



# Effect of service quality and student satisfaction on academic information system usage effectiveness

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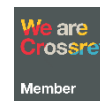
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# Effect of service quality and student satisfaction on academic information system usage effectiveness

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## ABSTRACT

This study analyzes the influence of academic administrative service quality and user satisfaction on the effectiveness of Academic Management Information System (SIMA) usage in higher education. Service quality was evaluated using the SERVQUAL dimensions, while user satisfaction was assessed through four key indicators. A quantitative survey of 333 students, supported by qualitative interviews, was employed. Multiple regression analysis shows that service quality significantly affects SIMA usage ( $\beta = 0.379$ ;  $p = 0.000$ ), and user satisfaction also has a strong positive effect ( $\beta = 1.053$ ;  $p = 0.000$ ). Together, both variables explain 47% of the variance in SIMA usage ( $R^2 = 0.470$ ). Descriptive findings indicate that assurance and responsiveness are the weakest aspects of service quality, while the confirmation dimension requires attention within user satisfaction. Although system and information quality are generally rated well, issues remain regarding information relevance and system assurance. Overall, the study highlights the need for a holistic strategy that simultaneously enhances service quality and user satisfaction to improve SIMA effectiveness in supporting academic processes.



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## Introduction

Universities are currently faced with increasing competition in improving the quality of educational services for students. The use of digital technology has become an integral part of educational practices in various fields (Gusteti et al., 2023). Technology not only plays a role in the learning process, but also in the overall administration and management of education. The implementation of digital systems helps educational institutions become more efficient, accurate, transparent and responsive to the needs of various parties. Various efforts are made to improve and enhance the quality of academic services. One of them is the development of an academic management information system. Academic management information system is one of the solutions that can be utilized by universities to improve the quality of academic services.

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Academic Information Systems play a strategic role in supporting the implementation of higher education, both in public and private universities. The quality and complexity of this system is often used as an indicator in assessing the quality of higher education institutions. The better the integration and functionality of the system implemented, the higher the perception of the quality of the college concerned. In addition, the existence of the Academic Management Information System is also an important component in the accreditation assessment process of higher education institutions (Wekke et al., 2018). Implementation of the right academic management information system can have a positive impact on improving the quality of academic services in higher education (Ali et al., 2020).

Management in higher education is highly dependent on the utilization of information technology. Various aspects such as the administration of new student admissions, academic data management, lecture implementation, resource management, and decision-making processes at the executive level can be carried out more effectively and efficiently through the application of integrated information systems. Administrative processes that are carried out manually take a lot of time and energy, such as student registration, recording grades, making transcripts, and reporting learning outcomes. This hampers the smooth running of the academic process and increases the workload of administrative staff (Anisah et al., 2020). Academic data management has a complex data structure that requires management with the help of information systems and the use of databases.

Moreover, problems in managing and maintaining the database, where the database capacity is not large enough to accommodate the growing transactional data, resulting in decreased system performance and poorly managed data. If the management is still manual, which makes it difficult to search for information, update data, and monitor academic progress, the system will not be able to handle the data (Hendriyati et al., 2022). Manual systems are also prone to human error, such as incorrect recording of grades or missing student data (Mawarti & Seprina, 2023). Without good management, it is difficult to know whether the quality of information provided is useful for its users. Similar problems were found in research Nurdianto et al. (2021) which states that handling academic data management manually makes it difficult for schools to obtain information about academics and is prone to providing inaccurate information. This in turn can reduce the overall quality of education.

Currently, Riau Caltex Polytechnic has a website-based academic information system that is very helpful in processing information about students, lecturers, academic administration, campus facilities and student activities. With the existence of a website-based academic management information system at Caltex Polytechnic, it is very important because the existence of an information system is very helpful in delivering information on campus activities to lecturers, education staff and foundation leaders who need information about the academic process of Caltex Polytechnic more easily, quickly, economically and precisely (Carpendale et al., 2025; Tshabalala et al., 2014). Manual processes are still used in data recapitulation and reporting, which are prone to human error and data mismatches, and hamper operational efficiency. Reporting done manually requires a lot of time and energy and is at risk of data mismatches. The Academic Management Information System helps provide precise and fast data for various important reports (Morgan & Wilk, 2021; Nguyen et al., 2022).

The quality of the Academic Information System at Caltex Polytechnic in supporting higher education management services can be said to be on the right track. In its implementation, various universities implement Academic Information Systems in a very diverse form, ranging from simple systems to complex systems. Therefore, the effectiveness and quality of the Academic Information System in the management of higher education institutions needs serious attention, given its strategic role in supporting managerial decision-making processes and other policies. To optimize the utilization of Academic Information System services, especially in the aspect of academic administration, further studies are needed. It is intended that the academic management process at Caltex Polytechnic can take place more effectively and efficiently and be able to support the achievement of overall institutional goals (Kovács et al., 2024; Lan et al., 2022; Pitic & Irimias, 2023).

The reality that occurs in the field of services provided is not fully optimized based on interviews conducted with several students. Although the Academic Information System at Caltex Polytechnic has been implemented. This is reflected in the complaints submitted by students regarding the mismatch between expectations and employee responsiveness in handling their needs through the system. The lack of a quick and appropriate response from related parties shows that the quality of Academic

Information System services has not been able to meet user expectations as a whole. This finding is in line with research [Ratnawati \(2003\)](#) which shows that the level of student satisfaction with the system is highly dependent on the reliability and effectiveness of the services provided. When the system is able to function properly and responsively, student satisfaction increases; conversely, if the system often experiences problems or delays in service, then student satisfaction will decrease. Other factors that can lead to ineffective management information systems are user interface and system performance that is slow or often interrupted.

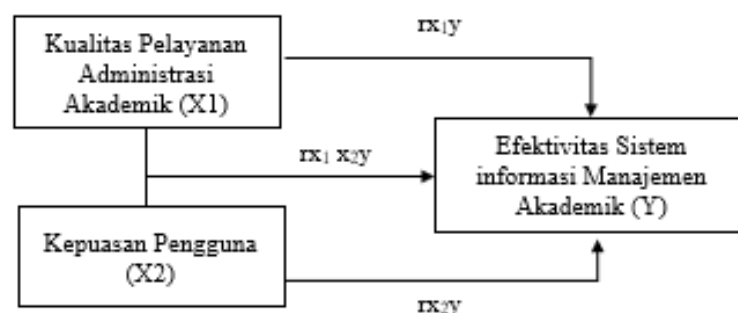
Based on the facts in the field, some student service facilities must wait for the response of several related parties. For example, when students want to borrow a room, students must first report to the relevant parties, which should make this process happen quickly through the features available on the academic information system. These students still think that the Service Unit is still considered slow and unresponsive in responding to student needs, so students sometimes have to report to the Service Unit in charge. This indicates that the performance of the Service Unit is still ineffective.

Good academic service quality can provide satisfaction for students as the main users. Student satisfaction with academic administration services is one indicator of the success of higher education in organizing education ([Tari et al., 2022](#)). Therefore, student satisfaction is expected so that services and facilities can be maximally utilized. When students express satisfaction with the services provided, they show a greater tendency to optimize the use of the system, which can then lead to an increase in the overall effectiveness of academic management.

Academic information systems play a crucial role in ensuring smooth academic processes, as system quality directly influences efficiency, transparency, and responsiveness in higher education management ([Deng et al., 2022](#); [Seifried et al., 2021](#)). Although Caltex Polytechnic has implemented an Academic Management Information System (SIMA), various issues such as slow responsiveness, unmet service expectations, and limited system features indicate that the current service quality and user satisfaction have not fully supported effective system utilization.

## Method

The conceptual framework in this study was prepared to explain the relationship between the variables studied, namely the quality of academic administration services and user satisfaction as independent variables, and the effectiveness of using the Academic Management Information System (SIMA) as the dependent variable.



**Figure 1.** Conceptual Framework

This study employed a quantitative explanatory approach to analyze the influence of academic administrative service quality and user satisfaction on the effectiveness of Academic Management Information System (SIMA) usage. Service quality was measured using the SERVQUAL dimensions tangibles, reliability, responsiveness, assurance, and empathy while user satisfaction was assessed through four indicators: expectation, performance, conformity, and affirmation. The effectiveness of SIMA usage was evaluated based on system quality (ease of use, reliability, access speed, flexibility, and security) and information quality (accuracy, timeliness, completeness, relevance, and consistency) as proposed by [McLean & Delone \(2003\)](#). Multiple linear regression was used to test the partial and simultaneous effects of the independent variables on the dependent variable.

The sample size of 332 students was determined from a population of 1,972 Caltex Polytechnic students using a 0.05 accuracy level. Data were collected through an online Likert-scale questionnaire designed to measure service quality, user satisfaction, and SIMA effectiveness. Before full deployment, the instrument was tested on 67 students to ensure validity and reliability. Pearson correlation showed that all 65 questionnaire items met the validity criteria ( $r_{\text{calculated}} > r_{\text{table}}$ ), while the reliability test produced a Cronbach's Alpha of 0.979, indicating excellent internal consistency. Therefore, the instrument was deemed suitable for use in the main data collection process.

## Results and Discussions

The normality test was carried out on the residual value using the One-Sample Kolmogorov-Smirnov test. The test results show a significance value of 0.093 ( $p > 0.05$ ). Based on this value, it can be concluded that the residuals are normally distributed. Thus, the normality assumption in multiple linear regression models has been met. The results of the residual normality test table can be seen in the table below:

**Table 1.** Normality Test

Statistics	Value
Amount of data (N)	333
Mean residual	0.000
Standar deviasi	10.062
Test statistic (D)	0.046
Asymp. Sig. (p-value)	0.093

The multicollinearity test is conducted to determine whether there is a high correlation between the independent variables in the multiple linear regression model. High multicollinearity can cause bias in the estimation of regression coefficients, thus affecting the validity of the model.

**Table 2 . U** Multicollinearity test

Variable	Tolerance	VIF
Service Quality	0.621	1.610
Student Satisfaction	0.621	1.610

The results of multicollinearity testing in this study are shown in the Collinearity Statistics column in the regression output table. Based on this output, the Tolerance value for the Academic Administration Service Quality and Student Satisfaction variables is 0.621, while the Variance Inflation Factor (VIF) value for the two variables is 1.610. Thus, since both variables have Tolerance values above 0.10 and VIF below 10, it can be concluded that there is no multicollinearity among the independent variables in this model

Park's test is conducted to detect the presence of heteroscedasticity symptoms in the regression model. This test is performed by regressing the natural logarithm of the residual square on the independent variables in the model, namely Student Satisfaction and Academic Administration Service Quality. The regression results are shown in the following table:

**Table 3.** Park Test

Independent Variable	coefficient	Sig.
Student Satisfaction	0,029	0,309
Quality of Academic Administration Services	-0,021	0,051

Based on this output, the significance value (p-value) for the Student Satisfaction variable is 0.309, while for the Quality of Academic Administration Services it is 0.051. Both values are greater than the significance level of 0.05, although the significance value of the second variable is at the threshold. Thus, it can be concluded that there are no symptoms of heteroscedasticity in this regression model.

The partial t test is conducted to determine whether each independent variable (Quality of Academic Administration Services and Student Satisfaction) has a significant effect individually on the

dependent variable, namely the Effectiveness of the Academic Management Information System (SIMA).

**Table 4 . t test**

Variable	Coefficient (B)	Std. Error	t count	Sig. (p-value)	information
Student Satisfaction	1,053	0,135	7,788	0,000	Signifikan
Quality of Academic Administration Services	0,379	0,052	7,218	0,000	Signifikan

The Student Satisfaction variable has a t value = 7.788 and a significance value = 0.000 < 0.05, it can be concluded that Student Satisfaction has a significant effect on the Effectiveness of Academic SIM. The Academic Administration Service Quality variable has a t value = 7.218 and significance = 0.000 < 0.05, so it has a significant effect on the Effectiveness of Academic SIM. Partially, both Student Satisfaction and the Quality of Academic Administration Services have a positive and significant effect on the Effectiveness of the Academic Management Information System (SIMA).

The F test is used to determine whether the independent variables simultaneously (together), namely Student Satisfaction and Academic Administration Service Quality, have a significant effect on the Effectiveness of Academic SIM.

**Table 5. F Test**

F	Sig.	Interpretation Results
146.500	0.000	If the significance value is less than 0.05, then $H_0$ is rejected.

Based on the results of the F test, the calculated F value is 146.500 with a significance value of 0.000. Because the significance value is smaller than 0.05, it can be concluded that the variables of Student Satisfaction and Quality of Academic Administration Services simultaneously have a significant effect on the Effectiveness of the Academic Management Information System (SIMA). Thus, this regression model is suitable for predicting SIMA Effectiveness based on these two variables.

The coefficient of determination ( $R^2$ ) is used to measure how much the proportion of variation in the dependent variable (SIMA Effectiveness) can be explained by the independent variables (Academic Administration Service Quality and Student Satisfaction) together.

**Table 6. R Square**

R	$R^2$	Adjust $R^2$
0,686	0,470	0,467

The value of  $R^2 = 0.470$  means that 47.0% of the variation in Academic SIM Effectiveness can be explained by Student Satisfaction and Academic Administration Service Quality simultaneously. While the remaining 53.0% is explained by other factors not included in this regression model.

$H_1$  : The Quality of Academic Administration Services ( $X_1$ ) has a positive and significant effect on the Use of Academic Management Information Systems (Y).

Based on the results of multiple linear regression analysis, the regression coefficient value for the Academic Administration Service Quality variable ( $X_1$ ) is 0.379 with a calculated t value = 7.218 and a significance value = 0.000. Because the significance value is smaller than 0.05, it can be concluded that:  $H_1$  is accepted, which means that the Quality of Academic Administration Services has a positive and significant effect on the Use of Academic Management Information Systems (SIMA). The positive regression coefficient indicates that an increase in the quality of administrative services will increase the effectiveness of the use of Academic SIM. The better the service received by students or users, the higher the level of utilization of available information systems. Results and discussion contain the results of research findings and their discussion. Write down the findings obtained from the results of the research that has been carried out and must be supported by adequate data.

$H_2$ : Kepuasan Mahasiswa ( $X_2$ ) berpengaruh positif dan signifikan terhadap Penggunaan Sistem Informasi Akademik (Y).

The results of multiple linear regression analysis show that the Student Satisfaction variable ( $X_2$ ) has a regression coefficient value of 1.053, with t count = 7.788 and a significance value = 0.000. Because the significance value is smaller than 0.05, it can be concluded that:  $H_2$  is accepted, meaning that Student Satisfaction has a positive and significant effect on the Use of Academic Management Information Systems (SIMA). The positive regression coefficient indicates that the higher the level of student satisfaction with academic services, the higher the effectiveness or use of Academic SIM. Students who feel satisfied will be more encouraged to utilize the system optimally.

$H_3$  : Quality of Academic Administration Services ( $X_1$ ) and Student Satisfaction ( $X_2$ ) together have a positive and significant effect on the effectiveness of the use of academic management information systems ( $Y_1$ ).

Based on the results of the ANOVA test (F test), the calculated F value is 146.500 with a significance value = 0.000. The significance value is smaller than 0.05, so it can be concluded that:  $H_3$  is accepted, meaning that the Quality of Academic Administration Services and Student Satisfaction simultaneously have a positive and significant effect on the Effectiveness of Using the Academic Management Information System (SIMA). This shows that the two independent variables have a strong and meaningful contribution in explaining variations in the dependent variable. The better the quality of administrative services and the higher student satisfaction, the higher the effectiveness of using Academic SIM.

The success of an educational organization depends on access to relevant and up-to-date information. The administrative management of an institution will determine the quality of education, where available information is obtained from good academic activities. The quality of academic administration services plays an important role in determining the effectiveness and satisfaction of academic information system users. High service quality, system quality, and information quality are consistently associated with better system effectiveness, user satisfaction, and organizational performance. Currently, the academic management information system (SIMA) at the university processes academic data to facilitate student activities. SIMA was developed to provide maximum service to students. To optimize the use of information technology and ensure the suitability of AIS services provided, it is necessary to examine the level of service provided to improve quality. The Academic Service Quality variable in this study is measured using five main dimensions based on the SERVQUAL model, namely Reliability, Tangibles, Assurance, Empathy, and Responsiveness. The following are the descriptive statistical results of each dimension:

**Tabel 7.** Statistic Descriptif of dimension academic service quality

Dimensions	Mean
Reliability	24,73
Tangibles	20,46
Assurance	16,38
Empathy	20,41
Responsiveness	16,44

Based on the table above, when viewed from the average / mean value, the assurance and responsiveness dimensions are the lowest. By looking at these results, the focus of improving the quality of academic services should be directed at the following two dimensions Assurance: increasing the competence, professional attitude, and confidence of service officers; and Responsiveness: increasing speed, readiness, and efficiency in responding to student needs.

The first hypothesis ( $H_1$ ) states that the Quality of Academic Administration Services has a positive effect on the Use of Academic SIM. The results of the analysis show that the direct effect of service quality on the use of Academic SIM is significant with a regression coefficient of 0.379 and a significance value = 0.000. This means that the better the quality of service provided, the higher the intensity and effectiveness of the use of Academic SIM by students. Based on the results of data analysis tests conducted in research [Octaviany et al. \(2023\)](#) It was concluded that the implementation of a web-based academic management information system was able to improve the quality of academic management by 65.68% based on the N-Gain percentage.

User satisfaction with information systems (IS) is considered an important indicator of the success of information systems and has been the subject of numerous research studies since its inception (Vaezi et al., 2016). User satisfaction measurement is a measurement of the behavior of information system users in terms of their response to several factors related to the delivery of information about products and services (Prihastono, 2011). As a concrete step in order to realize the vision and mission of an organization or educational institution is to implement an academic information system. One of the factors that influence the success of academic information systems is user satisfaction (Hidayah et al., 2020).

The User Satisfaction variable in this study is measured through four dimensions, namely Expectations, Performance, Conformity, and Affirmation. The following are the results of descriptive statistical analysis of each dimension:

**Tabel 8 .** descriptive statistical User Satisfaction variable

Dimension	Mean
Expectations	12,66
Performance	12,31
Suitability	12,41
Affirmation	11,87

Based on the descriptive results of the user satisfaction variable, it is known that three of the four dimensions are in the high category, namely: Expectations, Performance, and Conformity. This shows that in general, academic services have been running quite effectively in meeting user expectations and needs. However, there is one dimension that is still in the medium category, namely Affirmation. This dimension shows weaknesses in aspects: Clarity of service information, Procedural certainty or service time and Affirmation or confirmation from the service to the user.

The second hypothesis (H2) states that Student Satisfaction has a positive effect on the Use of Academic SIM. The analysis also supports this hypothesis with a regression coefficient value of 1.053, with t count = 7.788 and a significance value = 0.000, indicating that student satisfaction with services and academic information systems plays a significant role in increasing the use of SIM. This is in line with the literature which confirms that user satisfaction is a key predictor of usage and loyalty to information systems (McLean & Delone, 2003).

This finding is reinforced by the interview results which mentioned that the information in the Academic SIM is provided completely and accurately, and the interface is user-friendly, especially for new students. Ease of access was also cited as a major factor supporting students to actively use the system. However, obstacles such as frequent server downs and bugs in the application indicate that there are still aspects of service quality that need to be improved. These technical issues, if not fixed immediately, can reduce user trust and comfort, and potentially reduce the frequency of use of the system. However, some users noted that the system does not yet provide features that are considered important, such as reporting academic problems, permission/sickness letter features, or interactive messaging with administrative personnel. The absence of these features can reduce the level of user satisfaction in the long run, so it needs to be considered in further development.

One of the educational services provided by universities to students is academic administration services (Demir et al., 2021). To see the quality of quality educational services by comparing students' perceptions of the services they receive in accordance with their expectations or desires (Htang, 2021; Rahimizhian et al., 2020; Twum & Peprah, 2020). Therefore, the success of education services is determined by the provision of quality services to users of education services, namely students and the general public (Amin, 2017). Quality academic services can increase student satisfaction (Chandra et al., 2020). Academic services are said to be of high quality if they meet the needs of students (Sallis, 2014). In one study Prima et al. (2019) adding the concept of Customer Relationship Management (CRM) to the academic service information model system can be said that there is an increase in the quality of service to students. One of the factors causing this improvement is due to the existence of an academic service information model system that is fast, precise, accurate, and flexible, and in accordance with the needs of students as the main customers of the university.

Technology is primarily used to facilitate and improve human activities, making work more productive and efficient (Chao, 2017; Emad et al., 2020; JEBBAR et al., 2022). Especially in terms of information technology, the development of technology has increased very rapidly. One type of information technology utilized in the field of education is the Academic Information System (SIKAD). Academic information systems are used in universities for a variety of tasks, including filling out KRS (Study Plan Card), printing KHS (Study Result Card), managing lecture grades, and student attendance. The purpose of implementing SIKAD is to improve academic service standards for students (Widodo et al., 2023).

User access to the Academic Information System (SIKAD) is very important because it ensures that system users receive high quality services to guarantee student performance and improve student efficiency and effectiveness in the academic process (Tsabita et al., 2023). The infrastructure of a university will be determined by the existing Academic Information System and Quality of Service (Anam et al., 2023). With effective academic information system management, universities have a great opportunity to make the right decisions and solve problems efficiently, thus saving time, energy and costs.

The System Quality variable in this study is measured through five dimensions, namely: Ease of Use, System Reliability, Response Speed, Flexibility, and System Assurance. The results of descriptive statistical analysis of each dimension are as follows: Research Susilawati & Subroto (2022) This study found that Pancasakti Academic Information System (SIAP) and Administrative Service Quality simultaneously have a significant effect on student satisfaction. And partially Pancasakti Academic Information System has a significant effect on student satisfaction, Quality of Administrative Services has a significant effect on student satisfaction.

## Conclusions

The research findings indicate that the quality of academic administrative services and student satisfaction have a positive and significant impact on the effectiveness of the Academic Management Information System (SIMA) at Caltex Polytechnic. The assurance and responsiveness dimensions are key areas for improvement, reflecting the need to enhance the professionalism, speed, and readiness of service personnel. While the system is generally perceived as user-friendly and the information accurate, issues remain in system security and the relevance of information provided. SIMA features should better align with students' actual needs, such as permission requests, problem reporting, and communication tools. Regular training for administrative staff and ongoing evaluation of user experiences are essential to improve satisfaction and system effectiveness. Theoretically, this study supports the DeLone and McLean Information System Success Model and suggests expanding it with additional variables such as technological readiness and digital literacy to better understand system implementation success in higher education.

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