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# Developing an IT-Based Knowledge Sharing System for University IT Units: Integrating Large Model Language

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**Abstract**

Information technology companies in Indonesia face the challenge of high employee turnover, which leads to the loss of important knowledge and has an impact on productivity and innovation. This research aims to develop conceptual knowledge sharing and knowledge sharing systems in university IT units, which do not yet have an integrated system for documenting knowledge. Observations show that the ticketing system used can be optimized as a long-term knowledge sharing platform. The designed model includes strengthening the culture of sharing, utilizing social networks within the organization, applying information technology, reward systems, and the SECI model approach. In addition to knowledge repository features, role systems, documentation automation, search, and collaboration modules, the integration of Large Language Models (LLM) such as ChatGPT is expected to improve information search, documentation automation. LLMs play a crucial role in enhancing user interactions by enabling natural language queries, improving search accuracy, and automating knowledge classification. Moreover, they facilitate knowledge extraction from unstructured data, assist in summarizing key insights, and provide adaptive learning capabilities. By leveraging LLMs, the system can increase efficiency, reduce the time required to find relevant information, and ensure knowledge continuity within the organization.

**Keywords**: Knowledge Sharing, Knowledge Management, Information Technology, Lagre Model Language

## 1. INTRODUCTION

In the era of globalisation, the development of information technology affects various industrial sectors, including companies in the field of information technology that must continue to innovate and adapt to remain competitive [1]. One of the main challenges faced by IT companies in Indonesia is the high employee turnover rate, which often leads to the loss of important knowledge and impacts the company's productivity and innovation. Employee knowledge, both explicit and implicit, is an asset that must be managed properly to prevent

knowledge gaps, especially in new employees who need a quick understanding of the work they do [2].

Studies by [3] show that high turnover rates in the IT industry can disrupt the continuity of company operations and affect the company's ability to maintain continuous innovation. In this context, knowledge sharing strategies play a very important role. With a knowledge sharing mechanism in place, knowledge from senior employees can be transferred to junior employees, thereby reducing the negative impact of high employee turnover. This allows new employees to access existing knowledge, accelerate the adaptation process, and improve overall team performance [4].

A similar challenge was faced by university X, especially in the IT unit that supports campus operations. Within the IT unit, a high employee turnover rate leads to a decrease in knowledge continuity, potentially disrupting the smooth running of campus operational processes. One of the main issues faced is the high percentage of inexperienced new employees, who require guidance and knowledge transfer from senior employees. However, time and workload constraints often hinder effective knowledge transfer. Furthermore, the absence of an integrated system for documenting knowledge means that much important knowledge remains tacit, which is difficult for other employees to access.

For example, a study by [5], [6] revealed that in a university IT unit, technical knowledge needed to solve day-to-day problems was only available in tacit form and was difficult to effectively pass on to new employees. This increases the workload of senior employees who have to transfer knowledge directly, while reducing operational efficiency.

One potential solution to overcome this problem is the development of a knowledge sharing system that can be easily accessed by all employees. Application X, which is currently used by the IT unit to handle IT service issues, has the potential to be developed into a knowledge sharing platform that can digitally document technical knowledge. With certain adjustments, this application can become a system that allows easy access for all employees to obtain the knowledge needed to solve daily operational problems.

This research aims to examine the implementation of knowledge sharing strategies in university IT units, as well as to design a suitable knowledge sharing system model by utilizing application X as the main platform including the utilization of technology such as LLM which is expected to increase efficiency, reduce the time needed to find relevant information, and ensure knowledge continuity within the IT unit at the university.

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## 2. METHODS

This study uses the design research science methodology method. Design Science Research Methodology (DSRM) is a research approach used in information systems that focuses on the design and evaluation of artefacts to solve identified problems. It integrates principles, practices and procedures to guide researchers in creating innovative solutions. DSRM usually follows a structured process, which includes problem identification, goal definition, design and development, demonstration, evaluation and communication of results. This methodology aims to contribute to theoretical knowledge and practical applications in information technology and systems[7]. Figure 1 is an overview of the conceptual method of design research science methodology.

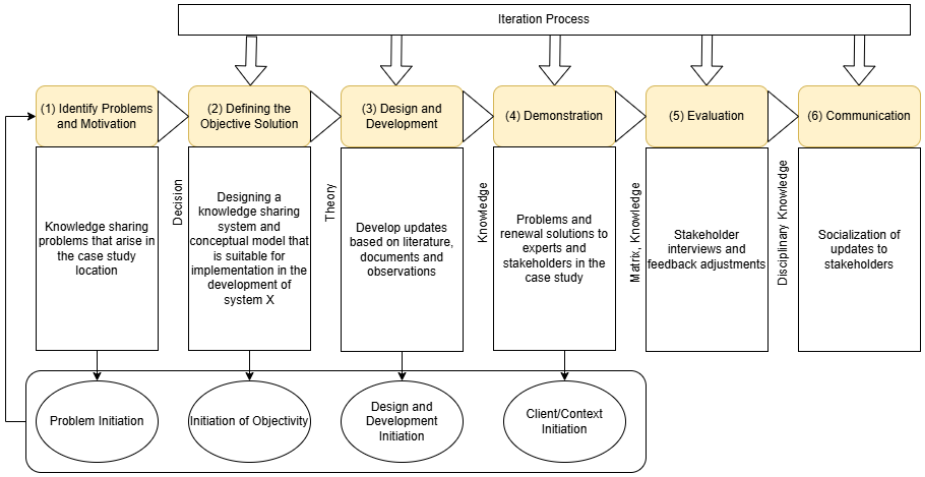


**Figure 1.** Literacy Process

The stages in the conceptual model include Problem Identification and Motivation, which involves determining and motivating the research problem, where the researcher examines the issue of knowledge sharing in a case study. Defining Objective Solutions sets the goal of the solution based on problem analysis to produce a knowledge sharing system on system X. Design and Development focuses on creating artefacts in the form of constructions or tested methods, in this case, the researcher designs updates based on literature and observations. Demonstration presents solutions to experts through case studies. Evaluation measures the effectiveness of the artefact through interviews and feedback, allowing for revision if necessary. Finally, Communication involves delivering the results, benefits, and effectiveness of the artefacts to stakeholders and the scientific community through publication and socialization of research results. The following are details of each step of the method used.

### 2.1 Problem Identification and Motivation

This study uses a literature review to compare knowledge sharing found in several studies with knowledge sharing observed in the case study. The following is the result of a review conducted by researchers through a literature study, namely by examining various scientific sources, research journals, articles, and relevant documents that support this study. This process involves a critical analysis of the theories, concepts, and findings from various previous studies, which aims to provide a strong basis for understanding the research context and enriching insights into the topic of knowledge sharing. Additionally, this research utilizes the literature review to compare knowledge sharing models identified in previous studies with the knowledge sharing practices observed in the case study, allowing for a more comprehensive analysis of their similarities, differences, and potential improvements.

#### 2.1.1 Knowledge Sharing

concepts, and findings from various previous studies, which aim to provide a strong foundation in understanding the research context and enriching insights into the topic of knowledge sharing[8]**.** The main challenge in its implementation is the tendency of employees to keep knowledge to themselves. The success of knowledge management is determined by the organisational culture, reward system, structure, motivation, and management support[9]. The five elements of knowledge flow include the availability of sources, the value of sources, the means of communication, the recipients of knowledge, and the capacity for absorption[10].

Knowledge sharing involves at least two individuals and it is important for IT companies to improve employee performance, motivation, loyalty, and commitment, as well as reducing detrimental turnover[11]. Research[12] describes a knowledge sharing process model compiled from theory and empirical results. Figure 2 is an overview of the knowledge sharing process from the paper.

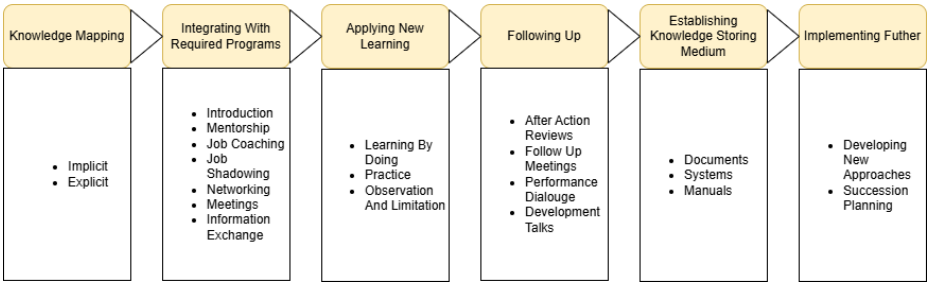


**Figure 2.** Knowledge Sharing Process

The knowledge sharing process is explained as follows in the image above[12]: Knowledge mapping involves identifying key knowledge that needs to be shared, whether implicit (silent and personal) or explicit (easy to document and communicate). Once key knowledge has been identified, it is then integrated with required programs, where it is shared through various methods such as introductory sessions, mentoring, job coaching, job shadowing, networking, meetings, and information exchange. These programs can be used together or separately to facilitate effective knowledge transfer. After knowledge is shared, the application of new knowledge takes place, where recipients apply what they have learned through practice, observation, or imitation, ensuring that knowledge is utilized in a real-world setting. This step ensures that knowledge is not only shared but also practically applied in daily operations. To reinforce understanding, follow-up discussions are conducted to ensure that knowledge is comprehended and effectively implemented in the workplace.

To support long-term knowledge retention, organizations build knowledge storage media, where important knowledge is documented in systems or databases for easy access and reference. This step ensures that knowledge remains available to others in the organization, facilitating continuous learning and future reference. Finally, further implementation involves developing a new approach and planning for succession, ensuring that the knowledge sharing cycle continues. This highlights the iterative nature of the process, as the cycle restarts after all steps are completed, contributing to the sustainability of organizational knowledge management.

### 2.1.2 Knowledge Management

Knowledge Management (KM) is the process of improving organizational performance through the acquisition, design and management of knowledge [8]. KM can also be interpreted as an effort to increase knowledge in an organization to optimize work and value by using tools, processes, methods, and techniques. The main objective of KM is to disseminate information that helps members of the organization make the right decisions[9]. KM transforms individual knowledge into assets that increase organizational effectiveness through dynamic interaction[13]. Overall, KM is the process of creating, identifying, and applying organizational knowledge for innovation and performance improvement by taking advantage of new opportunities. The core elements of implementing KM in a company include[14] :

1) Success Determining Factors, Such as Human Resources, Leadership, Information Technology, Strategy, Structure, and Organizational Culture.
2) Implementation Strategy, Namely Personalization.
3) KM Process, including sharing, utilization, storage, creation, and organization of knowledge.
4) Organizational Support for KM Implementation.

The four pillars supporting KM are organization, culture, leadership skills, and technology[14]. The KM process can be divided into four main phases, namely knowledge creation, capture and storage, knowledge sharing, and application and use[15]. To support this process, the Knowledge Management System (KMS) is used as a system that manages knowledge in the organization. The KMS serves to facilitate knowledge sharing, which is important for increasing innovation and creativity[16]. KMS uses information technology to support knowledge management through various functions, such as search and collaboration, and handling implicit knowledge. In addition to acting as a knowledge repository, KMS also encourages the creation of new knowledge, with three main types based on its focus on KM processes[17], namely:

1) Knowledge Discovery Systems: Focus on knowledge creation with techniques such as data mining.
2) Knowledge Capture Systems: Focus on storing and retrieving knowledge.
3) Knowledge Sharing System: Focus on the transfer and application of knowledge through collaboration and electronic communication

### 2.1.3 Knowledge Sharing Framework

The knowledge sharing framework is based on four main factors: sharing opportunities, motivation to share, the nature of knowledge, and the culture of the work environment. Sharing opportunities include formal channels, such as work teams and workshops, as well as informal channels, such as personal relationships and social networks, which are often more effective because of trust. The motivation to share is influenced by internal factors, such as the desire for reciprocity, and external factors, such as trust and rewards. The nature of knowledge, including type and value, as well as organizational culture, also determine the willingness to share. The workplace culture, at the organizational, institutional and national levels, shapes how knowledge is valued and shared[18]. The following is an overview of the knowledge sharing framework, as shown in Figure 3.


**Figure 3.** Knowledge Sharing Framework

### 2.1.4 Conceptual Framework of Knowledge Sharing

The knowledge sharing framework includes several main components that influence each other, namely knowledge management culture, social networks, information technology, motivation to share knowledge, work performance, and employee creativity. Knowledge management (KM) culture is an important basis for knowledge sharing by encouraging effective communication, trust, and mutual support, creating an open environment. Social networks strengthen trust and connections between employees, especially in organizations with a less supportive sharing culture. Information technology facilitates efficient knowledge sharing with fast access to information. The motivation to share needs to be supported by culture and technology for effective sharing practices. Knowledge sharing improves employee performance and creativity by opening up access to new information, which is particularly relevant in academic environments such as universities[19]. The following is an overview of the conceptual framework of knowledge sharing, as shown in Figure 4.

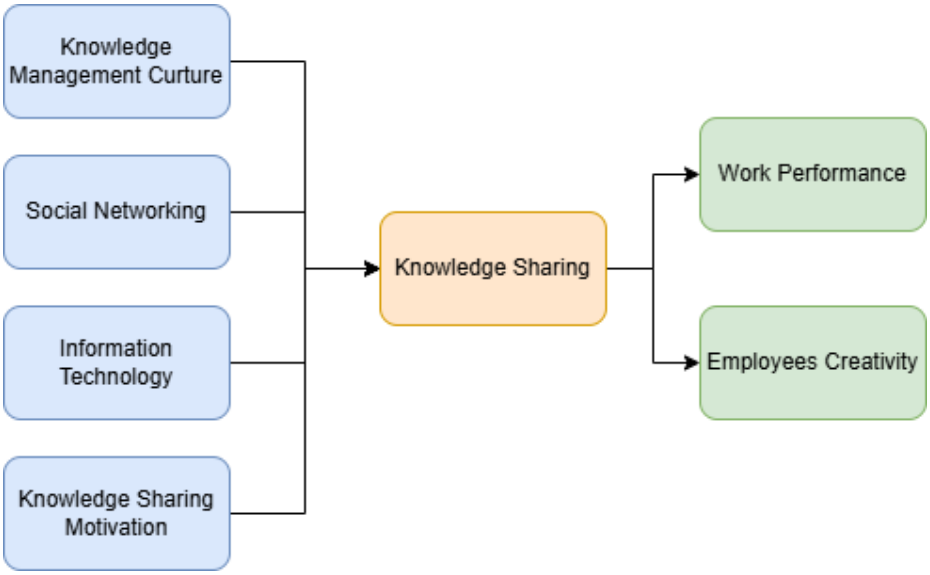


**Figure 4.** Conceptual Framework of Knowledge Sharing

### 2.1.5 Nonaka Knowledge Dynamics Model (SECI)

The SECI model explains how knowledge is created in an organization through the interaction between tacit and explicit knowledge. This model consists of four stages, namely first socialization, which is changing tacit knowledge into other tacit knowledge through non-verbal sharing of experiences, second externalization, which is changing tacit knowledge into explicit knowledge by explaining it through

discussion, third combination, which combines explicit knowledge into a broader system, and finally Internalization, which transforms explicit knowledge into tacit knowledge by applying it in daily practice, so that the knowledge becomes personal skill [20], as shown in Figure 5**.**

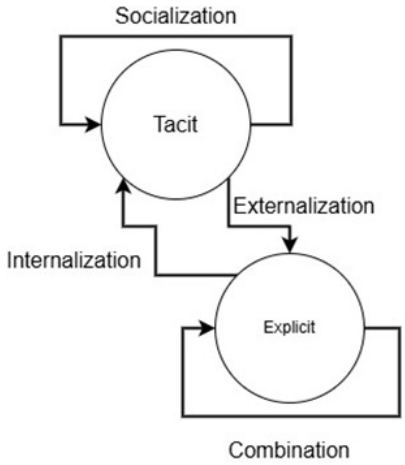


**Figure 5.** Knowledge Dynamics Model

### 2.1.6 Organizational Knowledge Dynamics Model (OKD)

The Organizational Knowledge Dynamics (OKD) model draws inspiration from the analogy of energy conservation in a system. However, unlike energy, knowledge can be created and eliminated, which means that there is no principle of knowledge conservation, even in closed systems. The OKD model offers a comprehensive framework for understanding and managing the dynamic and transformative nature of knowledge in organizations, making it an important tool in strategic knowledge management[21]. Figure 6 is an overview of the organizational knowledge dynamics model.

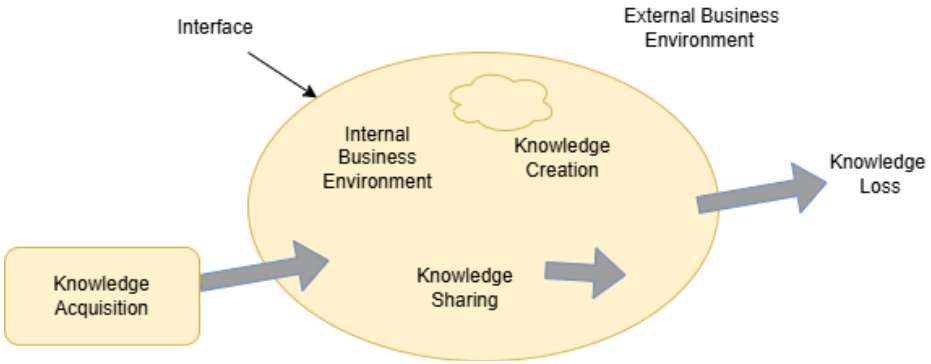


**Figure 6.** Organizational Knowledge Dynamics Model

### 2.1.7 Current Knowledge Sharing Flow

Currently, the flow of knowledge sharing in an organization usually takes place when there is a rotation of positions, employees resign, or when employees have difficulty carrying out their duties. Information about these changes is generally communicated one month in advance, giving time for the supervisor to find a suitable replacement and schedule a knowledge sharing session between the old employee and his or her successor. This knowledge transfer process often takes the form of face-to-face meetings or short meetings lasting 1-2 days, which is not always enough to ensure that the successor understands all responsibilities and procedures well. If new/old employees have difficulties, they usually have to ask their superiors or colleagues with similar roles. Unfortunately, without a structured documentation system, this knowledge sharing process becomes less efficient, relying solely on individual memory, and vulnerable to the loss of important knowledge when experienced employees leave the organization. As a result, long-term knowledge sharing becomes less effective and difficult to maintain in day-to-day operations

### 2.1.8 Existing Business Process of Application X

Application X is a platform used to manage service requests and technical support. This application allows users, such as employees or students, to report problems, request technical assistance, or submit other service requests through a ticketing system. Each report or request will be recorded as a ticket whose status can be monitored until it is resolved. With application X, the flow of communication and problem solving is more structured, responsive, and transparent, thus increasing efficiency and user satisfaction in accessing services. There are 3 roles in the use of application X, namely the community (students, employees, and lecturers), administrators, and executors (internal IT development unit).

The business process of application X begins when a member of the campus community experiences an obstacle in the information system or has a specific data request. They open the application X website, then log in using their registered official account. After successfully logging in, they create a new ticket, explain the problem or request in detail, and submit the ticket for processing. On the other hand, the admin of application X receives the incoming tickets. The first step the admin takes is to analyze the details of the ticket, categories the type of problem or request, and ensure that the ticket is forwarded to the appropriate executor team according to their expertise.

After the executor team receives the ticket, they begin the resolution step according to the description of the problem or request listed. They execute the task attentively and provide the best solution they can come up with. Once the problem

or data request has been resolved, the executor team closes the ticket and records the solution steps provided as part of the documentation.

The closed ticket is returned to the admin for confirmation. The admin ensures that the results of the executor team's work meet the needs of the community. The admin then contacts the members of the community, explains the solution that has been implemented and asks for confirmation that their problem or request has been resolved. If the members of the community are satisfied with the result, the process is considered complete. However, if there are still unresolved issues, the ticket will be reopened, and the executor team will resume the improvement process until the end result meets the community's expectations

### 2.1.9 Gap Analysis

The following are details of the gaps based on a literature study related to the implementation of knowledge sharing.

1) Critical Review of Research Approaches in Knowledge Transfer: This study concludes that effective knowledge transfer requires direct commitment between the disseminator and the recipient, as well as effective communication. Knowledge transfer is identified as a key element supporting organizational innovation and efficiency [22].
2) Knowledge Sharing Approach Cililin Culinary Community: This study found that informal approaches and family-oriented interactions are effective in shaping explicit knowledge from tacit knowledge. Nonaka & Takeuchi's SECI model strengthens kinship among community members [23].
3) Organization and Infrastructure Knowledge Sharing: Knowledge sharing requires infrastructure support such as databases and collaborative software. Factors such as a collaborative culture and leadership that encourages openness and incentivization are important [24].
4) Inter-Organizational Knowledge Sharing System (IOKSS): This system shows that user-friendly system support, skills training, and a strong organizational culture motivate knowledge workers to share knowledge. The sector and organizational system also influence the effectiveness of inter-organizational sharing [25].
5) Task and Technology Matching in the Knowledge Management System (KMS): A KMS that matches the task supports the effectiveness of knowledge sharing and impacts user performance. Motivation to share knowledge (KSI) is very important and influences the effectiveness of the KMS in encouraging knowledge contribution [26].
6) Practical Implications in Knowledge Management: This study underlines the importance of a deep understanding of the differences between data, information, and knowledge, as well as the role of information technology

in accelerating knowledge transfer and efficiently documenting important information [17].

7) Framework for Digital Knowledge Sharing Behavior among Academic Staff: The factors of trust, motivation, and altruism play an important role in shaping good knowledge sharing behavior, with university managers needing to facilitate the development of a supportive environment, including reward and training systems [27].

Based on observations, knowledge sharing in IT product development units is more informal, mainly occurring in the form of short sessions when there are changes in position or employee rotation. The absence of a structured knowledge documentation system creates a dependence on individual memory, thus potentially reducing the effectiveness of sharing. The following is a research gap between the literature review and the results of the observations.

1) Structure and Formalization: The literature shows the importance of infrastructure support such as databases and collaborative systems to support sharing. However, observations show that knowledge sharing is still limited to direct interaction without the support of a formal infrastructure.
2) Systematic Approach and Sustainability: The literature study emphasizes a system-based approach that can guarantee the long-term sustainability of knowledge sharing. On the contrary, observations show that knowledge sharing sessions often only occur when there is a change of position, making the long-term knowledge transfer process less effective.
3) Sharing Culture and Motivation: The literature review notes the importance of incentives, a collaborative culture, and trust to motivate sharing. In observation, motivation for knowledge sharing seems to arise only when needed, without the support of an incentive system or a clear culture of sharing.
4) Information Technology Support: The literature shows that information technology facilitates knowledge sharing by overcoming geographical barriers and increasing efficiency. However, observations show that it still depends on face-to-face meetings or brief communication methods without integrated digital documentation.
5) Alignment with Organizational Tasks and Needs: Some literature emphasizes the importance of a match between KMS and organizational needs to improve performance effectiveness. In observation, knowledge sharing is often held on an emergency basis when there are specific problems, without proper alignment with the organization's long-term goals.

From the explanation above, it can be concluded that a more structured approach is needed, supported by a technology-based system that can ensure that the knowledge sharing process does not depend on position rotation or individual

memory. This approach also needs to be integrated with an organizational culture that supports proactive and systematic sharing, so as to maximize knowledge in IT product development units

### 2.2 Defining The Objective Solution

Based on the problems identified, focus on recommendations and actions to overcome the constraints. The following are the objective solutions:

1. Structure and Formalization
   Develop a technology-based documentation system such as a knowledge base that records important information formally[28].
2. Sharing Sustainability
   Create a regular schedule of sharing sessions and a monitoring system to ensure knowledge sharing takes place consistently[27].
3. Sharing Culture and Motivation
   Build a culture of sharing with incentives or rewards, training, and leadership that supports collaboration[29][25].
4. Technology Support
   Optimize service desk applications to document knowledge and facilitate remote and real-time sharing.

### 2.3 Design and Development

At the design and development stage, researchers design a system or model that is in accordance with the findings obtained from the previous stage. This design includes the development of concepts and strategies that have been analyzed and adjusted to the needs identified during the research. Further discussion regarding this stage will be explained in depth in the Results and Discussion chapter, which will comprehensively describe the approach applied and the development process.

### 2.4 Demonstration

At the demonstration stage, researchers present the findings to stakeholders for constructive input and feedback. This demonstration aims to validate the design and development work and ensure that the proposed solution can be applied in a real context. Interaction with stakeholders also helps researchers understand the practical implementation of the developed solution and identify potential further improvements

### 2.5 Evaluation and Communication

The evaluation and communication stage involves a thorough assessment of the effectiveness and success of the implemented design, both through system design

and gathering feedback from stakeholders. The researcher reviews the results of the implementation to ensure that the developed solution has met the research objectives. In addition, the results of this evaluation are clearly communicated to stakeholders through written reports and presentations, so that all parties involved can understand the final outcome of the research and how its implementation can be optimized.

## 3. RESULTS AND DISCUSSION

### 3.1. IT-Based Knowledge Sharing System for University IT Units

Based on literature studies and observations, several important things have been found regarding knowledge management in organization. First, structured and easily accessible knowledge storage media is very important so that employees can study and refer to information at any time, and maintain the continuity of knowledge even if there are employee turnovers. Second, information technology, especially through the Knowledge Management System (KMS), can increase the efficiency of knowledge sharing with features for searching, collaborating, and creating new knowledge that also encourages innovation. Third, the organization has used an X application to manage service requests and technical support, with a ticketing process that allows status monitoring, although this workflow focuses more on solving technical problems than documenting knowledge. Fourth, knowledge sharing is currently more often done through time-limited face-to-face meetings, which depend on individual memory and are vulnerable to the loss of important information, as there is no clear knowledge storage system. Based on this, a database design and information technology implementation in the form of an RAG System that combines a large language model (LLM) is proposed to improve knowledge management more effectively.

The proposed knowledge sharing system design consists of several components: first, a knowledge repository that allows employees to document procedures, problem solutions, and new innovations that have been tested in the ticketing system. Completed ticket solutions will be stored in the repository and can be searched by other employees for reference. In addition, other general knowledge will also be documented in the repository to cover all knowledge in the IT unit. Secondly, a role-based system that provides limited access to features according to the user's role (e.g., admin, executor, non-admin/non-executor employee), where the admin has the right to add or edit knowledge documentation. Thirdly, automation of the documentation process that automatically generates a solution summary from completed tickets or other general knowledge, which can then be accessed by new employees or those who need a reference. Fourth, a fast and efficient knowledge search system, allowing employees to find solutions or relevant documentation with specific keywords or categories. Fifth, a collaboration module

that provides discussion forums or group chats for informal knowledge sharing. Finally, a reward and contribution assessment system that awards points or rewards employees who are active in sharing knowledge or contributing solutions, to increase motivation and involvement in knowledge sharing.

The image bellow is a database design to accommodate all the information and knowledge that will be entered into the RAG System which incorporates a large language model (LLM). This system is designed to facilitate the knowledge sharing process by storing, organizing and providing easy access to relevant knowledge for all employees, as shown in Figure 7. Through this database, each user can access documented information, collaborate in the creation of new knowledge, and ensure that valuable knowledge is preserved and can be reused by other employees, both now and in the future. With this system, knowledge sharing becomes more structured and integrated, reducing dependence on individual memory and increasing efficiency in the process of sharing knowledge within the organization.

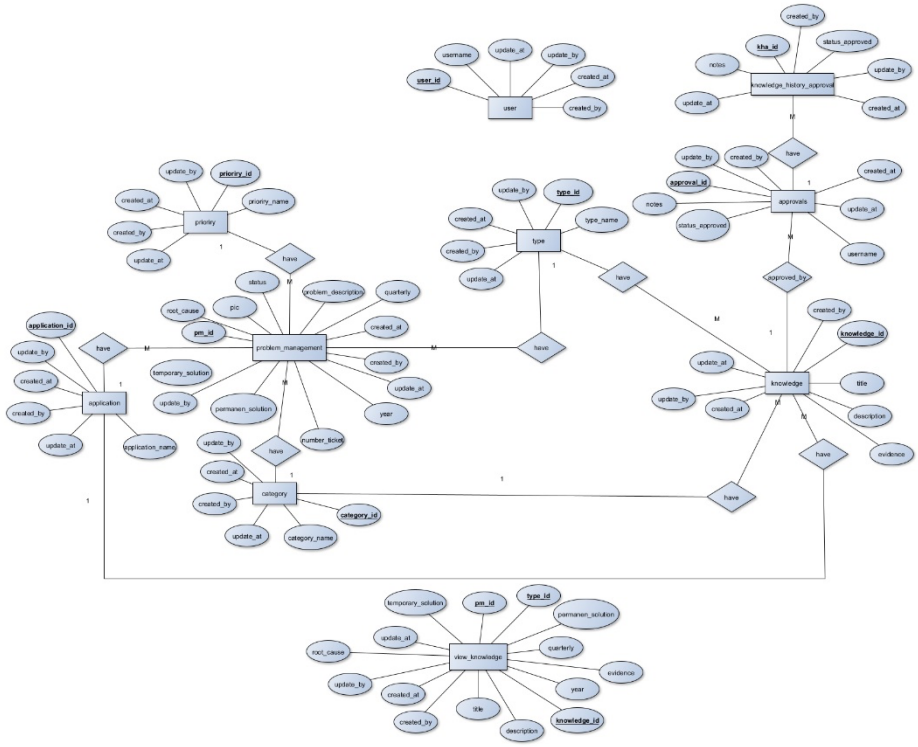


**Figure 7.** Knowledge Sharing Database Design

There are several tables in this database design, including: ticket table (for closed ticket data), category table (to accommodate categories such as access rights, application bugs, data requests, etc.), type table (to distinguish ticket data from

other knowledge), problem management table (to store ticket data transformation results), knowledge approval history table (to store knowledge approval data), approval table (to store data on the supervisor who gives approval), knowledge table (to store general knowledge outside of problem management), and view knowledge table (to store all knowledge, both from problem management and other knowledge), user table (this table is used to store user data that can access the application), priority table (this table is used to store priority master data, which contains medium, high, low. This data comes from ticket data that has been closed previously), Application table (this table is used to store application master data, which contains the names of existing applications. This design aims to facilitate the implementation of a structured system for knowledge sharing in the organization.

RAG systems combine large language models (LLMs) with search mechanisms to generate more accurate responses in context. With this integration, the system can utilize both structured and unstructured knowledge, making responses more transparent and precise[30]. Retrieval-augmented generation (RAG) is a method that combines various components and customizations to enhance the capabilities of large language models (LLMs). The main goal of RAG is to improve performance in specific tasks, such as configuration validation, through structured evaluation and improvement based on research and analysis [31]. LLM-based systems can accelerate the knowledge sharing process by enabling faster information retrieval, improving efficiency in problem solving, and utilizing existing documentation. With its ability to retrieve relevant information from extensive documentation sources, LLM helps reduce the time required to search for answers[32]. In addition, LLM strengthens the knowledge sharing system through advanced language capabilities, improves user interaction, and provides more accurate responses. The integration of LLM helps overcome challenges such as memory retention of domain-specific events and problems, thus enabling more reliable and context-relevant information retrieval[33]. Figure 8 is an overview of the LLM RAG design in this research.

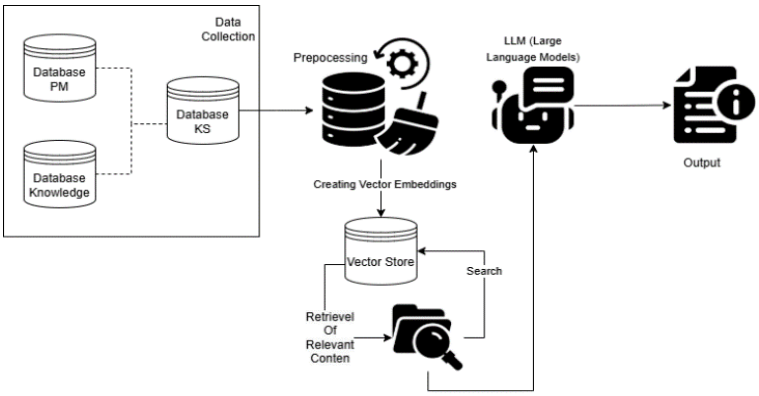


**Figure 8.** RAG which combines Large Language Model (LLM)

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The first step is data collection. This data is taken from several databases, the first is the problem management database and the second is the knowledge database and later it will be made into one, namely the knowledge sharing database, after which the data is collected. Then, data preprocessing is carried out to clean and prepare the data so that it is ready for analysis. After that, the data is transformed into vector representations through creating vector embeddings, which facilitates information retrieval based on contextual similarity. Next, retrieval of relevant content is carried out, where the model searches and retrieves relevant information from the vector database. Then, the model generates an answer through the generation of response by the LLM, using the information that has been obtained and the added context. Finally, all of this produces a final output, where the system presents an accurate and relevant final answer for the user. Figure 9 is an overview of the data that has been implemented in the RAG System which combines a large language model (LLM).

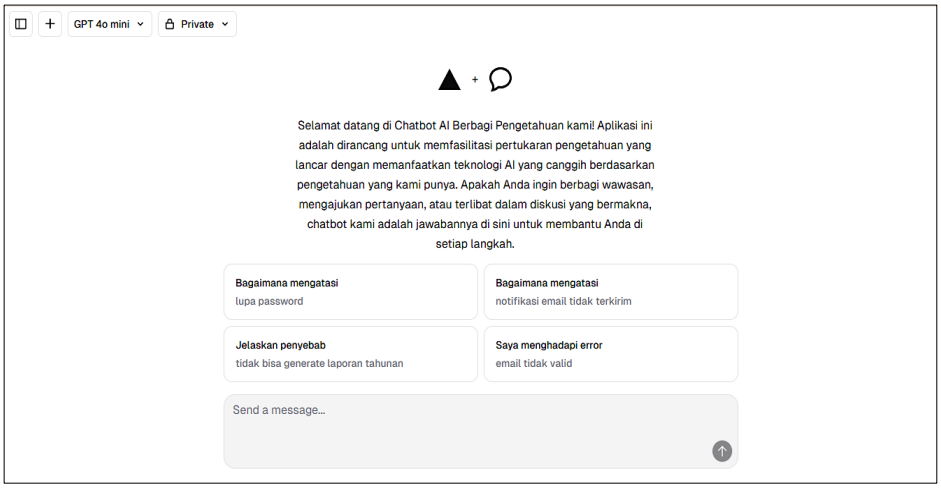


**Figure 9.** Initial Display of the Large Language Model (LLM)

Figure 10 is a large language model (LLM) view that allows employees to request information or knowledge available at the university based on existing data. It should be noted that not all data can be accessed by users who do not have access rights to this feature, and the data accessed will be according to the level of authority held by each user.

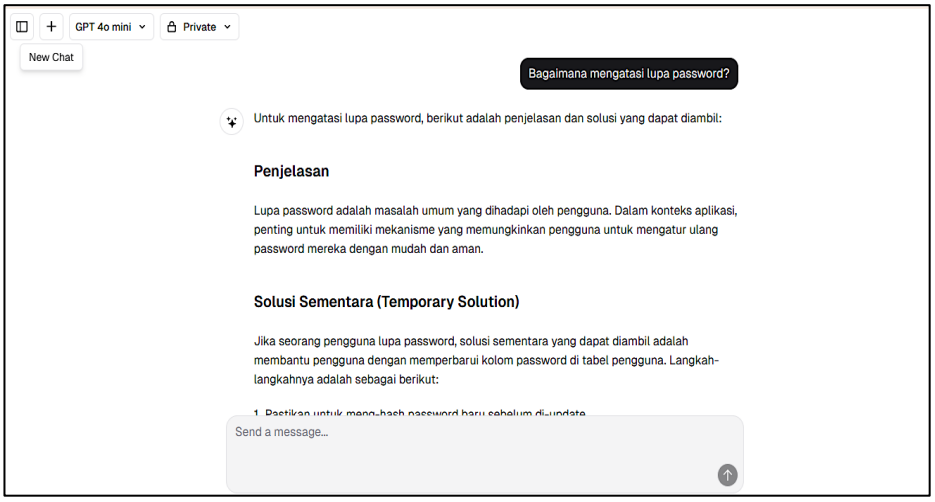


**Figure 10.** Initial Display of the Large Language Model (LLM) When Responding to Questions

Figure 10 is an example of a question that will later be answered by a large language model (LLM) according to the data implemented into the RAG System which combines large language models (LLM). Figure 11 is a detailed overview of the features that can be accessed or used by each individual according to their role in the system (use case). This explanation includes activities, access rights, and special functions designed for each user category. There are 3 actors who will later use this knowledge sharing system, including the service desk team, staff, and first supervisors. The service desk team has a role in managing knowledge by grouping and documenting problems that often occur in the ticketing system, thus facilitating the search for solutions and supporting the process of sharing knowledge effectively. Staff have a role in creating, documenting, and sharing knowledge gained through work experience or task completion, so that it can be a reference for colleagues and support the knowledge sharing process on an ongoing basis. Meanwhile, the first supervisor has a role in validating and ensuring the quality of the knowledge created by the staff under his or her responsibility, as well as providing input to improve the accuracy and relevance of this knowledge before it is used further.

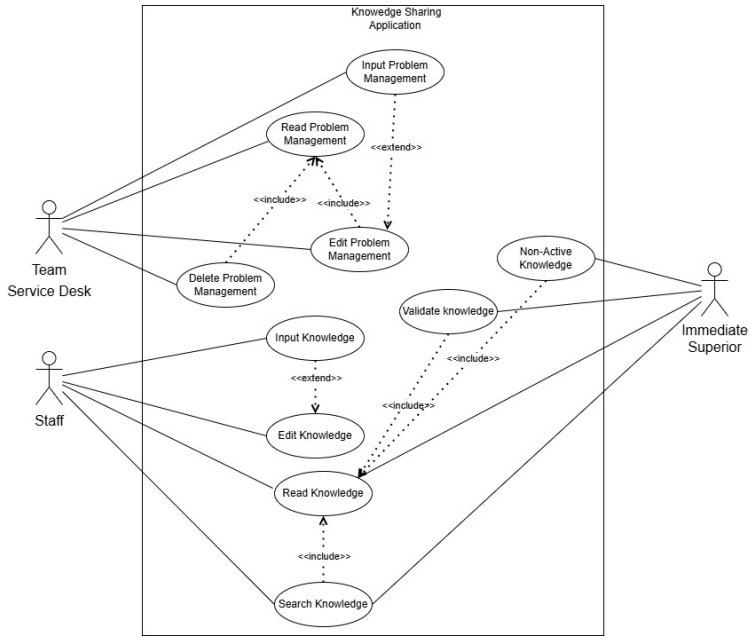


**Figure 11.** Use Case Design

Apart from the system design, based on the literature review and observation results, the following is a conceptual knowledge sharing design. Building a supportive knowledge management culture is essential for fostering knowledge sharing within an organization. This includes establishing trust, promoting open communication, gaining management support, and implementing reward systems that motivate employees to share their knowledge. Such initiatives encourage active participation in the knowledge-sharing process [25], [34]. Social networks, both formal and informal, play a crucial role in enhancing interactions within an organization. Work teams, professional groups, and interpersonal relationships help strengthen bonds and mutual trust among employees, which in turn serves as a foundation for increasing knowledge-sharing interactions [18].

The use of information technology acts as a key facilitator in knowledge sharing. Platforms such as ticketing systems, collaboration tools, and cloud-based information storage enable seamless knowledge access and efficient documentation, ensuring that valuable knowledge remains accessible and organized [19]. Motivation is another significant factor influencing knowledge sharing, encompassing both internal motivations, such as the intrinsic desire to share knowledge, and external motivations, such as recognition and incentives. Providing rewards, such as public appreciation or performance-based incentives, can boost employee engagement and willingness to participate in knowledge-

sharing activities [9], [18]. Knowledge sharing can also be effectively managed through established models such as the SECI (Socialization, Externalization, Combination, Internalization) Model, which facilitates the interaction between tacit and explicit knowledge. Additionally, the Organizational Knowledge Dynamics (OKD) model helps sustain and manage the transformation of knowledge over time, ensuring its long-term effectiveness and adaptability [20], [21]. Figure 12 is the proposed conceptual knowledge sharing design.

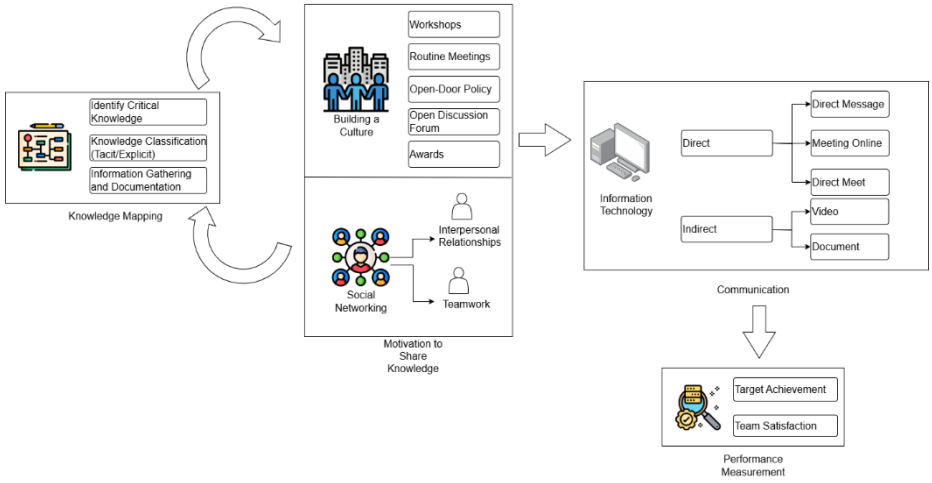


**Figure 12.** Conceptual Knowledge Sharing Design

Knowledge mapping involves determining and grouping important knowledge within the organization so that critical knowledge, both tacit and explicit, can be identified, classified, and documented. This process includes identifying key knowledge, classifying it into tacit (experience-based) and explicit (documented), and collecting and documenting relevant information for future reference. Motivation to share knowledge is essential in fostering an organizational culture that supports knowledge sharing. This can be achieved through various initiatives such as workshops, regular meetings, open-door policies, open discussion forums, and awards. Additionally, strengthening interpersonal relationships and teamwork plays a crucial role in encouraging employees to actively share their knowledge. Communication serves as the primary link between individuals and groups in the knowledge transfer process. Information technology plays a key role in facilitating knowledge sharing through both direct communication methods, such as direct messages, online meetings, and face-to-face discussions, and indirect methods, such as documentation and video content. Performance measurement is necessary to assess the effectiveness of knowledge sharing and its impact on the organization. This involves evaluating the achievement of organizational targets and analyzing

the level of team satisfaction with the knowledge-sharing process to ensure continuous improvement and optimization.

### 3.2. Discussion

The integration of a Large Language Model (LLM) into the knowledge sharing system within university IT units represents a transformative step in institutional knowledge management. It directly addresses long-standing challenges such as fragmented documentation, over-reliance on individual memory, and inefficient access to past technical solutions. Through its natural language processing (NLP) capabilities, LLM enables intuitive querying and contextual responses, thereby accelerating problem-solving, reducing bottlenecks caused by staff turnover, and significantly enhancing knowledge accessibility across all levels of users.

A key benefit of integrating LLM into the system is its ability to democratize access to information. Traditionally, junior staff or newly onboarded employees rely heavily on experienced colleagues to navigate technical problems. This dependency not only creates bottlenecks but also risks knowledge loss when senior staff leave or are unavailable. By enabling users to retrieve structured and unstructured information simply by asking questions in natural language, the LLM empowers users of all levels to resolve issues independently. This leads to faster resolution times, reduces repeated queries to senior staff, and enhances overall operational efficiency.

Moreover, the system's architecture—incorporating a knowledge repository, ticketing integration, and a role-based access model—ensures that documented knowledge is both comprehensive and securely managed. The automated documentation pipeline, which converts closed tickets into structured entries, solves the common issue of forgotten or undocumented fixes. In this setup, LLM does not merely act as a search engine; it becomes a knowledge facilitator that can summarize complex ticket histories, identify relevant solutions, and assist in building a continuously evolving knowledge base. As illustrated in the RAG system model, the process of embedding, retrieving, and generating responses ensures that knowledge is both accessible and dynamic, adapting to evolving technical environments.

Nonetheless, the implementation is not without its challenges. Data quality remains a critical factor. LLMs are only as effective as the knowledge they are trained on. If ticket entries or documentation are incomplete, inconsistent, or outdated, the output may be inaccurate or misleading. This makes the validation role of supervisors crucial, as they ensure that only verified, high-quality content enters the knowledge base. Additionally, concerns around information security and access control must be carefully managed, especially when dealing with sensitive

system data or user credentials. The system's role-based access design mitigates some of these risks by limiting content visibility based on user privileges, but continued auditing and compliance monitoring are essential.

User adoption is another vital aspect to consider. While the technology offers immense potential, its success depends heavily on how readily staff adapt to and engage with the system. Introducing incentives, such as gamified reward systems and recognition for top contributors, can foster a more active knowledge-sharing culture. Training programs and awareness campaigns will also be necessary to ensure users understand the benefits and functionalities of the system, especially those unfamiliar with AI-driven platforms.

When viewed holistically, the integration of LLM in university IT units not only improves internal efficiency but also serves as a replicable model for IT departments across other academic institutions. By providing an intelligent, secure, and user-friendly environment for managing institutional knowledge, this system lays the foundation for sustainable knowledge transfer, innovation, and organizational resilience. It elevates knowledge management from a passive archival task to a dynamic, interactive process that enhances collaboration, preserves institutional memory, and supports continuous learning.

This LLM-powered knowledge sharing system bridges technological advancement with human-centered design. It enhances the speed and quality of technical resolutions, empowers all levels of staff, and ensures long-term sustainability of organizational knowledge. While there are clear challenges in ensuring data integrity, user trust, and system governance, the strategic and thoughtful implementation presented in this model demonstrates its viability not just as a technical solution, but as a cornerstone of digital transformation in higher education IT management.

## 4. CONCLUSION

The organization has understood the importance of knowledge management to support information sustainability through structured documentation and easy accessibility. While there is a ticketing system used for technical services, a more focused approach to long-term knowledge sharing is still needed. The conceptual design of the knowledge sharing and knowledge sharing system emphasizes the need for information technology integration, a strong sharing culture, and a reward system to motivate employees. In addition, the integration of Large Language Models (LLMs) such as ChatGPT in knowledge sharing systems can improve information retrieval, documentation automation, and provide context-based recommendations. LLMs can help employees find solutions faster, summaries technical documents, and analyze patterns of frequently asked questions to

improve knowledge sharing effectiveness. Further studies are needed to explore the long-term impact of this system on knowledge retention and knowledge sharing effectiveness in universities, or compare its performance with traditional knowledge management practices.

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