

## **Effectiveness of Virtual Account Integrated Academic Information System for Increased Educational Efficiency and Transparency**

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### **KEYWORDS:**

Mitigation, Weather Research and Forecasting model, Richardson Number Index, Turbulence.

### **ABSTRACT**

Academic information system (SIAKAD) plays an important role in the management of educational data in higher education institutions. This study aims to evaluate the effectiveness of an academic information system integrated with virtual accounts at Medan Aviation Polytechnic, in order to improve efficiency and transparency in financial management. This research uses R&D (Research & Development) method with waterfall software development model. Data was collected through observation, interviews, questionnaires, and documentation. Observations were conducted to understand the data processing process, while interviews and questionnaires were used to obtain input from the study program admin and academic admin. The results showed that the integrated academic information system has functioned well. Features such as KRS filling, transcript printing, and payment confirmation can be accessed by various users, including university admins, study program admins, lecturers, and students. Users reported increased efficiency in managing academic and financial data. The implementation of SIAKAD integrated with virtual accounts provides significant benefits in terms of transparency and reduction of human error in data processing. The system facilitates real-time access to information, which is essential for informed decision-making in education management. This study concludes that the implementation of SIAKAD integrated with virtual accounts is effective in improving the efficiency and transparency of academic and financial data management at Politeknik Penerbangan Medan. Recommendations for further development include enhancing system features to support diverse user needs.

### **INTRODUCTION**

The current application of information systems is not only applied to the IT field, but over time it has been applied in all fields (Burrough et al., 2015; Rainer et al., 2020). The application of information systems that are useful for providing and processing information based on data that can involve human resources and computer devices in a computerized manner. Data processing that has been computerized is very useful and can increase effectiveness in assisting data processing (Halim, 2016). According to researchers, an information system is a system in an organization that is part of a combination of people, technology, facilities, media, procedures and controls aimed at obtaining communication channels, processing routine transaction types, signaling to management of internal and external events and providing an information basis for appropriate decision-making (Pearlson et al., 2024; Shaikh & Karjaluoto, 2015; Turner et al., 2022; Tyoso, 2016).

Academic information systems are a data management system that is so indispensable for a university in processing data, student grades, course data, data on teaching staff (lecturers) and faculty administration, and others. The previous research discussed the integration of academic information systems with e-learning systems related to practices, engineering architectures and tools to achieve consistent access and data transmission across the spectrum (Tyoso, 2016). In addition, the research which discusses the integration of academic information systems with academic achievement monitoring systems for school management states that the technology design in the study is for monitoring the academic information system which can later be used for school management to make decisions (Chaurasia et al., 2018).

Based on the description above, the researcher concludes that the academic information system is an organized system in computerized data processing in various fields/spectrum. One of them is the finance sector at the Medan Aviation Polytechnic which is in charge of processing administration related to payments or cadet financial administration. Currently, the financial administration processing process still utilizes computer hardware but has not been systematized with the integration of academic information systems with financial managers, so that the financial administration processing process becomes less organized such as when cadets have not made payments related to financial administration, then the cadets cannot input courses for the next semester.

In this case, an academic information system is needed that will facilitate data processing by integrating the system into the financial side. Therefore, this research will carry out an effectiveness of an academic information system that is integrated with virtual accounts so that a financial integrated academic information system can make a positive contribution to efficiency and transparency in the management of financial resources in the educational environment.

## **RESEARCH METHODS**

The type of research used is R&D (Research & Development), which uses a waterfall software development model. According to Sugiyono, Research & Development is a research method used to produce a certain product, and test the effectiveness of the product in order to produce a certain product that is used for research that is needs analysis (Husin et al., 2021).

The current system condition, namely filling in KRS, is still done manually by the study program. So that it can trigger human error. The academic information system that is currently available provides all data related to cadet profile data, cadet academic data, courses in the curriculum in each semester. Therefore, it can be possible to integrate academic information systems with financial administration in taking courses in KRS.

### **1. Observation**

Observation is the systematic recording of events, behaviors, objects seen and other things needed to support the research being carried out (Hikam et al., 2021). In this study, observation aims to observe and record how data processing in the Academic Information System at the Medan Aviation Polytechnic.

### **2. Interview**

Interviews are a data collection technique where the researcher directly dialogues with the respondents to dig up information from the respondents. In the interview process, the researcher asked questions to the study program and the academic section.

### **3. Questionnaire**

A questionnaire is a set of questions that have been prepared and written in advance by the researcher, to be asked for answers from respondents. In this study, the researcher provided a questionnaire to the study program admins, and academic admins.

### **4. Documentation**

Documentation in this study is used to collect data in the form of taking pictures, interviews or other evidence during the implementation of the research, in order to strengthen the results of the research.

## RESULTS AND DISCUSSION

The Academic Information System is a system designed to process academic data at the Medan Aviation Polytechnic, both faculty, student, lecture data, grade reports, attendance lists, filling out study plans, and paying tuition fees. Based on this, the results of this study are in the form of an academic information system abbreviated as SIAKAD which is useful as a system that integrates education data with finance (Millah et al., 2020; Purwanto et al., 2020). The page to access the academic information system is <https://siakad.poltekbangmedan.ac.id/>. The following are the results of the display of the Medan Aviation Polytechnic SIAKAD.

### 1. Home

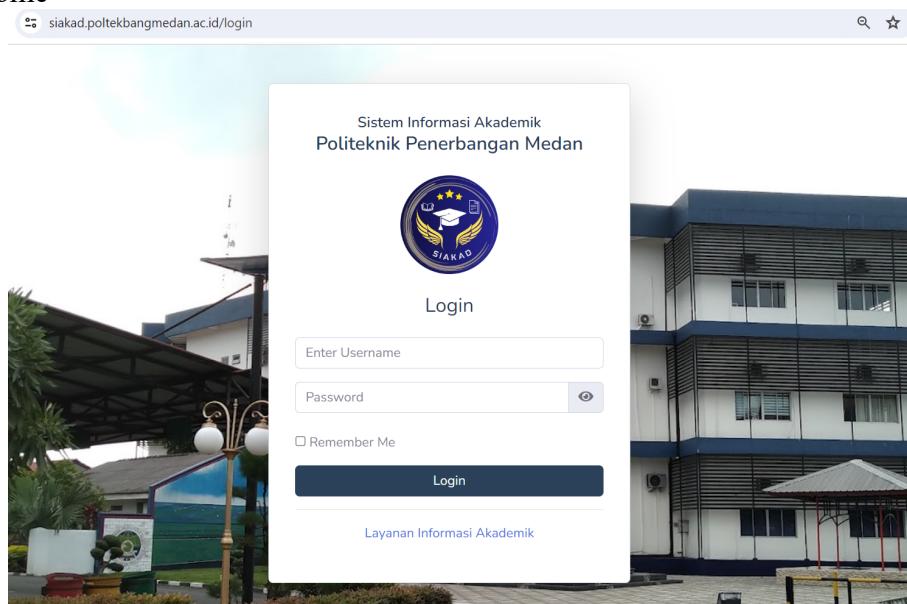


Figure 1 SIAKAD Main Page Display

### 2. Financial Feature Display

No	ID Tagihan	Nama Tagihan	Prodi	Total Tagihan	Syarat KRS	Opsi
1	TEST1	Uang Kuliah Semester Genap 2023/2024 Semester : 2023/2024 Genap	Teknik Listrik Bandar Udara	Rp. 5,700,000	Ya	

Figure 2 Financial Features Page Display

### 3. K Feature Display

Figure 3 KRS Feature Page Display

### 4. View of the KRS Take Feature

Figure 4 KR Grab Feature Page View

### 5. Display of Financial Features for Students

Figure 5 Display of the Student Payment Confirmation Feature

Based on the results above, users who can access siakad consist of several users, including university admins, study program admins, lecturers, students, and financial admins. Each user has different access rights. University admin as a super admin as the holder of data access rights for all academics at the Medan Aviation Polytechnic. Study program admins as admins who hold data access rights in their respective study programs. Lecturers as users as holders of supporting lecturer data (Borgman, 2018; O'Callaghan et al., 2017). Students as users as holders of their own student data, and financial admins as administrators who hold financial data that are integrated with student data. In the Siakad Application, all the features contained in the system are functioning properly.

## CONCLUSION

Based on the research conducted, it can be concluded that the implementation of an academic information system (SIAKAD) integrated with virtual accounts at Politeknik Penerbangan Medan has succeeded in improving efficiency and transparency in managing academic and financial data. All features in the system, including KRS filling, transcript printing, and payment confirmation, function well and provide easy access for various users, such as university admin, study program admin, lecturers, and students. Users reported that the system has reduced human error and accelerated data processing. For future research, it is suggested to focus on developing additional features that can further enhance the user experience, such as an automatic notification system for payment reminders and academic reporting. In addition, further research can also explore integration with other education management systems to create a more holistic and efficient education ecosystem. Research on the long-term impact of implementing this system on academic performance and student satisfaction could also be an interesting topic for further investigation.

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