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Integrated System Development to Support the Implementation of Tri Dharma of Higher Education by Lecturers at the Indonesia Civil Pilot Academy of Banyuwangi

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Abstract: In the pursuit of producing quality professional human resources in the field of aviation, Indonesian Aviation Academy (API) Banyuwangi under the Ministry of Transportation requires an integrated information system to enhance lecturers' and academic staff's performance in education, research, and community service. This study employed a qualitative approach involving eight informants, including lecturers and administrative staff. The findings revealed that the system improves efficiency in academic planning, documentation, and reporting. It also facilitates collaboration through integrated research repositories and transparent management of Community Service Programs. The development of this system aligns with the government's digital transformation agenda and serves as a strategic step toward positioning API Banyuwangi as a globally competitive aviation education institution.

Keywords: API Banyuwangi, digital transformation, academic staff, academic information system, higher education.

INTRODUCTION

A combined system takes on a key part in helping teachers to fulfill their tasks and roles in higher learning, mainly in doing the Tri Dharma of Higher Education—teaching, research, and community work. As hope for responsibility, openness, and usefulness keeps growing, rules for support by the government have shown added stress on the need for an online change across colleges. This is underlined in the Ministry of Education, Culture, Research, and Technology Regulation Number 53 of 2023 about the implementation of a quality education that requires accountability through an integrated academic information system.

However, up to now, in practice, very many challenges have fruitfully emanated from the side of research and community service. (Pratama & Subekti, 2021) discovered that the major issue faced by most lecturers is the problem of documentation of activities as well

as submitting proposals and reporting results. This has, however, been made easier with the provision of a comprehensive digital system. Similarly, a lack of coordination is mostly due to the absence of a collaborative platform (Sari et al., 2020). expressed that inadequate coordination between lecturers and departments is mostly due to the absence of a collaborative platform where information can be shared in real-time and activities tracked.

These problems reduce the overall efficacy and efficiency of academic processes, thereby impacting the institution's performance. Advancement in information technology can thus be appreciated. An integrated information system will provide a well-structured digital platform to support lecturers in managing and controlling their planning, execution, monitoring, and reporting of academic activities. Such a system also enhances the recordkeeping of academics, builds collaboration between disciplines, and offers fair performance evaluation that is measurable (Putra & Santosa, 2022).

It is in tandem with the 2020-2024 Strategic Plan of the Ministry of Education, Culture, Research, and Technology that digitalization in higher education be made a national priority for better governance based on informed decisions emanating from appropriate data. This study thus centers on the design and implementation of an integrated academic system supporting lecturers' performance of the Tri Dharma and institutional agility and competitiveness in this digital age.

RESEARCH METHOD

This uses a qualitative study with a descriptive approach about needs, challenges, and expectations toward the integrated information system supporting the implementation of Tri Dharma Perguruan Tinggi at Banyuwangi Indonesian Aviation Academy. The data were collected through semi-structured interviews with lecturers and academic administrators who directly engaged in the process of education, research, and community service. Participants were selected purposively based on their role and experience in academic processes. The data collected followed a thematic analysis by picking on those patterns that kept recurring and major themes that were emerging out of the interviews. These findings therefore form the basis upon which system requirements are formulated and solutions proposed to fit within the institutional context. This will bring the researcher into close contact and give meaningful insight about efforts at digitalization in an environment of higher education. The testing process is depicted in a testing process

flowchart, outlining the steps from the initial testing phase to completion, as shown in Figure 1.

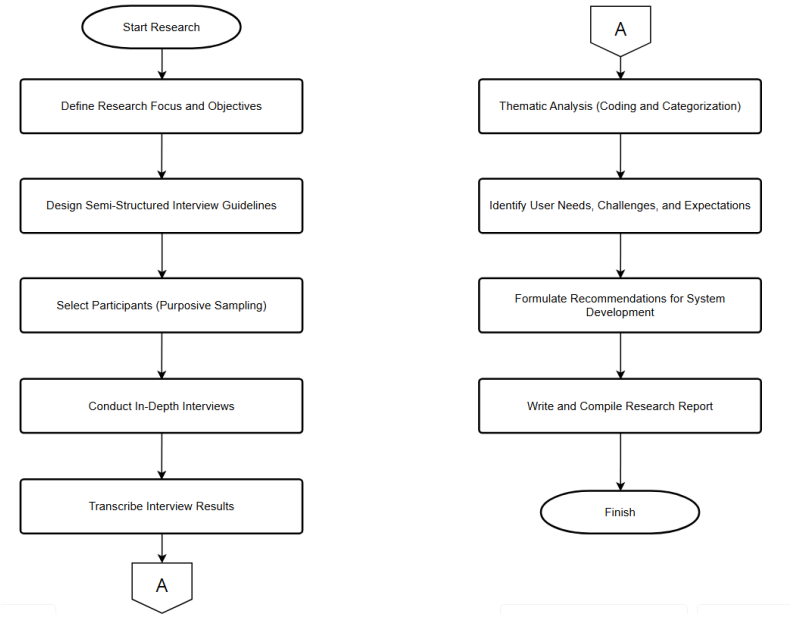

Figure 1. Flowchart of the Testing Process

RESULT AND DISCUSSION

Sihibat: A Web-Based Application

The Integrated Research and Community Service Grant System is designed to help faculty and staff at the Indonesian Aviation Academy of Banyuwangi easily file and manage proposals for research or community service projects. It's set up as a web app, so users can get to its features whenever and wherever they need them making the filing process quicker and open to all.

Results

The system provides several core features, including:

1. **User Authentication:** Secure login system for lecturers and administrators.

User Authentication makes sure that only allowed users- like lecturers, academic staff, and system admins- can get into the system. It usually has a safe login method where users need to provide right details (like username and password) to log in.

This function ensures the safety of all such highly sensitive information, including research proposals and documents as well as personal user data. It does so by enabling the system to define and allocate different access roles, for example,

- Lecturers can only view and submit their own proposals.
- Administrators have extended access to review, manage submissions, and generate reports.

The authentication process may also include additional security measures such as password encryption, session management, and in the future, possibly two-factor authentication (2FA) to further enhance security.

Here is the interface User Authentication of the Sihibat application from the webiste.

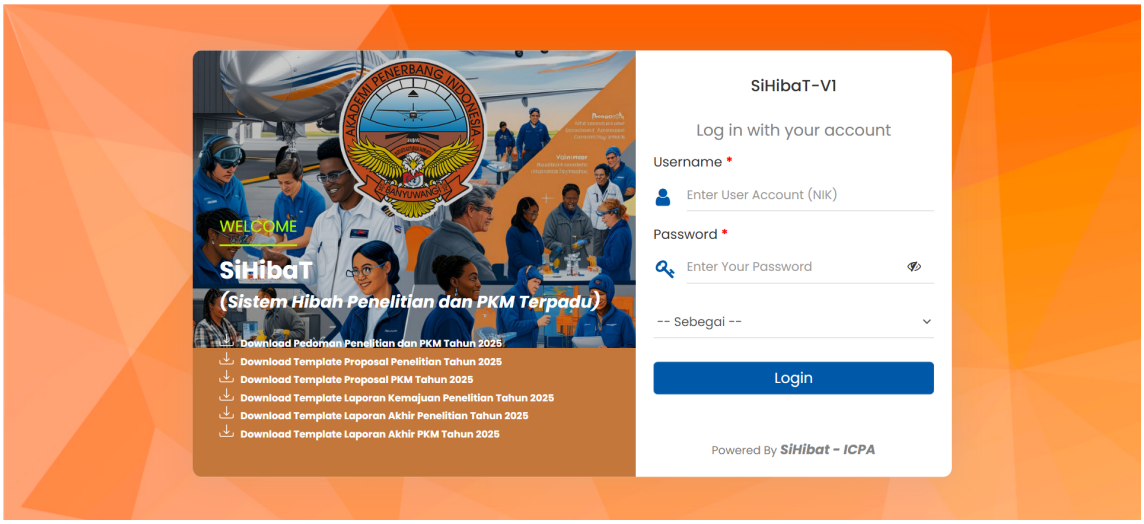

Figure 2. Interface User Authentication

2. **Proposal Submission:** Online submission of research and community service proposals with structured forms.

The Proposal Submission function will allow the lecturers to submit their research and service to the community (PKM) proposals fully inline through a well-structured web-based form. This digital submission process eases the ordinary manual approach by reducing paperwork and ensuring that all the required information and documents are attached in a systematic way.Title of the proposal

1 Type of activity (Research or PKM)
2 Abstract
3 Objectives
4 Methodology

5 Budget details

6 Supporting documents (e.g., PDF uploads)

By using a standardized format, the system ensures that proposals are consistent, easier to evaluate, and stored in a centralized database for easier tracking and retrieval by reviewers and administrators. This feature also includes automatic timestamps and user identification, ensuring accountability and transparency in the proposal process.

Here is the interface Proposal Submission of the Sihibat application from the webiste.

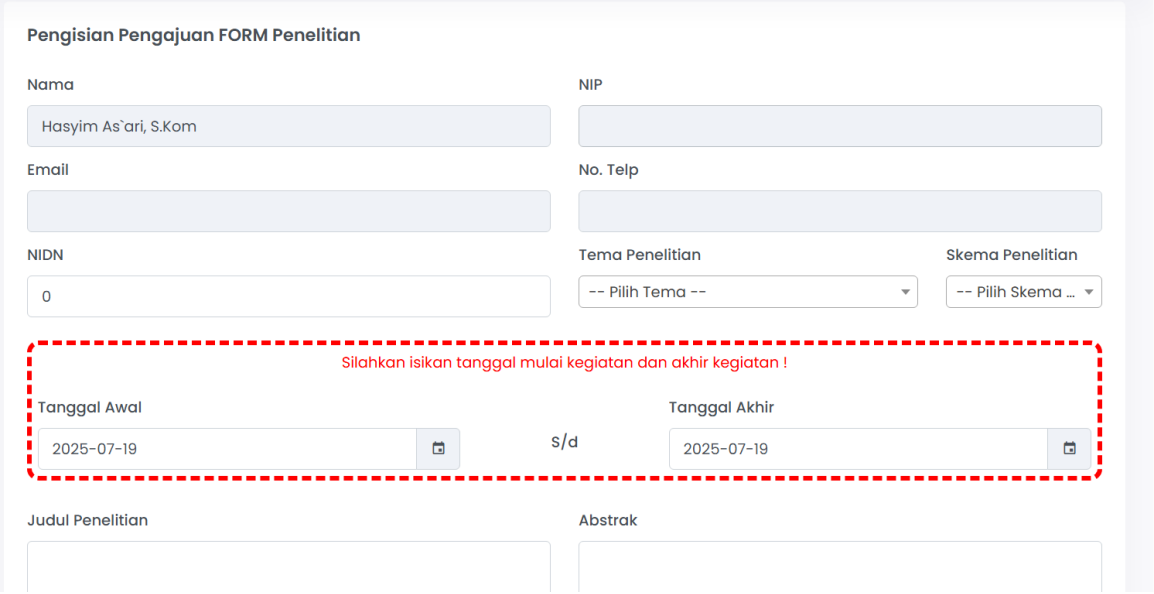

Figure 3. Proposal Submission

3. **Document Upload:** Upload feature for supporting documents such as research proposals, budgets, and letters of assignment.

The Document Upload feature allows users—primarily lecturers—to attach supporting documents that are essential for the proposal process. These may include research proposals, detailed budgets, letters of assignment (Surat Tugas), and other administrative or academic documentation.

This feature ensures that all necessary files are:

1. Collected in a centralized digital repository
2. Properly associated with each submission

3. Easily accessible to reviewers and administrators
4. Securely stored with access control permissions

The upload interface supports various file formats (PDF) and may include validations such as file size limits, required file types, and completeness checks before submission. By enabling digital document submission, the system eliminates the need for physical paperwork, enhances submission efficiency, and supports remote access for both applicants and evaluators.

Here is the interface upload document of the Sihibat application from the webiste.

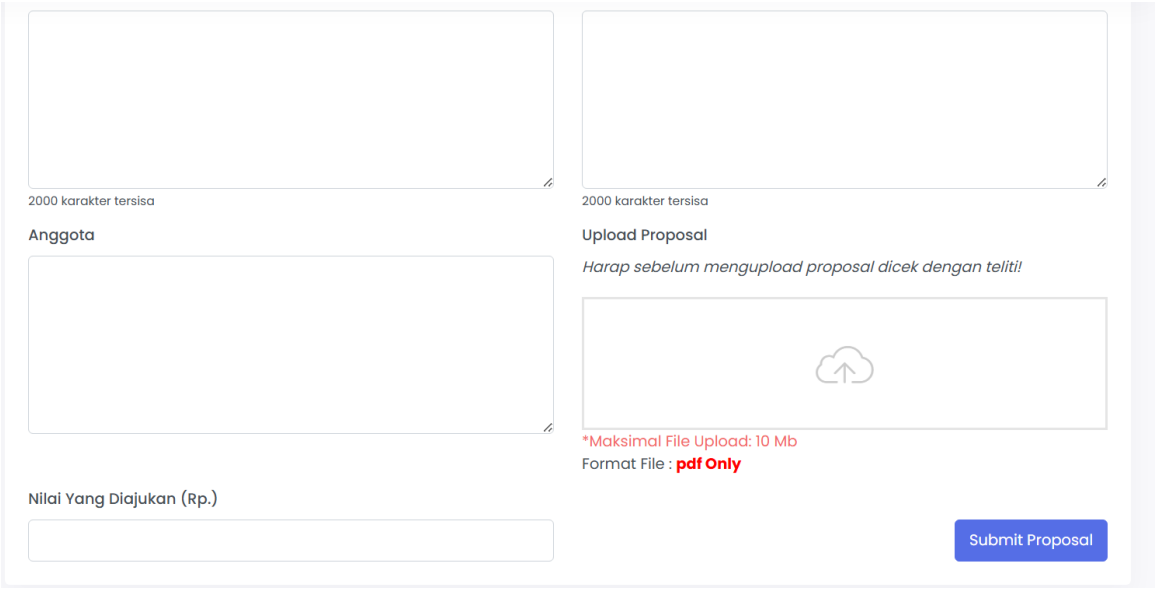

Figure 4. Document Upload

4. Status Tracking: Real-time status updates of each submission (e.g., submitted, under review, accepted, or rejected).

The Status Tracking feature provides users with real-time updates on the progress of their submitted research or community service proposals. Once a proposal is submitted, the system automatically logs and displays each stage of the review and approval process, such as:

1. **Submitted** – Proposal successfully uploaded and recorded in the system
2. **Under Review** – Proposal is being evaluated by reviewers or the academic committee

3. **Accepted** – Proposal has been approved and is eligible for implementation
4. **Rejected** – Proposal has been declined, possibly with notes or feedback

This feature enhances transparency and keeps users informed without needing to manually contact administrators or committee members. It also reduces administrative workload by automating status updates. The status tracking system may include notification alerts (via email or dashboard) whenever a status changes, helping users to stay engaged and responsive throughout the application process.

Here is the Status Tracking of the Sihibat application from the webiste.

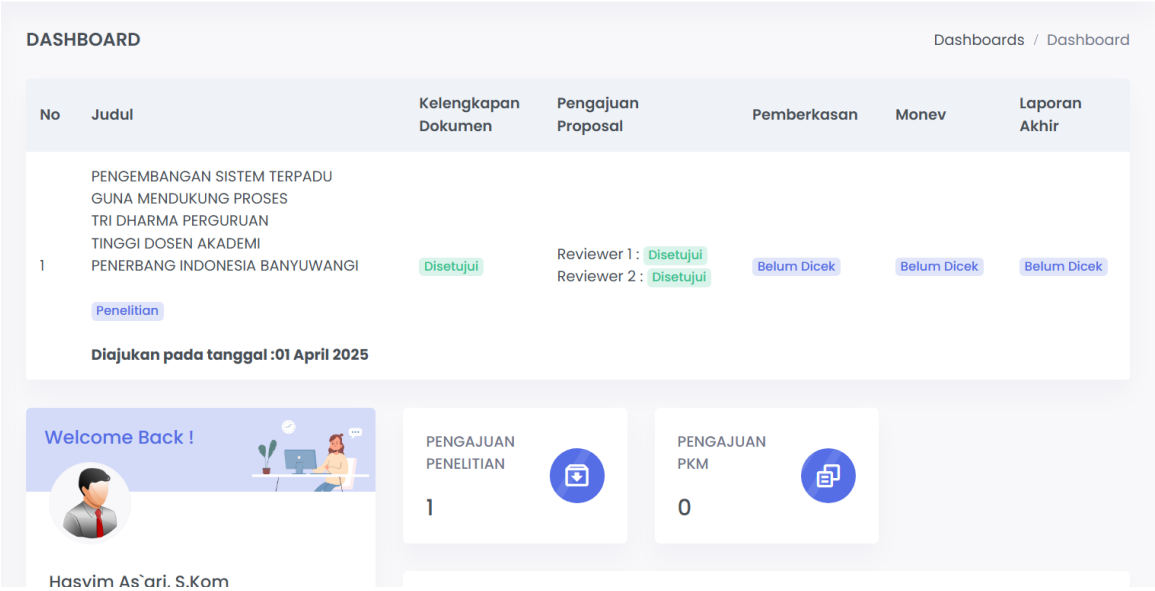

Figure 5. Status Tracking

5. Review and Approval: A workflow for reviewers and administrators to evaluate and approve submissions online.

The Review and Approval feature provides a structured workflow system that enables reviewers and administrators to efficiently evaluate, provide feedback on, and approve or reject proposals submitted by lecturers.

Once a proposal is submitted:

1. It is automatically routed to assigned reviewers based on criteria such as field of study or type of proposal (research or community service).

2. Reviewers can access the submission online, examine its content, and use built-in tools to leave comments, suggestions, or required revisions**.**

- Administrators can monitor the review process**,** ensure deadlines are met, and finalize decisions based on the reviewers' input.

This workflow ensures:

1. **Transparency**, with each step traceable
2. **Accountability**, as each action is logged
3. **Efficiency**, by reducing paperwork and manual coordinate on

The system also supports notifications and access control, so only authorized reviewers and admins can evaluate or modify the proposal status.

Here is the Review and Approval of the Sihibat application from the webiste.

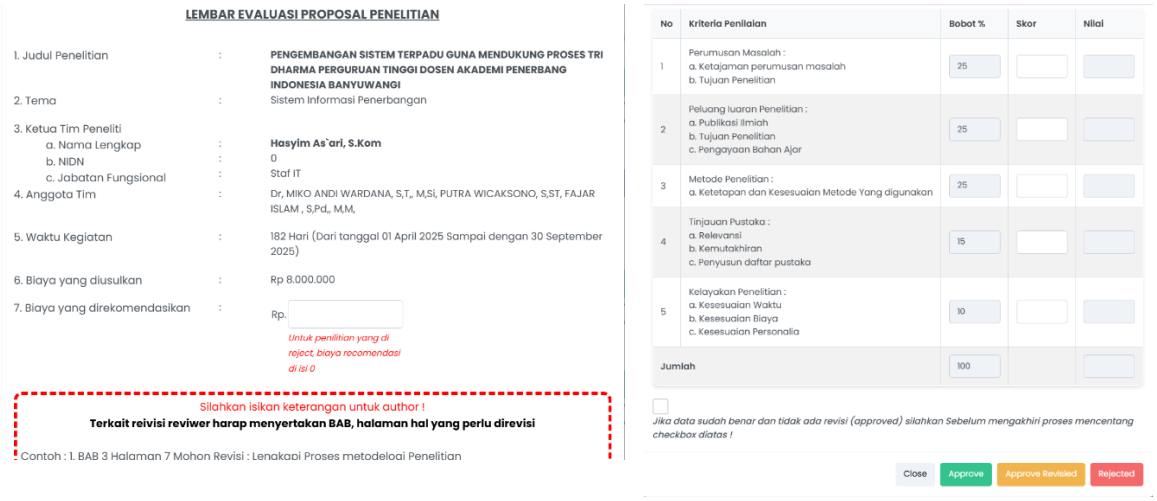

Figure 6. Process Review and Approve

6. Document Download and Reviewer Evaluation:

This feature enables both reviewers and administrators to securely download submitted documents for offline examination. Additionally, it offers an integrated interface for reviewers to enter their evaluations, provide comments, and assign scores directly within the system. This ensures a structured and efficient review process, while maintaining centralized and traceable feedback for each submission.

Here is the Document Download of the Sihibat application from the webiste.

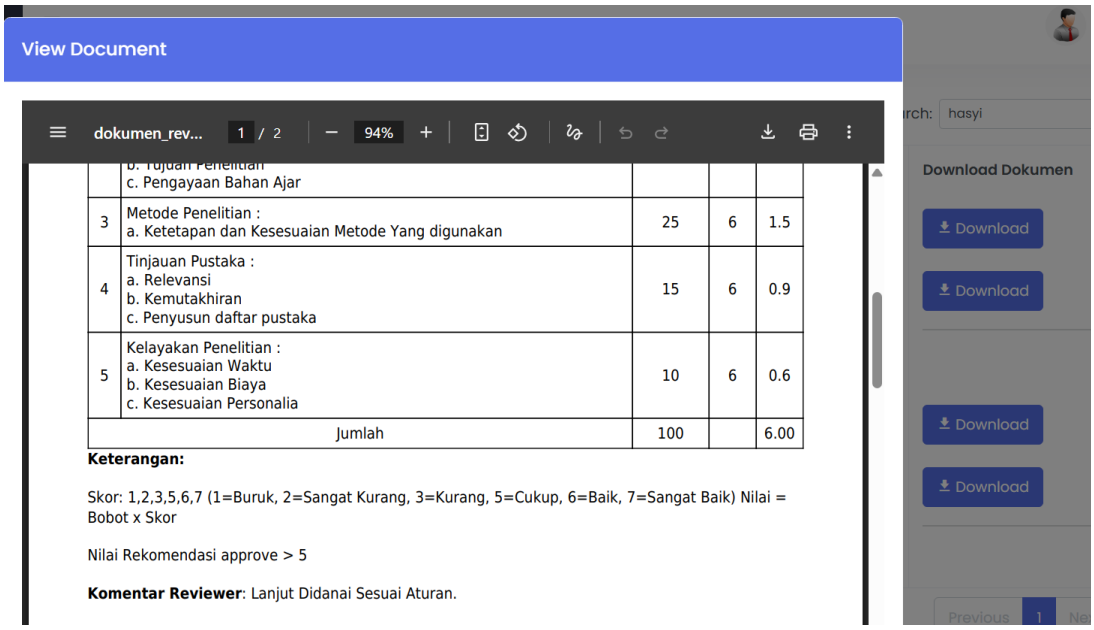

Figure 7. Document Download

7. Results of the Observation Activity

Table 1 : Identification of Problems Based on Interview and Observation Results

No	Issue	Academic Staff Status	Source
1.	The process of applying for research or community service (PKM) grants is still done manually—from preparing proposals to submitting final reports. One interviewee mentioned that, although no digital system is currently available and hardcopies are still required, this adds to the workload. In addition, complex bureaucracy and the already heavy workload of lecturers have become major obstacles preventing some of them from applying for grants. This highlights a strong need for an efficient and integrated digital system to simplify the administrative processes related to research and PKM grants.	Lecturer	Observation Results
2.	The challenges being faced by the faculty in their grant applications are attributed to inadequate clear communications of the procedures and guidelines, and also because administrative processes have to be done manually. Some of them find the requirement very cumbersome since they have to do paper	Educator	Observation Results

No	Issue	Academic Staff Status	Source
	documents and signatures from many officials—most of whom might not even be available. The process is perceived as very burdensome and inefficient due to the already heavy workloads that the faculty has.		
3.	The grant application process is still carried out entirely manually. Document submission, revisions, and record-keeping all rely on physical paper formats. One interviewee pointed out that the distance between offices and the need to go back and forth during the revision process make the system inefficient. This highlights the lack of a digital system integration in the grant administration process over the past several years.	Lecturer	Observation Results
4.	A system integrated with a platform is also very essential, especially in tracking the progress of submitted proposals. At the moment, applicants have to manually inquire via chat what the status of their documents is and most of the time staff cannot locate the files. If there will be an application wherein there will be features such as document history and real-time status update that will notify the applicant about the proposal progress, then efficiency will easily be attained, making transparent monitoring achievable.		
5.	There is a strong hope that the grant and PKM application processes can be carried out fully digitally, without the need to submit physical documents or hard copies. This is seen as a practical and efficient step that aligns with the spirit of going paperless—an essential direction for digital transformation within higher education institutions.	Lecturer	Observation Results
6.	The digital system will be able to influence, among other things, the quickening of the effectiveness of the Tri Dharma of Higher Education in the field of research. The digital system will also help discuss matters concerning documentation and which lecturers have not yet submitted their grant proposals. At this juncture, it is highly integrated with systems such as SISTER for the support and realization of a more seamless process. What it brings is better coordination, faster verification of documents, less	Lecturer	Observation Results

No	Issue	Academic Staff Status	Source
	paperwork, and allowing proposals to be uploaded online for assessment. It shall make room for efficiency to be attained in Tri Dharma execution and bring about effectiveness plus transparency.		
7.	The role of a digital application system is perceived as an enhancement towards lecturer productivity, particularly with regard to fulfilling the Tri Dharma of Higher Education, that is, research and community engagement. It aids in the submission, progress monitoring, and assessment functioning, thereby enabling the lecturer to appreciate a clearer and streamlined understanding of their performance. In addition, digital systems can also enhance motivational and competition dynamics among the lecturers as information concerning grants is becoming readily and uniformly available. It also reduces the burden of time and effort by automating processes and minimizing the need for physical meetings. Regardless, as noted by some interviewees, the full realization of the benefits of such systems is contingent upon the unconditional elimination of the need to submit physical hard copies, as such requirements add a burdensome tertiary workload. For this reason, unconditional fully digital implementation is deemed to offer greater support towards enhancement of lecturer performance.	Lecturer	Observation Results

CONCLUSION

The creation of this information system is centered on the digitalization of research as well as community service submissions and is anticipated to improve efficiency and accountability within the academic administrative functions of the institution. Nonetheless, the primary lecturers and academic staff system users understanding, acceptance, and utilization of its features remains critical for the system's effectiveness.

The expectation is that this digital system will enable all lecturers as well as academic staff to support a well-organized, well-documented, and transparent process for the submission of research and community service proposals. Furthermore, the system is anticipated to reduce the frequency of manual workflow delays, data duplication, and administrative errors.

In addition, the implementation of this system serves as a foundational part of advancing the digital transformation of the Banyuwangi Indonesian Aviation Academy, and its higher educational institutional management. The implementation of this system is anticipated to improve the professionalism, efficiency, and accountability of work culture among lecturers and academic staff.

In terms of future perspectives, the system is still unclosed fully for development and could be associated with other educational systems. The purpose is to facilitate the entire system of reporting the Tri Dharma of Higher Education—for internal system and performance monitoring, and for external in terms of accreditation, ministry reporting, and institutional reporting for evaluations.

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