An Integrated Approach to Academic Administration: The SIPATCA System for University Management and Transparency

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Abstract

This paper introduces the Integrated Academic Administration Service System (SIPATCA), designed to streamline administrative processes in higher education institutions. By integrating various functions such as student data management, letter submissions, and document verification into a single platform, SIPATCA enhances efficiency and transparency in academic administration. The system allows seamless communication between students, academic staff, and administrative personnel, simplifying tasks and reducing processing times. SIPATCA's implementation contributes to the achievement of the Integrity Zone in universities, ensuring higher data accuracy and better oversight. The paper discusses the design, development, and implementation of SIPATCA, showcasing its positive impact on administrative practices and its potential for broader adoption across educational institutions.

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An Integrated Approach to Academic Administration: The SIPATCA System for University Management and Transparency

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1. Introduction

In the era of globalization and advancements in information technology, educational institutions are required to continuously innovate and improve the efficiency of administrative services (Brito, Mombach, and Valente, 2019). Improving the quality and effectiveness of administration in academic environments has become crucial, especially with the increasing complexity of demands and regulations that must be adhered to (Hartina, Lawi, and Panggabean, 2019) In this context, the researcher responds by developing the Integrated Academic Administration Service System (SIPATCA) as an integrated solution (Komalasari, Arafat, and Mulyadi, 2020). Some of the administrative challenges faced by educational institutions include processes such as registration, student data management, class scheduling, and document reporting and archiving. Furthermore, the demand to achieve the Integrity Zone necessitates the implementation of a transparent, effective, and measurable system to manage all administrative activities (Satyahadewi, 2019)

In this context, SIPATCA was introduced to provide a comprehensive and integrated solution to improve the quality of administrative services in universities that apply the Integrity Zone. By simplifying administrative processes, SIPATCA is expected to ensure the achievement of high integrity, transparency, and efficiency, in line with efforts to meet the highest service quality standards (Sutabri, 2012).

In addition to benefiting the internal stakeholders of the university, the implementation of SIPATCA is also aimed at enhancing the institution's image and competitiveness both nationally and internationally. Thus, SIPATCA is not only an administrative tool but also an integral part of the strategy to enhance the university's reputation and credibility in higher education. With a deep understanding of administrative challenges and the vision toward achieving the Integrity Zone, SIPATCA is expected to lead universities to the pinnacle of excellence in administrative services.

2. Method

The method used in the software development process follows the waterfall model. The Waterfall method is a sequential software development process, where progress is seen as flowing downwards (like a waterfall) through phases of planning, modeling, implementation (construction), and testing. In its development, the waterfall method consists of several sequential stages: requirement analysis, system design, coding & testing, program implementation, and maintenance (Sutabri, 2012).

The software development stages using this waterfall model are divided into several processes as shown in Figure 1.
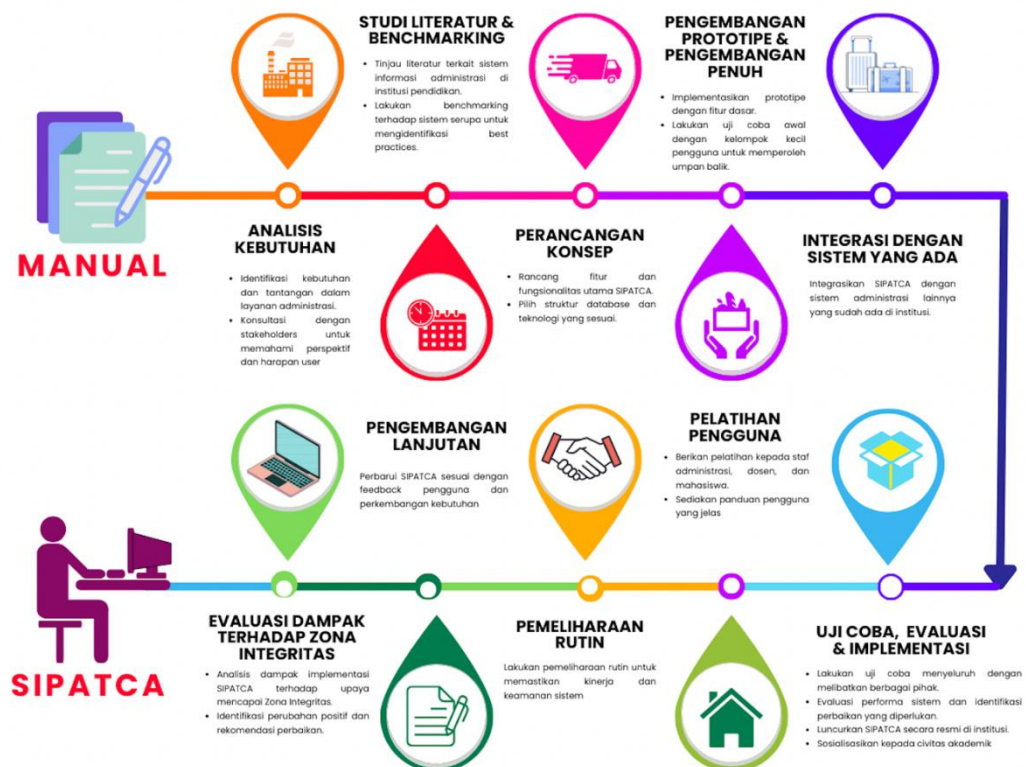

Figure 1 Metode Pelaksanaan Desain dan Implementasi SIPATCA

a. Requirement Analysis. Requirement analysis is the initial phase in the development of SIPATCA. This process aims to deeply understand the needs of the academic community and determine the features and functions that must be included in the system. This analysis forms the basis for

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designing an effective solution that meets user needs. The steps include: conducting interviews with stakeholders to understand user needs, analyzing existing administrative processes to identify areas for improvement, and reviewing regulations and standards related to the Integrity Zone (Rachman,2018).

b. Literature Study and Benchmarking. Literature study and benchmarking during the development phase of SIPATCA are important steps to understand current trends, innovations, and the implementation of similar systems. Both provide comprehensive insights to design the best solution according to the context of the educational institution. The steps involve mapping best practices through literature studies and benchmarking with similar institutions that have successfully implemented similar solutions (Rahayu and Marup, 2021).

c. Concept Design. The design process translates the requirement specifications into a software design that can be estimated before coding begins. This process focuses on: data structure, software architecture, interface representation, and procedural (algorithm) details. This phase results in a document called the software requirement. This document will be used by programmers to carry out system creation activities. Coding & Testing (writing the code / implementation) is the translation of the design into a language that can be understood by the computer (Sihotang, 2024). This is performed by programmers who will translate the transactions requested by the user. This phase is the real step in working on a system, maximizing the use of the computer during this phase. After coding is completed, testing will be conducted on the system that has been developed. The goal of testing is to find errors in the system and correct them.

d. Prototype Development & Full Development. The development of the SIPATCA prototype is the initial stage of system implementation. This prototype functions as an early version that includes basic features and allows users to provide feedback. The main objective is to identify

shortcomings and ensure that user needs are met from the outset (Supriono,2022)

e. Integration with Existing Systems. Integration with existing systems is a crucial step in the development of SIPATCA. The main goal is to ensure alignment and interoperability of SIPATCA with other systems already present in the academic environment. A good integration enables smooth data exchange and efficient resource utilization.

f. Testing, Evaluation & Official Implementation. Testing, evaluation, and official implementation are critical stages in the development of SIPATCA. Testing aims to ensure the system's performance and success before it is used widely. Evaluation is conducted to identify positive impacts and areas for improvement, while official implementation involves launching and using the system by the academic community.

g. User Training. User training is a crucial step in the implementation of SIPATCA. The goal is to ensure that all users, including administrative staff, lecturers, and students, have adequate understanding to use SIPATCA effectively. Good training can improve system acceptance and success.

h. Routine Maintenance. Routine maintenance of SIPATCA is a series of activities carried out periodically to ensure operational smoothness, security, and system performance. This maintenance aims to prevent potential issues, optimize functionality, and ensure SIPATCA remains relevant to the needs and technological developments.

i. Further Development. Further development of SIPATCA is the process of expanding and enhancing the system's functionality after the implementation phase. This development aims to address changing needs, new technologies, or improvements based on user feedback. This process provides the opportunity to continuously improve and adjust SIPATCA to meet the actual needs of educational institutions.

j. Impact Evaluation on the Integrity Zone. The evaluation of the impact on the Integrity Zone in SIPATCA is a critical step to ensure that the system's implementation and development support the principles of integrity in the

academic environment. This evaluation helps measure how SIPATCA has contributed to the efforts to achieve and maintain the Integrity Zone.

3. Result and Discussion

Design of SIPATCA

This system process is designed so that the workflow cycle for developing the Integrated Academic Administration Service System (SIPATCA) to support the Integrity Zone can be understood and accepted by users. The users directly involved in this activity include administrative staff, user admins, lecturers, students, deans, vice deans, and program coordinators (Koorprodi). In this process, the proposal steps can be illustrated as shown in Figure 3.

Figure 3 shows that in the process of submitting letters, students, lecturers, or academic staff no longer need to come to the administration office multiple times. They only need to use a PC or laptop connected to the internet and submit their requests online. The letter will be processed by the administrative staff through the user admin, and then verified by the verification team, such as the dean or vice dean, so that it can be directly accepted through SIPATCA.

a. User Admin: Log in to the system with admin credentials. Manage user access rights and roles. Respond to technical support requests from users.

b. Dosen: Log in to SIPATCA with a lecturer account. Submit requests for assignments and other administrative needs.

c. Mahasiswa: Log in to SIPATCA using a student account. Access class schedules, academic information, and exam results. Submit requests for leave, recommendation letters, cover letters, and other related documents.

d. Dekan: Log in to the system with dean access rights. Provide approval for assignments.

e. Dekan: Log in to SIPATCA with a vice dean account. Provide approval for letters submitted by students.

f. Koordinator Program Studi(Koorprodi): Log in to the system as a program coordinator. Provide verification for the letters submitted.
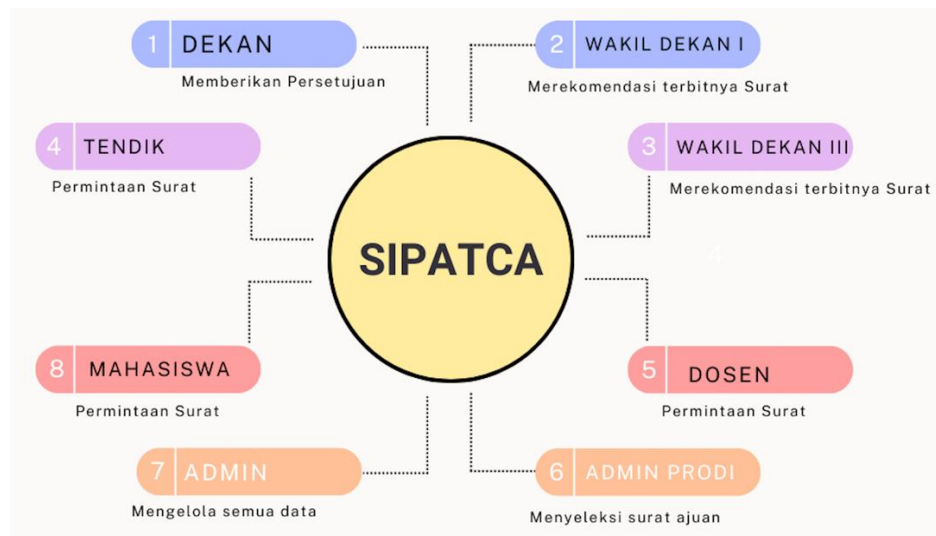
Figure 1. SIPATCA Workflow

Note:
- Each user has access related to their respective roles and responsibilities.
- The User Admin is responsible for the overall system management and technical support.
- Dosen focus on the academic management of students, teaching processes, and assignment letter submissions.
- Mahasiswa can access their personal academic information and perform academic activities.
- Dekan, Wakil Dekan, and Koordinator Program Studi (Koorprodi) have high-level management responsibilities and oversee the study programs.

This workflow is designed to ensure efficient collaboration and integration among the various parties in the academic environment, with SIPATCA serving as the primary tool for administrative management and decision-making.

Database Design

The database design in the development of the Integrated Academic Administration Service System (SIPATCA) is carried out with the aim of supporting efficient data storage and management, as well as facilitating the integration of various administrative services. The SIPATCA database structure consists of several main tables that are interconnected through relationships between entities, as shown in Figure 3.
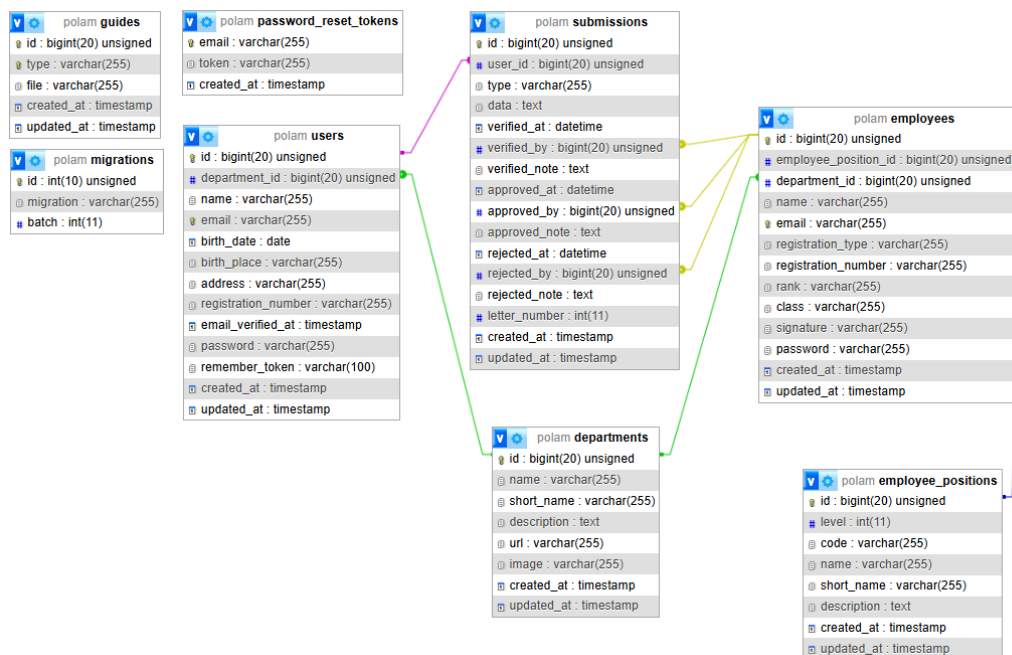
Figure 2. Desain Database

The relationships between the tables show a clear connection between users, submissions, employees, and departments. Each table has well-defined columns to support efficient data searching, updating, and deletion. For example, the users table is connected to the departments table, allowing each user to be identified based on the department they belong to. Additionally, the submissions table is linked to the users table to track the submissions made by each user.

With this design, the system can handle complex administrative needs while maintaining the integrity and security of the data involved. The well-structured integration between tables also ensures that data can be accessed efficiently, enhancing the system's performance in handling various administrative transactions.

System Development Results

This section presents several main views of the Integrated Academic Administration Service System (SIPATCA) developed to simplify the administrative processes within higher education institutions. These views illustrate the key functionalities of the system that have been successfully implemented.

- **SIPATCA Login Page**

    Figure 4 shows the SIPATCA login page, which is used by users to access the system. Users can log in using their email and password that have been previously registered. This page is designed with a simple and easy-to-use interface, ensuring good accessibility for all users, both students and administrative staff.
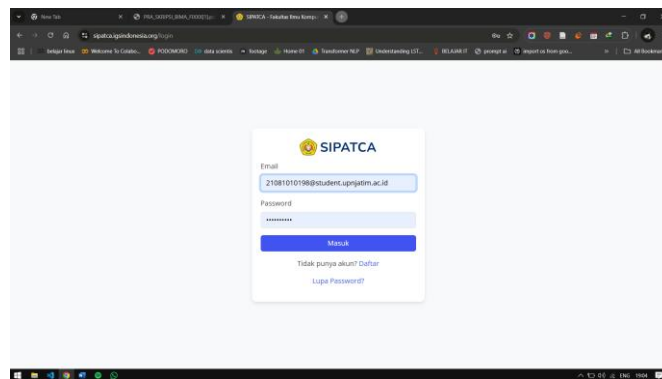

Figure 3. Login page

- **SIPATCA Main Dashboard**

    Figure 5 shows the main dashboard of SIPATCA after the user successfully logs in. This dashboard provides information related to various administrative services, including access to features such as letter submission, academic data management, and course-related information. The intuitive interface design allows users to easily navigate through the various available functions.
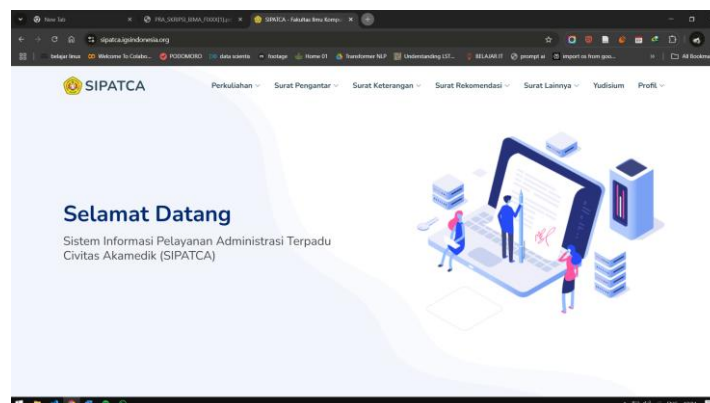

Figure 5. Dashboard page

• **Letter Submission Page**

Figure 6 shows the letter submission page, where users can fill out a form to submit various types of letters, such as a letter of introduction for internships. Users enter complete information such as the student's name, company details, and the internship start date. After filling out the form, the system processes the submission to be approved by the relevant parties.

Figure 4. Letter Submission Page

• **Letter Submission History Page**

Figure 7 shows the letter submission history page, where users can see the status of previously submitted letter requests. This page displays information such as the submitter's name, submission date, and submission status, allowing users to track the status of each of their requests. The status can be "Waiting for Verification," "Approved," or "Rejected," and allows users to check the documentation associated with the letter.

Figure 7 Halaman Riwayat Pengajuan Surat

- **Admin Page - Letter Submission History**

Figure 8 shows the admin page used to view the letter submission history from students. Here, the admin can see a list of letter submissions along with their statuses, such as "Waiting for Verification." Each submission also includes a "Detail" button that allows the admin to verify and approve the submission directly.
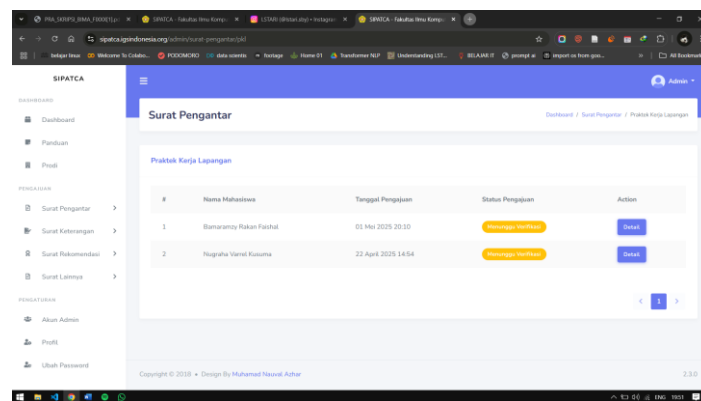

Figure 8. Letter Submission History Admin Page

- **Admin Page - Letter Submission Details**

Figure 9 shows the letter submission details page, which allows the admin to verify or reject a letter submission based on the information filled out by the user. On this page, the admin can view data related to the company where the internship is taking place, contact details, address, and internship start date. The admin can also add notes or decisions regarding the submission.
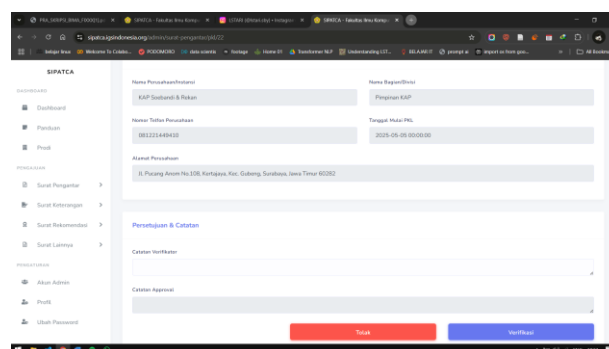

Figure 9. Admin Page Letter Submission Details

With its simple design and intuitive interface, SIPATCA successfully provides an effective solution to simplify administrative processes in higher

education institutions. Each feature in the system is designed to support efficiency, transparency, and ease of access for all users, including students, administrative staff, and other relevant parties. The implementation of SIPATCA is expected to reduce the time required for administrative management, improve data accuracy, and facilitate better oversight in letter submissions. The system also provides convenience for the admin in verifying and approving letter submissions with a more structured and easily monitored process. Overall, the development of SIPATCA contributes positively to supporting more efficient and transparent academic administration in higher education institutions.

4. Conclusion

The Integrated Academic Administration Service System (SIPATCA) developed in this study successfully provides an effective solution to improve efficiency and transparency in administrative processes in higher education institutions. By integrating various administrative services into a single platform, SIPATCA facilitates the management of academic data, letter submissions, and document verification, while ensuring smooth communication between students, administrative staff, and other relevant parties.

The implementation of SIPATCA shows that the system successfully meets the primary research goal, which is to accelerate and simplify administrative processes. With a simple and intuitive interface, users, both students and administrative staff, can easily access and use the various available features. Features such as letter submission, submission history, and status verification provide convenience and transparency in every process. This system also benefits the admin, who can easily manage letter submissions, verify, and approve submissions without relying on manual processes. The use of SIPATCA can reduce the time needed to process letter submissions, improve data accuracy, and optimize administrative management in higher education institutions.

Some further developments are still required, such as improving data security features and further testing related to large-scale usage in broader environments. Continuous user evaluation is also necessary to ensure that the

system remains relevant and effective in meeting the ever-evolving needs of academic administration. SIPATCA not only functions as a tool to simplify administration but also as a step forward in achieving transparency and efficiency in the management of academic administration in higher education institutions, contributing to the achievement of the Integrity Zone in the academic environment.

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