
Design of Interface and Features for Training Management System (TMS): A Case Study of the Corporate University Division of PT XYZ

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Abstract

This study addresses the fragmented learning systems at PT XYZ, where separate and manually managed platforms result in inefficient training documentation. With an annual learning volume of 156,018 training hours and a rise in mandays from 9.4 (2019) to 12.8 (2023), the inefficiencies significantly impact training management. The research aims to design the interface and features of a Training Management System (TMS) for PT XYZ using a Systematic Literature Review (SLR) and a user-centered design (UCD) approach to align with user needs. A mixed-methods approach combines qualitative and quantitative techniques, including interviews, pre-questionnaires, usability tests, feedback sessions, and Subject Matter Expert inputs. Evaluation results show an average score of 4.29 out of 5, reflecting user satisfaction with the system's functionality, efficiency, and reliability. Effective implementation of the TMS is expected to improve training quality, support human resource development, and help achieve strategic corporate objectives.

A. Introduction

In this era of digital disruption, rapid adaptation has become essential. Similarly, in the field of education, accelerating learning processes is critical to keeping pace with technological advancements and modern demands. To support sustainable business growth in a dynamic market environment, PT XYZ has undertaken transformations in various domains, including education, as part of its strategy to cultivate skilled and high-quality human resources. One of these initiatives involves the adoption of digital learning systems through accessible platforms for all employees. These platforms play a crucial role not only as tools for employee training and learning documentation but also as a core element in talent mapping and strategic decision-making by the Strategic Human Capital Division on Talent Mapping Guidelines [1].

Currently, the Corporate University Division manages multiple learning platforms, such as the Knowledge Management System (KMS), Learning Wallet, Gade Library, LMS iLearn, Gade Studilmu, and Gamification. However, these platforms operate independently, and data processing is still conducted manually, making the process inefficient for both the Corporate University Division and employees. According Corporate University Roadmap for 2024–2028, a key technological weakness was identified, with one strategic goal being the development of multichannel learning experience tools[2].

From 2019 to 2023, training activities were conducted on a massive scale, with an average of 11.26 training hours per employee annually, totaling 156,018 hours each year, delivered through various methods such as in-house training, workshops, webinars, MOOCs, and e-learning, as documented in the Human Capital Directorate's Organizational Structure and Governance document for 2024. Despite this, comprehensive systems to manage pre-training and post-training processes, including training evaluations and budgeting, are still lacking, as confirmed through interviews with the Dean of IT and Finance Academy at PT XYZ's Corporate University Division[3].

Table 1. The number of mandays for the years 2019–2023

<i>No</i>	<i>Year</i>	<i>Mandays</i>
1	2019	9.4
2	2020	11.4
3	2021	11.9
4	2022	10.8
5	2023	12.8

The proposed Training Management System (TMS) serves as a Learning Management System (LMS) designed to address these challenges. It aims to enhance operational efficiency, ensure comprehensive training documentation, and provide accurate data recording while supporting employee development aligned with the Corporate University Maturity Level objectives. By implementing TMS, PT XYZ seeks to foster better learning experiences, improve human resource quality, and indirectly contribute to sustainable business growth[4].

B. Literature Review

This study utilizes the Systematic Literature Review (SLR) method to select relevant literature. Following the SLR process outlined by Kitchenham and referenced by Corry Elsa (2021), the research involves three main steps: formulating research questions, identifying suitable databases and keywords, and determining selection criteria, including parameters for inclusion and exclusion. The analysis was then carried out using the 3C2S method (Compare, Contrast, Criticize, Summarize, and Synthesize). This approach enables the researcher to identify similarities and differences with previous studies, assess areas for improvement in past research, and construct a theoretical framework by synthesizing findings from prior studies to generate new insights for this research [5].

1. Learning Management System

Learning Management Systems (LMS) are server-based, web-accessible applications that allow users to connect via a browser from any location with internet access. These systems equip educators with tools to develop online learning websites and grant access to educational resources. Typically, LMS platforms enable teachers to upload content, create links to learning materials, design online assessments, and provide instant feedback to students. However, despite their goal of being student-centered, many LMS platforms primarily serve as tools for instruction rather than fostering interactive learning experience [6]. Web-based information systems leverage web technology to introduce innovative approaches to design and development, differing from traditional computer software. Learning Management Systems (LMS) are robust software platforms specifically created to improve and facilitate the learning process [11].

2. User-Centered Design (UCD)

User-Centered Design (UCD) is a design methodology that emphasizes users' needs, preferences, and behaviors as the central focus during the development of systems or products. This approach prioritizes user input obtained through testing and feedback. In the development of e-learning systems, users like students and lecturers (subject matter experts) play a critical role in assessing the design's effectiveness. The process follows an iterative approach, where initial prototypes are tested, refined, and enhanced based on the outcomes of each testing phase [7].

User-Centered Design (UCD) is a design methodology that prioritizes users as the central focus during the development of products or services. It ensures that users' needs, preferences, and experiences are carefully addressed throughout every stage of the design process. In this study, the UCD approach was implemented through three iterative cycles, with each cycle's evaluation utilizing quantitative and/or qualitative methods within the UCD framework [8]. User-Centered Design (UCD) is a design approach in which a trained researcher observes and/or interviews users, who primarily exhibit passive or reactive behaviors. The users' involvement is restricted to completing assigned tasks and/or sharing their feedback on product concepts that were not developed by them [9].

3. User Interface (UI)

User Interface (UI) is a term that refers to the visual aspect of a service when customers interact with a product or service. A computer system consists of three interconnected aspects: hardware, software, and brainware. According to Lastiansah (2012), the User Interface (UI) is the means by which a program and a user interact. UI is often referred to as Human-Computer Interaction (HCI), where all aspects are interconnected. In general, the UI or user interface utilizes graphical displays that directly relate to the user and are part of the computer and software that can be seen, heard, touched, or understood by humans[9].

C. Research Method

The study employs a user-centered design (UCD) approach to ensure the system prototype meets user requirements and preferences. This approach is relevant as prior studies indicate that UCD enhances efficiency, relevance, and user satisfaction in digital learning systems. An evaluative paradigm is utilized to assess system performance and enable comparative analysis. This paradigm facilitates the evaluation of the designed solution's effectiveness based on empirical data.

This study utilizes a case study approach, conducting an empirical investigation of a specific phenomenon within its real-world context, as suggested by prior research. This study employs a mixed-methods approach, combining qualitative and quantitative techniques. Qualitative methods, including interviews, pre-questionnaires, and usability testing, are utilized to gather in-depth insights from users, while quantitative methods rely on evaluation questionnaires to measure user satisfaction with the system design. Participants are selected using purposive sampling from PT XYZ's workforce, encompassing management, administrators, and system users, to ensure the sample captures a broad and relevant range of perspectives.

Table 2. Research Design

Component	Description
Classification	Mixed method research
Research Category	Case Study
Paradigm	Evaluative
Research objectives	Providing recommendations for the interface design and features of the Training Management System (TMS)
Research outcome	A designed prototype of the Training Management System (TMS)
Data Collection	Interview, usability testing, questionnaires
Sampling Strategy	Purposive sampling

The sequence of research stages involved in designing the Training Management System (TMS) is depicted in the figure below:

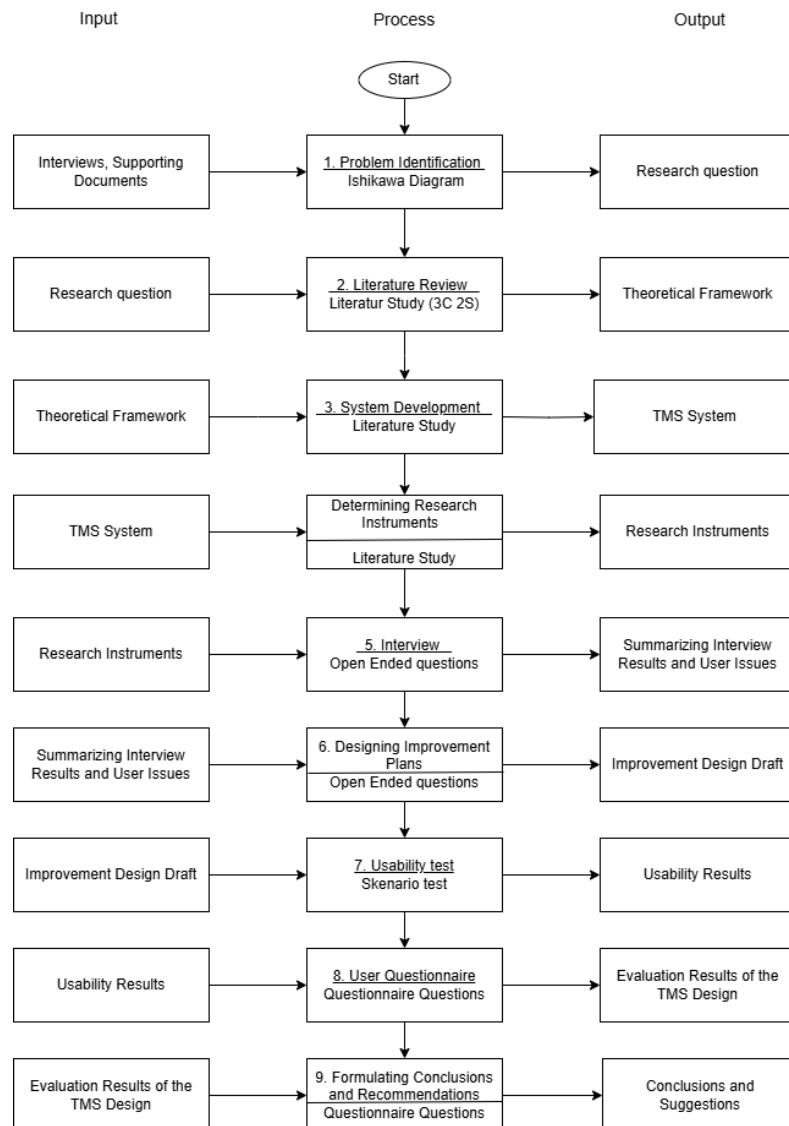


Figure 1. Research Stage

D. Result and Discussion

This study aims to design and develop a Training Management System (TMS) that integrates all training processes within the Corporate University Division of PT XYZ, covering pre-training, training, and post-training activities. The research process encompasses several stages, including a needs analysis, system design based on the initial findings, followed by interviews, usability testing, and user feedback through questionnaires

1. Technical and Technological Specifications

The TMS system is developed using the latest technologies to prioritize reliability, security, and ease of use. Key features include:

- a. **Security:** the system incorporates SSL Certificates, adheres to ISO 27001 standards, and is safeguarded against vulnerabilities. Additionally, it undergoes penetration testing to ensure its strength and resilience.
- b. **Development:** the backend leverages frameworks such as Node.js, Laravel, or Django, while the frontend is built using technologies like React.js or Vue.js. The system communicates through APIs and employs PostgreSQL as its database.
- c. **Ease of Customization:** the system is easily customizable to accommodate the dynamic business needs of PT XYZ.

1. Functional Modeling and Structural Modeling

This section explains the Functional Models, represented through Use Case Diagrams and Activity Diagrams, as well as the Structural Modeling, depicted using a Class Diagram. The development of use cases is based on the analysis of collected and evaluated requirements. Use cases are directly derived from functional requirements and also encompass certain non-functional requirements. These models illustrate how the Use Case Description, Use Case Diagram, and Activity Model are interconnected.

- a. **Use Case Diagram:** Illustrates the interaction between actors (admin, and users) and the TMS system.

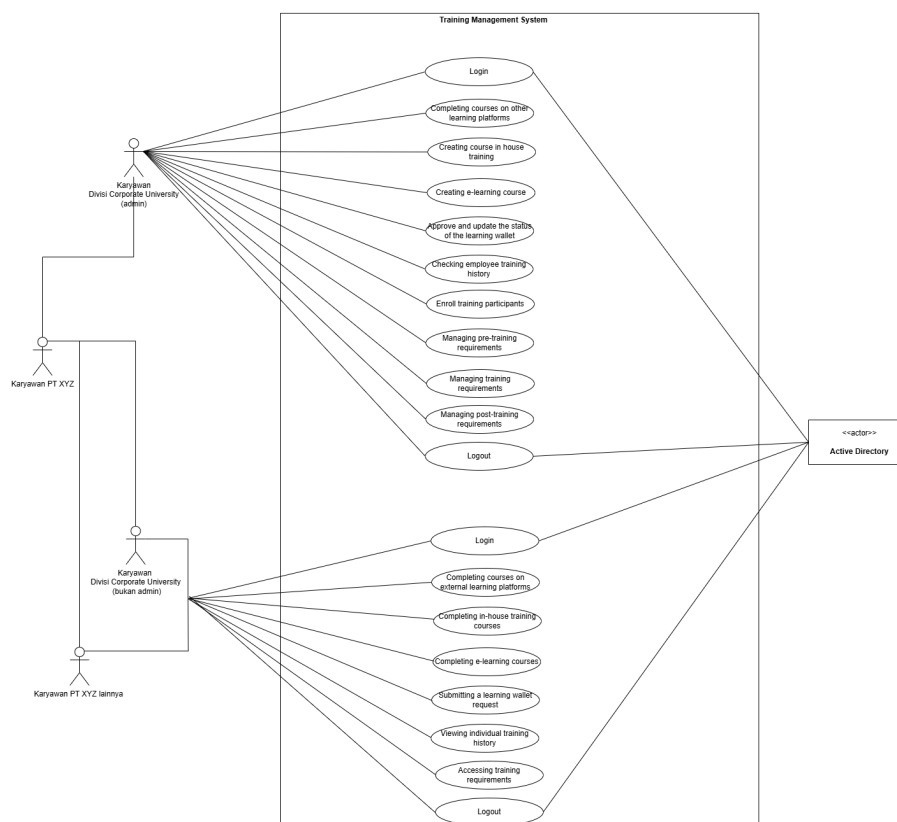


Figure 2. Use case diagram TMS

- b. Activity Diagram:** represents the flow of activities or actions within a system or process. Here is activity diagram the main process flows, such as login, manage in house training, and manage e-learning course.

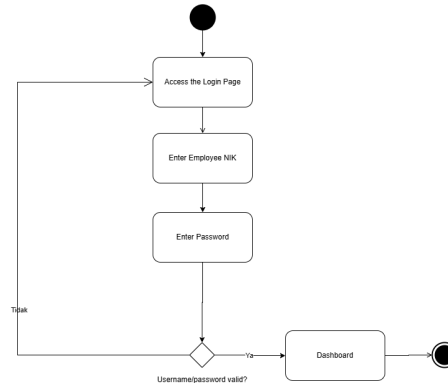


Figure 3. Activity Diagram login process

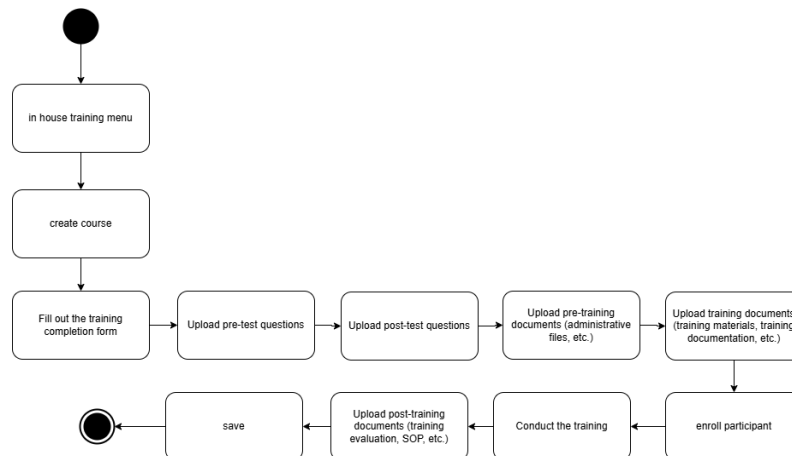


Figure 4. Activity Diagram create in house training

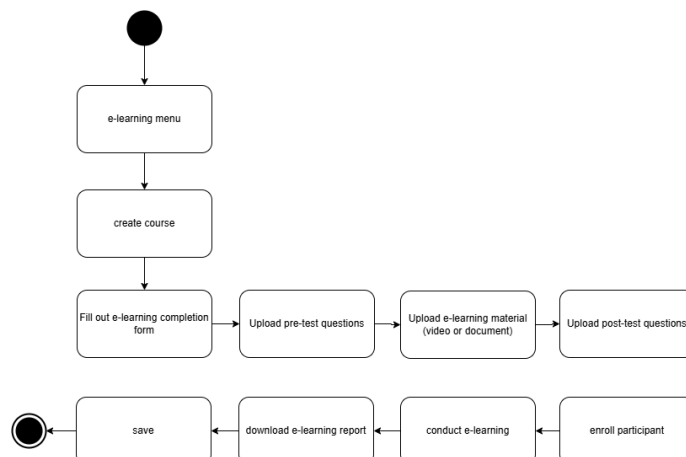


Figure 5. Activity Diagram create e-learning course

c. Class Diagram: Displays the relationships between classes in the system, complete with their attributes and functions.

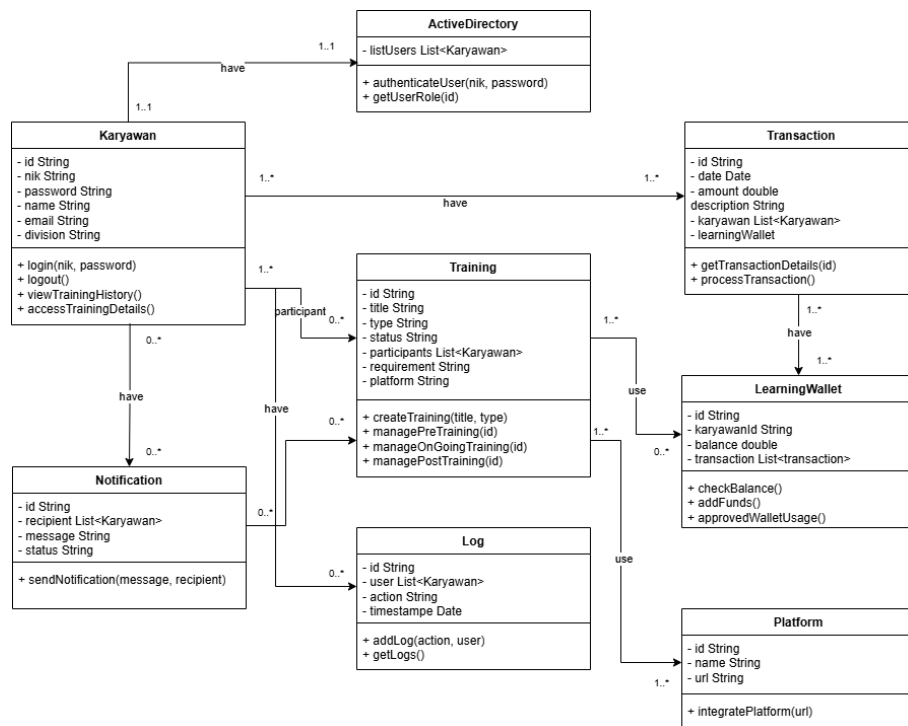


Figure 6. Class diagram TMS

2. Analysis of Initial Interview Results

The initial interview session was conducted with three employees of PT XYZ at the First Line Manager level from the Corporate University Division. These individuals have 2–5 years of experience as administrators of PT XYZ's Learning Management System, providing them with the capability to assess and evaluate the design of the Training Management System (TMS). The session aimed to gather feedback on the initial system design to align it with user needs. This session focused on identifying feature completeness, evaluating the user interface design, and pinpointing aspects that require improvement to better support training needs at PT XYZ. The interview was structured around five categories of questions, which included two questions on usability, one on design, and two on general recommendations. The interview findings reveal that the TMS system adequately addresses the training requirements of the Corporate University Division at PT XYZ. Nonetheless, there are several aspects that need further enhancement, including:

- Navigation and Layout:** Enhancements are needed for the left-side menu layout (main menu) to make it more organized and streamlined.
- Additional Features:** Features such as participant conflict checks and activation of the training history button need to be implemented promptly.

- c. System Security: Improved username and password validation can enhance the system's reliability.
- d. System Capability: Strengthening the system's capacity is necessary to support access for all employees of PT XYZ.

3. Analysis of Pre-Testing Questionnaire Results in Usability Test

Based on the initial interview, improvements were made according to the suggestions provided by the respondents as users. Following these adjustments, a pre-testing questionnaire was conducted during the usability test to evaluate the initial design and gather further user insights. The analysis of the pre-testing questionnaire results is as follows:

- a. Previous Experience: All respondents had prior experience with similar systems, making them familiar with the types of features and workflows in the TMS.
- b. Familiarity and Ease of Use: Respondent 1 felt moderately familiar, while Respondents 2 and 3 felt very familiar. Most respondents found the system easy to use, with the majority stating that features were highly accessible.
- c. No Reported Issues: None of the respondents reported any problems or difficulties using the system after the improvements were implemented.
- d. System Strengths: Respondent 1 highlighted the user interface as the main strength, Respondent 2 appreciated the system's ease of use, and Respondent 3 emphasized the system's features as the most notable aspect.

4. Analysis of Task Scenario Results in Usability Test

Based on the task scenarios conducted during the usability test, the following results were obtained:

Table 3. Usability Test Results Based on Initial Scenarios

No	Task Scenario	Result
1	Log in to the TMS platform using the provided account	All respondents successfully logged into the system without technical issues
2	Complete the assigned tasks using the available features	Respondents stated that the system's features helped document the training process
3	Log out of the TMS platform	All respondents could log out of the system easily.

Table 4. Usability Test Results Based on Final Scenarios

No	Question	Conclusion
1	How was your experience completing tasks on the TMS platform?	User experience was positive as the system effectively documented the training process.
2	Do the features available on the TMS platform help you complete your tasks?	All respondents found the features easy to use, with a clear system flow.
3	Is the interface of the TMS platform easy to understand and use?	A The interface was easy to understand, and the system design was considered well-organized after improvements.
4	Are there any missing or inadequate features for completing your tasks?	Respondents did not find any lacking features; all were deemed sufficient to meet needs.
5	Did you encounter any difficulty in finding or accessing the provided materials?	No difficulties were reported; all materials, including learning videos, were easily accessible.
6	Were there any technical issues encountered during the use of the TMS platform?	No technical issues were found during the testing.

5. Interview Results with Subject Matter Experts

After further improvements based on the initial interviews and usability test results, a presentation was conducted with managerial leaders from the Corporate University Division of PT XYZ, who acted as Subject Matter Experts (SMEs). They were asked to provide feedback to assess their perceptions and acceptance of the new prototype and participated in a survey via Google Forms for questionnaire evaluation.

Table 5. Interview Results with Subject Matter Experts

Subject Matter Expert	Positive Points	Criticism and Suggestion for Further Development	Conclusion
SME 1	By this design data integration into a single platform greatly facilitates audit and reporting processes, especially in managing documents and training costs. Grouping features into pre-training, training, and post-training categories is also considered effective.	Recommended adding cost categories, such as separating facilitator fees, travel expenses, and other costs, to simplify cost analysis.	The design and features are deemed suitable, with development suggestions focusing on cost management.
SME 2	Proposed features meet the needs, particularly in documenting individual training history. This	Suggested updating the interface to make it more visually appealing by using	The design system is considered mature, with additional suggestions for

	functionality significantly reduces manual input for the academic team.	dynamic tailored to the preferences of younger generations (Gen Z).	colors to the of interface aesthetics.
SME 3	The interface design is simpler, and previously separate features have been integrated into a single platform. The addition of pre-training, training, and post-training features greatly assists in documentation and coordination processes.	No major criticisms; the design is considered more user-friendly than the previous version.	The platform simplifies admin tasks and accelerates training administration processes.

6. Analysis of Questionnaire Results

The questionnaire respondents consist of three main categories: management of the Corporate University Division at PT XYZ, LMS administrators, and LMS users. Out of the total respondents, 8 individuals fall under the management category, representing strategic decision-makers. Meanwhile, 12 individuals belong to the LMS administrator category, directly involved in system management, and 10 individuals are LMS users, serving as the end-users of the training system. In terms of age, the majority of respondents (15 individuals) are in the productive age range of >25–35 years, followed by 9 individuals aged 17–25 years, most of whom are from the outsourcing category. Four respondents are in the >35–45 age group, while only 2 respondents are aged >45 years, all of whom are part of senior management.

Based on the questionnaire data filled out by users, administrators, and managerial staff of the Corporate University Division at PT XYZ, the following is an analysis of the TMS system aspects using a Likert scale of 1-5.

Table 6. Questionnaire Results

<i>No</i>	<i>Aspect</i>	<i>Question</i>	<i>Average Score</i>
1	Functional Suitability	The features on the TMS are complete and function properly.	4.30
2	Functional Suitability	The menus available on the TMS are usable.	4.53
3	Functional Suitability	The features provided in the TMS meet the training needs.	4.27
4	Performance Efficiency	Responsive to menu selections and displays the expected information.	4.30
5	Performance Efficiency	The TMS improves efficiency in training activities.	4.47
6	Usability	The TMS is easy to learn and use.	4.30
7	Usability	The TMS interface is easy to understand.	4.37
8	Compatibility	The TMS runs smoothly on a PC/Laptop without issues.	3.47
9	Reliability	The TMS supports the training process from start to finish without obstacles.	4.00
10	Security	The TMS requires login with NIK and password.	4.73

11	Portability	Previously completed materials.	4.47
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Based on the questionnaire results from 30 respondents, the Training Management System (TMS) received overall positive evaluations, with an average score of 4.29 across 11 assessed points. The **Security** aspect scored the highest at 4.73, reflecting strong user trust in the NIK and password-based login system. High scores were also given for **Portability** (4.47) and **Performance Efficiency** (4.47), indicating user appreciation for the system's ability to access and download materials while saving time in training processes. The **Functional Suitability** aspect scored between 4.27–4.53, confirming that the available features meet user needs in training management and implementation. **Usability** was rated 4.37, though further improvements are suggested to make the interface more intuitive and engaging. However, **Compatibility** received the lowest score at 3.47, highlighting challenges in using TMS on certain devices or platforms. To enhance user satisfaction, improving system compatibility is recommended. Overall, the TMS design effectively supports training needs and aligns with the operational requirements of PT XYZ.

7. User Interface and Working System Prototype

a. User Interface

This section presents the user interface design to be implemented in the Training Management System. The user interface design aims to assist developers in implementing the interface effectively. The designs in this section are low-level drafts, providing an initial visualization of the interface layout. Here are some user interface displays from the main menus.

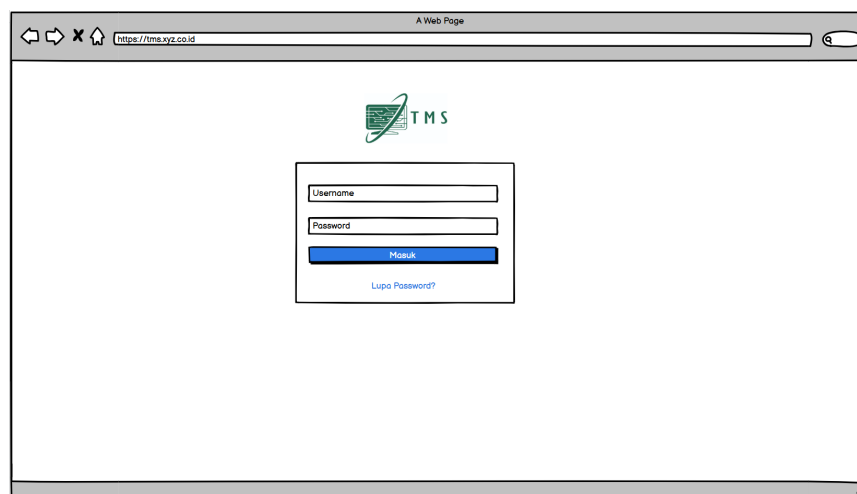


Figure 7. User interface log in

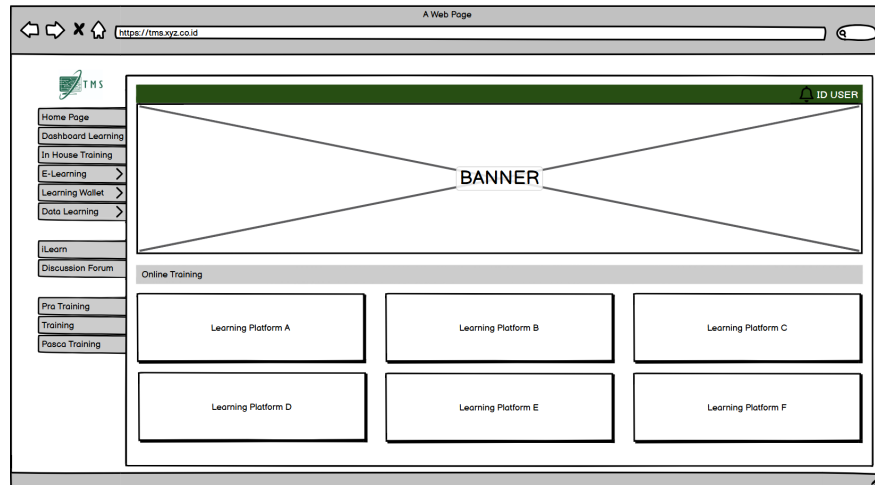


Figure 8. User interface integrated learning platform page

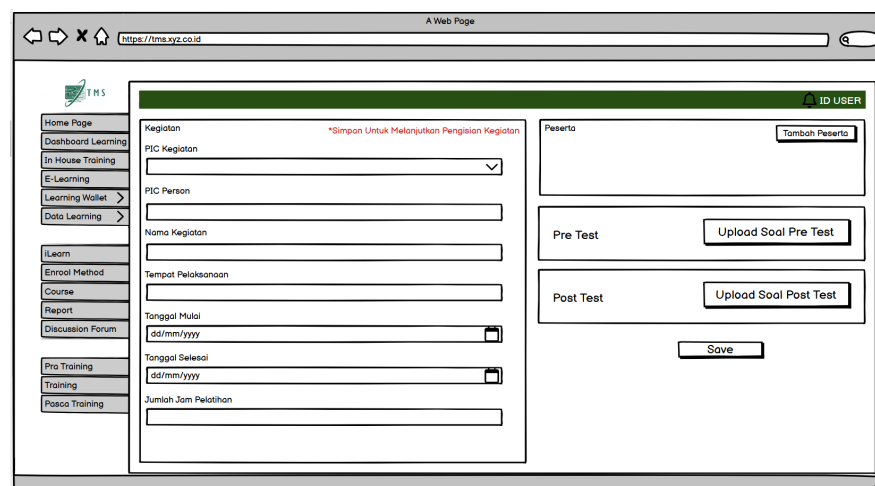


Figure 9. User interface enroll participant, pre test, and post test page

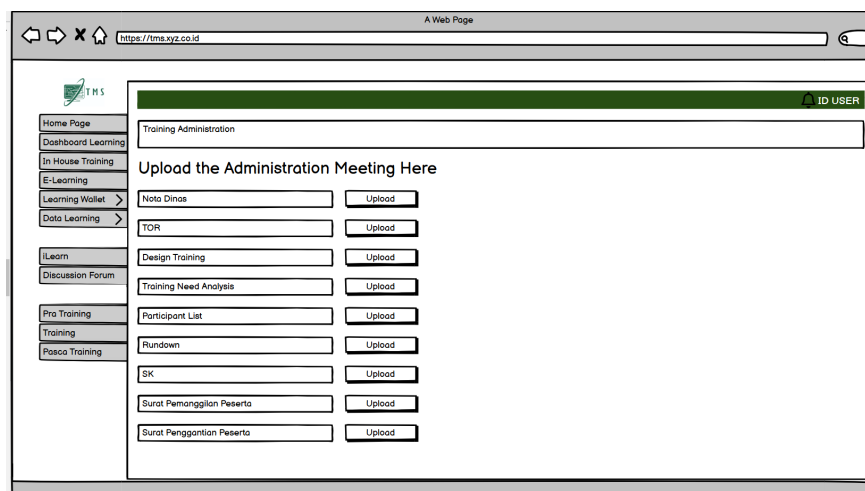


Figure 10. User interface upload training administration

b. Working System Prototype

A working system prototype is a functional model of a system that simulates the actual system's processes, features, and interactions. Unlike conceptual designs or low-fidelity prototypes, a working system prototype is a partially or fully operational version of the system. It allows stakeholders to interact with the system in a real-world context, providing feedback for refinement and improvement. Here are some user interface displays from the main menus.

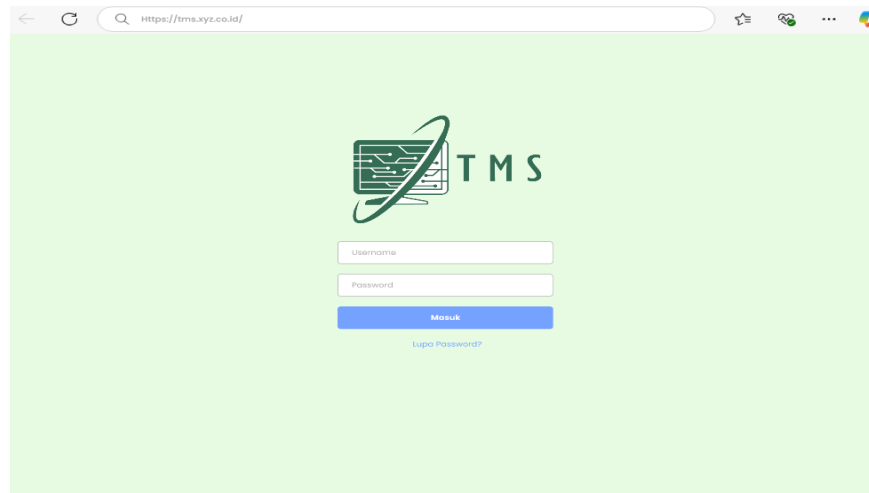


Figure 11. Working system prototype log in

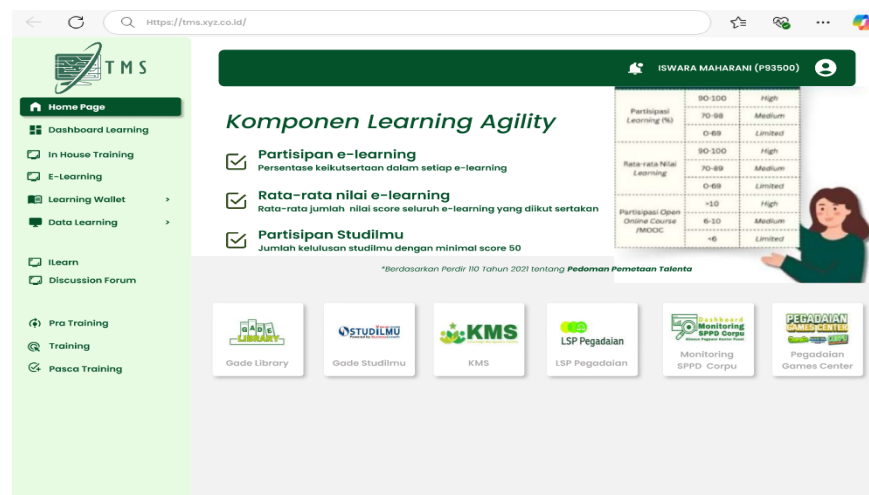


Figure 12. Working system prototype integrated learning platform page

Figure 13. Working system prototype enroll participant, pre test, and post test page

Figure 14. Working system prototype upload training administration

E. Conclusion

This research aims to design a Training Management System (TMS) for the Corporate University Division at PT XYZ. The design focuses on enhancing operational efficiency, documenting training activities, and providing recommendations for an end-to-end TMS that addresses training needs from pre-training to post-training stages. Based on an analysis of existing conditions, interviews, usability testing, and evaluation questionnaires, several conclusions have been drawn:

1. The findings indicate that PT XYZ requires a TMS capable of accommodating training processes from pre-training, implementation, to post-training. The system should offer a design for integration with other existing learning platforms within the Corporate University Division of PT XYZ.
2. The approach employed is User-Centered Design (UCD), where the author tailored the design based on user needs and feedback. The research steps included initial interviews, usability testing (pre-testing questionnaires and

task scenarios), feedback interviews, interviews with Subject Matter Experts, and questionnaires.

3. Based on questionnaire results, with an average score of 4.29 on a scale of 1-5, users responded positively to the system design, particularly in terms of usability, functional suitability, and compatibility. Constructive suggestions regarding system performance improvements and menu layout have been accommodated in the design iterations.

F. Acknowledgment

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