

Performance information system and student governance Politeknik Negeri Medan

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ABSTRACT

Structured and effective student governance is one of the keys to success in creating a dynamic and productive academic environment at the Politeknik Negeri Medan. In an effort to increase transparency and efficiency in the management of student activities, especially related to activities, competitions and scholarships, it is necessary to implement an integrated Student Performance and Governance Information System. This system will cover various student activities, from organizations, social activities, to self-development, as well as three main competition categories: Sports and Arts Competitions, and Academic Competency Competitions. Scholarship management is also the main focus to provide financial support to students who excel or need assistance. With this integration, Politeknik Negeri Medan can improve data management efficiency, strengthen supervision, and provide easier and faster access to all parties involved, thereby creating a learning environment that is more structured and oriented towards achieving academic and non-academic achievements.

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1. INTRODUCTION

Structured and effective student governance is one of the keys to success in creating a dynamic and productive academic environment at the Politeknik Negeri Medan. In order to increase transparency and efficiency in managing various student activities, especially those related to activities, competitions and scholarships, the Politeknik Negeri Medan needs to adopt an integrated Student Performance and Governance Information System.

Student activities include various activities that involve active participation of students outside the academic environment, such as student organizations, social activities, and self-development activities. Meanwhile, competition is an integral part of students' learning experience, which can enhance their skills, talents and experience. Competitions at the Politeknik Negeri Medan are divided into three main categories: Sports and Arts Competitions, and Academic Competency Competitions. Each competition category has various levels, ranging from internal competitions to international competitions. In the context of competition, the Sports and Arts Competition category involves various sports and arts which are participated in both on an internal and external scale. Meanwhile, Academic Competency Competitions include competitions in certain academic fields, such as science olympiads, technology competitions, and so on. Each type of competition can consist of various levels, ranging from internal competitions on campus to international competitions involving participants from various institutions (Apriati et al., 2022).

Competitions are an integral part of students' learning experience, enhancing their skills, talents and overall development. At the Medan State Polytechnic, competitions are categorized into Sports and Arts Competitions and Academic Competency Competitions. Quantitative data shows

that in 2024, Medan State Polytechnic will participate in Porseni Se Indonesia, and will host Porseni 2026, so a system is needed that can help collect data on student achievements.

Apart from activities and competitions, scholarship management is also an important part of student affairs governance. Scholarships provide financial support to students who excel or need financial assistance in completing their education. Therefore, effective and transparent scholarship management will help ensure that eligible students have fair and equitable access to scholarship opportunities (Husain et al., 2023).

By integrating activities, competitions, and scholarship management into a comprehensive Student Performance and Governance Information System, Politeknik Negeri Medan can increase efficiency in data management, strengthen supervision of various student activities, and provide easier and faster access for all parties involved (Silpia et al., 2023). involved. As a result, it is hoped that the Politeknik Negeri Medan can create a learning environment that is more structured, dynamic and oriented towards achieving student academic and non-academic achievements (Ansyori et al., 2022).

2. RESEARCH METHOD

Structured and effective student governance is one of the keys to success in creating a dynamic and productive academic environment at the Politeknik Negeri Medan. In order to increase transparency and efficiency in managing various student activities, especially those related to activities, competitions and scholarships, the Politeknik Negeri Medan needs to adopt an integrated Student Performance and Governance Information System (Suprapti et al., 2022).

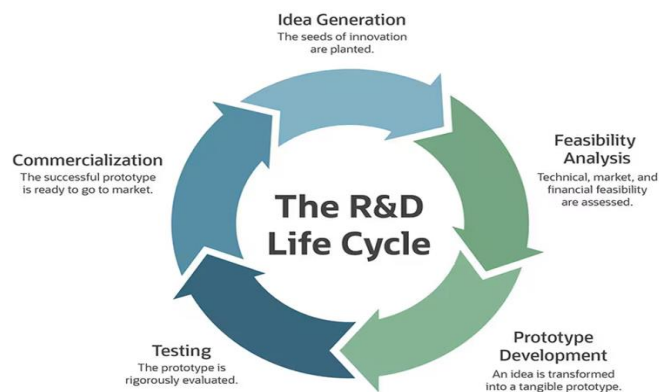


Figure 1. R&D cycle

Student activities include various activities that involve active participation of students outside the academic environment, such as student organizations, social activities, and self-development activities (Waruwu, 2024). Meanwhile, competition is an integral part of students' learning experience, which can enhance their skills, talents and experience. Competitions at the Politeknik Negeri Medan are divided into three main categories: Sports and Arts Competitions, and Academic Competency Competitions (Koirum Hasibuan et al., 2023). Each competition category has various levels, ranging from internal competitions to international competitions. The Research and Development (R&D) approach used in this research aims to produce a product in the form of an integrated Student Performance and Governance Information System that can be implemented at the Politeknik Negeri Medan (Hayati et al., 2021). R&D is a systematic approach that combines a research process to explore needs, and a development process that produces practical solutions. The main stages in this R&D approach are as follows:

Preliminary Study

This stage was carried out to identify existing problems in student affairs management at the Politeknik Negeri Medan. Through this preliminary study, researchers can analyze the situation and conditions of student affairs management that has been implemented so far. Some of the activities carried out in this stage include: a) Direct observation of manual processes carried out in student affairs management, including the scholarship registration process, management of student activities, and management of competitions between students (Mukhtar et al., 2020); b)

Literature study regarding student information systems that have been implemented in other educational institutions as a reference for developing a better system (Francis et al., 2023); c) Interviews with main users (stakeholders), such as student affairs administration staff, students and institutional leaders, to find out their constraints and needs regarding the existing management system (Septiani Nurfauzia Koeswara et al., 2024).

Planning

After conducting a preliminary study, the next step is to prepare an information system development plan based on the problem findings and needs that have been identified. This planning stage includes: Formulate development objectives: System development objectives are formulated based on institutional needs to increase efficiency, transparency and effectiveness in student affairs management. Designing system specifications: Specifications of the system to be developed, including the required modules (for example scholarship modules, student activity modules, and competition modules), as well as the overall system architecture. Determining the technology used: Selecting appropriate technology, such as using a web-based framework such as Laravel and a database that supports data integration (Mercy, 2022), in this case MySQL (Rawat & Purnama, 2021).

Preparing a development timeline: Preparing a schedule plan and system implementation stages which include development, testing, to final implementation.

Development

At this stage, the system begins to be developed based on the results of the planning that has been carried out. The development process includes Making a system prototype Developing an initial prototype as a form of system that will be tested on users. This prototype was created based on the results of the system design that was approved in the planning stage (Dika Pratama et al., 2022).

Internal testing: After the system prototype is complete, internal testing is carried out to ensure each system function runs according to the designed specifications. This testing stage usually involves the Black Box Testing method to verify each system functionality.

Validation

The validation stage is an important part of the R&D approach. In this stage, the system is tested on real users to get feedback regarding performance, ease of use, and suitability of the system to their needs. The validation methods used include (Wahid Rhomdani et al., 2024): User Acceptance Testing (UAT), System users, such as student affairs administration staff and students, will use the system and provide their evaluations regarding the system's advantages and disadvantages. UAT aims to ensure that the system being developed truly meets user needs. Improvements: Based on feedback obtained from users, the system can be improved or refined before being fully implemented.

Implementation

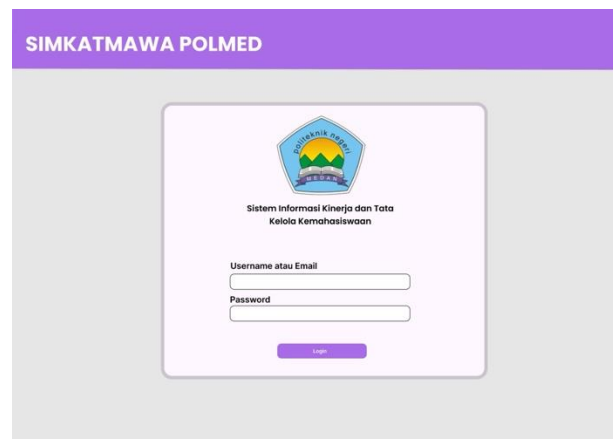
After going through the validation and improvement stages, the system is ready to be fully implemented at the Politeknik Negeri Medan. This implementation process involves training administrative staff and students on how to use the system. Apart from that, outreach was carried out to the entire academic community to ensure optimal acceptance and use of the information system.

Evaluation and Maintenance (Maintenance)

After the system is implemented, periodic evaluations are carried out to ensure that the system is working well and as expected. This evaluation can take the form of a user satisfaction survey, monitoring system performance, as well as identifying technical problems that may arise during use. System maintenance is also an important part of the system life cycle to ensure the system continues to function optimally and can be upgraded over time according to technological developments and needs (Salahuddin et al., 2023).

3. RESULTS AND DISCUSSIONS

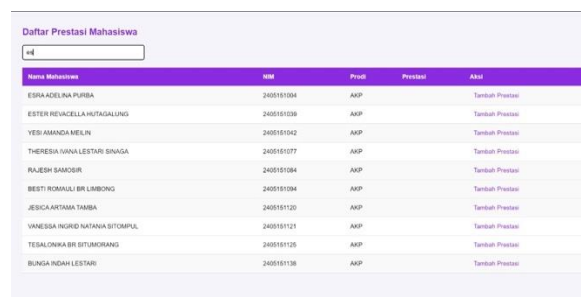
Based on the design method and development results using the Laravel framework, the design results are as follows



The screenshot shows a login interface for 'SIMKATMAWA POLMED'. At the top, there is a purple header with the text 'SIMKATMAWA POLMED'. Below this, a white box contains the logo of 'POLITEKNIK DESAIN MEDAN STATE' and the title 'Sistem Informasi Kinerja dan Tata Kelola Kemahasiswaan'. The login form consists of two input fields: 'Username atau Email' and 'Password', followed by a purple 'Login' button.

Figure 2. Login form

The Login Form functions as the main gate to the student governance system. Each study program admin uses the email and password that has been given to enter the system. Access to the system is limited and is only intended for study program admins, so that each admin can only manage and view the dashboard of their own study program (Roy et al., 2024). Additional security features such as forgotten password are available to help admins recover their accounts if problems with login occur. This ensures that only authorized users can log in and access information relevant to their study program.



The screenshot shows a table titled 'Daftar Prestasi Mahasiswa'. It has a search bar at the top with the number '44'. The table has five columns: 'Nama Mahasiswa', 'NIM', 'Prodi', 'Prestasi', and 'Aksi'. The data rows are as follows:

Nama Mahasiswa	NIM	Prodi	Prestasi	Aksi
ESRA ADELINA PURBA	240515104	AKP		Tambah Prestasi
ESTER REWACELLA HUTAGALUNG	240515109	AKP		Tambah Prestasi
YESI AMANDA MELIN	2405151042	AKP		Tambah Prestasi
THERESIA VANIA LESTARI SINAGA	2405151077	AKP		Tambah Prestasi
KAJESH SAMOSIR	2405151084	AKP		Tambah Prestasi
BESTI ROKMULU BR LIMBONG	2405151094	AKP		Tambah Prestasi
JESICA ARTANA TAMBA	2405151120	AKP		Tambah Prestasi
VANESSA INGRID NATANIA SITOMPUL	2405151121	AKP		Tambah Prestasi
TESALONIKA BIRI SITUMORANG	2405151125	AKP		Tambah Prestasi
BUNGA INDAH LESTARI	2405151138	AKP		Tambah Prestasi

Figure 3. Students data

This form gives access to study program admins to view data on all Medan State Polytechnic students registered in 2024 (Fatimah Zahra & Yulianti, 2023). The information displayed includes important data such as NIM, full name, study program, year of entry, and academic status. Study program admins can use the filter feature based on study programs to view more specific data, as well as export data into a format that can be used for further administration or reporting purposes (Maryani et al., 2023).



The screenshot shows a form titled 'Kelola Akun Prodi'. It has a vertical purple sidebar on the left with icons for home, mail, and user profile. The form fields are: 'Username', 'Jurusan', 'Program Studi', and 'Password', followed by a purple 'Simpan' button.

Figure 4. Study programs dashboard

The Study Program Dashboard is the main feature that is managed by each study program independently (Edo, Wahyu, et al., 2024). Each study program admin can access and manage information related to students in their study program, such as academic data, achievements and student performance. Through this dashboard, admins can see academic trends, monitor students who need special attention, and manage statistics relevant to study program performance. With this independent management, each study program can make more focused decisions based on internal data that they manage independently (Mayangsari & Badrul, 2023).

Figure 5. Base management dashboard

The Achievement Management Form is designed to document and manage student achievements, both in academic and non-academic fields (Edo, Oktaviani, et al., 2024). The responsible study program admin can enter, update and delete student achievement data, as well as add information regarding competitions or awards received. This system makes it easier to monitor and update achievement data in real-time, making it easier to prepare more accurate and relevant student achievement reports (Arribe & Ryandi, 2023).

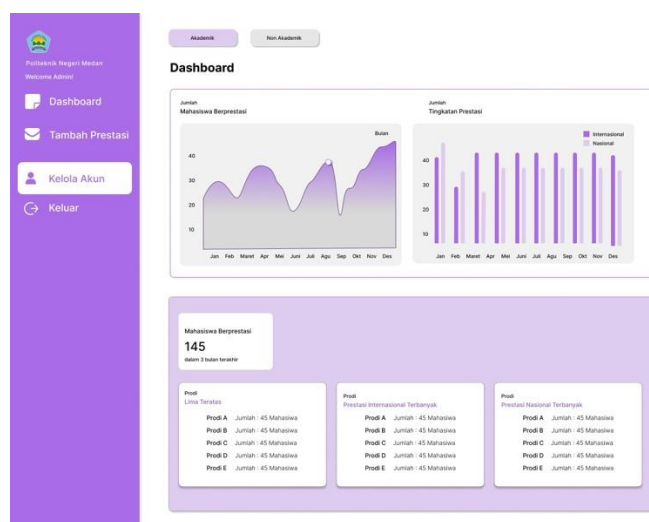


Figure 6. Main dashboard

The Main Dashboard displays a comprehensive summary of student information. Functions as an information center that can be accessed by higher authorities, such as the management of the Medan State Polytechnic (Rahmaddon & Arribe, 2023). This dashboard displays general statistics such as the total number of students, achievement statistics, and important announcements related to campus activities (Nishfi et al., 2023). Visual graphs and statistical

charts provide a quick and easy-to-understand overview of data trends, aiding data-driven decision making at the management level.

4. CONCLUSION

The student governance system designed for the Medan State Polytechnic has been successfully developed with a focus on achievement modules and UKM data, as well as a special login mechanism for study program admins using email and password. Each study program has a study program dashboard that is managed independently, providing flexibility and independence in managing student data. With this feature, the system is able to increase efficiency, accuracy and security in managing student information, as well as providing powerful tools to support the decision-making process at the study program level. The addition of modules in the next stage, such as scholarship modules, guidance and counseling, and career and alumni management, will expand the scope of system functions, making it more holistic and able to support various student needs as a whole. This system will also facilitate the management of academic and non-academic activities, assist students in aspects of administration, achievement and career development (Ilham & Yuniarti, 2022).

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