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Design and Implementation of Knowledge Management, Learning Organizations and Learning Experience Based on LMS Corporate University

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Keyword

Abstract

Corporate University is a system that combines Knowledge Management (KM), Learning Organization (LO) and Learning Experience (LE). Therefore, the existence of software media is needed. This research aims to design, implement, and test Learning Management System (LMS) based on Corporate University. This LMS is built with web-based technology with Java and PHP programming languages, and MySQL database. The method used is agile scrum with stages that include Product Backlog, Sprint Backlog, Sprint, and Working Increment of The Software. This research found a software in the form of an LMS specifically designed and built according to the needs of Corporate University by integrating KM, LO, and LE in a 70:20:10 pattern. The instrument testing stage was carried out using the Pearson product moment validity test and Cronbach alpha reliability test. The function testing stage is carried out using the black box testing method, and for user satisfaction is carried out with questionnaires and questionnaires using frequency analysis, percentage, average, and standard deviation. The results of black box testing show that this LMS can work as expected. This is reinforced by the results of frequency and percentage analysis, as many as 84% of respondents were satisfied overall. While the mean value and standard deviation for each question given to respondents are above 4.0, indicating a high level of satisfaction. In conclusion, this research makes a significant contribution in the field of technology-based learning system development, especially in the context of Corporate University. By integrating KM, LO, and LE, this research offers a more comprehensive LMS model that fits the needs of modern organisations.

INTRODUCTION

According to Article 203 of Government Regulation No. 17 Year 2020 on Amendments to Government Regulations No. 11 Year 2017, each PNS must follow competence development at least 20 hours of lessons per year (Republik Indonesia, n.d.). The development of competences referred to in paragraph (4a) is carried out through an integrated learning system (Corporate University). Corporate University becomes a suitable model of competence development because it blends classical and non-classical training. This policy is in line with the Regulations of the State Administration Institution No. 10 of 2018 on the Development of the Competence of Civil State Officers regulating classical and non-classical training (2). Even the Governor of South Sulawesi has issued a Governor's Regulation as a form of attention to the importance of improving apparatus competence as an effort to ensure that apparatus is capable of supporting the strategic achievement, the vision of the organization's mission, including in it is the Key Performance Indicators (3).

ISSN (Online): 2961-9602

The current competence development system in BPSDM Province of South Sulawesi still uses an old pattern, where training is focused only on enhancing managerial competence, very rarely touches technical and socio-cultural training and is not integrated with the pattern 70:20:10 (4–6). The training is still classical and does not touch the equipment needs because it is built without analyzing the gaps in ASN competence with the target access. The Regional Device Organization (OPD) is also not involved in formulating the requirements of its apparatus competence. In addition, knowledge resources are not freely accessible and managed so that the apparatus does not have a container for sharing knowledge and experience, so that when the apparatuses find it difficult to accomplish their tasks they do not have the reference in solving their problems.

1.1 State of The Art

Apparatus competence development models have become significant research topics, several major researches have discussed them. In 2019, an article by Nike Mutiara Fauziah and Andri Wahyu Prasetyo titled "ASN Corporate University: Sebuah Konsep Pendidikan dan Pelatihan Pada Era Disruptif". The objective of this study is to produce an alternative training model namely Corporate University. The study uses a literary study method and the results indicate that the concept of corporate university in public sector organizations is still in the conceptual stage and is not yet in the field of implementation (7). Next, in 2020, the research by Firman Nugraha, Dedi Restendi, and Agus Triyanto is titled "Pengembangan Sistem Pelatihan Jarak Jauh Berbasis Moodle di Balai Diklat Keagamaan Bandung". The aim of this study is to find out the implementation of a moodle-based remote training system. The method used is a waterfall, the results showed that the LMS Moodle based training system allows remote education but has not adopted the concept of Corporate University as suggested by the previous Nike Mutiara research (8). In 2020, Hamdana in his article entitled "Penerapan sistem informasi dan pengembangan (SIBANG) dalam peningkatan kompetensi widyaiswara BPSDM Provinsi Sulawesi Selatan". The purpose of this research is to find out the implementation of training in BPSDM South Sulawesi based LMS Sibang. The methods used are qualitative and quantitative. The results found that SIBANG LMS has been able to facilitate training but as is the case with the results of Nugraha's research is only classical and not integrated with the concept of Corporate University (6). In 2021, research by Witra Apdhi Yohanitas, Nur Kristian Hidayat, and Evi Maya Safira with the title "ASN Unggul 2.0, a New Paradigm of Learning Management System in Civil Service Competency Development". The research is aimed at developing ASN Unggul LMS version 2.0. The method used is qualitative descriptive. The result is that this LMS is able to assemble LMS-LMS on the BPSDM district of the Ministry in a single container of ASN Unggul. The findings also result in the implementation of Knowledge Management concepts that have been revealed in Nike Mutiara research, but have not implemented other elements that exist at Corporate University namely Learning Organization and Learning Experience (9). In 2023, an article by Ari Syuhada, Denny Sagita Rusiantoro, and Mahardeka Tri Ananta titled "Pembangunan Sistem Manajemen Pelatihan bagi ASN berbasis Website di Badan Kepegawaian dan Pengembangan Sumber Daya Manusia Kabupaten Situbondo". The aim of this research is to build a web-based training management system for ASN. The method used is waterfall. The result is the awakening of a training system that runs effectively like in Hamdana research and Nugraha words, but different in development techniques because Hamdana and Firman use existing LMS that is the moodle while Ari Syuhada research build web-based LMS (10). The same thing is that these researches have not yet reached the concept of Corporate University.

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1.2 Problems

ISSN (Online): 2961-9602

Based on these researches it was found that no software (LMS) has been built and meets the specific needs of LMS based on the concept of Corporate University. Previous researches only build and implement competence development based on classical. There is no integrated implementation of Knowledge management (KM), Learning Organizations (LO) and Learning Experience (LE). The method used is also only a waterfall limit where this method has rarely been done by researchers today because of its rigidity and requires a relatively longer process. If this problem is not resolved immediately, it will result in widespread gaps in the competence of the apparatus, which will interfere with the acceleration of the achievement of the initiative programmes of the organization and result in budgetary inefficiency.

1.3 Purpose and Benefits of Research

Based on the gap analysis and the problem, the aim of this research is to design, implement and test the Corporate University-based Learning Management System (LMS). The LMS is built with Web-based technology with Java and PHP programming languages, as well as MySQL Database. The method used is agile scrum with stages that include the Product Backlog, Sprint Backlogs, Sprints, and Working Increment of the Software. This method was chosen because it was better rated than Waterfall in terms of allowing changes to the development cycle and does not require large work teams and shorter work times (11). This research is crucial because with the software it allows classical and non-classical training as a preference learning that can be done anywhere, anytime, and low cost. The advantage of this research is that the apparatus has analytical competence, problem solving, agile and independent to support the strategic achievement of the organization.

1.4 Literature Review

KM is a discipline aimed at collecting, storing, managing, and sharing knowledge and information within an organization in a systematic and targeted manner (12). This concept covers a range of strategies, practices, and technologies used to ensure that the knowledge held by individuals, teams, and organizations as a whole can be optimally utilized to goals. KM becomes the primary foundation in optimizing the knowledge resources of the organization. In addition, the LO concept emphasizes the importance of the sustainable development of skills and knowledge across the organizational level (13). LO was the concept first introduced by Peter Senge in the 1990s. The concept emphasizes the importance of continuous learning, collaboration, and collective problem-solving within the organization. When organizations are able to create a strong learning culture, the apparatus feels encouraged to continue to enhance their abilities, share knowledge, and innovate sustainably. On the other hand, LE is an important aspect in ensuring learning effectiveness within the organization. A good learning experience must be interesting, relevant, and easily accessible to members of the organization (14).

In today's digital age, the presence of LMS in training has become a very important and strategic element for organizations. LMS offers a range of benefits that can improve the effectiveness and efficiency of training, as well as provide a better learning experience for participants (15,16). LMS allows training participants to access the material anytime and from anywhere. This is crucial in a dynamic workplace where employees are often scattered across different locations and time zones. The training is accessible online, giving participants the flexibility to study according to their own schedules. LMS provides a centralized platform for storing and managing all learning materials. This makes it easy for instructors to upload, update, and distribute material quickly (17). In addition, training participants can easily find and access the material they need.

1.5 Research Questions

In order to focus research on answering problems and objectives, the author formulates some research questions:

ISSN (Online): 2961-9602

1. How to design and implement an effective Corporate University-based LMS?;
2. What are the stages in the agile scrum methodology applied in the development of Corporate Universities-based lMS?
3. How is the integration between Knowledge Management, Learning Organization, and Learning Experience in a Corporate university-basedLMS?
4. How can the black box testing of functional requirements ensure the functionality of the corporate universities- based lms?
5. What is the response of users (training participants, mentors, facilitators, and experts) to the relevance and benefits of a corporate-based university based LMS built?
6. How is a 70:20:10 pattern implemented in the Corporate-university-driven LMS implemented?

METHOD

The method used is agile scrum, which is part of Research and Development with stages that include Product Backlog, Sprint Backlogs, Sprints, and Working Increment of The Software. This method was chosen because it was better rated than Waterfall in terms of allowing changes to the development cycle and does not require large work teams and shorter work times (18,19).

Figure 1. Agile Scrum Process

2.1 Research Design

The research design below is done gradually to generate research objectives and solve problems, it is also to answer research question number one namely: How to design and implement an effective Corporate University based LMS? As for the stages of this study are:

1. Product Backlog: is a priority list of all the work that needs to be done for the project. This includes features, bug fixes, technical improvements, and other work needed to the product vision. Product Backlog is dynamic; it is constantly changing to reflect what a product needs to be competitive, useful, and tailored to customer needs. Items in a Product Backlog are commonly referred to as Product Bacclog Items (PBI);
2. Sprint Backlogs: are a subset of the Product backlog that is selected to be done in a single Sprint. It covers all the jobs planned to be completed in a particular Sprint. The Sprint Backlog is created during Sprint planning and contains only items that are expected to be completed during the Sprint duration. The team can also add a implementation plan for the selected item, which often includes specific tasks required to complete the PBI;
3. Sprint: is a fixed time period, usually ranging from one to four weeks, during which work is done to a specific goal. During the Sprint, the Scrum team focuses on completing the items in the sprint backlog. Sprints begin with Sprint planning, followed by daily work including daily Scrum meetings, and end with a Sprint review

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and Sprint retrospective to evaluate what has been achieved and how the process can be improved in the future; and

4. Working Increment of The Software: is the result of work that can be used or released to the customer after Sprint ends. It's an operable version of the product and meets the definition of "Done" agreed by the team. Each increment must be a part of the software that works and gives value to the user or customer. This increment reflects the progress the team achieved in product development during the Sprint.

2.2 Subjects of research

Research subjects are divided into several categories based on their role in the context of using LMS:

1. Training participants: those who use LMS for training and skills development purposes. They provide an end-user perspective on ease of use, material relevance, and the overall learning experience. The total number of respondents is 25;
2. Mentors and facilitators: individuals responsible for facilitating learning and supporting training participants. They provide insight into the effectiveness of the collaboration tools and support provided by LMS. The total respondents are 10 people; and
3. Subject Matter Experts: experts in a particular field who use LMS to provide training content and materials. They provide feedback on content management, material quality, and system capabilities to support effective learning. The total number of respondents was five. The total remaining respondents were 40.

2.3 Research and Data Collection Instruments

Research instruments include anglets and questionnaires. Anglets and quizzes are instruments designed to collect data from respondents by providing a series of written questions to be answered (20). Here are the details of the lifting components and the questionnaire:

a. Demographic information: this section covers questions about the respondent's personal data such as name, position, department, length of work, and previous experience with LMS;
b. LMS Functionality Assessment: This section includes questions that assess the ease of use, user interface, speed, and responsiveness of LMS.
c. Content and Learning Assessments: this part covers issues about the relevance, quality, and effectiveness of the content provided in LMS,
d. User Experience: This part includes questions regarding the usage frequency, navigability, and impact of the LMS on learning purposes;
e. Feedback and Recommendation: This segment covers open questions that enable respondents to provide additional suggestions and comments about LMS

To measure the level of satisfaction or agreement of respondents to a particular statement, the lifting instrument and the questionnaire use the Likert scale, 1: Very disagreeable, 2: Disagreeing, 3: Neutral, 4: Agree, and 5: Very agreeable. In addition to the lifting instruments and questionnaires, the study also used the black box testing method to test the functionality of the LMS. The testing was done without looking at the source code, focusing on ensuring that all LMS features work according to the specifications. Data collection is carried out using lifts and questionnaires in a way distributed through the Google Forms platform. In this process, clear instructions are given on how to fill in the pickup and questionnaire, including the collection deadline. Before the application of the instrument, a validity and reliability test has been carried out (21,22).

As for the calculation of the validity test of descriptions using the pearson product moment correlation formula with the following formula:

ISSN (Online): 2961-9602

$$\text{Pearson r} = \frac{\text{N}\sum\text{XY}-(\sum\text{X})(\sum\text{Y})}{\sqrt{\{N\sum X^2-(\sum X)^2\}}\sqrt{\{N\sum Y^2-(\sum Y)^2\}}}$$

In the reliability test in this study using the Alfa Cronbach reliability tests. The formula of the Alpha Cronbachs reliability coefficient is as follows:

$$ri = \frac{k}{(k-1)}\{1-\frac{\sum S_i^2}{S_t^2}\}$$

2.4 Data Analysis

Analysis of research data using descriptive statistical analysis, here calculated frequency, percentage, average and standard deviation. Several reasons justify this technique include: ease of interpretation, easy comparison, data visualization, identification of trends and patterns, as a basis for advanced analysis, and measurement of user satisfaction.

a. Rumus Frekuensi = Jumlah kemunculan kategori
b. Rumus Presentase = Presentase $= \left(\frac{Frekuensi}{Total\ Frekuensi}\right) x\ 100$
c. Rumus Rata-rata = $\mu = \frac{1}{N}\sum_{i=1}^{N} X_i$
d. Rumus Standar Deviasi = $\sigma = \sqrt{\frac{\sum_{i=1}^{n}(x_i-\mu)^2}{n}}$

2.5 Research Ethics

The ethical aspects of research are crucial to ensuring that research is conducted responsibly and that the rights of participants are respected. This includes informed consent, with an explanation of the purpose of research and a request for written consent, as well asining the anonymity and confidentiality of data. Data must be secure and used only for research purposes. Research should avoid physical or psychological harm to participants, as well as provide support if necessary. Participants must be elected fairly and without discrimination, and the results of research must be beneficial to all parties involved. Researchers should report results honestly and transparently, as well as communicate findings in an easy-to-understand way. The technology used must be secure, protect privacy, and data must be used ethically in accordance with data protection regulations.

RESULTS AND DISCUSSION

Here are the results and discussion of the agile scrum process, while answering the 2nd research question namely: What are the stages in the Agile Scrum method applied in the development of Corporate University based LMS?

3.1 *Product Backlog*

Product Backlog is a list of the most important features that provide satisfaction values and meet the needs of the agency. The author evaluates the current competence development system and LMS. The author observed and observed the implementation of the Supervisory Leadership and Administrator Leadership Training as well as the Digital Learning Facilitator Training. The results showed that the management of the Training and LMS system is still being carried out exclusively and has not adopted the Corporate University system.

3.2 Sprint Backlog

After conducting analysis, it was revealed that there were many consequences arising from this problem, such as the lack of constraints on the part of the Organization and the Regional Approach in analyzing and proposing the competence required by its apparatus. Besides, there is no training list that can be selected and followed directly by the equipment. The existing LMS is also not equipped with a project-based training system and a practical community to share the best experience as well as features for internship equipment.

ISSN (Online): 2961-9602

3.3 Sprint

The author then displays the system to be built to meet the needs of the instance by showing a list of feature plans (Table 1) and system interface plans (Figure 2), explaining who the actors involved in the LMS and what their roles are. Explain the methods of exploitation and maintenance of the system, and so on. In addition, the team explains how long it takes to build the system, as well as to conduct domain registration and hosting so that the system can run online.

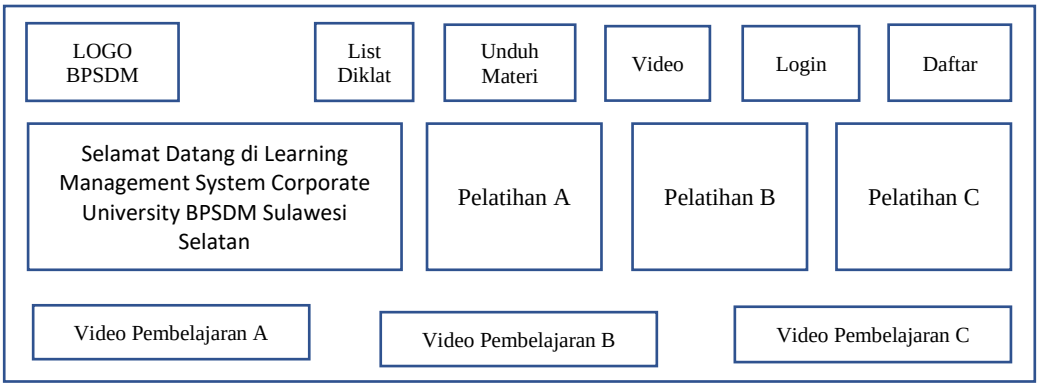

Figure 2. Desain Antar Muka

Table 1. List of Feature Suggestions

Category	LMS Features	Description
Knowledge Management	Knowledge Repository	Save and access content such as documents, videos
	Discussions and Groups	A platform to discuss and share knowledge.
Learning Organization	Structured and Modular Course	Create and manage courses that can be updated periodically.
	Training proposals by OPD	Proposing equipment competence requirements
	Training List	Preparing training lists based on OPD proposals
	Group Projects and Tasks	Supports team-based tasks with features to manage projects and group tasks.
	Mentoring and Coaching	Connecting equipment with a mentor or a trainer.
Learning Experience	E-learning and Blended Learning	Combining online and face-to-face learning.
	Live Chat and Discussion Forums	Interact with instructors and participants in real time.
	Responsive Design	The interface is optimized for a variety of devices, including phones and tablets.
	Practical Community	Connecting participants to share good practice.
	Project assignment	Implementing assignment projects
	Internship	Implementing work tactics

ISSN (Online): 2961-9602

By implementing Corporate University through LMS, organizations can manage, disseminate, and develop knowledge more effectively. LMS enables the application of the principles of Knowledge Management, Learning Organization, and Learning Experience in an integrated manner, creating a dynamic learning environment and supporting the sustainable development of employees.

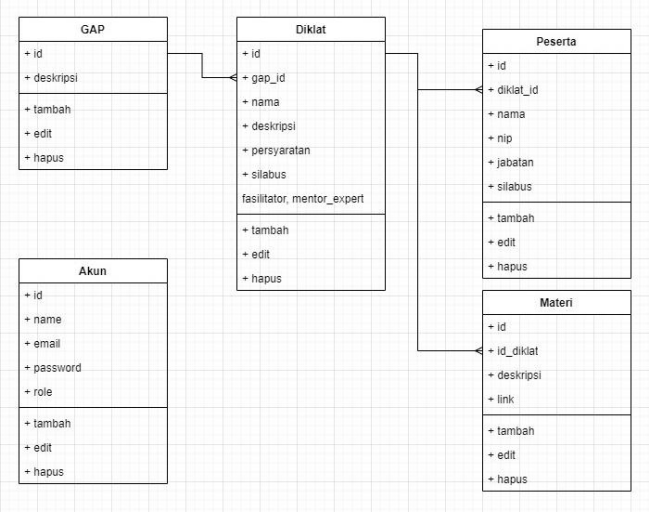

Figure 3. Entity-Relationship Diagram

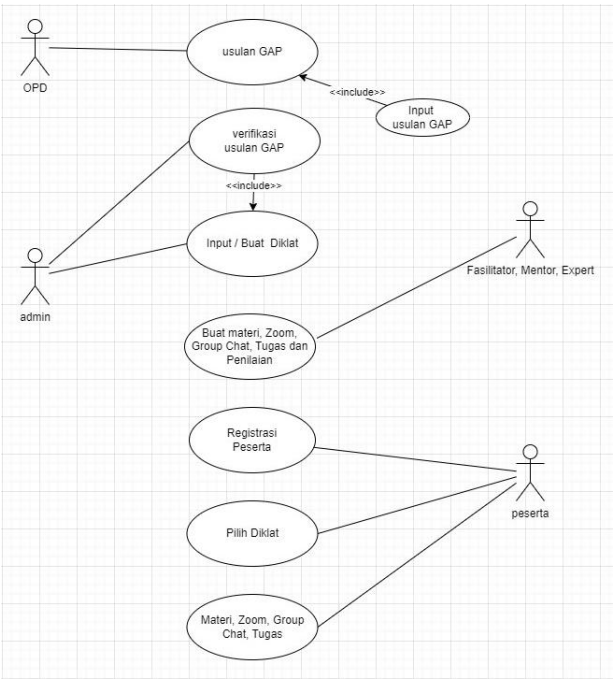

Figure 4. Usecase Diagram

Figure 4 is a Use Case diagram used to describe interactions between actors and systems. OPD (Regional Device Organization): Submitting a GAP proposal (Gap Analysis). Admin: Responsible for verifying GAP proposals, input or drawing (education and training), and creating training-related materials and settings (virtual meeting, Group Chat, Tasks, Assessments). Participants: Sign up for drawing and select drawing to follow. Facilitator,

ISSN (Online): 2961-9602

Mentor, Expert: Engaged in material creation, virtual meetings, Group Chat, tasks, and assessments.

3.4 Working Increment of Software

As a result of the above design, the software was built using Web-based technology with Java and PHP programming languages, as well as MySQL Database. Figure 5 shows a home page view of a built-in LMS.

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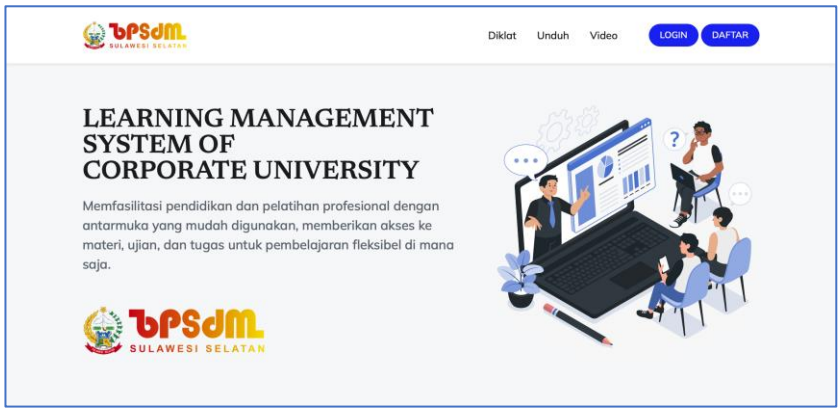

Figure 5. Home Page
Source : https://diklat.digitalgov.id

Figure 6 shows a list of training sessions that can be followed by the equipment. The equipment selects the training required to improve its competence. Before signing up, the equipment can first study the training details.

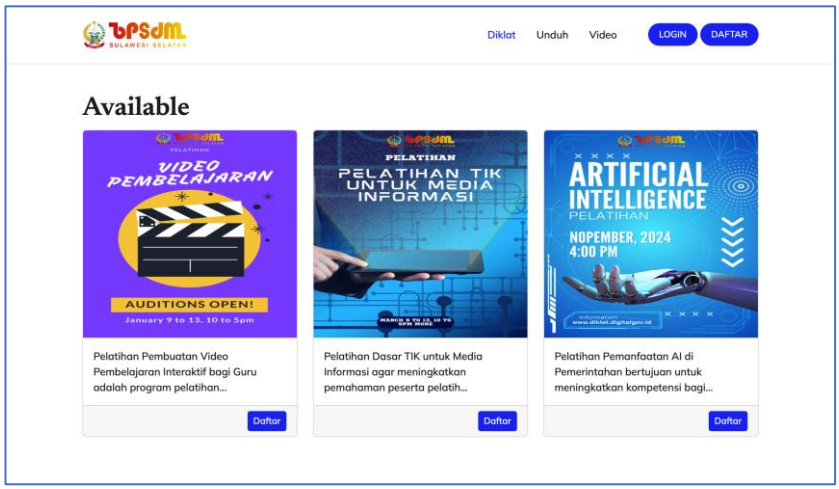

Figure 6. List of Training Available

ISSN (Online): 2961-9602

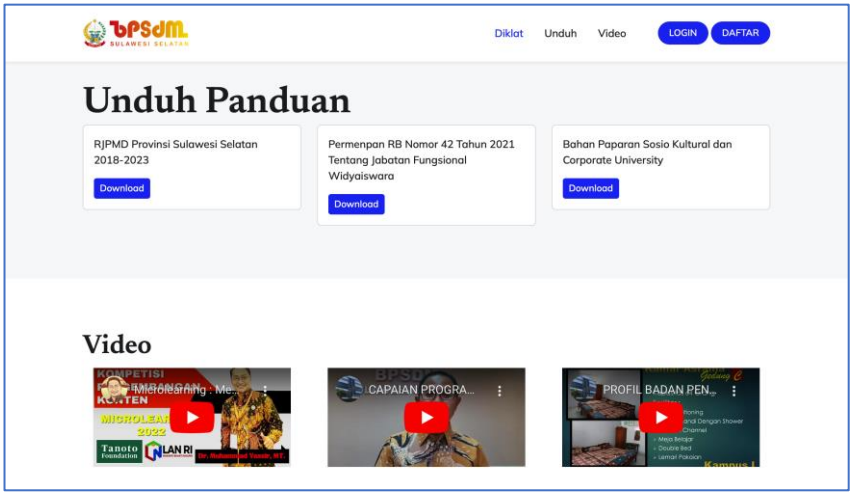

Figure 7. Dowload Materials and Watching Videos

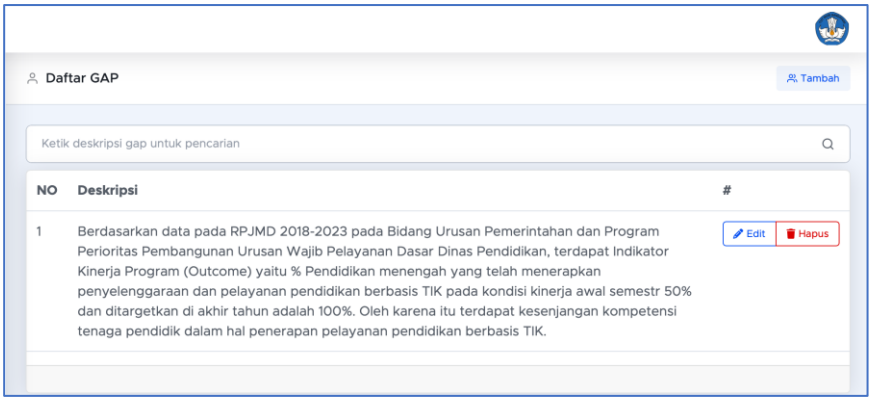

Figure 8. Competence GAP Input By OPD

Figure 8 shows the OPD's commitment to proposing its apparatus competence based on study and organization access targets. Here the OPD may refer to the medium-term regional development plan (RPJMD) or those listed in the Main Indicators. (IKU).

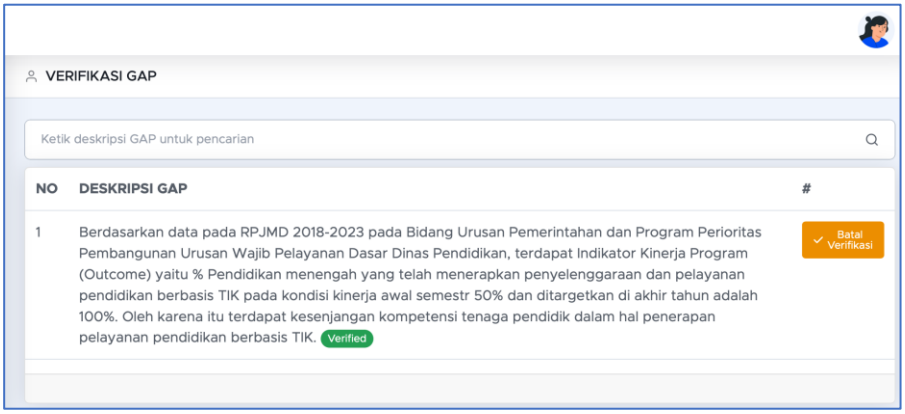

Figure 9. Proposal Verification by Admin

ISSN (Online): 2961-9602

Figure 9 shows the process of verification by the Admin against the OPD's proposal regarding the competence of the apparatus. It's also an embodiment of the Learning Organization at the Corporate University. This verification is required to identify and formulate the appropriate training equipment so that the training material is relevant to the objectives to be achieved, such as: Training Name, Training Description, Participant Requirements, Curriculum and the appointment of facilitators, mentors and experts appropriate to the field of training. It can be seen in pictures 10 and 11.

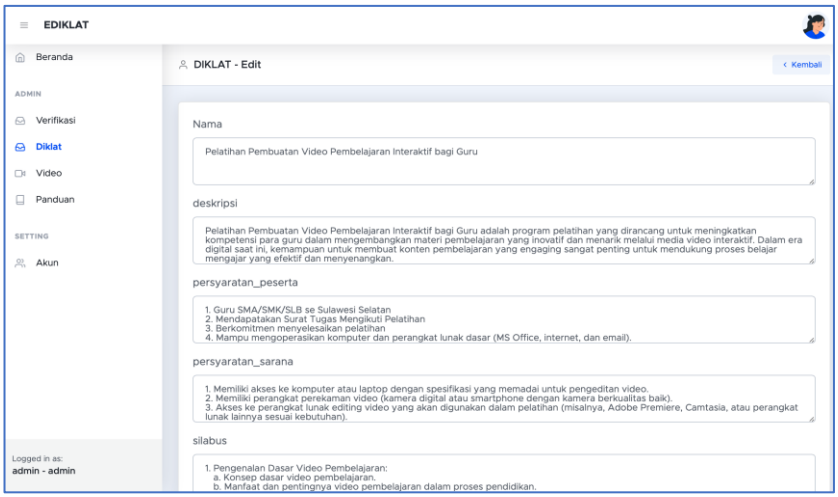

Figure 10. Training Details Input By Admin

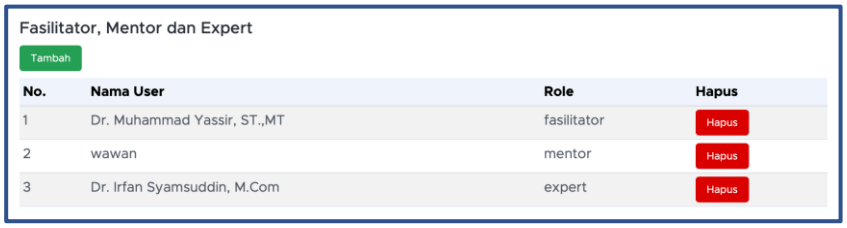

Figure 11. Selection of Facilitator, Mentor and Expert

If the equipment has selected one of the training options available, then in the LMS the equipment will look like in Figure 12. Available 3 training patterns, classical, non-classical and other classical as seen in Figures 13, 14 and 15. In classical training, materials are available to download and learn and discuss. In non-classical training, a mentor has been prepared to help the participants to better understand the substance of training in the coaching and mentoring model, it can also be done sharing experiences among participants in the Practical Community model. In other non- classical training participants can choose the type of training such as Task Forced, Project Based Learning and internship. It's also in response to training question number six namely: How the 70:20:10 pattern is implemented in a Corporate University-based LMS. 70% of Learning from Practical Experience is as in other non-classical training, 20% of learning from social interaction as in non- classical training and 10% is done through classic training such as seminars, workshops and online training.

ISSN (Online): 2961-9602

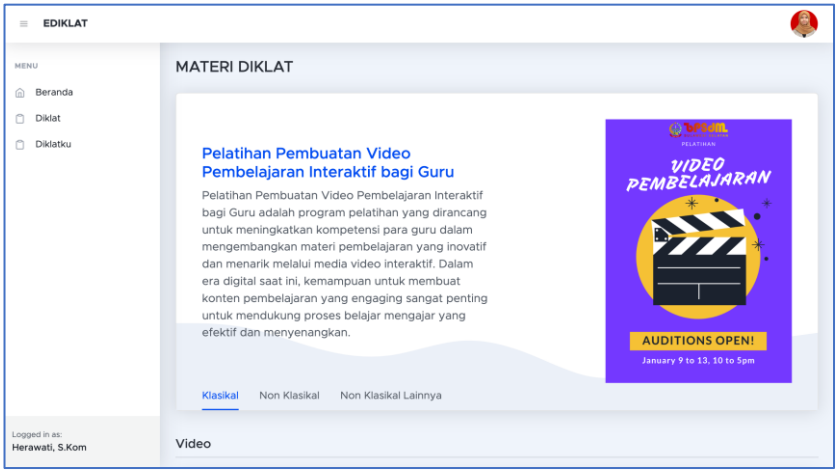

Figure 12. Training Underway

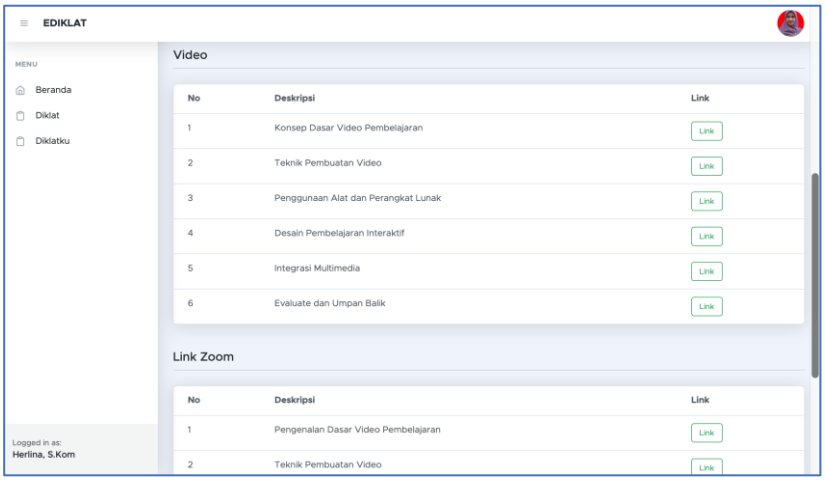

Figure 13. Classical Training Materials

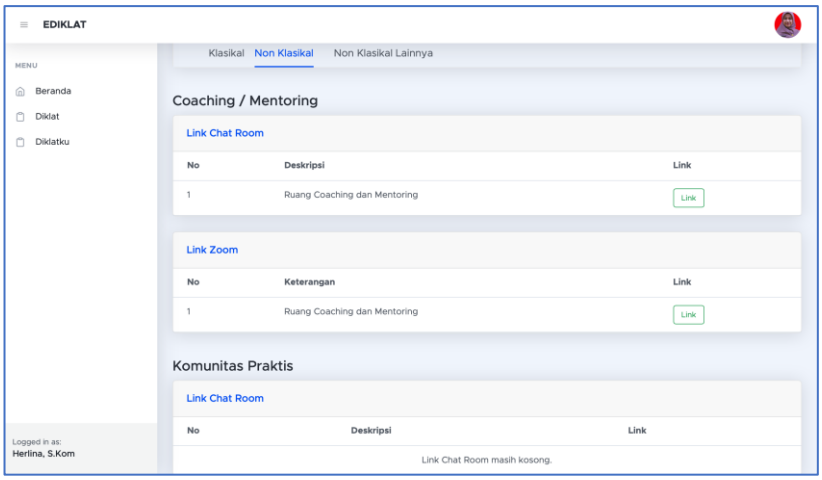

Figure 14. Non-Classical View

ISSN (Online): 2961-9602

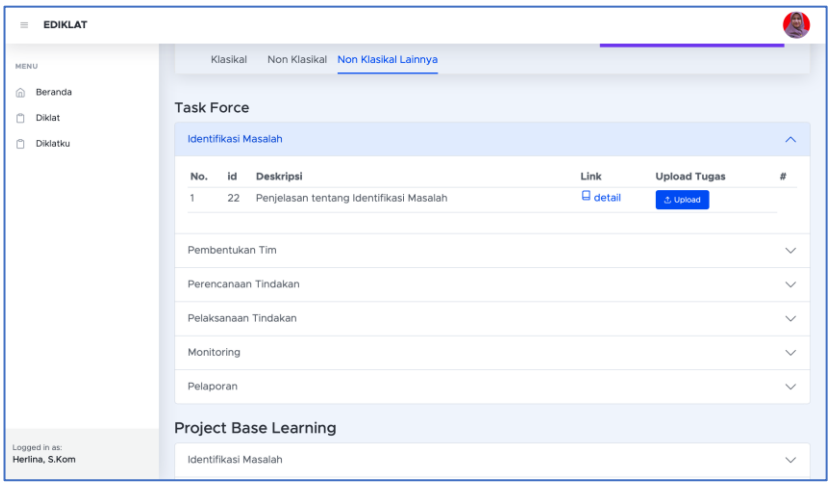

Figure 15. Other Non-Classical View

The next step is to perform a test with a black box system. Black Box Testing is a test method in which a model is run or executed, then the results are observed to ensure conformity with the desired business process (23,24). This LMS is operated through a web browser. The purpose of this test is to verify whether the features in the LMS are working properly for their role.

Table 2. Black Box Test on Admin Page

Test Case	Prosedur	Expected results	Results
admin Login	Enter username and password	Successfully logged into admin page	Succeeded
Add user	Select the account menu, add, role	User data successfully added	Succeeded
User Edit	Select account menu, set role	User data modified successfully	Succeeded
Remove User	Select account menu, delete	User data successfully deleted	Succeeded
GAP Verification	Select the Verification, Verification menu	GAP data has been verified	Succeeded
Training Details Input	Select the training menu, add, make training	Default Details Successfully Input	Succeeded
Video Input	Click the video menu, add	Video entered successfully	Succeeded
Document Input	Select the guide menu, add	Document entered successfully	Succeeded

Table 3. Test Black Box Page Facilitator, Mentor and Expert

Test Case	Prosedur	Expected results	Results
Login	Enter username and password	Successfully logged into facilitaor page	Succeeded
Displays enabled Defaults	Select the training menu	Training data successfully displayed	Succeeded

ISSN (Online): 2961-9602

Upload Material	Choose the training menu, choose the name of the draft, upload the material	Material data successfully uploaded	Succeeded
Displays the name of the participant in the cache	Select the training menu, participants	Participant name successfully displayed	Succeeded
Entering Score	Choose training menu, upload material, value	Score entered successfully	Succeeded

Table 4. Black Box Test Training Participant Page

Test Case	Prosedur	Expected results	Results
Login	Enter username and password	Successfully logged into Participant page	Succeeded
Choosing Training Name	Choose training menu, list	Participant successfully added	Succeeded
Show Training Details	Select the training menu, details	Training details successfully displayed	Succeeded
Showing Classic Training Menus	Choose my training menu, material, classic	Classic successfully displayed	Succeeded
Showing Non-Classical Training Menus	Choose menu in my table, material, non-classical	Non-Classical successfully displayed	Succeeded
Showing other Non-Classical Training Menus	Choose menu in my table, material, other non-classical	Other Non-Classical successfully displayed	Succeeded

The results of the Black box test showed that each feature built can work as expected. It shows that this LMS can be used in managing corporate university-based competence improvements, and also successfully answered research question number 4: How the black box testing functional requirements can ensure the functionality of Corporate University-based LMS.

Table 5. Validator Assessment Results

No	Rater-1	Rater-2
1	3	4
2	3	3
3	4	4
4	3	2
5	4	4
6	4	4
7	4	3
8	3	2
9	4	4
10	3	4
Average	3,5	3,4

ISSN (Online): 2961-9602

The reliability test in this study uses the Alfa Cronbach reliability tests. The results can be seen in Table 6.

Table 6. Hasil Penghitungan Reliabilitas Instrument

No	Instrument	Alfa Cronbach	Results
1	Demographic Information	0,783	Reliabel
2	LMS Functionality Assessment	0,744	Reliabel
3	Content Assessment and Learning	0,731	Reliabel
4	User Experience	0,757	Reliabel
5	Feedback and Advice	0,710	Reliabel

Next on the frequency and percentage analysis, here's a table of results based on respondents. The total number of respondents was 40 and they have given answers on the Likert scale 1-5 for satisfaction aspects to the overall use of LMS. A total of 84% of respondents were generally satisfied with the LMS. This indicates that the overall LMS meets the expectations and needs of users.

Table 7. Table of Frequency and Percentage Calculation Results

Answer (likert scale)	Frequency	Percentage
1	0	0%
2	1	4%
3	3	12%
4	11	44%
5	10	40%
Total	**25**	**100%**

The following is a collective table of averages and standard deviations for each question given to participants, facilitators, mentors and experts. From the collective tables, it is seen that respondents generally have a positive assessment of Corporate University-based LMS. The average score for most questions is above 4.0, indicating a high level of satisfaction. This data answers research question number 5 namely: What are the responses of users (training participants, mentors, facilitators, and experts) to the relevance and benefits of a Corporate University-based LMS built.

Table 8. Table of Collective Results of Average Calculation and Standard Deviation of Training Participants

No.	Questions	Average	Standard Deviation
1	The learning material provided at LMS is very relevant to my needs.	4,04	1,138
2	The LMS is easy to use and the navigation is intuitive.	4,16	0,75
3	The technical support and assistance provided was very helpful.	4,00	1,03
4	My learning experience with LMS was very satisfying.	4,04	0,89

ISSN (Online): 2961-9602

5	Using this LMS has improved my skills and knowledge.	4,00	0,91
6	LMS facilitates effective collaboration and interaction between users.	3,84	1,05
7	The assessment and feedback system at LMS helped me understand my progress.	3,96	0,85
8	I'm very pleased with this LMS overall	4,08	0,78

Table 9. Table of Collective Outcomes of Medium and Standard Deviations of Facilitators, Mentors and Experts

No.	Questions	Average	Standard Deviation
1	The learning material provided at the LMS is very relevant to the needs of the Participants.	4,20	0,75
2	The LMS is easy to use and the navigation is intuitive.	4,13	0,83
3	The technical support and assistance provided was very helpful.	4,07	0,80
4	LMS facilitates effective collaboration and interaction between users.	3,87	0,92
5	The experience of the participants with the LMS was very satisfactory.	4,00	0,85
6	The assessment and feedback system in the LMS helps participants understand their progress.	3,93	0,88
7	Using this LMS has improved the skills and knowledge of the participants.	4,00	0,77
8	I'm very pleased with this LMS overall	4,13	0,74

The results found by this study when compared to previous studies look different. This research is able to combine important elements of Corporate University namely Knowledge Management (KM), Learning Organization (LO) and Learning Experience (LE). While the study of Witra Apdhi Yohanitas (2023) only produces a merger of LMS-LMS that exists in each Ministry/Agency and Region, there is no integration between KM, LO and LE. Therefore, this study is very complementary to previous research.

CONCLUSION

The aim of this research is to design, build, implement and test a Corporate University-based Learning Management System (LMS). Thus, this research has succeeded in finding novelty among others: 1) Availability of LMS built with Web-based technology with programming languages Java and PHP, as well as MySQL Database through agile scrum methods better than previous methods; 2) Availability of the LMS that is able to integrate the essential elements of Corporate University namely Knowledge Management, Learning Organization and Learning Experience. Functional test results using black box testing show that this LMS can work as expected. This is reinforced by the results of frequency and percentage analysis, as much as 84% of respondents felt overall satisfied. While the average and standard deviation values for each question given to respondents

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were above 4.0, indicating a high level of satisfaction. The most important implication of this research is that the developed Corporate University-based LMS is capable of providing a strong foundation for organizations to manage knowledge, support sustainable learning, and provide optimal learning experiences for its users. It contributes to enhancing hardware competence more effectively and efficiently, which in turn can support the achievement of the organization's strategic goals. This research has made significant contributions to the development of technology-based learning systems, in the context of Corporate University. By integrating KM, LO, and LE, the study offers a more comprehensive LMS model that fits the needs of modern organizations. As for the author's advice, it is necessary to: 1) carry out tests involving more respondents in order to describe the user's interpretation of this LMS; 2) Keep upgrading the software so that it can be adapted to the features required in the implementation of Corporate University-based training.

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