A Proposed Website Development Based on SECI Framework and Quality Function Deployment Methods
(Case Study at Telkom Property)

Sarastya Dewi[1], Dedy Sushandoyo, S.T., M.Sc.Eng., MA.Sc., Ph.D.[2], Dr. Ir. Rudy Bekti, M.B.A[3]

[1,2,3] School of Business Management, Institut Teknologi Bandung

ABSTRACT: Employee capability is one of the most important things that can influenced the company's performance. In an effort to increase employee capabilities, qualified knowledge management is needed to ensure that the knowledge possessed by the company can be formed, used and used appropriately. Telkom Property is one of the subsidiaries of PT Telkom Indonesia Tbk. engaged in Property Management, Property Development, Project Solutions and Transportation Management Services. In order to maintain its business during the Covid-19 pandemic, in 2021 Telkom Property made changes to its vision and mission which had an impact on digitizing the company's business processes. As a business enabler, the Human Resources Division continues to strive for the development and improvement of employee capabilities. Some of the initiatives that have been carried out are by increasing the frequency of knowledge sharing events and holding the Innovation Award which aims to be a forum for employees to provide innovation for the company. Based on the observation results, when viewed from the 5 steps of the knowledge management process, Telkom Property does not yet have the means to store knowledge. Therefore, in this research, the development of a knowledge management website at Telkom Property is carried out which aims to be a knowledge repository so that knowledge owned by companies and individuals is documented so that it can be accessed by all employees and helps the knowledge sharing process to be more effective. The development of this website takes into the SECI concept, where the features developed can support the Socialization, Externalization, Combination and Internalization processes. Proposed website development is made using the Quality Function Deployment (QFD) method in order to develop the website based on the user requirement. HOQ tools used to support to transform the user needs into technical responses and 14 technical responses should be develop by the company to deliver the user centric website.

KEYWORDS: Digital Transformation, Knowledge, Knowledge Management, Website, QFD, HOQ, SECI.

INTRODUCTION

Facing the high pace environmental developments, both in terms of technology, information systems, politics and the economy, it is necessary to increase employee capabilities in a sustainable manner. This capability is not only about skills but also includes employees' knowledge of science that is currently developing along with a company's revolution in facing industrial competition [1]. Telkom Property is one of the subsidiaries of PT Telkom Indonesia Tbk. engaged in business property whose main task is to manage all property assets owned by PT Telkom Indonesia Tbk. In accordance to facing the digital transformation, Telkom Property renews its vision and mission to support the company's long-term plans by digitizing or implementing and utilizing digital technology for efficiency. Therefore, Telkom Property has changed all of its business processes which were previously carried out conventionally to digital. To deal with this transformation, Telkom Property continues to strive to create a work environment where knowledge can be created, disseminated and shared at the right time which is very important to support the improvement of the capabilities of its employees. According to [3] in her research stated that to improve quality human resources, good knowledge management is needed. The knowledge management process consists of Identifying, Storing, Sharing, Applying and Developing Knowledge[4] therefore, to ensure knowledge management runs well these five processes must be properly maintained. Managing knowledge assets is a challenge for a company in this agile era, so the role of Information Technology (IT) in knowledge management is highly considered to help manage their knowledge assets especially for storing and transferring knowledge. Capturing knowledge and then storing it in a repository is critical to knowledge management effectiveness [5]. In this digital era, many use websites to support their knowledge

management processes, for example Trans Retail Indonesia companies where they use websites to manage company information and knowledge to avoid loss of company knowledge assets and the media is a means for creating, sharing and transferring knowledge [6]. Therefore, in facing the transformation for digitizing business processes, Telkom Property can consider adopting technology to assist their knowledge management process so that the knowledge possessed by the company is well maintained and can be used to increase employee capabilities.

In 2021, as business enablers, the Human Resources Division will also focus on developing and transforming human resources. The impact that is most felt due to the pandemic is that activities that are usually carried out offline now have to shift to online where all employees must adapt quickly to these changes. This causes the need for rapid exchange of information between individuals, departments and all entities in the organization. Therefore, the Human Resource Unit is concerned about their knowledge management. This is proven in the face of a pandemic, Telkom Property continues to strive to increase the frequency of their training and knowledge sharing realization. The problem currently faced by Telkom Property is that the knowledge held by the company has not been properly documented, therefor all knowledge obtained from knowledge sharing activities and innovation awards held by the company has never been stored properly. The knowledge and information obtained from the results of knowledge sharing is only known by the employees who take part in the activity. In addition, based on the results of interviews with several employees, it is known that after they participate in knowledge sharing activities, no broadcasts regarding notes or resumes of these activities are published for all employees, so that employees who do not participate in knowledge sharing activities are difficult to obtain information and knowledge updated. Based on the research of [7], in dealing with the problem of not storing knowledge properly, a website with the SECI approach was created for a knowledge management system. In addition to this research [3], to overcome poor knowledge sharing, the authors created a website using the SECI model approach which allows discussion and information sharing features.

To overcome the problems faced by Telkom Property, a website will proposed to support the company's knowledge management using the SECI method approach. In research [8], companies previously developed their websites without considering user needs and caused a lot of negative feedback from website users because they did not match what the user needed. Therefore, in developing website for Telkom Property, the QFD method is also used, so that the website development focuses on what the user needs

LITERATURE REVIEW

A. Knowledge Management

Knowledge management is the application of knowledge assets within an organization that is useful for the continuity of the organization to run effectively and efficiently by managing existing people, processes and technology. Knowledge management is very important to increase the competitive advantage of the organization, therefore, to maintain the sustainability of the organization a conducive learning environment is needed and supporting facilities so that members are motivated to learn. Knowledge management focuses on making people more productive to develop their knowledge and share their knowledge. Several reasons why knowledge management is considered to be a determining factor for organizational success (Tjakraatmadja & Lantu, 2017).

B. People, Process, and Technology

People, Process and Technology are three main elements that have important roles in knowledge management. These three elements have to must be managed properly to achieve an effective and efficient system in organization [10] In KM Planning, People, Process and Technology have a very important role. This can be explained as follows [10]:

- People : have an interest as the person who will do the KM itself.
- Process : has the importance of what procedures, policies and rules must be carried out to achieve effectiveness.
- Technology : has an interest as an infrastructure to integrate people and processes where technology must be designed to be easy to use and collaborative.
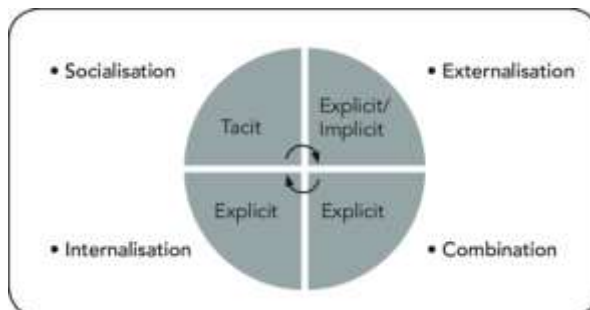
C. **SECI**

Figure 1. SECI Model
Source : [11]

SECI stands for Socialization, Externalization, Combination and Internalization. This framework founded by Nonaka and Takeuchi in 1995. These four activities used to convert the tacit knowledge into explicit knowledge [11]

1. Socialization is transforming the tacit knowledge into tacit. It can be done by meeting, brainstorming or sharing with peers or with the manager
2. Externalization is transforming the tacit knowledge into explicit knowledge. This process can be conduct when the employee transforms their tacit knowledge into an article or research
3. Combination is transforming the explicit knowledge into explicit. This activity can be start from the employee compile, compare, categorize the explicit knowledge and combine it into the systematic and complex explicit knowledge
4. Internalization is transforming the explicit knowledge into tacit knowledge. This process can be done when the employee using the SOP or written document of the company to know about the rules, procedure and bureaucracy of the company

D. **Quality Function Deployment (QFD)**

The Quality Function Deployment (QFD) method was coined by Yoji Akao in 1996 which is used to develop a design quality to satisfy customers/users by translating customer requests into design targets [12]. QFD focuses on consumer needs and it is very good at translating user requirements from voice of customers into technical requirements of products, processes or services.
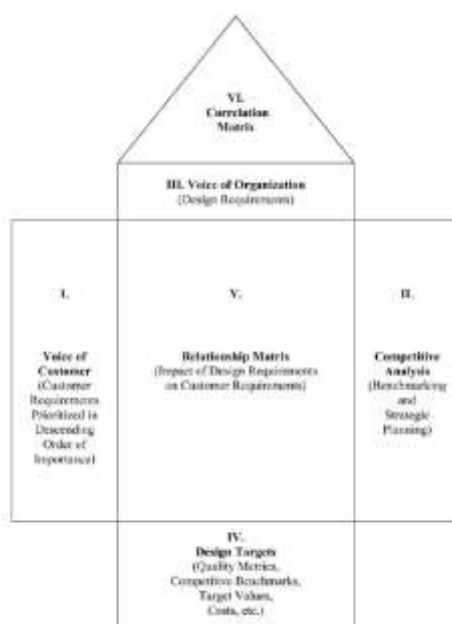

Figure 2. House of Quality
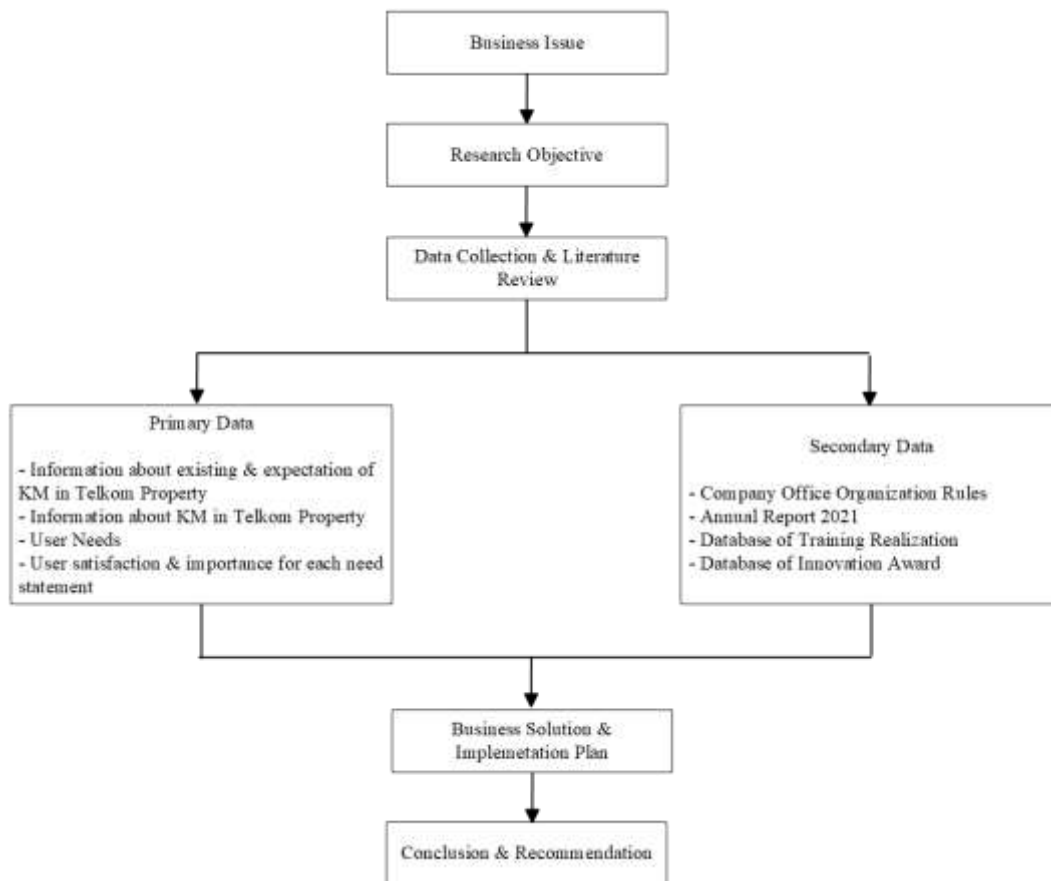**Source :** [12]

RESEARCH METHODOLOGY

Figure 3. Research Design

Based on the research design above, conducting this research begins with identifying the business issues that exist in the company. Identification was carried out by interviews and direct observation. After knowing the issues that occur, a research objective is prepared to focus on the objectives of this research. The objective that is prepared aims to solve the problem. Then data collection is carried out together with reading references and literature to determine what methods will be used in solving the problem and what data must be obtained to solve the problem. Then collect data on a primary & secondary basis and process the data to obtain a business solution. In the end, an implementation plan for business solutions will be formed that has been prepared beforehand. And this report will end with a conclusion and recommendation.

RESULT & DISCUSSION

Most of the knowledge storage facilities are still done manually through written documents. The storage itself is still carried out by each individual and there is no central repository by Telkom Property yet. This causes the knowledge obtained from the results of training, seminars, webinars, workshops, sharing sessions and outreach to be owned only by the employees who take part in these activities. For innovation articles, only Human Resources as event organizers and judges can read and access innovation articles. Other employees only know who won the best article, but employees cannot read and know the contents of the article.

For the process of sharing knowledge from Telkom Property, it has attempted to carry out the activities previously described. It's just that there are still some obstacles faced by employees in knowledge sharing activities, namely knowledge sharing activities such as webinars or sharing sessions which cure held simultaneously with their hectic work.

Based on the interview results above, it can be concluded that the main problem faced by Telkom Property is the lack of facilities for storing and sharing the knowledge, so that the knowledge possessed by the company cannot be accessed again by all employees

and slow dissemination and exchange of knowledge between employees. The company does not yet have integrated technology to store and share their knowledge.

It can be concluded that Telkom Property does not yet have an integrated solution for storing and sharing their knowledge. Therefore, in order to maximize knowledge management, in this study technology will be adopted to assist Nonaka's Knowledge Conversion Process by building a knowledge management website.

A. *Feature Development based on SECI Framework*

The knowledge management website that will be developed for Telkom Property is not only used as a repository facility. Several additional features on the website will form a complete package for implementing SECI (Socialization, Externalization, Combination and Internalization) packaged in digital media. Here is the feature that developed based on SECI approach:

The knowledge management website will consist of several main menus, namely:

1. Digiconnect, is an application of **socialization** which consists of the #NgobrolAjaDulu feature, additional comment features on every Digilib content and Know Your Employee
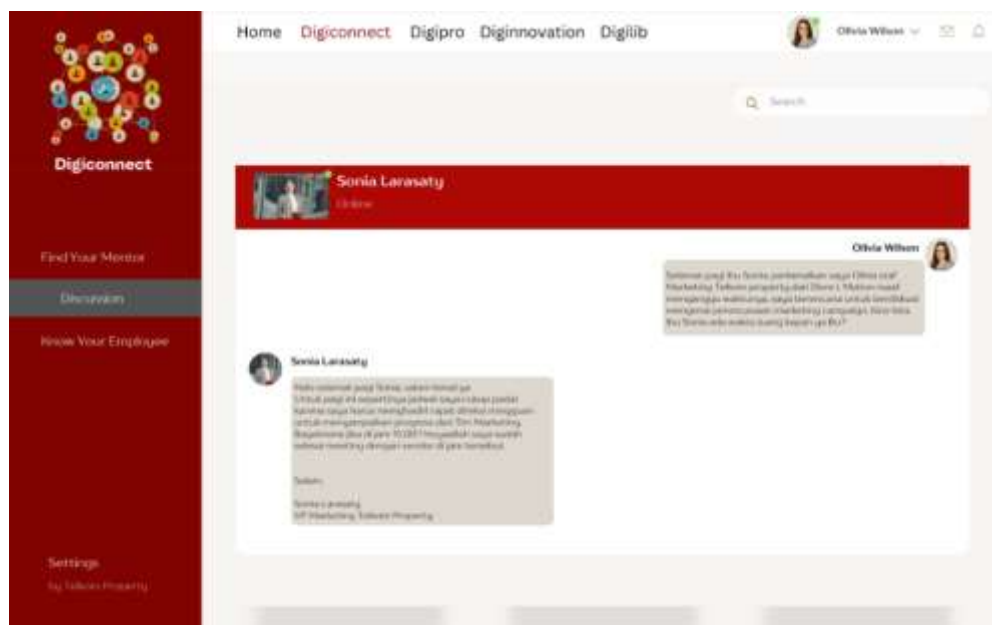

Figure 4. Digiconnect Find Your Mentor Interface (Proposed)

To support the socialization process, the #NgobrolAjaDulu feature will be created on this website. This feature is a feature to communicate between employees and their mentor/boss. Employees who can become mentors are employees with the position of manager and vice president. Employees can see the profile of their mentor and choose to discuss with their mentor. This discussion was carried out via chat between the employee and their mentor. Chatting can be done directly on the platform, so that communication will run more efficiently
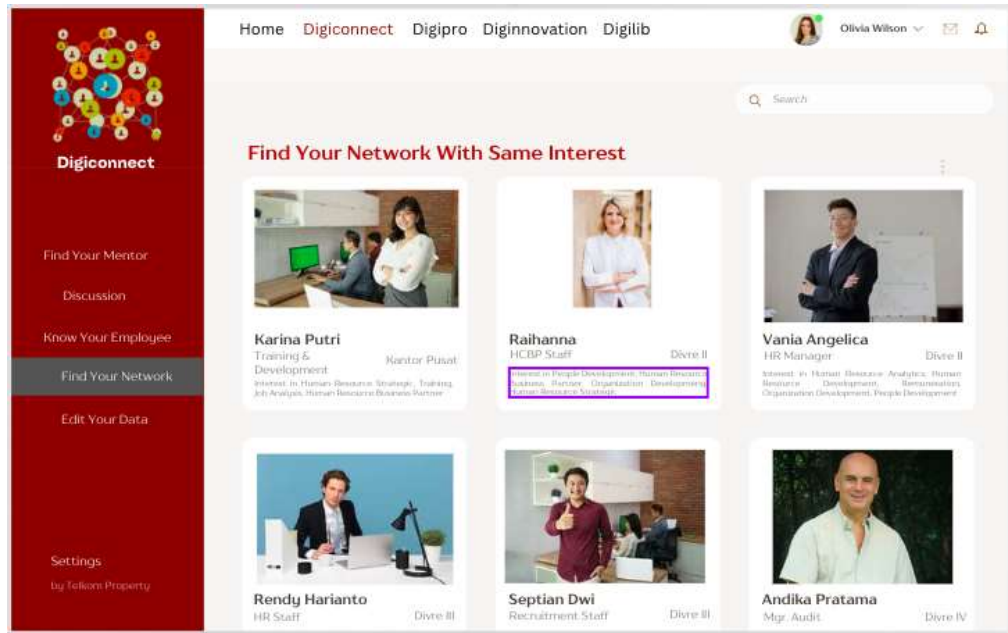
Figure 5. Digiconnect Know Your Employee Interface (Proposed)

For the Know Your Employee feature, users can upload general information about themselves, such as name, region, division, and areas of interest. This is intended so that fellow users can get to know each other even though they are in different regions. Information about areas of interest can also make it easier for fellow users to find colleagues who have the same field of work in other regions so they can share experiences and discuss each other's fields of work

2. Digipro, is an implementer of the concept of **externalization**. This menu consists of Know Your Company and Event Diary features
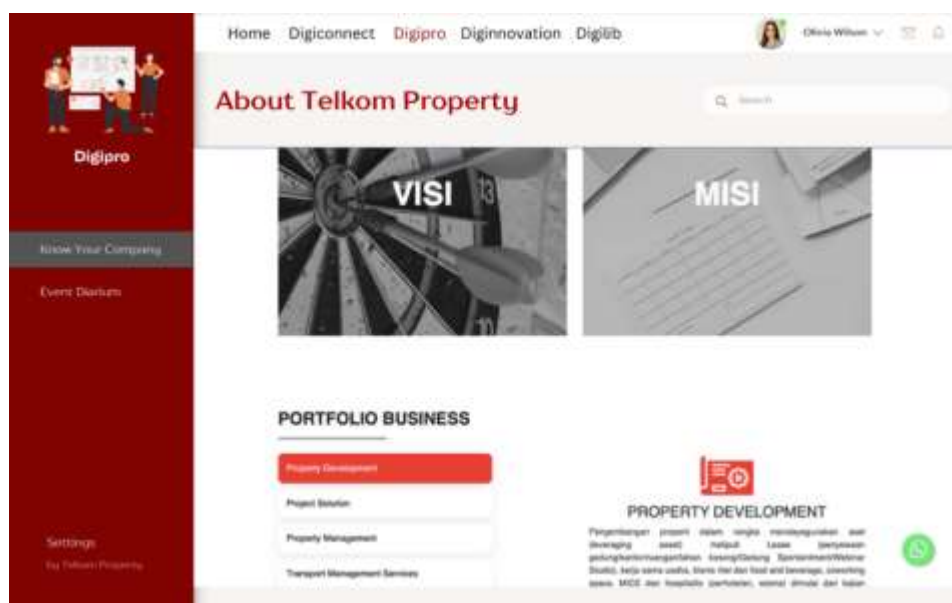

Figure 6. Digipro Know Your Company Interface (Proposed)
(The content in the figure above benchmark from https://www.telkomproperty.co.id/)

The Know Your Company feature will publish Telkom Property information, starting from the organizational structure, number and location of regional offices, information on each division, culture, etc.
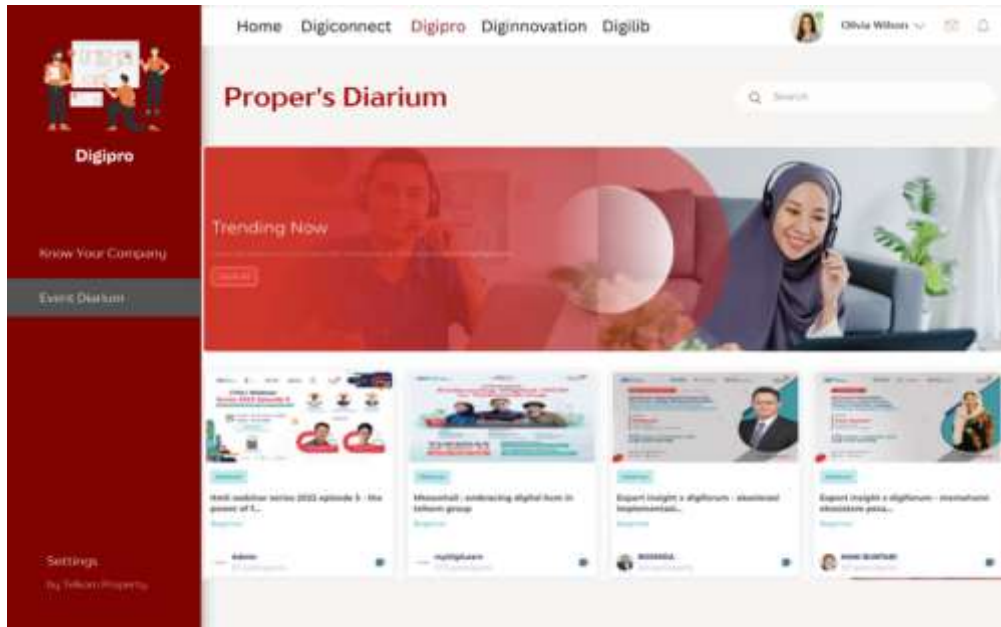

Figure 7. Digipro Event Diarium Interface (Proposed)
(The content in the figure above benchmark from https://mydigilearn.id/)

For the Event Diarium feature, every knowledge sharing event activity such as webinars, benchmarks, outreach, training, etc. will be documented either in writing or on video and will be uploaded to the Event Diarium.

3. Diginnovation, is an application of the **combination** concept where on this menu employees can submit their innovation article submissions and can read the best published innovation articles.
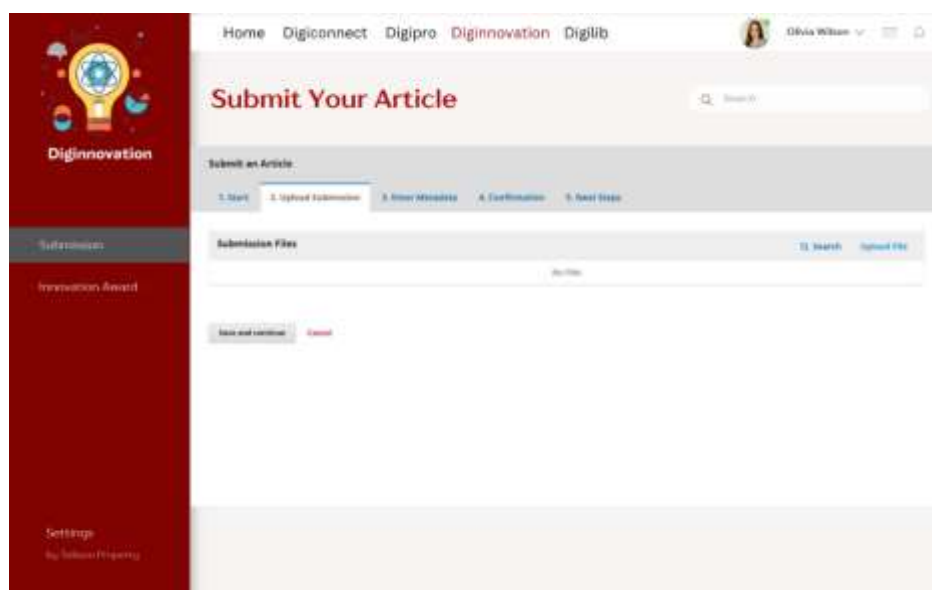

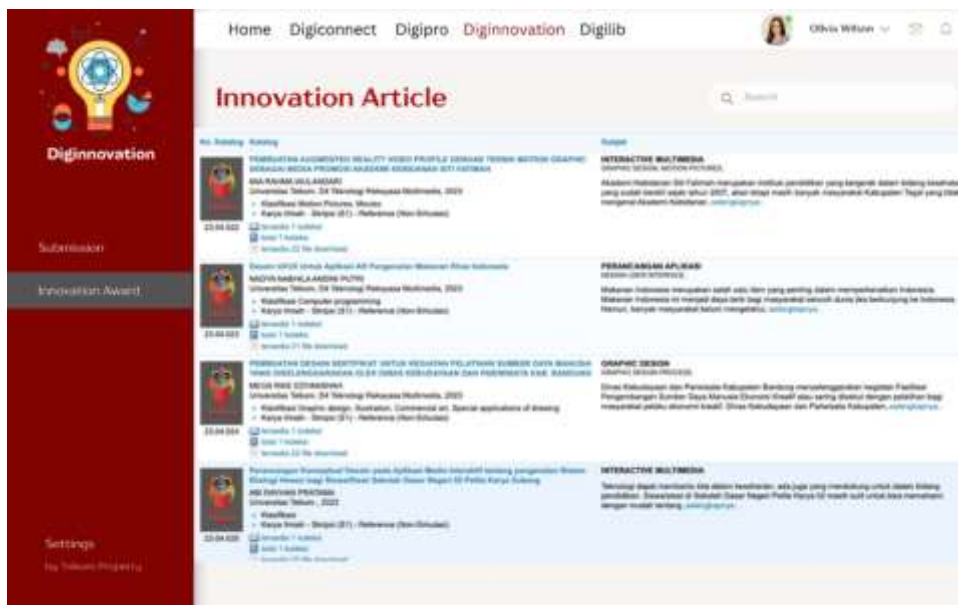**Figure 8**. Diginnovation Submission Interface (Proposed)

Figure 9. Diginnovation Submission Interface (Proposed)
(The content in the figure above benchmark from https://openlibrary.telkomuniversity.ac.id/)

In the Innovation Article feature, the results of innovation work from employees will be published. Innovation Articles are ideas/innovations developed by employees based on work processes/existing knowledge possessed by the company. In innovation, existing knowledge will be developed by combining the latest knowledge and will be written in the form of articles.

4. Digilib, is an application of **internalization** concept, where on this menu contains e-books, journals, videos, infographics, and podcasts whose material is tailored to the needs of employees. In the Digilib menu, e-books, journals, videos, infographics, podcasts will be provided which knowledge is needed by employees of each division to increase their knowledge so that it can be implemented in completing their daily work.
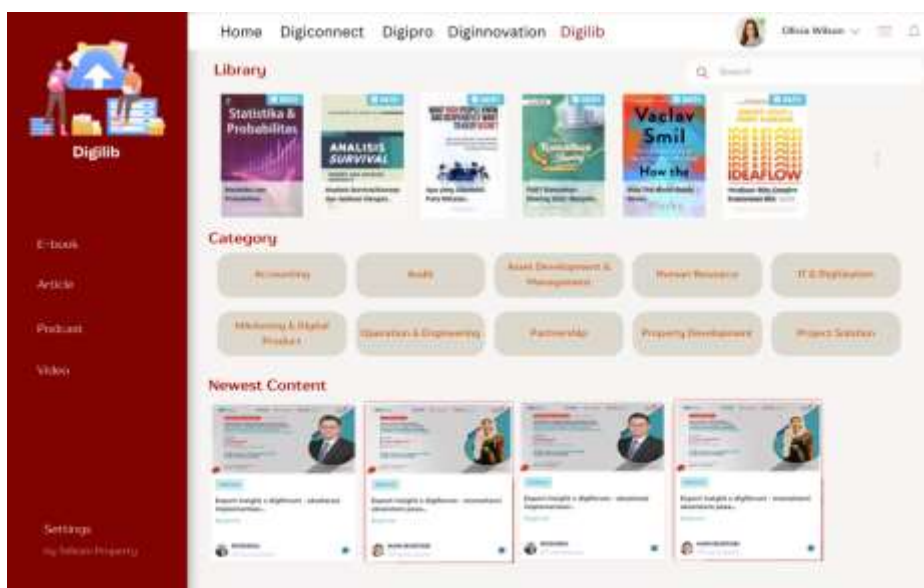

Figure 10. Digilib Interface (Proposed)
(The content in the figure above benchmark from https://openlibrary.telkomuniversity.ac.id/)

Through Digilib employees can find the material they need and facilitate the learning process because employees can study anywhere and anytime and the material presented is reliable for Telkom Property employees because they have previously passed screening by the Telkom Property knowledge management team. This will support and facilitate the process of internalization in the formation of knowledge.

B. Attribute Development Based on QFD

Because previously Telkom Property did not have a knowledge management website, the QFD method will be used to develop this website to produce a user-centric website. For this reason, the House of Quality (HOQ) tools are needed to translate user needs into a product. The results of the HOQ can be seen in the figure below.
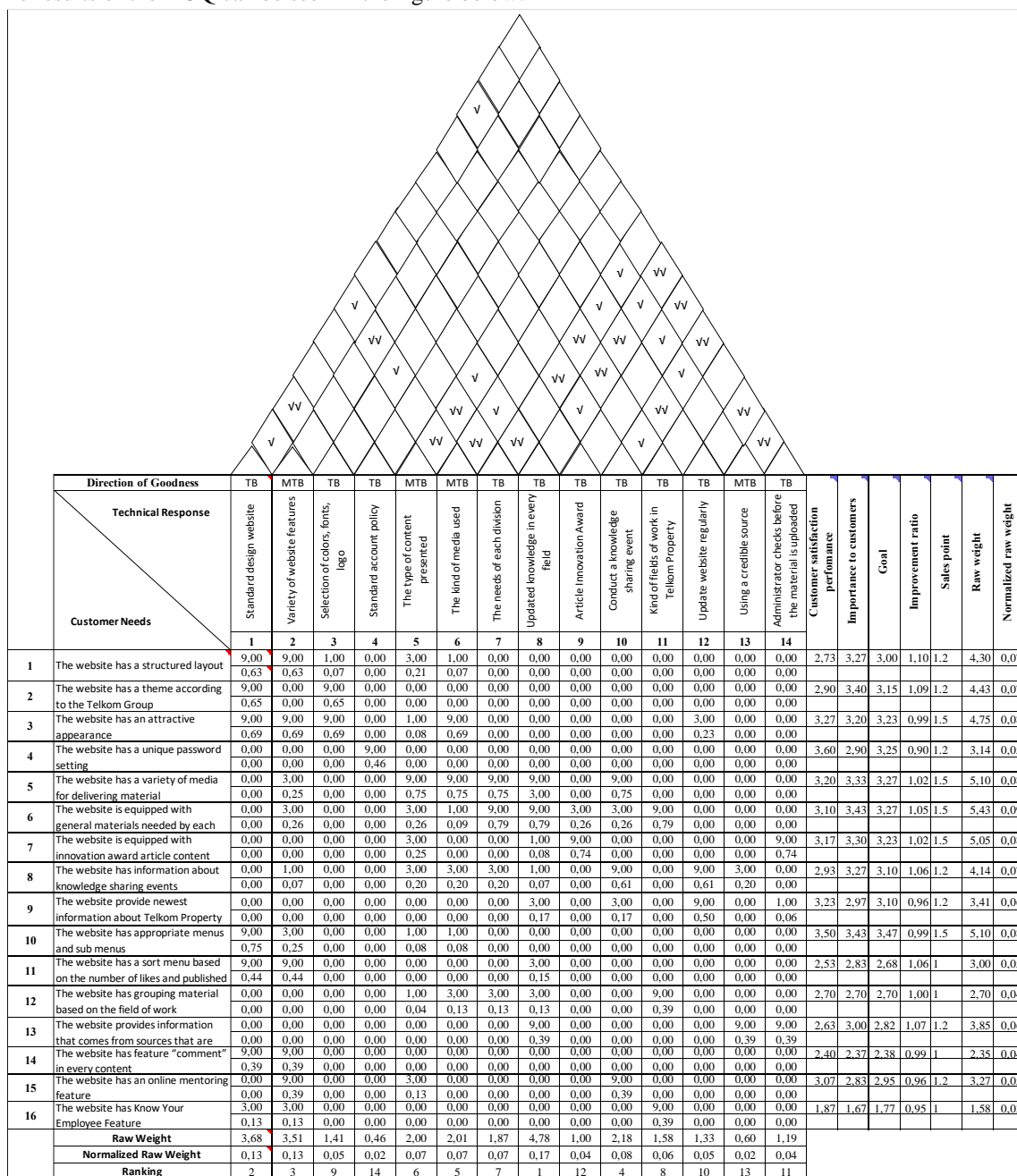

Figure 11. HOQ

Based on the results of the HOQ calculation above, the priority technical response that should be a concern for knowledge management website development is obtained as shown in the table below

Table 1. Technical Response

No	Technical Response	QFD Priority
1	Updated knowledge in every field	1
2	Standard design website	2
3	Variety of website features	3
4	Conduct a knowledge sharing event	4
5	The kind of media used	5
6	The type of content presented	6
7	The needs of each division	7
8	Kind of fields of work in Telkom Property	8
9	Selection of colors, fonts, logo	9
10	Update website regularly	10
11	Administrator checks before the material is uploaded	11
12	Article Innovation Award	12
13	Using a credible source	13
14	Standard account policy	14

C. People, Process and Technology

To support the running of the knowledge management website, it does not only require technological assistance, but also people and processes who have the capability and are in line with the technology to be implemented.
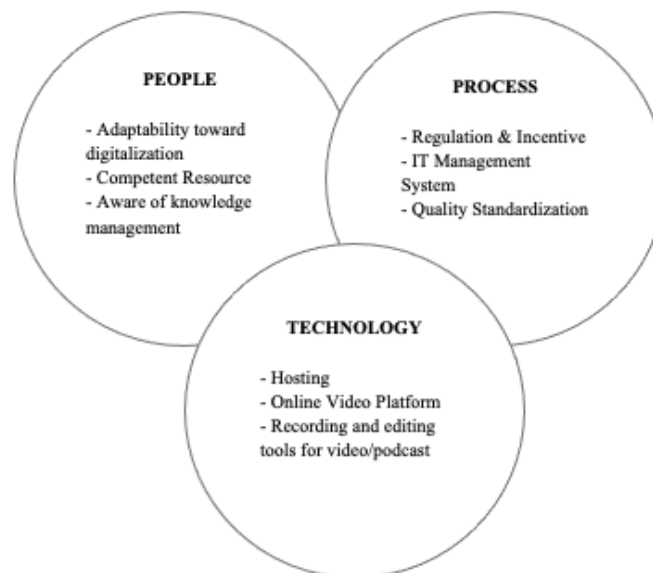

Figure 12. People, Process and Technology Framework

- People

    To support the knowledge management website to function optimally, it requires resources that are willing to adapt in using technology. Learning in companies that was initially carried out in a conventional way will now be carried out online via the website, although not all learning is via the website. In addition, competent resources are needed in managing websites such as managing website content and managing website infrastructure.

- Process

  With the existence of a knowledge management website, there are several processes that must be considered so that this website can run in a sustainable manner, one of which is regulation and incentives. Telkom Property needs to make rules that every employee must contribute to the knowledge management process such as writing articles related to divisional work, innovation articles (already implemented), and for employees who have contributed in writing articles will get additional points for year-end performance evaluation. Apart from that, to ensure the website can run properly, an IT Management System is needed to manage the website system, such as updates and maintenance. To ensure website information and infrastructure are in accordance with standardization and do not violate the rules.

- Technology

  To support the operation of this website, adequate infrastructure is needed, such as hosting which is useful for storing data posted on the website, besides that, to support knowledge management activities such as webinars or online mentoring, online video media is needed so that knowledge sharing activities can be carried out online. In providing learning materials, Telkom Property will not only provide material in the form of e-books or articles but will also provide material in the form of videos and podcasts, therefore supporting tools are needed to produce videos and podcasts with high picture and sound quality. so that it can support the learning process optimally.

CONCLUSION AND RECOMMENDATION

Telkom Property has made knowledge management efforts, namely by holding webinars, training, seminars, workshops, sharing sessions and outreach, however, Telkom Property does not yet have a knowledge storage system. Knowledge obtained from the results of webinars, training, seminars, workshops, sharing sessions and outreach is only owned by the employee who has the session and has not been spread to other employees who do not attend the session. This causes slow dissemination of knowledge. Based on the development results of this research, a knowledge management website is proposed for Telkom Property with the following specifications:

1. The proposed knowledge management website for Telkom property is named "Digi-Pro Learn". This website was developed based on the SECI framework approach (Socialization, Externalization, Combination and Internalization) where there are four main menus on this website, namely
   - Digiconnect which is a development of the concept of socialization
   - Digipro which is the development of the concept of externalization
   - Diginnovation which is the development of the combination concept
   - Digilib which is the development of the concept of internalization

   The website's menu development based on the SECI concept makes this website not only a repository, but also a tools for sharing so that knowledge can be spread properly by all Telkom Property employees throughout the region. Apart from using the SECI concept, technically for developing this website it also uses the QFD method with the help of HOQ tools so that the developed website is more user centric. Based on the HOQ results, there are 14 aspects that should be a concern in developing this website.

2. The Implementation Plan

   In the process of implementing this knowledge management website, apart from being developed from the QFD method, several benchmarks from several other platforms are also used, such as Coursera, YouTube, Telkom University open library, Spotify, Telkom Indonesia and Telkom Property. The implementation process also involves all divisions to find out the required knowledge and collaborate with the IT division to upload materials and update websites. As an implementation plan, the activities carried out are divided into 5 phases, namely the initiation, design, implementation, monitoring and evaluation phases.

REFERENCES

1. Sudirian I, Maarif S, Affandi J, Arkeman Y. Peningkatan Kapabilitas Karyawan dan Penerapan Budaya Baru Perusahaan dalam Mewujudkan Daya Saing. 2019;5(2):239-256. doi:10.31289/jkbm.v5i2.2274

2. Property T. TRANSFORMASI FUNDAMENTAL BISNIS STRATEGI PASCA PANDEMI UNTUK PERTUMBUHAN DI ERA ENDEMIK.; 2021.

3. Saraswati SD. Rancang Bangun Prototipe Knowlegde Management System Untuk Mendukung Knowledge Sharing Dengan Model Seci : Studi Kasus Pt Republika Media Mandiri Jakarta. Jurnal PILAR Nusa Mandiri. 2018;14(1):75-82.

4. Tjakraatmadja JH, Kristinawati D. Strategi Implementasi Knowledge Management. 1st ed. (Warsidi E, ed.). Institut Teknologi Bandung; 2017.

5. Egbu CO, Botterill K. Information technologies for knowledge management: Their usage and effectiveness. Electronic Journal of Information Technology in Construction. 2002;7(August):125-137.

6. Sutrisna E. Implementasi Knowledge Management System Berbasis Website dengan Model Spiral pada PT. Trans Retail Indonesia. Jurnal Informatika Universitas Pamulang. 2018;3(2):64. doi:10.32493/informatika.v3i2.1430

7. Usino W, Hadi RU. Knowledge Management System Berbasis web Dengan Pendekatan SECI Pada Kantor Cabang Dinas Pendidikan dan Kebudayaan Kabupaten Pandeglang. Seminar Nasional Sistem Informasi dan Teknologi Informasi. Published online 2017:699-703.

8. Islam R, Ahmed M, Alias MH. Application of Quality Function Deployment in redesigning website: A case study on TV3. Int J Bus Inf Syst. 2007;2(2):195-216. doi:10.1504/IJBIS.2007.011619

9. Tjakraatmadja JH, Lantu DC. Knowledge Management Dalam Konteks Organisasi Pembelajar. 1st ed. Institut Teknologi Bandung; 2017.

10. Hosseini MR, Tahsildari H, Hashim MT, Tareq MA. The Impact of People , Process and Technology on Knowledge Management. European Journal of Business and Management. 2014;6(28):230-241.

11. Nonaka I, Toyama R, Konno N. SECI, Ba, and Leadership. Managing Industrial Knowledge - Creation, transfer and utilization. 2002;33:13-43. www.elsevier.com/locate/lrp

12. Han SB, Chen SK, Ebrahimpour M, Sodhi MS. A conceptual QFD planning model. International Journal of Quality and Reliability Management. 2001;18(8):796-812. doi:10.1108/02656710110401187