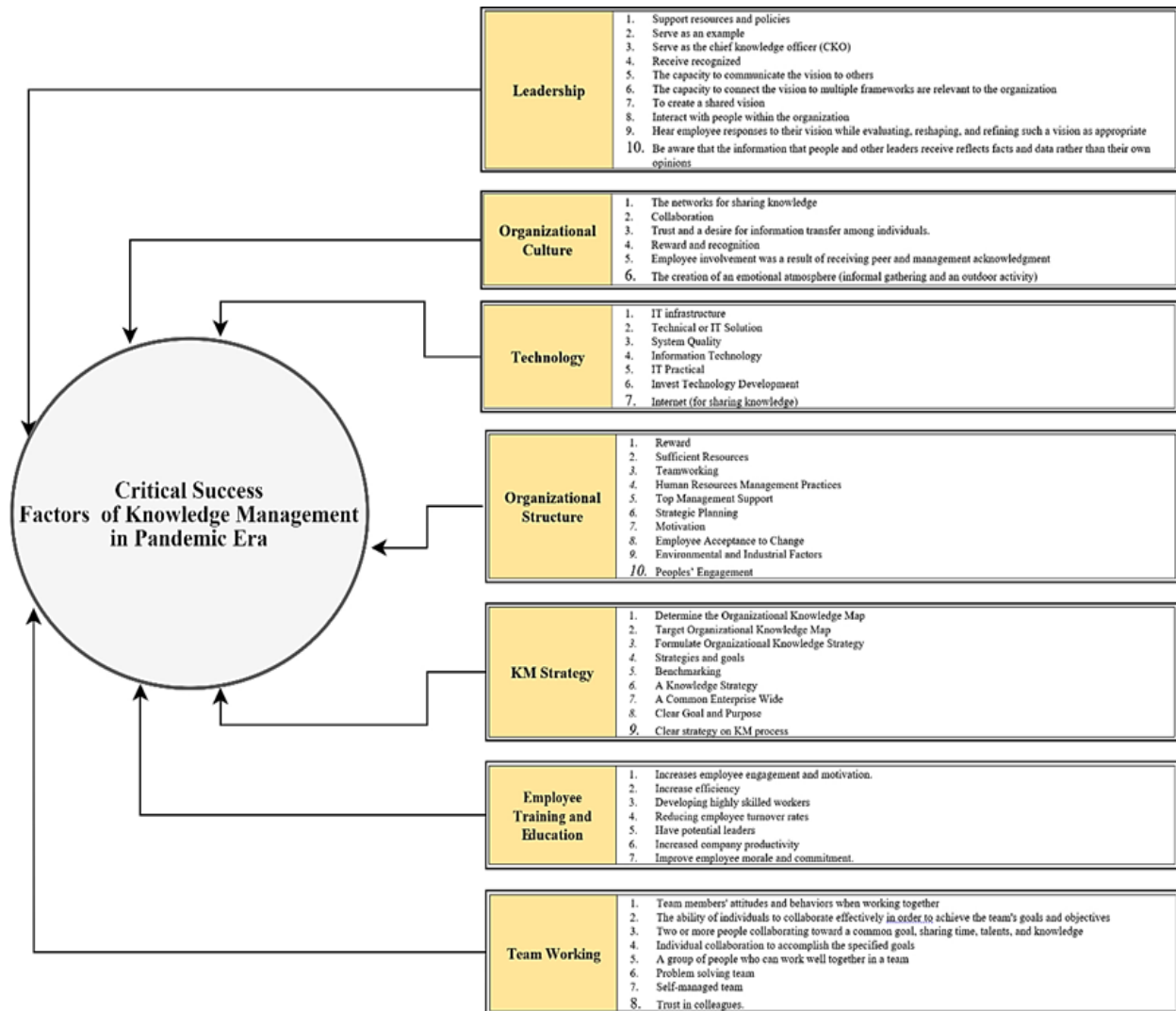


Fig.6. Theoretical Framework of KM Implementation in Pandemic Era

The Learning Management System and Knowledge Management System stages can be integrated online. Therefore, the learning process can be done anytime, anywhere, and with any device. This application has been integrated into the XYZ Bank company since December 2018 through the Integrated Digital Learning program. XYZ Bank employees only need to register their Personal Number in order to access XYZSmart. If all the required data has been uploaded, then the employee is free to access the materials at XYZSmart. The main menu is on the home page, so visitors don't find it difficult to explore the features and functions of the XYZSmart application. The XYZSmart site is also equipped with a learning journey feature, so participants can know what stage their learning progress has reached. Not only reading material and working on questions, now XYZSmart participants can also chat with other students who are studying the same material. XYZ Bank is also supported by a qualified learning organization through XYZ Corporate University which is a place for Bank XYZ talents.

The education system that is built is aligned with the latest business developments as well as being able to respond to future challenges. Utilization of digital platforms that can be accessed anywhere in combination with a Knowledge Management System and supported by Subject Matter Experts will strengthen the role of Bank XYZ Corporate University in creating future leaders. To oversee the performance driven culture, the Human Capital Directorate of Bank XYZ prepares objective and accountable performance management through the establishment of Key Performance Indicators for each individual that is in line with the company's mission. An accountable Talent Management System is also designed with a comprehensive data drive so that the process of identification (talent mapping),

selection (talent committee), development (Educational program) and succession (talent pool) can be carried out validly in a system called XYZlliance. Of course, this system will really help management to make strategic decisions related to talent management accurately.

As a result of the SLR analysis results, combined with thematic analysis and equipped with ISM analysis to determine the level of importance, we can create a theoretical framework, as shown in Fig.6. In Fig.6 represents seven success factors that influence KM implementation during a pandemic.

5. Discussion

The education system that is built According to the result leaders play a particularly important part in KM implementation in terms of enhancing the organization's process for finding and sharing knowledge, as well as motivating staff to embrace a culture of knowledge sharing. One of the key elements needed for successfully implementing KM is the presence of excellent leaders (Aldehayyat, Almohtasb, & Alsob, 2021). Leaders place a strong emphasis on knowledge management's other crucial success factors, such as reason. Top management should commit to fostering a business culture that emphasizes knowledge exchange throughout the company (Elia, Margherita, & Passiante, October 2019). Resource allocation, inspiring leadership, and managerial support and commitment were among the key elements that were mapped under the umbrella term "leadership" (Kniffin, 2021) Without managerial support, very few innovations in a company may be successful.

It would take extraordinary dedication and encouragement from the leadership for a relatively new idea like knowledge management to be accepted by the workforce. It is true that senior management initiates, sponsors, and promotes knowledge management (KM) and is in charge of giving KM enough money and resources (Kniffin, 2021). It has been recognized that it even has an impact on other CSF aspects. Management's structure, attitude, and example all contribute to the development of an organization's culture. An organization can start to develop the principles that encourage knowledge sharing across boundaries when the upper management is strongly committed to changing the organizational culture (Kniffin, 2021). Two key factors in fostering knowledge sharing are participative leadership and empowering leadership. In fact, ethnographic analysis revealed that one of the business's partners was in charge of launching Squad to apply KM. Furthermore, as people were reserved during sessions of Design Thinking, the leaders' inspiration was crucial for knowledge mapping. As a result, not only should leaders take part in KM design, but they also need to ensure employee participation and input (Mathew & Rodrigues, 2019).

The failure causes' emergence stage or stages were identified when the results were analyzed. After that, several failure reasons were linked to the correct KM cycle stage. It is noteworthy that the majority of the risk factors for failure might manifest during the planning stage. In the beginning, the KM team, money, time management, and employee involvement are all crucial. The foundation of the KM process is formed during a crucial stage of the cycle known as preparation and infrastructure. In this step, decisions are made on the primary tools, information technology, conditions, budget, project costs, team, timetable, and planning. In our studies, this stage saw the emergence of factors including a split budget and poor infrastructure (Zhou, Yip, Ren, & To, December 2021). Because the KM team is established at the start of the initiatives, the failure factors associated with it, such as improper KM team members and a lack of top management commitment and support for KM, emerged at this time. It is impossible to establish an appropriate organizational structure and culture that promotes the open exchange of information and experience if the top management are not involved in or support KM activities.

The KM cycle's organizing and sharing stages contain the most potential points of failure. Aspects of behavior and management that could contribute to failure include organizational structure and culture, resistance to change, ineffective conflict resolution, and reward systems. Employees will resist the development of KM efforts if top managers do not pay enough attention to the issues, many of which are related to the workers, their wants, and their expectations (Zhou, Yip, Ren, & To, December 2021). In general, the sharing stage of KM deployment is where the majority of KM failure causes become

evident. Workers should be encouraged to participate in information sharing, and the outcomes of their efforts should be assessed and rewarded. KM efforts may also fail due to a lack of a KM-oriented culture, employee opposition, and conflict management. All of these elements might be recommended in order to prevent KM implementation failures.

6. Conclusions

Based on the findings of the literature review in pandemic era and semi-structured interviews with ten experts (in the context of the pandemic), seven CSFs were identified as the result of thematic analysis processing. The seven CSFs, namely: leadership, organizational culture, technology, organizational structure, KM strategy, employee training and education, and team working consists of CSFs discovered during the pandemic. The identified CSFs were investigated for interaction using ISM, and it was showed that leadership (CSF1) had the greatest influence on the implementation of the KM strategy at bank XYZ. As a result of the findings, leadership (CSF1) is one of the most important determinants of success factor in implementing a KM strategy at XYZ bank.

Based on our findings, in pandemic era and maybe on post pandemic, to avoid failure when implementing KM in XYZ bank, it is recommended that seven CSF must be considered during the conceptualization, design, and implementation stages of the program KM. To attract the ideal calibre of workers with career prospects in KM, leadership must ensure that there is continuous personal expansion and continuous learning for workers involved with KM. In many instances, technology problems received more attention than behavioral and human problems. Employee involvement in knowledge sharing should be encouraged during the sharing phase. The majority of failures are due to behavioral problems involving the employees, who are the main focus of KM projects, such as a lack of a KM-oriented culture, worker resistance, and conflict management. Prior to implementation, managers (leaders) should create a proper plan such a responsible change management plan in order to prevent these failures. The workers and matters pertaining to them should receive their undivided attention.

Further research would benefit from an increase in the number of sources (experts), and quantitative analysis can combine ISM and DEMATEL analysis for further exploration (when ISM and DEMATEL are combined, they create an effective and powerful tool that aids the decision-making group). Benefit of ISM is a very well terminology for investigating links between variables that organizes a complete set of directly and indirectly connected variable into a full systematic classifier, while the DEMATEL technique was utilized as accurately represented decision-making method to construct the correlation structure between those factors. And also, they can isolate the effects of each failure component, neutralize each one individually using the success factor as an antidote, and explain the likely connections between failure factors.

Acknowledgements

This research was carried out as a team and under supervision by the University of Indonesia, Faculty of Computer Science, master of information technology, especially lecturers and teaching assistants for the Knowledge Management class.

References

- Aldehayyat, J., Almohtasb, A., & Alsob, S. (2021). An Evaluation Of Critical Success Factors For Knowledge Management In The Financial Sector: Evidence From Developing Country Context. *Acad. Strateg. Manag. J.*, vol. 20, no. 3, pp. 1–20.
- Amelia, R., Endrastaty, A., & Sensuse, , D. (2022). Critical Success Factors of Knowledge Management Implementation in BPKP. *1st Int. Conf. Inf. Syst. Inf. Technol. ICISIT 2022*, doi: 10.1109/ICISIT54091.2022.9872767., (pp. pp. 112–117).

- Artini, D., Wati, T., & Afrizal, S. (2020). Analysis of Knowledge Management Readiness in PT Artajasa Pembayaran Elektronis. *Proc. - 2nd Int. Conf. Informatics, Multimedia, Cyber, Inf. Syst. ICIMCIS 2020* (pp. pp. 226–230). doi: 10.1109/ICIMCIS51567.2020.935430.
- Berbekova, A., Uysa, M., & Assaf, A. (April, 2021). A thematic analysis of crisis management in tourism: A theoretical perspective. *Tour. Manag.*, vol. 86, doi: 10.1016/j.tourman.2021.104342.
- Brem, A., Viardot, E., & Nylund, P. (November 2020). Implications of the coronavirus (COVID-19) outbreak for innovation: Which technologies will improve our lives? *Technol. Forecast. Soc. Change*, vol. 163, p. 120451, 2021, doi: 10.1016/j.techfore.
- Clarke, V., & Braun, V. (2018). Using thematic analysis in counselling and psychotherapy research: A critical reflection. *Couns. Psychother. Res.*, vol. 18, no. 2, pp. 107–110, doi: 10.1002/capr.12165.
- Elia, G., Margherita, A., & Passiante, G. (October 2019). Digital entrepreneurship ecosystem: How digital technologies and collective intelligence are reshaping the entrepreneurial process. *Technol. Forecast. Soc. Change*, vol. 150,, p. 119791, 2020, doi: 10.1016/j.techfore.2019.119791.
- Fernandez,, I. B. (2015). *Knowledge Management Systems and Processes*.
- Gunasekera, V., & Chong, S. (2018). Knowledge management critical success factors and project management performance outcomes in major construction organisations in Sri Lanka: A case study. *VINE J. Inf. Knowl. Manag. Syst.*, vol. 48, no. 4,, pp. 537–558, 20.
- Heriyanto, P. K. (2018). Thematic Analysis sebagai Metode Menganalisa Data untuk,”. *ANUVA*, vol. 2, no. 3, pp. 317–324.
- Jennex, M. (2007, pp. 1–417.). *Knowledge Management in Modern Organizations,” in Knowledge Management in Modern Organizations*, .
- Kaswan , M., & Rathi, R. (2019). Analysis and modeling the enablers of Green Lean Six Sigma implementation using Interpretive Structural Modeling. *J. Clean. Prod.*, vol. 231, pp. 1182–1191, doi: 10.1016/j.jclepro.2019.05.253.
- Khazieva, N., Tomé, E., & Caganova, D. (2018). Why knowledge management fails. *Proc. Eur. Conf. Knowl. Manag. ECKM*, vol. 1, no. 1, doi: 10.4018/978-1-59904-933-5.ch166, (pp. pp. 390–398).
- Kniffin , K. (2021). COVID-19 and the workplace: Implications, issues, and insights for future research and action. *Am. Psychol.*, vol. 76, no. 1, (pp. pp. 63–77, doi: 10.1037/amp0000716).
- Liberati, A. e. (2009). *The PRISMA statement for reporting systematic reviews and meta-analyses of studies that evaluate health care interventions: explanation and elaboration*, vol. 62, no. 10. 2009.
- Mathew , A., & Rodrigues, L. (2019). Critical success factors of knowledge management : a review Asish Oommen Mathew . *World Rev. Entrep. Manag. Sust. Dev.*, vol. 15, no. 4, .
- Mousavizade , F., & Shakibazad, M. (Jan 2019). Identifying and ranking CSFs for KM implementation in urban water and sewage companies using ISM-DEMATEL technique. *J. Knowl. Manag.*, vol. 23, no. 1,, pp. 200–218, doi: 10.1108/JKM-05-2018-0321.
- Othman, A., Ismail, S., Yahya, K., & Ahmad, M. (2018). Critical success factors in implementing knowledge management in consultant firms for Malaysian construction industry. *Manag. Sci. Lett.*, vol. 8, no. 5,, pp. 305–316, doi: 10.5267/j.msl.2018.4.017.
- Palit, T., Bari, A., & Karmaker, C. (2022). An integrated Principal Component Analysis and Interpretive Structural Modeling approach for electric vehicle adoption decisions in sustainable transportation systems. *Decis. Anal. J.*, vol. 4, p. 100119, doi: 10.1016/j.dajour.2022.100119.

- Pandey, S., Dutta, A., & Nayak, A. (2018). Organizational capabilities and knowledge management success: a quartet of case studies. *Kybernetes*, vol. 47, no. 1, pp. 222–238, doi: 10.1108/K-01-2017-0041.
- Paradis, E., O'Brien, B., Nimmon, L., Bandiera, G., & Martimianakis, M. (2016). Design: Selection of Data Collection Methods. *J. Grad. Med. Educ.*, vol. 8, no.2, pp. 263–264, doi: 10.4300/JGME-D-16-00098.1.
- Renukappa, S., Suresh, S., Al Nabt, S., Sarraikh, R., & Algahtani, K. (2020). An ISM Approach to Evaluate Critical Success Factors for Knowledge Management in the Kingdom of Saudi Arabia. *Harnessing Knowledge, Innov. Competence Eng. Mission Crit. Syst.*, pp. 1–20, doi: 10.5772/intechopen.90069.
- Sensuse, D., Qodarsih, N., Lusa, J., & Pri, P. (2018). Critical Success Factors of Knowledge Management: A Systematic Literature Review. *Int. Conf. Inf. Technol. Syst. Innov. ICITSI 2018 - Proc.* pp. 26–31, 2018, doi: 10.1109/ICITSI.2018.8695926.
- Singh, S., & Singh, K. (2019). Critical success factors and knowledge management process in Indian nationalised bank. *Int. J. Innov. Technol. Explor. Eng.*, vol. 8, no. 12,, pp. 4642–4649,, doi: 10.35940/ijitee.L3853.1081219.
- Teixeira, A., Tenório, N., Pinto, D., Matta, N., & da Cruz Urpia, A. (2023). The critical success factors' investigation during knowledge management implementation within SME enterprises: a Participatory Design opportunity. *SN Comput. Sci.*, vol. 4, no. 1, doi: 10.1007/s42979-022-01420-6.
- Von , G., & Nonaka, K. (2009). Tacit Knowledge and Knowledge Conversion: Controversy and Advancement in Organizational Knowledge Creation Theory. *Indoforms*, vol. 45, no. 3, pp. 1–19,.
- Watson, R. (1978). Interpretive structural modeling-A useful tool for technology assessment?,”. *Technol. Forecast. Soc. Change*, vol. 11, no. 2,, pp. 165–185,doi: 10.1016/0040-1625(78)90028-8.
- Zhou, H., Yip, W., Ren, J., & To, S. (December 2021). Thematic analysis of sustainable ultra-precision machining by using text mining and unsupervised learning method. *J. Manuf. Syst.*, vol. 62, pp. 218–233, doi: 10.1016/j.jmsy.2021.11.013.