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UI/UX Design Internship Management Information System Using Design Thinking Method

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ABSTRACT

This research designs and develops the Internship Management Information System (SIMPEL) application for the UPN "Veteran" Jawa Timur Information Systems Study Program using the Design Thinking approach. The design process follows five stages (empathize, define, ideate, prototype, and test) to increase the efficiency and effectiveness of internship management. Usability testing was conducted using the System Usability Scale (SUS) before and after development iterations. Initial results showed an average score of 65, categorized as average. After user feedback-based improvements, the SUS score increased to 81 (good category), showing significant improvements in ease of use and user satisfaction. In conclusion, the application of Design Thinking helped create an intuitive interface and a better user experience, significantly improving the internship administration process.

Keywords: Internship, UI, UX, Design Thinking, SUS

Introduction

The internship program is an essential component in the curriculum of the Information Systems study program, which aims to provide practical experience to students in applying the theories and concepts learned during lectures (Anjum, 2020). In supporting the implementation of the internship program, managing information regarding registration, reporting, and monitoring student performance during internships is crucial. Currently, most internship management processes in many educational institutions are still done manually or through platforms that are not specifically designed for internship needs, resulting in various obstacles in the flow of communication and data management. Consequently, a solution is required that delivers an optimal user experience (UX) with an easy user interface (UI) to streamline the internship management process.

In the context of information system development, effective UI/UX design plays an important role in ensuring easy interaction between users, both students and supervisors and the system (Suratno & Shafira, 2022). Intuitive and responsive systems can increase efficiency and user satisfaction, while complex and unfriendly systems can lead to frustration and operational errors. Therefore, a user-centered design approach is crucial in the development of an internship management information system (Maulana et al., 2024). Therefore, the Design Thinking method is an appropriate approach to identify user needs and come up with suitable design solutions (Nigata et al., 2020).

The Design Thinking method is an iterative approach that emphasizes a deep understanding of user needs, the development of solution ideas, and the creation of prototypes that are tested directly by users (Sinaga et al., 2024). The methodology has five primary phases: Empathy, Definition, Ideation,

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Prototyping, and Testing. Each stage of Design Thinking enables engineers to thoroughly investigate customer requirements, precisely articulate challenges, and devise unique solutions that are attuned to user input (Pangestuti et al., 2024). This research employs the Design Thinking methodology to construct the user interface and user experience (UI/UX) of an internship management information system application tailored for Information Systems academic programs.

This research aims to design the UI/UX of an internship management information system application that will facilitate students in undergoing the internship process, as well as facilitate supervisors in monitoring and assessing student performance during internships. Through the Design Thinking approach, this research is expected to produce a system design that is intuitive and by user needs, thereby increasing the effectiveness and efficiency of internship management in the Information Systems study program. Each phase of Design Thinking will be used to identify problems and come up with solutions that are based on real user needs.

This research is expected to significantly enhance the development of educational information systems, especially in the administration of internships within the Information Systems academic program. In addition, the application of the Design Thinking method in this research is expected to provide a new perspective on the application of this approach in the context of UI/UX development for management applications in the education sector. The results of this research can be used as a reference for other educational institutions in developing similar information systems that are more responsive and user-friendly.

Material and Methods

This research uses the Design Thinking approach in designing and developing an internship management information system that focuses on improving user experience (UI/UX). Design Thinking was chosen as the main methodology due to its solution-oriented nature based on user needs and its iterative approach, which allows for continuous product development through user feedback. The methodology consists of five main stages: Empathize, Define, Ideate, Prototype, and Test.

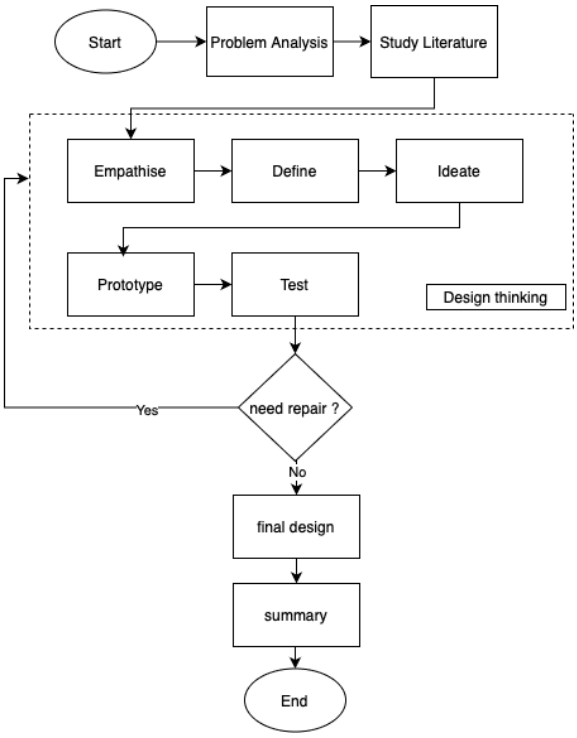

Figure 1. Research methodology

Emphatize

At this stage, the research begins with understanding user needs and problems. Data is collected through interviews and observations of system users, namely students, supervisors, and administrative staff involved in managing the internship program. Semi-structured interviews were conducted to explore problems experienced by users in the internship process, such as difficulties in uploading reports or communicating with supervisors. The qualitative data collected was used to understand user perspectives and experiences.

Define

After understanding the problem from the user's perspective, the next step was to define the problem specifically. Based on the results of the interviews, the researcher identified several key problems such as the lack of an internship progress tracking feature and an unintuitive interface. These problems were then formulated into problem statements that would be the focus of solution development.

Ideate

At this stage, a brainstorming session was conducted to come up with various creative solutions that could address user problems. Initial designs in the form of wireframes and system workflows were generated from the discussions of the development team and designers. Some of the ideas that emerged included the development of a more interactive dashboard and an automatic notification feature to remind students of tasks that must be completed.

Prototype

The next stage was to create an initial prototype of the designed internship management system. This prototype includes a visual view of the user interface (UI) and some basic proposed features such as assignment tracking, lecturer-student communication, and an automated grading system. This prototype was developed using interface design tools such as Figma to visualize the user experience (UX).

Test

The prototype that had been created was then tested by a small group of the same users who were interviewed at the Empathize stage. The trials were conducted using the usability testing method, where users were asked to complete certain tasks in the system, such as uploading internship reports or checking assessments. The results of this testing were used to refine and improve the prototype design before the system was fully launched.

Results and Discussion

The penalty for paying compensation is a consequence of deceit or corruption that endangers the country's finances or the country's economy. A Juridical means is needed to recover the losses, namely in the remittance of replacement money. Replacement money is an additional form of punishment (criminal) in corruption cases. In essence, both legally and doctrinally, judges are not required to always impose additional penalties.

Emphathize

In the empathize stage, an empathy process is carried out to understand the target user's point of view more deeply. This stage begins with conducting in-depth interviews with target users (Kurniawan et al., 2023). The number of users involved in the research consisted of 5 students, 5 supervisors, 1 person in charge of internships, and 1 admin. The following is the result of empathize, namely the empathy map of several user personas.

Emphaty map

Table 1 is an Empathy Map that describes the condition of students before the Internship Management Information System.

Table 1. Empathy map "Student"

Category	Description
Say	"This internship process is so complicated, I don't know what to do after this." "I didn't know when I had to submit the report, there were too many things to remember." "Communication with my supervisor is very difficult, I have to keep sending messages for guidance." "Why isn't there one place that manages all the information about internships?"
Feel	- Frustration: Difficulty finding information related to assignments, reports, and guidelines. - Stress: Worrying about submitting reports and assignments late. - Confusion: No clear guidance on next steps. - Limitations: Not having full control over the progress of the internship.
Think	- "I wish there was a system that could help me keep track of all my assignments and reports." - "If communication with my lecturers was easier, I would be able to complete my assignments faster." - "Why does it have to be complicated? Everything can be simpler if there is one system that manages this." - "If I forget the deadline, I might fail to finish my internship on time."
Do	- Manually record every deadline and assignment to be completed. - Sending messages or emails to supervisors for clarification or guidance. - Managing internship reports separately without an integrated system. - Using tools not specifically designed for internships, such as spreadsheets or reminder apps.

Table 2 is an Empathy Map that describes the condition of the supervisor before the Internship Management Information System.

Table 2. Empathy map "supervisor"

Category	Description
Say	- "It is very difficult to monitor the progress of all internship students, I have to keep asking for reports." - "Students often submit reports late without clear notification." - "Communication with students is scattered across various platforms, inefficient."
Feel	- Frustration: Having difficulty managing reports from many students without a centralized system. - Overburdened: Having too many administrative tasks related to internship supervision. - Lack of organization: Communication with students was not integrated.
Think	- "If only there was a system that helped track student progress, I could focus on mentoring."

To be continued….

	- “I need one platform to manage assignments, reports, and communication with students.” - “Managing internships manually is very inefficient.”
Do	- Send manual messages to students to request reports. - Monitoring students through multiple communication platforms such as email and instant messaging. - Creating personalized notes to track student progress manually.

Table 3 is an Empathy Map that describes the condition of Person in chargeof Internship before the Internship Management Information System.

Table 3. Emphaty map "Person in charge of Internship "

Category	Description
Say	- “It is difficult to track the status and progress of all students at one time.” - “Report submissions are often late and difficult to monitor.” - “Coordination between students and supervisors is inefficient.”
Feel	- Burdened: Difficulty managing student data, reports, and internship schedules manually. - Frustrated: There is no effective way to see the overall progress of students. - Worried: Data is often scattered and not integrated.
Think	- “We need a system that can integrate all student data, reports, and progress in one place.” - “I wish there was a platform that could facilitate coordination between students and lecturers.” - “Manual data management is no longer efficient.”
Do	- Recording student data manually in spreadsheets or physical documents. - Collecting reports separately from each student and checking the reports one by one. - Contacting supervisors and students separately to monitor progress.

Table 4 is an Empathy Map that describes the condition of the admin Internship before the Internship Management Information System.

Table 4. Empathy Map "Admin"

Category	Description
Say	- “It is difficult to manage students' internship assignment letters because everything is manual.” - “I have to wait a long time to get the final grade from the person in charge of internship.” - “Students are often late in submitting internship assignment letters.” - “The sudden change of internship title makes the assignment letter process even slower.”
Feel	- Frustration: Difficulty managing and compiling internship submission task letters manually. - Anxiety: The process of getting the final internship score from the person in charge of internship is not well coordinated. - Burdened: Managing many documents without an integrated system.

To be continued….

	- Stressed: The sudden change of internship title adds an unexpected administrative burden.
Think	- "I wish there was a system that could automatically manage assignment letters and speed up access to student grades." - "The manual process is time-consuming and often late." - "The sudden change of internship title disrupts the administrative workflow, a faster solution is needed."
Do	- Manually processing internship assignment letters from students with many physical documents. - Collecting students' final internship grades manually from the person in charge of internship and having to wait a long time for the data to be collected. - Reorganizing assignment letters when there is a sudden change of internship title, which adds time and effort in document management.

Define

The data and information obtained during the empathize phase will be analyzed in the define phase to turn the main problem into a challenge. The result in the define phase is to compile a How Might We (HMW) statement can be seen in Table 5.

Table 5. How might we statement

User	How Might We
Student	How can we help students track their internship progress more easily? How can we create a system that automatically reminds students of internship report and assignment deadlines? How can we make it easier for students to communicate with their supervisors in one integrated platform? How to speed up the process of submitting student internship assignment letters so that there are no delays? How to simplify the flow of communication between students and the person in charge of internship regarding changes in internship titles?
Supervisors	How can we make it easier for supervisors to track student progress in real-time without having to use multiple communication platforms? How can we integrate communication between supervisors and students so that feedback and guidance can be delivered more efficiently? How can we simplify the flow of providing final grades for students to the person in charge of internship? How to ensure that supervisors can easily view and evaluate assignments submitted by students?
PIC	How can we facilitate the person in charge of PKL to monitor the status and progress of all PKL students in a fast and integrated manner? How can we speed up the process of collecting and managing students' final PKL grades from supervisors? How to simplify the process of managing PKL titles that often change suddenly without hampering workflow?
Admin	How can we help internship admins manage student internship assignment letters more quickly and efficiently, without piling up physical documents? How can we make it easier for internship admins to get students' final internship grades from the person in charge of the internship in a timely manner?

To be continued….

	How to simplify the internship admin's workflow in handling sudden internship title changes so that the process is not hampered? How to integrate all administrative documents related to internship applications, so that the admin no longer works manually?

Ideate

Table 6 below converts HMW statements from the Define stage into creative solution ideas in the Ideate stage. Each idea is designed to answer the challenges of various users, ranging from students, supervisors, and internship supervisors, to administrators, to improve efficiency and user experience in the internship system.

Table 6. Solution idea

User	solution idea
Student	-Built an interactive progress dashboard that displays the status of internship assignments, reports, and deadlines in one easy-to-access page. - Develop automated notifications via email or mobile apps linked to the system, reminding students of assignment and report deadlines. - Provide a chat or direct message feature in the internship platform for communication between students and supervisors that is integrated with the assignment and report system. - Create an online assignment letter submission form that can be submitted directly through the system and automatically connected to the admin for processing. - Provide a title change form feature in the system, which will automatically inform the person in charge and the supervisor about the changes proposed by the student.
Supervisors	- Provide a supervisor panel in the system that displays a list of mentored students as well as the progress of assignments and reports in real-time. - Create a comment feature directly on assignments in the system, so that lecturers can provide feedback and revisions directly in the internship system. - Provide a direct assessment feature in the system, where the supervisor can enter the final grade which will automatically be saved and sent to the person in charge of the internship. - Provides an integrated assignment review feature, where lecturers can access, grade, and give feedback on student reports directly in the system.
PIC	- Provide a dashboard for the person in charge of internship that displays the status of all students centrally, so that the person in charge can monitor their progress easily. - Provide an automatic grade synchronization feature between the supervisor and the person in charge of the PKL, where the final grade inputted can be accessed directly by the person in charge. - Provides an automatic title change feature, where title changes will be directly integrated with system data without the need for manual documents or layered processes.
Admin	- Develop a digital assignment letter submission system, where assignment letters can be created, submitted, and approved online by the admin without the need for physical documents. - Provide an integrated assessment feature, where the admin can access students' final grades directly from the system after the person in charge of internship has inputted them.

To be continued….

- Provide a title change automation feature that allows admins to make title changes with one easy step without the need to change manual data in various documents.
- Develop a digital document management system that manages the submission, approval, and storage of internship documents automatically and centrally.

Prototype

Prototypes serve to evaluate whether the design solutions that have been developed can overcome the problems faced by users. In addition, prototypes also aim to provide users with direct experience of the products created, because they have functionality that is quite interactive and close to the actual system. the following are the results of the application prototype.

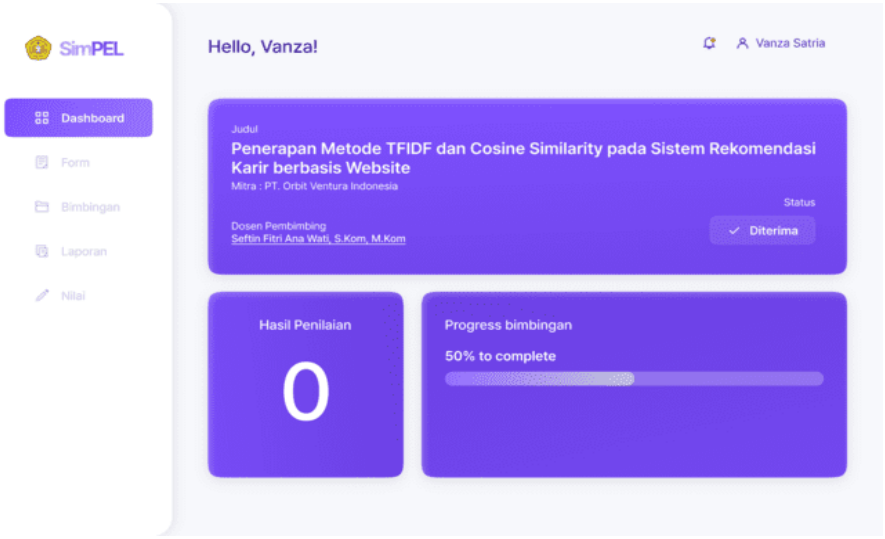

Figure 1. Student Dashboard

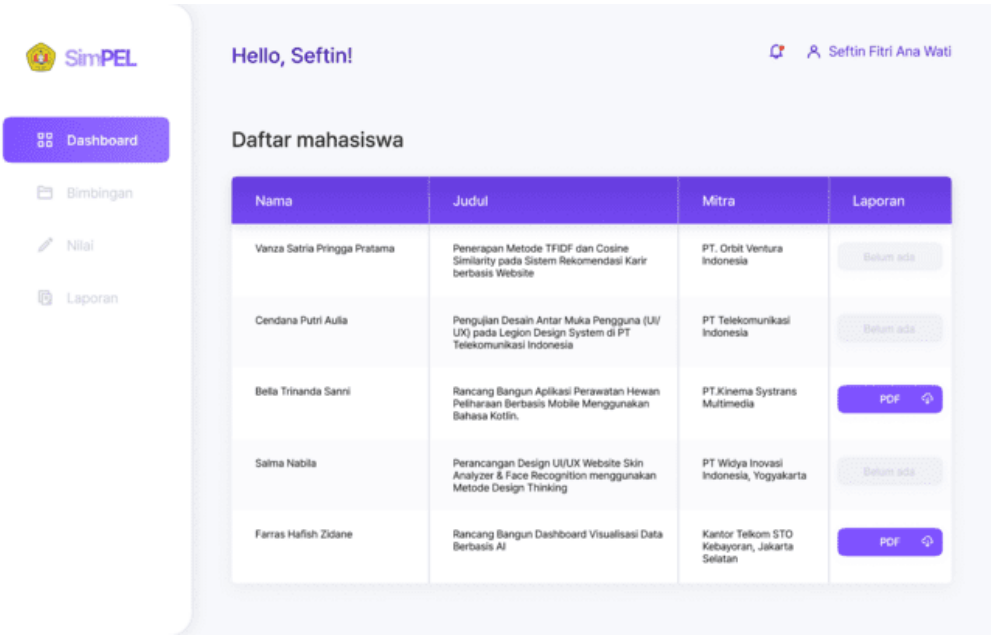

Figure 2. Supervisor dashboard

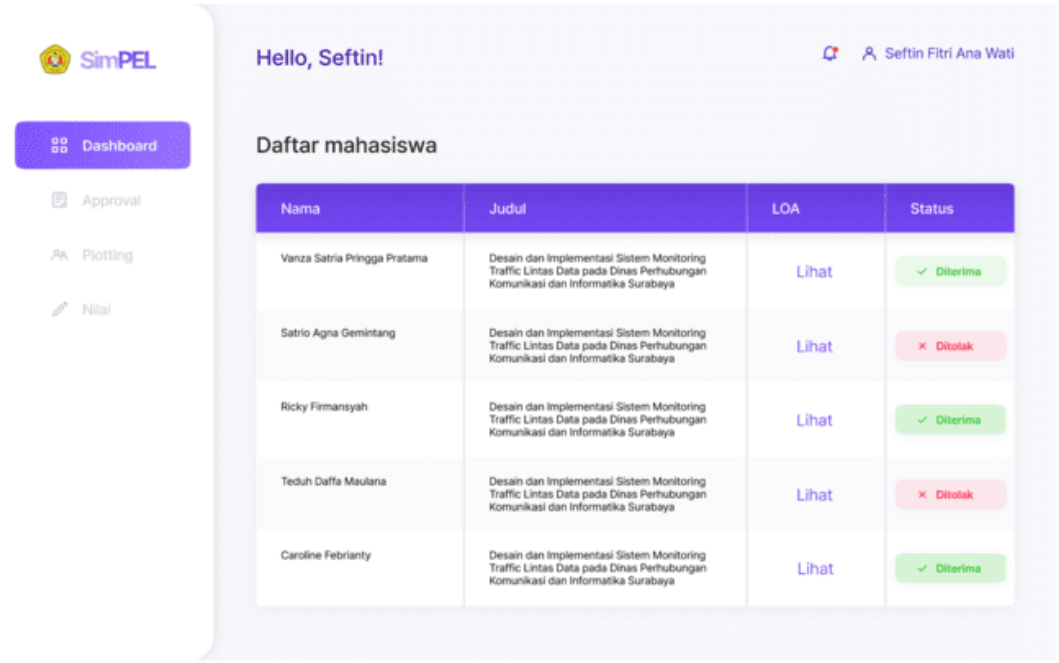

Figure 3. PIC dashboard

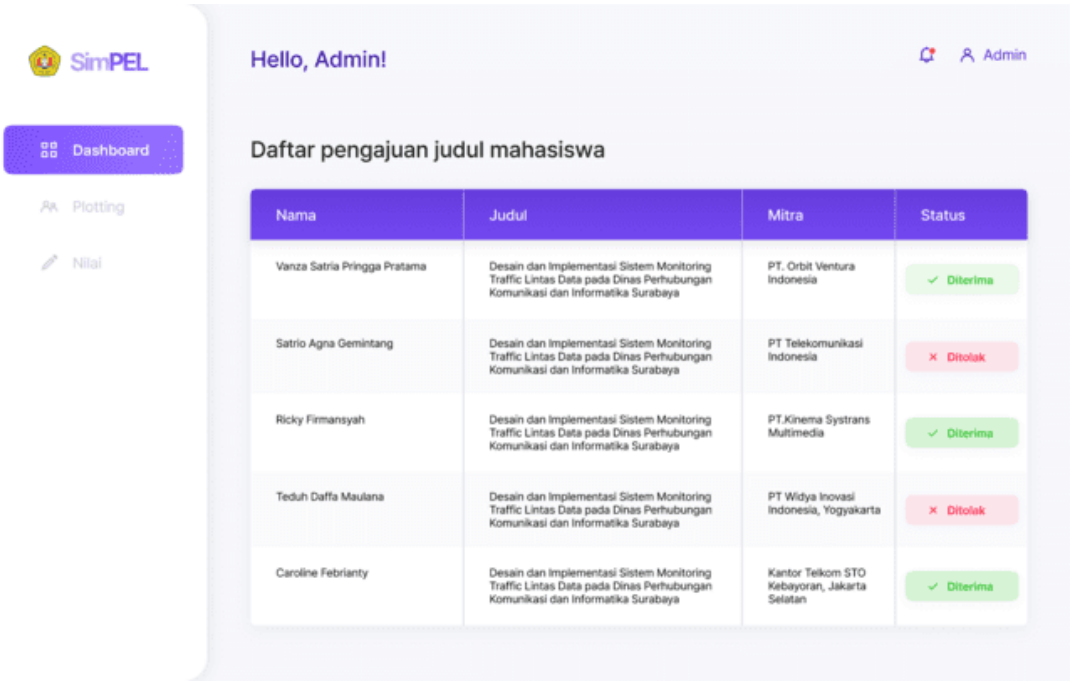

Figure 4. Admin Dashboard

Test

At this point, the author is evaluating the usability of the UI/UX prototype. The user testing technique used in this phase is the System Usability Scale (SUS) technique. This usability testing method consists of 10 user statements with both positive and negative sentiments. This questionnaire implements a Likert scale for data measurement with a range of 1-5. Where 1 indicates strongly disagree and 5 indicates strongly agree.

Table 7. User Statement

No	Statement
1	I think that I would use this system frequently.
2	I found the system unnecessarily complex.
3	I thought the system was easy to use.
4	I think that I would need the support of a technical person to be able to use this system.
5	I found the various functions in this system were well integrated.
6	I thought there was too much inconsistency in this system.
7	I would imagine that most people would learn to use this system very quickly.
8	I found the system very cumbersome to use.
9	I felt very confident using the system.
10	I needed to learn a lot of things before I could get going with this system.

The users involved in this test consist of students, supervisors, internship PIC, and internship admin. Each user is asked to complete certain tasks in the SIMPEL system, such as submitting assignment letters, uploading reports, filling out final grades, and monitoring internship progress. Each user is required to fill out the SUS questionnaire containing 10 statements in Table 7 covering aspects of usability, ease of use, and system complexity. They are requested to provide a score for each SUS statement using a Likert scale of 1 to 5, with the following details:

Table 8. Skala Likert

Score	Description
5	strongly agree
4	Agree
3	Neutral
2	Disagree
1	Strongly Disagree

Calculation of the SUS score derived from replies to ten statements. The following stages outline the procedure for determining the SUS score:

- ✓ Conversion Score
  - For positive statements (1, 3, 5, 7, 9), the user's assigned score is reduced by 1.
  - For negative statements (2, 4, 6, 8, 10), a scale of 5 is subtracted from the score given.
- ✓ All conversion results from the 10 statements were summed up for each user.
- ✓ The summed scores are multiplied by 2.5 to get a final score on a scale of 0 to 100.

Table 9 shows the results of the questionnaire consisting of 10 students, 1 pic, and 1 admin with a total of 12 respondents R. by calculating positive and negative statements to get points.

Table 9. Questionnaire Result

Resp.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	positive	nega-tive	Point
R1	4	2	4	2	4	2	5	1	5	2	17	16	33
R2	3	3	4	2	5	2	4	2	4	3	15	13	28
R3	5	1	5	1	4	2	5	1	4	1	18	19	37
R4	4	3	5	2	5	2	4	1	5	2	18	15	33
R5	3	3	3	4	4	3	4	2	4	3	13	10	23
R6	4	2	5	1	5	2	5	1	5	1	19	18	37

To be continued….

R7	5	1	5	2	4	1	5	1	4	2	19	18	37
R8	4	2	4	3	4	2	4	2	5	3	16	13	29
R9	3	3	4	3	5	3	4	3	4	2	15	11	26
R10	4	2	4	1	5	2	5	1	4	2	17	17	34
R11	4	3	5	3	5	2	5	2	5	2	19	13	32
R12	5	1	5	2	5	1	5	1	5	2	20	18	38

Table 10 shows the results of the SUS score on testing the prototype User interface and user experience on SIMPEL with a result of 81, where that number in SUS interpretation shows that it is in a good category.

Table 10. SUS Score

Resp.	Point*2.5	Sub-Score
R1	33*2.5	83
R2	30*2.5	75
R3	37*2.5	93
R4	33*2.5	83
R5	23*2.5	58
R6	37*2.5	93
R7	37*2.5	93
R8	29*2.5	73
R9	26*2.5	65
R10	34*2.5	85
R11	32*2.5	80
R12	38*2.5	95
SUS Score		81

Conclusion

This study effectively designs and builds an Internship Management Information System (SIMPEL) for the Information Systems Study Program at UPN “Veteran” Jawa Timur, using the Design Thinking methodology. The design approach, including five steps, namely empathize, define, ideate, prototype, and test, significantly improves the efficiency and effectiveness of the system in internship management.

Usability testing was performed using the System Usability Scale (SUS) to assess the system's ease of use and overall user satisfaction. Preliminary testing before iterative development yielded a SUS score of 65, classified as average. Informed by input from students, supervisors, and administrators, various essential enhancements were implemented, especially regarding interface simplicity, navigation, and notification features. Following the implementation of these enhancements, a subsequent round of usability testing yielded a SUS score of 81, classified as good, signifying a substantial rise in user happiness and usability.

In summary, the use of Design Thinking in the creation of SIMPEL was successful in producing an intuitive interface and enhancing the overall user experience. The iterative methodology enabled ongoing enhancements informed by user input, culminating in a system that optimized the administration and management of internships, making it more efficient and user-centric. This illustrates the significance of user-centered design in attaining optimal usability and pleasure in the creation of information systems.

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