Research Article

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Analysis of Student User Satisfaction with the Learning Management System (LMS) at Gajayana University

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Abstract

The development of information technology has driven the transformation of learning through e-learning systems, one of which is the use of a Learning Management System (LMS). Gajayana University Malang has implemented a web-based LMS to support the online teaching and learning process. This study aims to analyze the level of user satisfaction—in this case students—with the use of the LMS using the DeLone and McLean Model approach. This model measures the success of an information system through six variables: system quality, information quality, service quality, impact of use, user satisfaction, and net benefits. This study used a quantitative approach by distributing questionnaires to 95 active students of Gajayana University Malang who have used the LMS. Data were analyzed using multiple linear regression through SPSS. The results showed that system quality, service quality, and impact of use significantly influenced user satisfaction, while information quality did not have a significant influence. Furthermore, user satisfaction was proven to have a positive effect on perceived net benefits.

Keyword: Information System Success, User Satisfaction, LMS, University Students.

1. Introduction

The development of information technology influences various aspects of social life, including the world of education (Afzal et al., 2023; HM Amir et al., 2024). Speed, accuracy, and consistency of the process are some of the reasons why information technology is used as a solution to problems (Pakaja & Wava, 2023). E-learning technology is one of the fields of information technology that can support the world of education in learning activities (Luckyardi & Rahman, 2021). E-learning is a distance learning system as a solution to the limitations of conventional learning systems that give rise to problems of limited time, distance, and costs (Al Rawashdeh et al., 2021). E-learning is a learning media that allows the delivery of learning materials to students using internet media, or other computer network media (Ritonga et al., 2021); (Hoerudin et al., 2023). The use of the ie-learning system can run on various platforms, but in general ie-learning is implemented using a web-based platform.

Service quality in e-learning systems plays a crucial role in determining user satisfaction. Research by Limbu & Pham (2023) shows that system quality, material and instructor quality, and administrative and

support services significantly influence student satisfaction in using e-learning. Furthermore, a study by Dangaiso et al. (2022) found that system, information, and service quality positively influenced e-learning user satisfaction in higher education. Similar findings by Rukmana et al., (2024) in their research at Brawijaya University, which confirmed that improving the quality of systems, information, and services can increase e-learning user satisfaction. Therefore, evaluating e-learning service quality is essential to ensure user satisfaction and the effectiveness of online learning (Pham et al., 2019). In the educational context, an LMS plays a crucial role in organizing, managing, and supporting interactions between instructors and students in an e-learning environment. However, it is important to distinguish between an LMS and e-learning itself. LMS is a system used to manage e-learning, while e-learning is a learning method that utilizes digital technology, which can be run with or without LMS.

Universitas Gajayana Malang (UNIGA) has implemented a web-based e-learning system to support teaching and learning activities. This system is used as an online learning platform that allows students and lecturers to interact effectively, especially in situations requiring distance learning. In addition, UNIGA actively improves the quality of digital learning through Learning Management System (LMS) training for lecturers from various faculties and study programs. This step demonstrates UNIGA's commitment to utilizing information technology to support a more modern and efficient educational process. With this background, this study aims to analyze the level of user satisfaction, specifically students, with the use of the LMS at Universitas Gajayana Malang. The main focus of this study is to measure how well the LMS system meets the needs of its users, as well as what factors influence the level of student satisfaction in using the LMS as a learning tool.

In analyzing student satisfaction with the E-Learning Management System (LMS), this study uses the DeLone and McLean Model approach as a conceptual framework. This model was chosen because it is able to provide a comprehensive overview of the factors that influence the success of an information system, including e-learning systems (Alotaibi & Alshahrani, 2022). The DeLone and McLean Model consists of six main variables, namely system quality, information quality, service quality, impact of use, user satisfaction, and net benefits (Yakubu & Dasuki, 2018). In the context of Gajayana University Malang, this approach is used to evaluate how the technical quality of the LMS, the reliability of the information presented, and the available service support contribute to student satisfaction as the main users. By using this model, the study is expected to be able to identify areas that need to be improved to optimize the student learning experience through the LMS.

Currently, there are many methods that can be used to analyze student satisfaction with information technology services, especially e-learning information systems, one of which is the DeLone & McLean model. This model was developed by William H. DeLone and Ephraim R. McLean in 1992 and has been updated in 2003 to better adapt to developments (DeLone & McLean, 1992) in information technology. The DeLone & McLean model has advantages in measuring user satisfaction because it considers various factors that influence the success of the system, such as system quality, information quality, service quality, and its impact on users and the organization (Delone & McLean, 2003). This approach provides a more comprehensive picture than other models because it does not only focus on technical aspects, but also on the benefits felt by users. In the context of this research, the DeLone & McLean model is used because it can evaluate the effectiveness of the e-learning system from various aspects that are irrelevant

to user satisfaction. This model allows analysis of how the quality of the e-learning system used at Gajayana University Malang contributes to student satisfaction. In this way, the results of this research can provide recommendations for academic parties to improve the quality of e-learning services that are more optimal and in accordance with the needs of users (Rambudi et al., 2024).

2. The Art of Research

a. Learning Management System

The Learning Management System (LMS) is a technology-based platform used to support the online learning process by providing various features such as material management, discussion forums, assignments, and academic evaluation (Hidalgo et al., 2019). LMS plays a crucial role in improving the accessibility and effectiveness of learning for students and lecturers in higher education. E-learning is a breakthrough in educational technology (Munna et al., 2024). This e-learning system has the potential to improve the efficiency and quality of human resources. E-learning is a new approach to teaching and learning that utilizes electronic media, particularly the internet, as a medium for learning. E-learning is a type of teaching and learning that can be delivered to students via the internet or other computer network media (Bali et al., 2022; Matthew et al., 2021). According to Ouadoud et al. (2021) an LMS is an integrated and comprehensive system that can be used as an e-learning platform. LMS has several features, including course content management, learning process management, online evaluation and examinations, subject administration, and discussions.

b. User Satisfaction

User satisfaction in information systems, including academic Learning Management Systems (LMS) at universities, According to Rabaa'i et al. (2021) can be explained through the Expectation-Confirmation Theory (ECT) proposed by Richard (1980). This theory states that user satisfaction occurs when their experience using an LMS meets or even exceeds their initial expectations. If an LMS offers easy access, optimally functioning features, and relevant information, users will experience positive confirmation, leading to satisfaction. Conversely, if an LMS does not meet expectations, negative disconfirmation occurs, which can lead to dissatisfaction and decreased intensity of system use. This approach aligns with the DeLone & McLean (2003) Model, which measures user satisfaction based on six main factors: system quality, information quality, service quality, usage level, user satisfaction, and net benefits of the system. Good system quality, accurate information, and responsive support services will increase user satisfaction and strengthen the intensity of LMS use. The integration of these two models shows that user satisfaction with academic LMS at universities is formed through the match between initial expectations and their actual experience, which is influenced by the overall quality of the LMS. Therefore, improving features, stability, and service within an LMS is crucial to ensuring user satisfaction and the system's effectiveness in supporting the learning process in higher education. In DeLone and McLean's success model, these three levels of communication are divided into six dimensions (Informasi et al., 2018), for example: system quality, information quality, service quality, user satisfaction, and usefulness.

c. Research Hypothesis

In measuring user satisfaction, the DeLone and McLean model was used. This model was chosen because it can test user satisfaction with system quality, information quality, and users. (Rambudi et al., 2024) Several methods were used in this study, but they did not have the same structure as the DeLone and McLean model. Another opinion regarding the advantages of this model is that it quickly received a

response because the DeLone and McLean model is a simple model but is considered valid enough for use in research. Previous research on testing the DeLone and McLean success model was conducted by Widyaningrum et al. (2024). Based on the two models used, it stated that the two hypotheses proposed by the researcher could be proven, where system quality and information quality have a significant influence on user satisfaction (Rulinawaty et al., 2024). According to Aggelidis & Chatzoglou (2006) user satisfaction in the context of information systems is defined as the level of user acceptance and comfort with a system based on their experience in using the system. In an LMS, user satisfaction can be measured through ease of access, service quality, and the effectiveness of learning obtained from the system. According to Deng (2010), user satisfaction is determined by their initial expectations of the system and their actual experience. If the LMS system is able to meet or exceed expectations, then users will be satisfied. DeLone & McLean's information systems success model is used as an analytical framework (see Figure 1) to evaluate user satisfaction with Learning Management Systems (LMS) in a university academic environment. Therefore, this study hypothesizes the following:

H1 : System quality has a positive effect on LMS user satisfaction at universities.
H2: Information quality has a positive effect on LMS user satisfaction at universities.
H3: Service quality has a positive effect on LMS user satisfaction at universities.
H4: LMS impact of used has a positive effect on LMS user satisfaction at universities.
H5: User satisfaction has a positive effect on LMS net benefits at universities.

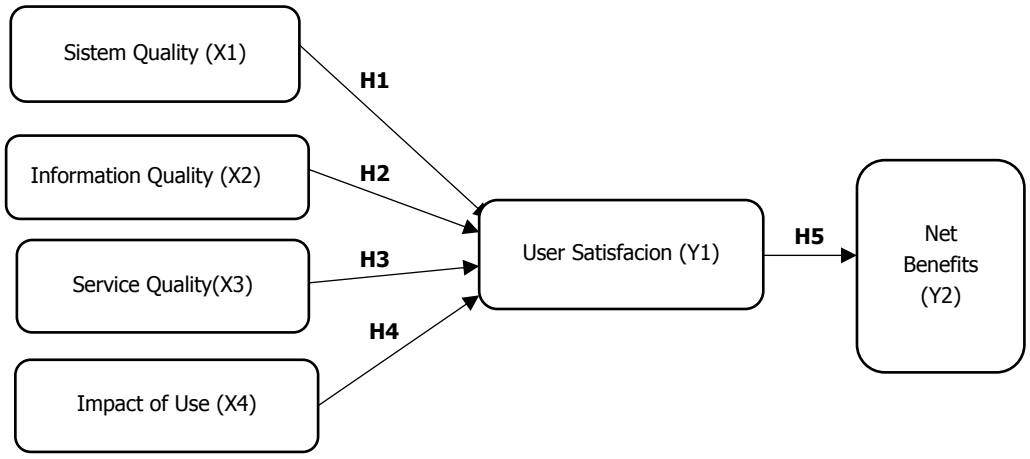

Figure 1. Conceptual Framework of the Research

3. Method

This study uses a descriptive quantitative approach with the aim of determining the extent to which the quality of the system, information, services, and other aspects of the LMS can influence student satisfaction. This type of research is descriptive quantitative. Therefore, in addition to calculating, this study also provides an overview of how the research object, in this case students, uses the Learning Management System (LMS) to support online learning activities. The population in this study were students of Gajayana University Malang, with a research sample of 95 student respondents, with the provision that students are still active and have used the Learning Management System (LMS) at least once in learning

activities. The respondent selection technique used purposive sampling. The research measurement indicators use previously existing literature provisions (DeLone & McLean 2003; Seddon, 1997), including: system quality consisting of five questions, information quality consisting of five questions, service quality consisting of four questions, impact of use consisting of four questions, user satisfaction consisting of four questions, and net benefits consisting of four questions. Validity and reliability tests will be conducted to determine whether the research instrument is of good quality and is capable of being valid and consistent. Next, classical assumption tests using normality, multicollinearity, and heteroscedasticity tests are conducted to determine whether the regression model is unbiased and can be interpreted accurately. Finally, the research model will be analyzed using multiple regression to determine the extent of influence of the independent variables on the dependent variable and answer the research hypotheses..

4. Result

a. Characteristics of Research Respondents

In general, Gajayana University Malang has 3 Faculties consisting of the Faculty of Engineering and Informatics, the Faculty of Economics and Business, the Faculty of Literature and Culture, furthermore, an overview of the characteristics of the respondents used in this study can be seen from several aspects, namely gender, study program, and year of entry, as for the characteristics of respondents in this study as shown in table 1 where the majority of respondents were male with the most students coming from the class of 2022 and 2024. Furthermore, the largest number of respondents were students of information systems and communication science.

Table 1. Characteristics of Research Respondents

Information	Total	%	Information	Total	%
Gender			Study program		
Man	61	64.2	Information Systems	31	32.7
Woman	34	35.8	Electrical Engineering	5	5.3
Year of Entry			Mechanical Engineering	4	4.2
2019	5		Communication Science	27	28.5
2020	8		Psychology	8	8.3
2021	15		Management	9	9.4
2022	30		Accounting	11	11.6
2023	10				
2024	27				

b. Validity and Reliability Test

Validity testing is used to determine the extent to which the items in the questionnaire are truly capable of measuring the intended variables. In this study, validity testing was conducted on each item of the research construct statement using the Pearson Product Moment technique, where the calculated r value is greater than the table r value at a significance level of 5% (Pakaja et al., 2024). The results obtained in Table 2 show that each dimension of the research question item has a calculated r value > table r value and is valid.

Table 2. Results of Pearson Product Moment Validity Test

Variable	Items	r-count	r-table	Info
X1	X1.1	0,748	0,201	Valid
	X1.2	0,776		
	X1.3	0,782		
	X1.4	0,819		
	X1.5	0,762		
X2	X2.1	0,912	0,201	Valid
	X2.2	0,864		
	X2.3	0,829		
	X2.4	0,848		
	X2.5	0,919		
X3	X3.1	0,745	0,201	Valid
	X3.2	0,813		
	X3.3	0,851		
	X3.4	0,797		
X4	X4.1	0,773	0,201	Valid
	X4.2	0,869		
	X4.3	0,898		
	X4.4	0,829		
Y1	Y1.1	0,936	0,201	Valid
	Y1.2	0,928		
	Y1.3	0,896		
	Y1.4	0,920		
Y2	Y2.1	0,767	0,201	Valid
	Y2.2	0,842		
	Y2.3	0,899		
	Y2.4	0,874		

Furthermore, the reliability test aims to determine the extent to which the research instrument can be trusted or consistent when used under the same conditions. In this reliability test, the Cronbach's Alpha method is used with a requirement of >0.60 (Pakaja et al., 2023). The reliability test results obtained in Table 3 show that all variables have above the specified threshold (>0.60) and have excellent internal consistency and are suitable for use in further analysis.

Table 3. Reliability Test Results

No	Variable	Reliability
1	X1	0,836
2	X2	0,920
3	X3	0,813
4	X4	0,859
5	Y1	0,938
6	Y2	0,868

c. Classical Assumption Test

- Normality test aims to determine whether the data used in the regression model is normally distributed. In this study, the normality test was conducted using the Kolmogorov-Smirnov method with a significance value >0.05. The results obtained in Table 4 show a 2-tailed Asymp. Sig. value of 0.85, meeting the normality requirements.

Table 4. One-Sample Kolmogorov-Smirnov Test

			Unstandardized Residual
N			95
Normal Parameters[a,b]	Mean		.0000000
	Std. Deviation		1.58916864
Most Extreme Differences	Absolute		.264
	Positive		.231
	Negative		-.264
Test Statistic			.264
Asymp. Sig. (2-tailed)[c]			.085
Monte Carlo Sig. (2-tailed)[d]	Sig.		.069
	99% Confidence Interval	Lower Bound	.059
		Upper Bound	.061

- Multicollinearity test in this study was carried out to detect the presence or absence of multicollinearity in the model. This can be done by looking at the tolerance value > 0.1 and the variance inflation factor (VIF) value <10. The results obtained in table 5 show that all research variables have a tolerance value and a VIF value below the specified value, which explains that there is no multicollinearity problem among the research variables.

Table 5. Multicollinearity Test Results

Coefficients[a]

		Collinearity Statistics	
Model		Tolerance	VIF
1	X1	.319	3.130
	X2	.233	4.291
	X3	.619	1.617
	X4	.394	2.539

a. Dependent Variable: Y1

- Heteroskedasticity test to determine the presence of heteroscedasticity, the Scatterplot graphic method is used where the provisions in this test are if the points in the image expand or spread above and below the number 0 to the Y axis, it can be stated that there are no symptoms of heteroscedasticity. The results shown in Figure 2 for the scatterplot results show that the distribution of residual points spreads randomly around the horizontal line without forming a certain pattern and this indicates that there are no symptoms of heteroscedasticity in the regression model.

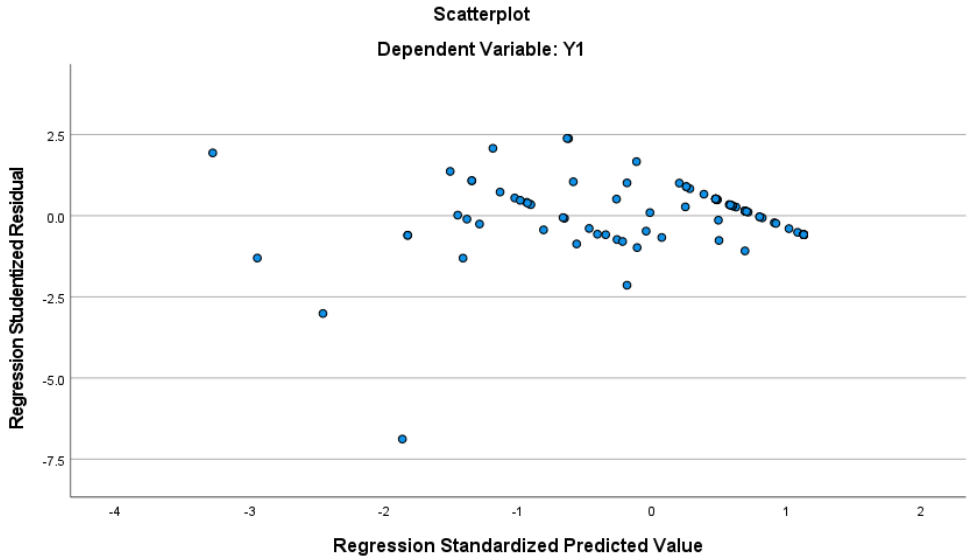

Figure 2. Scatterplot Test

d. Hypothesis Analysis

- Equation 1
  a. Parcial Test (t-test)

The t-test is used to determine how much influence the variables individually (partially) can explain the variation of the dependent variable. The results of the partial test of equation 1 in this study as shown in table 6 can be concluded that the system quality variable (H1) has a significant effect (sig = 0.000, t-statistic 3.634 and beta 0.280) on customer satisfaction, service quality (H3) has a significant effect (sig = 0.000, t-statistic 4.630 and beta 0.296) on customer satisfaction, and the impact of use (H4) has a significant effect (sig = 0.002, t-statistic 3.323 and beta 0.276) which is significant on user satisfaction. Meanwhile, the information quality variable (H2) does not have a significant influence (sig = 0.505, t-statistic 0.669 and beta 0.061) on satisfaction and rejects the hypothesis.

Table 6. Partial Test of Research Equation 1

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	.994	1.084		.916	.362
	X1	.280	.077	.346	3.634	.000
	X2	.061	.091	.075	.669	.505
	X3	.296	.064	.317	4.630	.000
	X4	.276	.085	.278	3.243	.002

a. Dependent Variable: Y1

b. Simultaneous Test (f-test)

The F test is used to determine the effect of all independent variables simultaneously on Y1. According to Ghozali (2016), the F test is used to see whether all independent variables simultaneously have an effect on the dependent variable. The results shown in table 7 for the simultaneous ANOVA test obtained a significance value of 0.000 and showed that all research variables (system quality, information quality, service quality, and the impact of use simultaneously had a significant effect on the dependent variable of user satisfaction.

Tabel 7. ANOVA Test

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	688.162	4	172.041	63.775	.000[b]
	Residual	242.785	90	2.698		
	Total	930.947	94			

a. Dependent Variable: Y1

b. Predictors: (Constant), X4, X3, X1, X2

c. Coefficient of Determination

The coefficient of determination (R^2) is used to measure how much the independent variable is able to explain the variation in the dependent variable. According to Santoso (2012), the higher the R^2 value, the better the regression model's ability to explain the variation data that occurs in the user satisfaction variable. The analysis results shown in Table 8 show that the coefficient of determination (Adjusted R Square) is 0.728, meaning the independent variable contributes 72.8% to customer satisfaction.

Table 8. Results of the Determinant Coefficient Test for Research Equation 2

Model	R	R Square	Adjusted R Square	Std. Error of the Estimane
1	$.860^a$	.739	.728	1.642

- Eqution 2

a. Parcial Test

The results of the t-test in table 9 for the analysis of equation 2 show that the significance value for the user satisfaction variable (H5) has a significant effect (sig = 0.000, t-statistic 4.630 and beta 0.296) on customer satisfaction with net benefits.

Table 9. Results of Partial Test of Research Equation 2

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	1.537	.951		1.616	.110
	User Satisfaction	.894	.052	.871	17.075	.000

a. Dependent Variable: Net Benefits

b. Determinant Coefficient
The R Square value of 0.758 (see table 10) shows that 75.8% of the variation in user satisfaction is able to explain the magnitude of the influence on the net benefits felt by students when using LMS in their learning activities, while the remaining 24.2% is explained by other variables outside this model.

Table 10. Results of the Determinant Coefficient Test for Research Equation 2

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.871[a]	.758	.756	1.598

a. Predictors: (Constant), User Satisfaction
b. Dependent Variable: Net Benefits

5. Discussion

The initial findings in this study are that the system quality variable has a significant effect on user satisfaction with a significance value of 0.000 and a regression coefficient of 0.280 and this indicates that the higher the quality of the LMS system perceived by students, the more it will increase students' desire to learn because they are satisfied with the existence of a learning model, a responsive LMS, easy to use, and equipped with complete features—such as video conferencing, integrated assignments, and smooth access to materials—will make it easier for students to follow lectures (Munna et al., 2024). The next finding is that the service quality variable is significant to user satisfaction with a significance value of 0.000 and a regression coefficient of 0.296 and this indicates that technical services, lecturer assistance, and responses to LMS user constraints play a very important role in increasing student satisfaction, where according to the Wenzel & Moreno (2022) that the ease of access and intuitive navigation provided by the LMS can enable students to learn more efficiently without technical obstacles, thereby improving the overall learning experience. Furthermore, the variable of impact of LMS usage was found to have a significant effect on user satisfaction with a significance value of 0.002 and a regression coefficient of 0.276. This indicates that the greater the positive impact perceived by users—such as time efficiency, increased understanding of the material, and ease of online interaction—the greater the level of user satisfaction. This finding is in line with Ghazal et al., (2018) explaining that experience and perceived benefits of using the system contribute to the achievement of satisfaction and this may also be felt by students.

The next finding is that the user satisfaction variable has a very strong and significant influence on the benefits that students may experience when using an LMS with a significance value of 0.000 and a regression coefficient of 0.894 and a coefficient of determination (R^2) of 0.758. The benefits of using an LMS include efficiency, increased learning productivity, and ease in undergoing the student academic process (Juarez Santiago et al., 2020). This finding confirms the position of User Satisfaction as a key variable in the DeLone & McLean model. The higher the user satisfaction with the LMS, the greater the likelihood that they will feel a real and positive impact from using the system. Finally, there was no significant influence of the information quality variable on customer satisfaction and the possible explanation is that the information provided in the LMS may be technically good, but not yet significant enough to increase student satisfaction. Ghazal et al., (2018) state that student satisfaction in using an

LMS is influenced by several other supporting factors and aspects, for example: system speed, ease of use, or responsive technical support, so that the accuracy and completeness of information alone are not enough to determine overall satisfaction.

6. Conclusion

The analysis of student satisfaction with the quality of the e-learning system used at Gajayana University, using the DeLone and McLean approach, in this study is influenced by system quality, service quality, and user impact. Students are more likely to choose and use an LMS to support their learning activities when the LMS is optimally utilized. Furthermore, user satisfaction can be a significant driver of the benefits of LMS use in learning activities. Students who are satisfied with LMS use tend to experience greater academic benefits, such as efficiency in learning time, improved learning outcomes, and ease of academic communication.

A limitation of this study is the limited sample size of Gajayana University Malang students, so the results cannot necessarily be generalized to other universities with different user characteristics and LMS systems. Furthermore, this study relied on questionnaires as a data collection tool, which could potentially contain respondent subjectivity bias. External factors such as internet connection or individual experience with technology were also not controlled, which may influence perceptions of satisfaction. Finally, this study was cross-sectional, so it was not possible to measure changes in LMS user satisfaction over time.

This research is expected to provide input for Gajayana University Malang in improving the quality of its LMS system based on student satisfaction levels. The research results can serve as a reference for the university to improve technical aspects such as access speed, a more intuitive interface, or the completeness of learning features. Furthermore, these findings can also encourage the development of training or LMS user guides for students and lecturers, thus optimizing system utilization. Therefore, improving the quality of the LMS is expected to support the effectiveness of online learning and enhance the overall academic experience of students.

Acknowledgments

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