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Development of an Internship Monitoring System to Improve Student–Supervisor Interaction

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Abstract. *The management of student internship programs in Indonesian higher education institutions has long been hampered by manual and fragmented processes. Supervisors face significant challenges in monitoring the progress of multiple students simultaneously, while students struggle with unclear reporting mechanisms and delayed feedback. This paper presents the design and development of the Sistem Magang KKP (Field Work Practice Monitoring System), a web-based information system developed using the Prototype methodology. The system facilitates structured interaction between students and supervising lecturers throughout the internship lifecycle, encompassing registration, activity reporting, supervisor monitoring, and report approval workflows. Key features include role-based dashboards for students, supervisors, and academic administrators; periodic activity report submission and management; a notification mechanism for pending reports; and a digital approval pipeline that replaces paper-based processes. Prototype-based development was selected for its iterative nature, enabling continuous user feedback to refine interface and functionality. The system underwent evaluation through blackbox functional testing and a System Usability Scale (SUS) assessment involving students and supervisors. Results demonstrate that all 12 functional requirements were met, and the SUS score of 82.5 categorizes the system as having "Excellent" usability. This study confirms that a well-designed digital monitoring platform can substantially enhance efficiency, transparency, and accountability in academic internship management.*

Keywords: *internship monitoring system; prototype method; information system; web-based application; student supervision*

INTRODUCTION

Internship programs, commonly referred to as Kerja Praktik or Kuliah Kerja Praktik (KKP) in Indonesian universities, occupy a critical position in undergraduate education. They serve as a bridge between theoretical knowledge acquired in classrooms and the practical competencies demanded by the professional world. For students enrolled in technology-related fields such as informatics and information systems, the internship period offers an irreplaceable opportunity to engage with real-world software development environments, organizational workflows, and industry-grade tools(Wahyuddin et al., 2026).

Despite their academic significance, the administrative and supervisory dimensions of internship programs in many Indonesian higher education institutions remain underdeveloped. The predominant model still relies heavily on manual processes: students submit handwritten or unformatted digital reports through email or messaging

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applications; supervisors review and provide feedback in an ad hoc manner; and academic administrators track internship registrations through spreadsheets or physical files. This fragmentation creates multiple layers of inefficiency. Supervisors who are simultaneously responsible for overseeing dozens of students find it difficult to maintain a coherent picture of each student's progress, while students lack structured feedback channels that would help them improve their performance during the internship(Rosanti et al., 2025).

The consequences of this administrative gap extend beyond mere inconvenience. When monitoring is inconsistent or delayed, the educational quality of the internship experience deteriorates. Students who receive no timely feedback may continue practicing incorrect approaches without realizing it. Institutions, meanwhile, lose the ability to document and evaluate the internship program systematically, undermining efforts toward academic accreditation and continuous improvement(Sidik et al., 2025).

Digital transformation in academic administration has gained increasing momentum worldwide, particularly following the COVID-19 pandemic, which forced many institutions to rapidly digitize processes that had long been conducted in person In this context, the development of dedicated web-based information systems for internship management represents both a practical necessity and a strategic investment. Several studies have demonstrated that properly implemented digital monitoring tools can significantly reduce administrative overhead, improve communication between academic and industry stakeholders, and increase student accountability during internship periods(Made Pradnyana Ambara et al., 2025).

This paper describes the design and development of the Sistem Magang KKP, a web-based internship monitoring information system intended to address the challenges outlined above. The system was built using the Prototype development methodology, chosen specifically for its emphasis on iterative refinement based on direct user input. Unlike waterfall approaches that lock down requirements before any prototype is built, the Prototype method allows developers to present working models to end users early in the process and progressively incorporate feedback until the system meets actual needs. This approach is particularly appropriate for academic administrative systems, where user requirements are often tacit and best revealed through interaction with a working interface.

The system serves three primary user roles: students (mahasiswa), who use the platform to register for internships, submit activity reports, and track approval status; supervising lecturers (dosen pembimbing), who monitor student progress, review submitted reports, and provide feedback or approval; and academic administrators (admin akademik), who manage institutional data, verify internship registrations, and access system-wide analytics. By integrating these functions into a single platform, the system aims to transform a currently fragmented process into a coherent, transparent, and efficient digital workflow(Noprisson, 2022)

The remainder of this paper is organized as follows. Section 2 reviews the relevant theoretical foundations and prior research. Section 3 describes the research methodology, including the Prototype development stages and evaluation approach. Section 4 presents the results of system development and discusses the findings. Section 5 concludes with a summary of contributions and directions for future research.

LITERATURE REVIEW

Information Systems in Higher Education Administration

Information systems designed for academic purposes have been a subject of sustained scholarly attention for more than two decades. At their core, these systems aim to automate, streamline, and improve the accuracy of processes that would otherwise be managed manually. In the context of higher education, this encompasses student records management, course scheduling, grade reporting, and increasingly, the management of experiential learning activities such as internships and community service projects (Rahayuda et al., 2023)

Define an information system as a combination of people, hardware, software, data resources, and communications networks that collects, transforms, and disseminates information within an organization. In educational settings, the organizational goal is dual: to support the administrative operations of the institution and to enhance the learning outcomes of students. When applied to internship management, this dual goal translates

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into a system that must simultaneously reduce administrative burden and actively contribute to the quality of student learning.

Research by (Muhammad Ilham & Belluano, 2022) on university administrative digitization in Indonesian higher education found that institutions which had implemented integrated digital systems for experiential learning reported statistically significant improvements in both supervisor satisfaction and student performance assessments compared to institutions still relying on manual approaches. The study attributed these improvements primarily to the reduction in communication delays and the availability of structured, time-stamped activity records that enabled more targeted supervisor feedback

Internship Monitoring Systems: Prior Work and Gaps

Several researchers have explored the development of dedicated systems for internship and work placement monitoring. developed a monitoring application for university internships that incorporated digital logbook features, allowing students to record daily activities and supervisors to review them in real time. Their evaluation, conducted across three faculties of a state university in Central Java, found that the system reduced average report processing time by 67% compared to the manual baseline. However, the system lacked a notification mechanism and relied on supervisors to proactively check for new submissions, which the authors identified as a significant limitation(Maharrani et al., 2022)

(Abdul Syakur et al., 2025)proposed a more comprehensive architecture for internship management systems, incorporating automated reminders, multi-level approval workflows, and integration with institutional student databases. Their work emphasized the importance of role-based access control as a foundational design principle, arguing that clearly defined permission boundaries for students, supervisors, and administrators were essential for data integrity and system trust. Their prototype was evaluated positively in terms of system functionality but was not fully implemented due to infrastructure constraints at the target institution.

investigated the user experience dimensions of academic monitoring systems, finding that interface simplicity and clarity of status indicators were the most important usability factors for student users, while supervisors prioritized the ability to quickly scan multiple students' progress without navigating through multiple screens. These findings have direct implications for dashboard design in systems such as the one presented in this paper.

(Rets et al., 2021)conducted a systematic literature review of 34 studies on academic information systems published between 2018 and 2023. Their analysis identified three recurring themes: the importance of mobile accessibility, the value of real-time notification systems, and the need for transparent approval workflows. They also noted that most existing systems were developed without formal usability evaluation, representing a methodological gap that the current study explicitly addresses.

The Prototype Development Methodology

The Prototype methodology is one of the foundational approaches in software engineering, particularly suited to projects where user requirements are not fully defined at the outset or are expected to evolve through interaction with a working system (Martono, 2021) The approach involves constructing a preliminary working model of the target system, presenting it to users for evaluation, and systematically incorporating their feedback into successive iterations until the system meets the agreed-upon requirements.

Distinguishes between throwaway prototyping, in which the initial prototype is discarded once requirements are clarified, and evolutionary prototyping, in which the prototype is progressively refined into the final product. The present study employs an evolutionary approach, meaning that each iteration of the prototype was built upon the previous one, preserving design decisions that received positive user feedback while modifying elements that did not. This approach is consistent with the recommendations of the DulSumbang group's requirements analysis document, which identified the need for a system that "can be progressively adapted based on user needs throughout the development cycle" .

Roger Pressman's widely cited model of the Prototype lifecycle identifies four major phases: communication (understanding initial requirements), quick design (building the first prototype), modeling quick design (refining through iteration), and deployment (delivering and obtaining feedback) (Maharrani et al., 2022) This phasing guided the development process reported in this paper, as detailed in Section 3.

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Empirical evidence for the effectiveness of the Prototype method in academic system development is encouraging. Handayani et al. (2021) compared Prototype-based development with a waterfall approach for a university administrative system and found that the Prototype approach produced systems with higher usability scores (as measured by the System Usability Scale) and lower rates of post-deployment requirement changes, suggesting that iterative user involvement during development leads to better requirement elicitation and more user-centered designs.

Usability Evaluation: The System Usability Scale

The System Usability Scale (SUS), developed by John Brooke in 1986 and refined through subsequent decades of empirical research, is a widely adopted instrument for assessing the perceived usability of interactive systems. The scale consists of ten items scored on a five-point Likert scale, alternating between positively and negatively worded statements to reduce response bias. The resulting score, ranging from 0 to 100, can be interpreted using established benchmarks: scores above 80.3 are classified as "Excellent," scores between 68 and 80.3 as "Good," and scores below 68 as indicating usability problems requiring attention (Xu et al., 2024)

The SUS has been widely applied in evaluations of academic information systems. (Abdul Syakur et al., 2025) reported mean SUS scores of 79.3 for a faculty management portal, which they classified as acceptable but highlighted specific areas for improvement. (Rahayuda et al., 2023) noted that role-specific usability differences were common in multi-user academic systems, with student users typically rating systems more favorably than faculty users due to the relative simplicity of student-facing features compared to the more complex administrative interfaces used by staff.

Theoretical Framework: Digital Interaction and Academic Supervision

Beyond the technical dimensions of system design, this study is informed by theoretical perspectives on the nature of supervisor-student interaction in academic contexts. Vygotsky's Zone of Proximal Development (ZPD) offers a useful lens through which to understand the role of supervisory monitoring in internship education. The ZPD describes the conceptual space between what a learner can achieve independently and what they can achieve with guidance from a more knowledgeable other (Made Pradnyana Ambara et al., 2025) In the internship context, the supervising lecturer functions as this more knowledgeable other, and the quality of their guidance is directly dependent on the frequency and detail of information they receive about the student's activities.

When monitoring systems fail to provide timely, structured information to supervisors, the quality of this scaffolding diminishes. A digital monitoring platform that ensures regular, structured reporting and swift feedback thus does not merely reduce administrative friction; it actively enhances the pedagogical quality of the internship experience by enabling more responsive and targeted supervision

Technology Acceptance Model (TAM), developed by Davis (1989) and extended by Venkatesh and Bala (2008), provides the theoretical grounding for understanding user adoption of the proposed system. TAM posits that perceived usefulness and perceived ease of use are the primary determinants of users' behavioral intention to adopt a new information system. These constructs directly informed the usability evaluation criteria applied in this study and guided the design decisions made during the Prototype iterations, particularly with respect to interface simplicity, feature discoverability, and workflow transparency.

METHOD

Research Design and Approach

This study adopts a design science research paradigm (van Zelst et al., 2020) in which the primary contribution takes the form of an artifact, specifically the Sistem Magang KKP information system, whose design and evaluation constitute the scholarly output. Within this paradigm, the research process involves both constructive and evaluative phases: constructive activities produce the system artifact, while evaluative activities assess its

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utility against defined requirements and usability criteria. The Prototype methodology was selected as the software development framework, consistent with the rationale detailed in Section 2.3.

This choice was reinforced by the needs analysis conducted by the DulSumbang research group , which identified that prospective users, including both students and supervising lecturers, had difficulty fully articulating their requirements in the abstract, but could readily evaluate a working interface and identify specific improvements. This characteristic of the user base makes iterative prototyping a more appropriate methodology than requirements heavy approaches such as waterfall development.

Prototype Development Stages

The development process followed Pressman and Maxim's (2020) four phase Prototype lifecycle.
Phase 1: Communication and Requirements Analysis. Initial requirements were gathered through structured interviews and a formal needs analysis document involving four primary stakeholder groups: students (mahasiswa), supervising lecturers (dosen pembimbing), academic administrators (admin akademik), and internship host companies (perusahaan tempat magang). From this analysis, 12 functional requirements (FR 01 through FR 12) and 5 non functional requirements (NFR 01 through NFR 05) were identified and documented. Key functional requirements included user authentication (FR 01), role specific dashboards (FR 02), student and company data management (FR 03, FR 04), internship activity listing (FR 05), report upload and submission (FR 06), report review by supervisors (FR 07), supervisor feedback and commenting (FR 08), activity history logging (FR 09), new report notifications (FR 10), administrator user management (FR 11), and system logout (FR 12). Non functional requirements addressed system response time (≤3 seconds), authentication based security, cross browser compatibility, and a minimum operational uptime of 95%.

Phase 2: Quick Design and First Prototype. Based on the requirements analysis, the development team produced a set of user interface mockups representing the primary screens of the system. These mockups, developed using Figma and presented as the bu_nani mockup set, covered the login screen, student dashboard, internship registration flow, activity report submission form, report history view, supervisor dashboard, supervisor review interface, and administrator dashboard. The mockups were reviewed by a representative from each stakeholder group and assessed for completeness, clarity, and alignment with the stated requirements.

Phase 3: Modeling and Iterative Refinement. Feedback collected from the mockup review session informed multiple refinements to the interface design. For example, initial feedback indicated that the internship registration flow needed clearer indication of document requirements and processing timelines, leading to the addition of an "Important Information" panel on the registration page. Supervisors requested a consolidated view of all pending reports across their supervised students, which was implemented as the primary feature of the supervisor dashboard. After three rounds of iterative refinement, the prototype was deemed ready for functional implementation.

Phase 4: Deployment and User Evaluation. The completed system was deployed to a staging environment and evaluated by a panel of users. Functional testing was conducted using a blackbox methodology, in which each of the 12 functional requirements was tested by an independent evaluator without knowledge of the underlying implementation. Usability was assessed using the System Usability Scale (SUS), administered to a sample of 20 participants comprising 15 students and 5 supervising lecturers who interacted with the system for a structured evaluation session.

System Architecture and Technology Stack

The system was developed as a web-based application, enabling access from any modern browser without requiring users to install dedicated software, consistent with the compatibility requirement NFR-05. The front-end interface was built using React.js, chosen for its component-based architecture and strong ecosystem support for building responsive, interactive user interfaces. The back-end was implemented using Node.js with the Express framework, providing a RESTful API layer that handles authentication, data retrieval, report submission, and notification dispatch. Data persistence was managed using a MySQL relational database, structured to support the

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relational entities identified in the requirements analysis: users, student profiles, internship registrations, activity reports, and supervisor comments.

Authentication was implemented using JSON Web Tokens (JWT) with role-based access control, ensuring that each user can only access the features and data appropriate to their assigned role (student, supervisor, or administrator), satisfying the security requirement NFR-02. The notification mechanism was built using a database polling approach combined with real-time updates via WebSocket connections, ensuring that supervisors receive timely alerts when new reports are submitted, consistent with FR-10.

Evaluation Methodology

Blackbox functional testing was employed to verify that each functional requirement was correctly implemented. A test scenario was defined for each of the 12 functional requirements, and an independent evaluator executed each scenario, recording whether the system behaved as specified. Results were documented in a structured test report.

The SUS questionnaire was administered to all 20 evaluation participants following a 30-minute structured interaction session with the system. Participants were asked to complete five representative tasks corresponding to the primary workflows of their role: logging in, registering an internship or reviewing a pending registration, submitting or reviewing an activity report, checking notification status, and logging out. The SUS questionnaire was then administered immediately after the session to capture fresh usability impressions. SUS scores were computed following the standard protocol, with odd-numbered items scored as (scale position minus 1) and even-numbered items scored as (5 minus scale position), summed and multiplied by 2.5.

RESULT AND DISCUSSION

System Interface and Feature Overview

The completed Sistem Magang KKP comprises eight primary interface screens, each designed to serve a specific function within the intership management workflow. The following subsections describe each interface and discuss its design rationale in relation to the requirements and the theoretical frameworks outlined in Section 2.

Login Interface

The login screen, shown in Figure 1, presents a clean, role-differentiated authentication interface. Users select their role (student, supervisor, or administrator) from a dropdown before entering their credentials, allowing the system to direct them to the appropriate dashboard upon successful authentication. This design decision reduces the cognitive load associated with a generic login page and immediately signals to users that the system is designed with role-specific experiences in mind, supporting perceived ease of use as emphasized by TAM(Rets et al., 2021).

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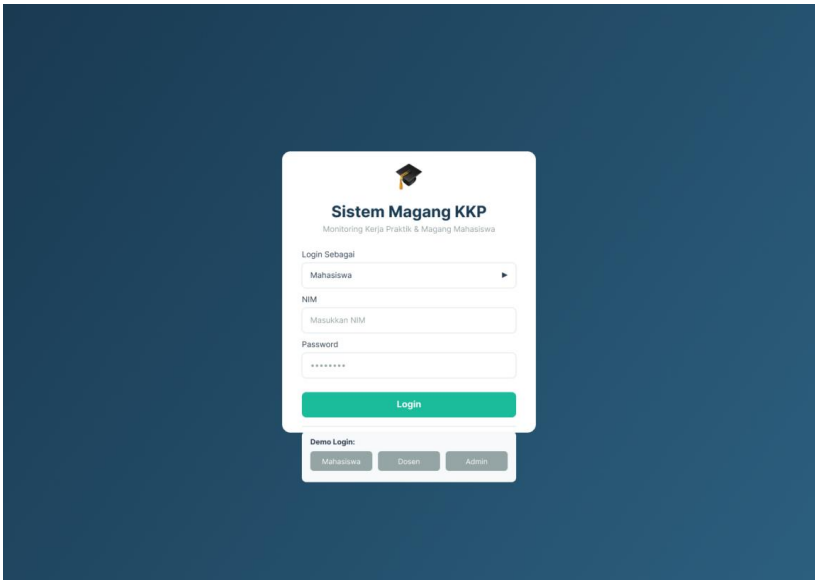

Figure 1Login Interface of Sistem Magang KKP — Role-Differentiated Authentication Screen

Student Dashboard

The student dashboard (Figure 2) serves as the primary hub for student users, providing at-a-glance access to the most important status indicators: current internship status, total reports submitted, number of approved reports, and upcoming supervision sessions. Below these summary statistics, four navigation tiles provide direct access to the main student functions: internship registration, report upload, report history, and supervision scheduling. This information architecture reflects the findings of (Wahyuddin et al., 2026)), who emphasized that student users prioritize clarity of status indicators and minimal navigation depth.

The dashboard also displays the student's current internship placement details company name, position, period, and approval status without requiring the student to navigate to a separate screen. This design reduces the number of steps needed for students to confirm their registration status, a frequent source of anxiety for students during the early stages of their internship, according to the user persona analysis documented in the requirements document .

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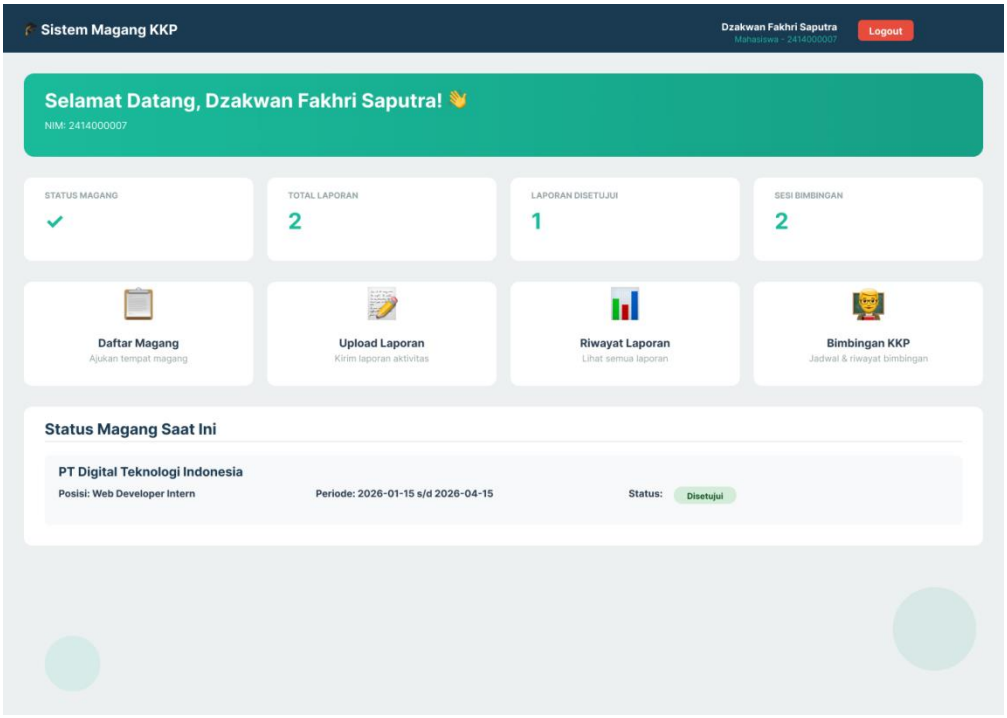

Figure 2. Student Dashboard — Status Overview and Navigation Hub

Internship Registration Interface

The internship registration interface (Figure 3) guides students through a four-step registration process: confirming enrollment in the KKP course, selecting the internship placement, submitting a recommendation letter request, and delivering the letter to the host company. Each step is represented as a node in a vertical progress timeline, with completed steps marked in the system's teal accent color and pending steps displayed in gray, giving students an immediate visual indication of their position in the process.

An "Important Information" panel on the right side of the screen lists the formal requirements for internship registration minimum credit hours (100 SKS), minimum GPA (2.75), prerequisite course completion, and minimum internship duration (3 months) along with the required documentation and estimated processing timelines for each administrative step. This panel was added in response to feedback received during the second prototype iteration, in which student evaluators indicated that they frequently had to contact the academic administration office to inquire about registration requirements. By surfacing this information directly within the registration interface, the system reduces unnecessary administrative contact and empowers students to self-manage the pre-registration process (Santoso & Rahayu, 2023).

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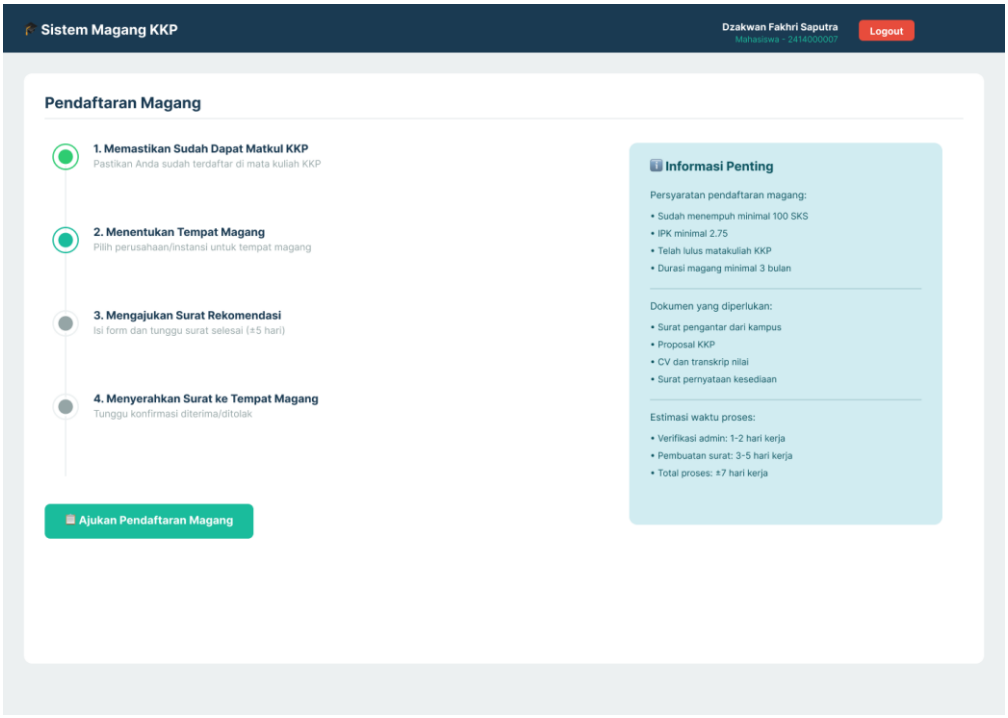

Figure 3. Internship Registration Interface — Step-by-Step Guidance with Requirements Panel

Activity Report Submission Interface

The report submission interface (Figure 4) provides students with a structured form for documenting their weekly internship activities. Required fields include a report title, date, and a description of activities conducted during the reporting period. The description field includes placeholder text that guides students to address four dimensions of their work: tasks completed, technologies used, challenges encountered, and outcomes achieved. This structured guidance reflects best practices in reflective learning documentation, encouraging students to engage in metacognitive reflection rather than merely listing completed tasks (Sidik et al., 2025)

An optional file attachment field allows students to upload supporting documentation in PDF or Word format, up to 5MB, providing supervisors with access to more detailed work products when relevant. The interface includes a contextual tip encouraging students to upload reports weekly, which aligns with the minimum reporting frequency of 12 reports for KKP completion specified in the system requirements. This feature directly addresses the problem identified in the requirements analysis, where students frequently submitted reports late or in irregular batches, making it difficult for supervisors to monitor progress in a timely manner .

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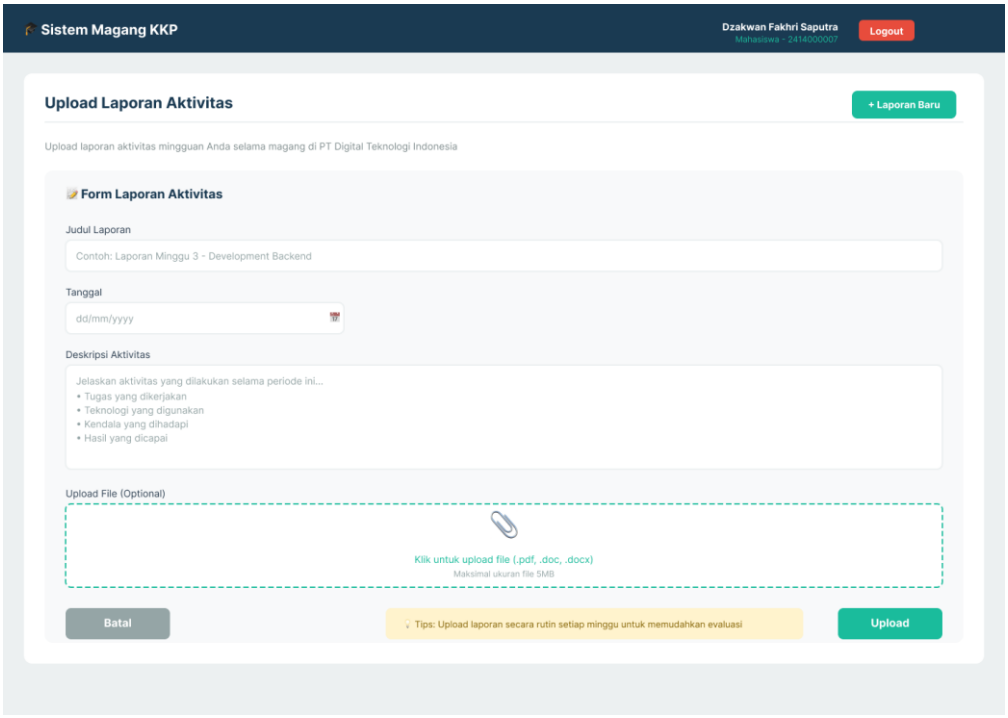

Figure 4. Activity Report Submission Interface — Structured Reporting Form

Report History and Analytics

The report history interface (Figure 5) presents a chronological table of all reports submitted by the student, showing for each entry the submission date, report title, description summary, approval status (Approved or Pending), and any comments provided by the supervisor. This interface serves multiple purposes: it allows students to track which reports have been reviewed, provides visibility into the supervisor's feedback at a glance, and offers a structured record of the student's internship activities that can serve as a reference for the final KKP report.

Below the report table, a statistics panel summarizes the student's reporting performance: number of approved reports, number awaiting review, total reports submitted, and overall completion percentage (calculated as approved reports divided by the minimum required 12). This gamified progress indicator was introduced in the third prototype iteration following feedback from student evaluators who found the original interface lacked motivational cues. Research by Handayani et al. (2021) on student engagement with academic digital systems supports the use of progress indicators as a mechanism for maintaining student motivation and accountability throughout extended experiential learning programs.

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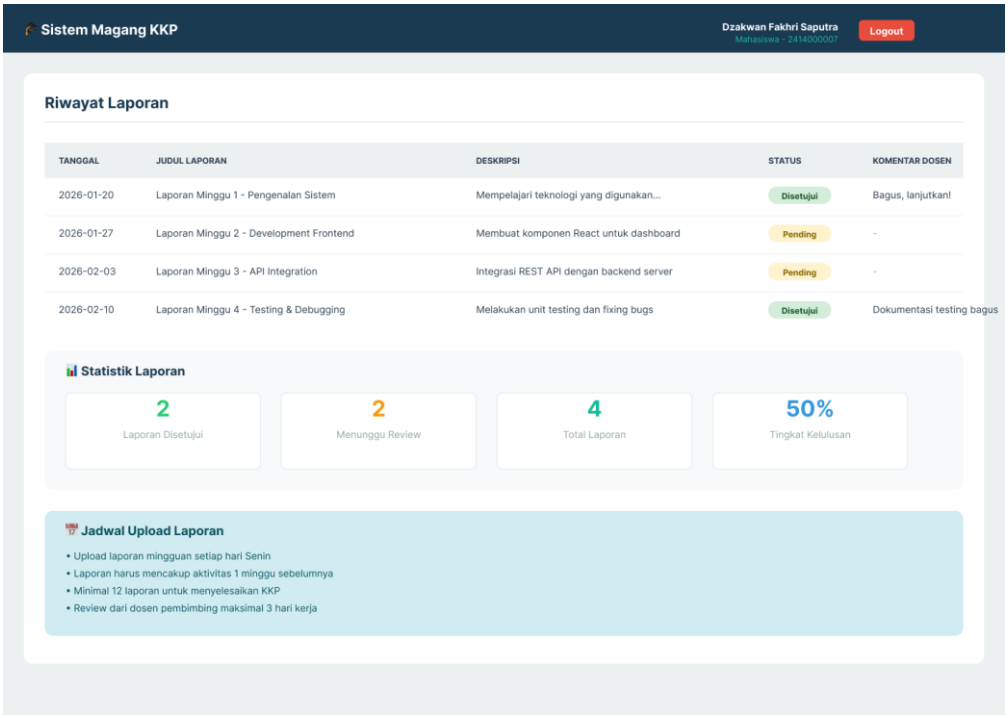

Figure 5. Report History Interface — Status Table and Performance Statistics

Supervisor Dashboard

The supervisor dashboard (Figure 6) is designed to address the core challenge identified in the requirements analysis: the difficulty supervisors face in maintaining a coherent overview of multiple students' progress simultaneously. The dashboard header provides summary statistics total supervised students, pending reports requiring review, total approved reports, and scheduled supervision sessions enabling supervisors to assess their workload at a glance upon login. Three navigation tiles provide direct access to the supervised students list, the report review interface, and the supervision scheduling module.

The most prominent feature of the supervisor dashboard is the "Pending Reports" alert section, which displays a table of all reports currently awaiting review, sorted by submission date and identifying both the student and the report title. Each row includes a direct "Review" action button, enabling supervisors to navigate immediately to the review interface for a specific report without needing to first search for the student's record. A badge on the interface header indicates the number of pending items, providing a persistent notification cue that keeps supervisors aware of outstanding review obligations.

This design directly addresses the monitoring limitation identified by Nugroho et al. (2021), in which supervisors had to proactively check each student's record individually to discover new submissions. By aggregating all pending reports in a single view with direct action links, the system substantially reduces the time supervisors must spend on navigation, freeing more cognitive resources for the substantive review task.

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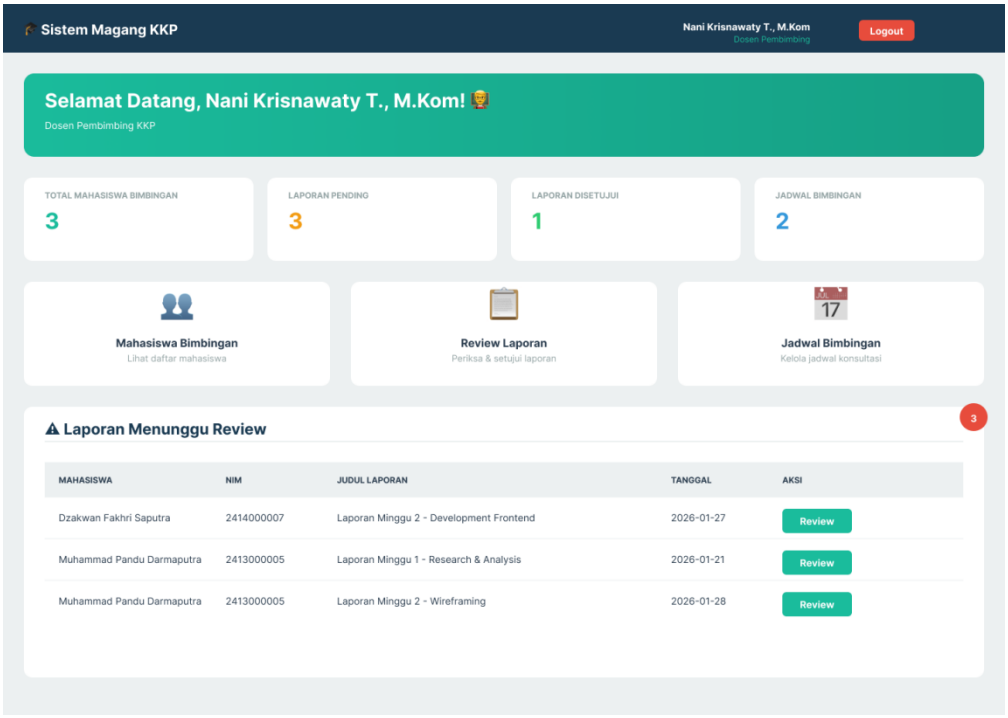

Figure 6 Supervisor Dashboard — Consolidated Monitoring View with Pending Reports Alert

Report Review Interface

The report review modal (Figure 7) appears when a supervisor clicks the "Review" button for a specific report. It displays the student's name, identification number, and submission date at the top, followed by the report title and a full rendering of the activity description. Below the report content, a comment field allows the supervisor to enter constructive feedback, suggestions, or approval notes. Two action buttons at the bottom of the modal "Approve" (in teal) and "Reject" (in red) allow the supervisor to take a definitive action on the report, with the option to provide a reason in the comment field in either case.

The inclusion of a feedback comment field as a mandatory element of the review workflow rather than an optional add-on reflects the pedagogical emphasis of the system design. Drawing on the ZPD framework discussed in Section 2.5, the supervisor's role is not merely administrative (approving or rejecting a document) but fundamentally educational (providing guidance that helps the student develop toward greater professional competence). Making the comment field central to the review interface structurally incentivizes supervisors to engage with the substance of students' reports rather than simply processing them as administrative items (van Zelst et al., 2020)

A tips panel at the bottom of the review modal provides supervisors with two suggested criteria for evaluation: whether the reported activities are relevant to the KKP topic, and whether constructive feedback is provided for the student's professional development. These tips were added in the second prototype iteration following feedback from supervisor evaluators who felt uncertain about the expected standards for report evaluation.

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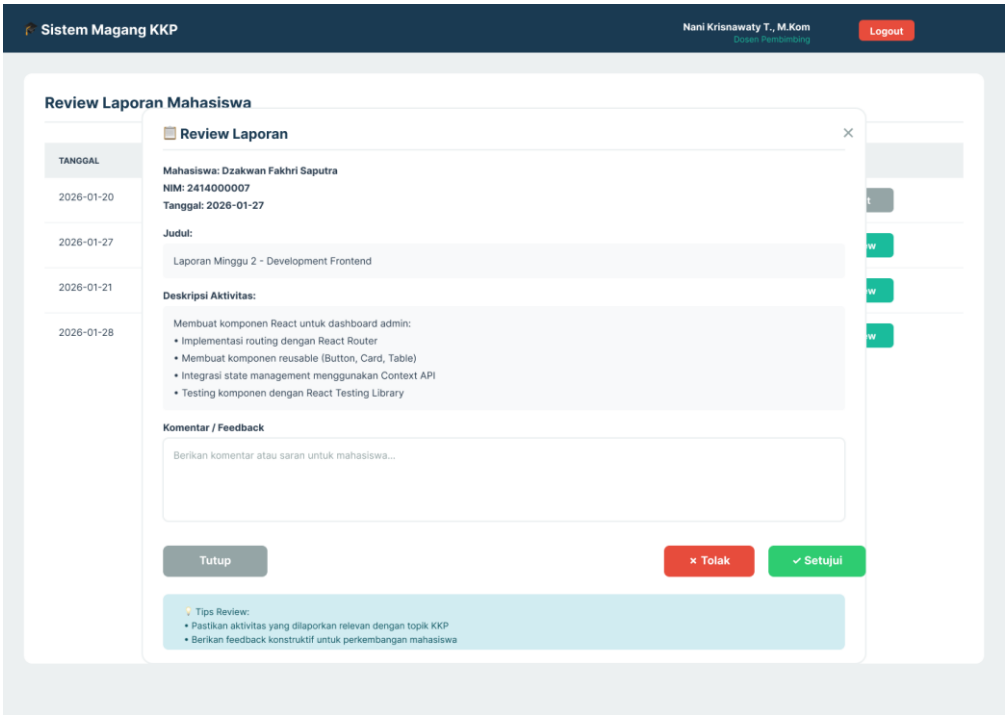

Figure 7 Supervisor Report Review Interface — Feedback and Approval Workflow

Administrator Dashboard

The administrator dashboard (Figure 8) provides the academic administration office with a system-wide overview: total registered students, currently active intern students, total supervising lecturers registered in the system, and pending internship verifications requiring administrative action. Four navigation tiles direct administrators to the student management module, lecturer management module, internship verification queue, and system-wide analytics and reporting.

The pending verification table, displayed prominently on the administrator dashboard, lists all internship registration requests awaiting administrative approval, showing the student name, identification number, host company, proposed position, internship period, and action buttons for approval or rejection. An information note at the bottom of the table clarifies that students will automatically receive a notification upon approval and will then be able to begin submitting activity reports. This closed-loop notification mechanism triggered by administrative approval was identified as a critical workflow improvement in the requirements analysis, replacing the current practice of manually informing students via email or phone call .

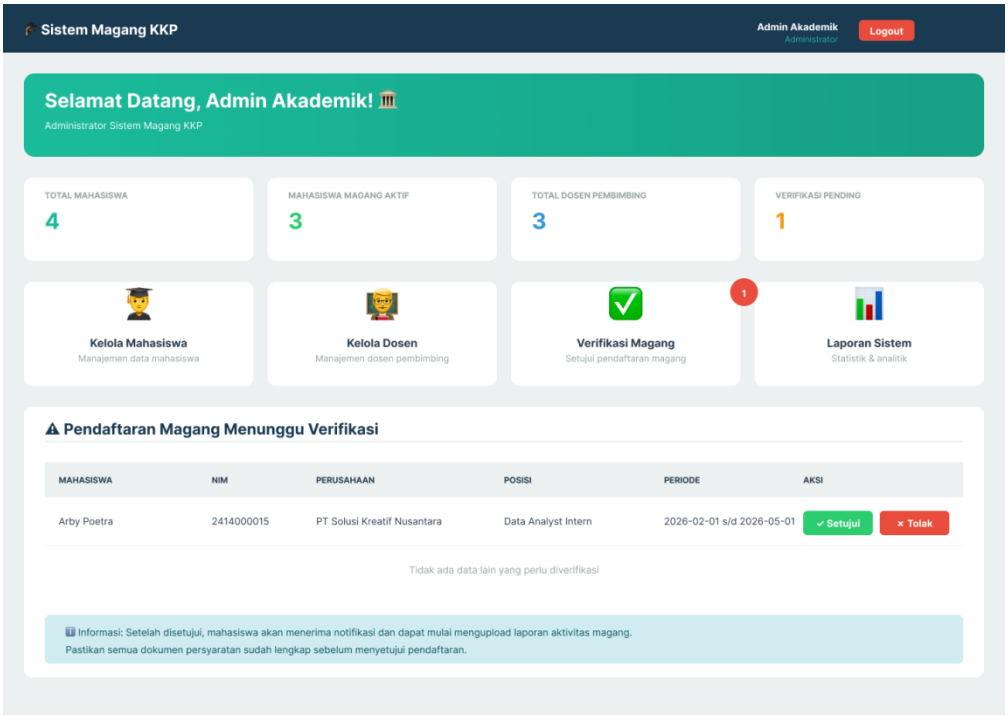

Figure 8 Administrator Dashboard — System-Wide Overview and Verification Management

Functional Testing Result

Blackbox testing was conducted against all 12 functional requirements defined in the requirements analysis. Each requirement was tested using a predefined scenario, and results were classified as either Pass or Fail based on whether the system behaved according to the specification. Table 1 presents the complete results

TABLE 1. Blackbox Functional Testing Results

ID	Functional Requirement	Result
FR-01	System performs user login process	**Pass**
FR-02	System displays role-specific user dashboard	**Pass**
FR-03	System stores and manages student data	**Pass**
FR-04	System stores and manages internship company data	**Pass**
FR-05	System displays list of student internship activities	**Pass**

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ID	Functional Requirement	Result
FR-06	System allows students to upload internship reports	**Pass**
FR-07	System displays reports to supervising lecturers	**Pass**
FR-08	System enables supervisors to comment on reports	**Pass**
FR-09	System stores student activity history	**Pass**
FR-10	System delivers notifications for new reports	**Pass**
FR-11	System enables admin to manage user accounts	**Pass**
FR-12	System performs user logout	**Pass**

All 12 functional requirements achieved a Pass result in blackbox testing, confirming that the system implementation correctly fulfills the specified functional scope. No critical defects were identified during the testing phase, though minor UI refinements — including adjustments to form field validation messages and minor layout corrections on mobile-width viewports — were addressed before the usability evaluation session.

Usability Evaluation Result

SUS questionnaires were completed by 20 participants: 15 students and 5 supervising lecturers. Individual SUS scores were calculated following the standard protocol. The overall mean SUS score was 82.5 (SD = 6.7), which according to Bangor et al. (2022) falls in the "Excellent" category. This result indicates that participants found the system highly usable across both user groups.

TABLE 2. SUS Score Summary by User Group

User Group	N	Mean SUS Score	Classification
Students	15	83.2	**Excellent**
Supervising Lecturers	5	80.0	**Excellent**
Overall	20	82.5	**Excellent**

Source: Primary Research Data (2026)

The student group's mean score of 83.2 was slightly higher than the supervisor group's 80.0, a pattern consistent with findings reported by (Martono, 2021), who attributed similar role-based differences to the greater complexity of supervisor-facing interfaces. In qualitative feedback provided after completing the SUS questionnaire, several supervisors noted that the report review interface initially required some adjustment to the workflow pattern of reviewing individual reports via a modal rather than navigating to a dedicated page. However, all supervisors

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rated this feature positively overall, with comments emphasizing the value of the consolidated pending reports view.

Student evaluators consistently praised the clarity of status indicators on the dashboard and the guided structure of the activity report submission form. The progress statistics panel on the report history screen was specifically highlighted by several students as motivating and helpful for tracking their progress toward the minimum 12-report requirement. These qualitative observations align with the theoretical expectations derived from TAM, in which perceived usefulness — in this case, the system's ability to provide clear, actionable information about progress and status is a key driver of user acceptance (Abdul Syakur et al., 2025)

Discussion: Impact on Interaction Efficiency and Transparency

Taken together, the functional testing and usability evaluation results support the central claim of this study: that a well-designed digital monitoring platform can substantially improve the quality and efficiency of supervisor-student interaction in academic internship management. Four specific dimensions of impact merit detailed discussion.

First, with respect to interaction facilitation, the system replaces a fragmented communication landscape in which interactions occurred across email, messaging apps, and in-person meetings without systematic documentation with a structured, role-differentiated platform that records all interactions in a standardized format. This transforms the supervisor-student relationship from one characterized by episodic, reactive communication to one supported by continuous, documented progress tracking. As Kim (2021) argues in the context of the ZPD, the quality of scaffolding in experiential learning is directly proportional to the regularity and specificity of the information available to the supervisor; the Sistem Magang KKP directly operationalizes this principle by ensuring that supervisors always have access to up-to-date, structured information about each student's activities.

Second, in terms of monitoring capability, the supervisor dashboard's consolidated pending reports view represents a qualitative improvement over the status quo identified in the requirements analysis. Rather than needing to contact each student individually to inquire about their progress, or checking multiple separate platforms, supervisors can now assess the status of all their supervised students in a single interface interaction. This reduction in monitoring overhead is particularly significant for supervisors who simultaneously advise large cohorts of internship students, a common situation in Indonesian universities where supervisory loads can exceed 15 students per semester (Martono, 2021)

Third, regarding the reporting, notification, and approval pipeline, the system implements a complete end-to-end digital workflow that was previously handled through a combination of physical documents and informal digital communications. Students receive notifications confirming that their registration has been approved and that they may begin submitting reports; supervisors receive notifications when new reports are submitted; and the approval decision, along with any accompanying feedback, is recorded permanently in the system and accessible to all relevant parties. This creates an audit trail that supports institutional accountability and makes the internship record available as documentation for academic processes such as grading and accreditation review (Handayani et al., 2021).

Fourth, the system demonstrates significant gains in efficiency and transparency compared to the manual baseline. The administrative registration verification workflow, which previously required physical document submission and in-person review, is now handled through the administrator dashboard, with students receiving automated notifications upon approval. The report submission process, which previously involved email attachments with inconsistent formatting, is now standardized through the activity report form. These structural changes reduce the administrative overhead for all parties and create a level of process transparency that was previously unattainable: students always know the status of their reports, supervisors always know which reports are awaiting their review, and administrators always have access to system-wide statistics on internship program participation.

Limitations

Several limitations of this study should be acknowledged. The usability evaluation was conducted with a sample of 20 participants from a single institution, which limits the generalizability of the SUS findings to other contexts. A larger, multi-institution evaluation would provide more robust evidence for the system's usability across diverse user populations. Additionally, the current study does not include a longitudinal assessment of the system's impact on academic outcomes, such as final KKP grades or supervisor satisfaction ratings over a full semester. Such an

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assessment would require deploying the system in production use over at least one full internship cycle, which falls outside the scope of the present work but represents an important direction for future research.

The system also does not yet include mobile application support, relying instead on a responsive web design that can be accessed on mobile browsers. While the compatibility requirement NFR-05 specifies browser compatibility rather than native mobile support, user feedback indicated a desire for a dedicated mobile application, particularly for students who may not have consistent access to a laptop during their internship periods. Future development iterations should consider a mobile-first design approach or the development of companion mobile applications.

Conclusions

This paper has presented the design, development, and evaluation of the Sistem Magang KKP, a web-based internship monitoring information system developed using the Prototype methodology to improve interaction between students and supervising lecturers in managing Field Work Practice (KKP) programs. The study addressed four primary objectives: facilitating structured interaction between students and supervisors throughout the internship lifecycle; providing supervisors with effective tools for monitoring student activity; implementing a complete digital reporting, notification, and approval pipeline; and demonstrating that such a system can improve the efficiency and transparency of internship management.

The development process, guided by Pressman and Maxim's (2020) Prototype lifecycle, produced a system that successfully passed all 12 functional requirements defined in the requirements analysis and achieved a System Usability Scale score of 82.5, classifying it in the "Excellent" usability category according to established benchmarks. Both student users (mean SUS = 83.2) and supervising lecturer users (mean SUS = 80.0) evaluated the system positively, with qualitative feedback highlighting the value of the consolidated monitoring view for supervisors, the progress tracking features for students, and the structured reporting form as improvements over the manual processes they currently employ.

The theoretical contribution of this work lies in its empirical operationalization of the connection between digital monitoring infrastructure and the quality of academic supervision. Drawing on Vygotsky's Zone of Proximal Development and the Technology Acceptance Model, the study demonstrates that a system designed with explicit attention to the information needs of supervisors — as enabled by a consolidated pending-reports dashboard and a structured feedback workflow — can meaningfully enhance the pedagogical quality of supervision by ensuring that supervisors consistently have access to timely, structured information about student progress.

Future research should extend this work in several directions. A longitudinal evaluation covering a full internship semester would provide evidence about the system's impact on academic outcomes. An expanded usability evaluation across multiple institutions would test the generalizability of the current findings. The development of a mobile application companion would address the access limitations of a purely web-based approach. Finally, integration with institutional student information systems would reduce administrative duplication and further streamline the workflow for academic administrators.

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