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Research Article

Implementation of the EUCS Method and IS Success Model for Measuring the Satisfaction Level of Learning Management System Users

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Abstract— Learning Management System is an online learning platform that facilitates users to participate in digital teaching and learning activities. Currently, Yayasan Sekolah Kristen Indonesia (YSKI) has adopted a Learning Management System (LMS) platform called SiSKY (Sistem Informasi Sekolah YSKI), which is implemented by all members of the school community. However, not all educational actors, both teachers and students have the skills to efficiently utilize the LMS. The challenges faced by users might come from various aspects, including technical issues, interface design complexity, feature limitations, or constraints in terms of accessibility. Along with the shift of learning from conventional to digital, SiSKY LMS as a learning management system needs to fulfill user expectations and comfort. Analysis of the use of LMS SiSKY is used to determine comfort and further development using 2 methods, namely EUCS (End User Computing Satisfaction) and IS Success model. The research population consists of teachers and students as direct users, with 450 respondents selected purposively using a purposive sampling method based on related criteria. Analysis and calculation of SiSKY LMS respondent data was carried out with PLS-SEM using SmartPLS 3. The results of testing and analysis show that teachers and students are SATISFIED with the use of LMS SiSKY with a mean value of 3.672. Further analysis shows that if the 3 hypotheses tested result in EUCS having a positive influence on LMS users, EUCS has a positive influence on System Impact, and SiSKY LMS users have a positive influence on System Impact. For effective e-learning system development, attention should be paid to increasing end-user satisfaction, encouraging active use, and ensuring the positive impact felt by users on the system as a whole.

Keywords— EUCS, IS Success Model, LMS, User Satisfaction

1. Introduction

In recent years, advances in information and computer technology have changed our lives in many ways. One of the biggest changes has been in education, where the application of technology in the learning process has changed the way students get and receive information [1]. In the concept of technology in education, teacher activities in providing material are no longer only done in the classroom and providing printed material. Education services are now emerging as a solution to the development of Industry 4.0, especially in the education sector. This sector requires a faster rate of adaptation and a variety of skills related to the development of digitalization [2],[3].

Modern education also uses technology as an effective learning tool [4]. Internet, mobile devices, e-learning and digital platforms provide access to unlimited learning resources [5]. Technology also enables distance and project-based learning, which engages students in active exploration and collaboration with peers around the world [6].

In the growing digital era, Learning Management System (LMS) has become the most important tool in high school education [7]. This application allows users, such as students and faculty to access and participate in the learning process digitally.

YSKI Junior and Senior High School is a secondary school located in Semarang City, Indonesia which has an LMS named SiSKY *(Sistem Informasi Sekolah YSKI)* which was developed by the ICT division in 2020. SiSKY is currently used by all YSKI junior and senior high school teachers and students as a means to support the digital learning process, where teachers can provide learning materials, video conferences, attendance, submit assignments and conduct exams online on one platform. With the change in learning from conventional to digital, SiSKY LMS as a learning management system must be able to facilitate and meet the expectations of its users. It is very important for YSKI to know how the level of satisfaction of SiSKY LMS users.

Although the SiSKY LMS has a number of advantages, there are some problems that need to be resolved to improve user comfort and convenience when using the system. These problems can be technical issues, complex interface design, feature limitations, or accessibility issues. The experience of users, both students and teachers, can negatively affect the system that has been used. For example, students have difficulty in submitting assignments, interacting with teachers, or accessing the learning materials they need. On the other hand, teachers feel limited in managing and evaluating student performance [8].

User satisfaction is the most commonly used measure to determine the success of an application designed with the user in mind as the top priority [9]. To find out how well SiSKY LMS has been accepted by users, it is necessary to conduct an evaluation to analyze end-user satisfaction and understand its relationship with usage intention and overall effectiveness. When measuring user satisfaction with a system, the EUCS model and the IS Success Model are used. The following is a method to assess user satisfaction with the SiSKY LMS by comparing their expectations and the reality associated with the LMS used at YSKI Junior and Senior High Schools [10]. In this study, the EUCS model is measured using five indicators: content, accuracy, format, usability, and timeliness. The second model, IS Success is a framework that evaluates system success from the user's perspective [11].

Research conducted at YSKI is expected to have a significant impact in improving services to SiSKY LMS users and become a measuring tool for system success. The evaluation results will be a guideline for YSKI to correct deficiencies and further develop the SiSKY LMS to increase user satisfaction.

2. Related Work

This study examines previous research on the utilization of e-learning systems with regard to student perceptions. The IS Success Model was used to assess LMS system quality and information, and user satisfaction. The survey was conducted at the university of Rome, Italy, which utilizes the LMS platform. To make sense of the data, Smart PLS 3.0 used a path analysis model based on PLS. The research findings show that information quality impacts LMS user comfort [12].

The study of electronic services in the education sector mainly involves the development of Information Systems for Education Management (EMIS), this study evaluates the performance of the system according to users using the IS Success Model. Using a quantitative approach, this study aims to create and test a measurement model that can be used to assess the effectiveness of educational information systems, particularly EMIS systems. The research findings show that users have an important role in improving information systems. As evaluation material for LMS developers, it is recommended to consider system users with different backgrounds and education [13].

A study was conducted to find out how easy it is for students to complete an e-learning course. The Edmodo e-learning system in secondary schools was evaluated using the EUCS method. This study discusses the important factors of user satisfaction and components that affect information technology, especially the Edmodo LMS system during the COVID-19 pandemic. The information collected shows accuracy and reliability, and shows that the EUCS method is effective in measuring the comfort of Edmodo LMS users, taking into account the factors that affect the comfort of using the application [14].

An online study was conducted with 96 students to evaluate the impact of the EUCS model consisting of various indicators on user satisfaction with the UG In Your Hand system. The method used was multiple linear regression. The analysis resulted in not all elements affecting the user convenience of the UG In Your Hand application [15].

Previous studies discussed how to evaluate the success of an LMS using a modified IS Success Model. Using the linear regression method, we can see how the independent variables and the dependent variables relate to each other. Two hypotheses are indicated by the data analysis results: H5 links system quality with user satisfaction (H7) and H7 links system quality with LMS usage rate. The results show what can improve user satisfaction and LMS usage rate. In addition, this study also concluded that the modified IS Success Model can provide an alternative perspective for assessing the LMS [16].

The next research objective is the influence of students' ability to use the LMS consistently during the COVID-19 pandemic. The IS Success Model provides specific variables related to LMS usage. Students of this study have used electronic learning platforms or e-learning applications. Respondents were asked to specify satisfaction, perceived usefulness, perceived ease, social support, and subjective behavioral control regarding their desire to continue using electronic learning. Data were tested using multiple regression [17].

Student aspirations are an important component in providing input to the development of the LMS. To ensure the measuring instrument is reliable in measuring certain variables, validity and reliability tests were conducted on the questionnaire instrument. The research findings show that learning motivation has a central role in increasing students' interest and active participation in its utilization. Perceptions of the benefits of the LMS and ease of use also contribute to its success. In addition, it is evident that social support from peers and educators greatly influences how effectively the e-learning system can be accepted by students. Students who get positive support from teachers and peers tend to use the LMS more actively. Online learning experience also affects the success of the LMS. This research shows that learning motivation is the main factor influencing students' interest and active participation in utilizing the LMS [18].

To identify the success factors of government systems, the study incorporated the EUCS variables into the IS Success Model. EUCS and IS Success are shown that EUCS is considered a variable included in the model. The IS Success Model focuses more on the information systems approach, the application of EUCS is considered a significant outcome in the framework. The research methodology involves users to evaluate government websites [19].

The selection of the IS Success Model Method is used to identify components that affect user satisfaction with the TikTok Shop feature in the TikTok application. EUCS is used to measure user comfort with the TikTok Shop feature. To conduct data analysis, PLS-SEM modeling is carried out. The calculation results show that users are overall satisfied with the TikTok Shop feature in the TikTok application. Furthermore, the analysis results show that there are several hypotheses that cannot be accepted and one hypothesis that can be accepted. Analysis of this calculation can be used to find out what components affect user satisfaction with the TikTok Shop function in the TikTok application [20].

Evaluate the implementation of mobile cloud learning using the IS Success Model. Research analysis shows that the quality of information systems, and services affect the frequency of use. The calculation is analyzed by F-test. The results showed that the F-count value of 13.222 was greater than the F-count value (3.01). The conclusion drawn is that the quality of information systems [21].

Referring to the literature that has been analyzed, there are several findings relevant to research on the Implementation of the EUCS Method and IS Success Model for Measuring Learning Management System User Satisfaction Level, there are several findings relevant to research on user satisfaction factors and learning system performance. Some studies show that key factors such as user interface, availability of learning resources, fast system response, and good integration with user needs can significantly affect user satisfaction level. The evaluation of user satisfaction level is not only limited to the technical functionality aspects of the system, but also includes aspects such as information security, user privacy, and quality of support services. By considering these findings, this research can provide an understanding related to Learning Management System user satisfaction through integrating the EUCS Method and IS Success Model.

3. Method

The research method used consisted of several stages. First, a questionnaire was used to collect data on teachers and students as active users of the LMS at school. This questionnaire assesses the level of satisfaction of teachers and students as active users of the LMS. Before data processing, the questionnaire results from respondents went through a validation and reliability checking process. Figure 1 displays the overall method in the research process.

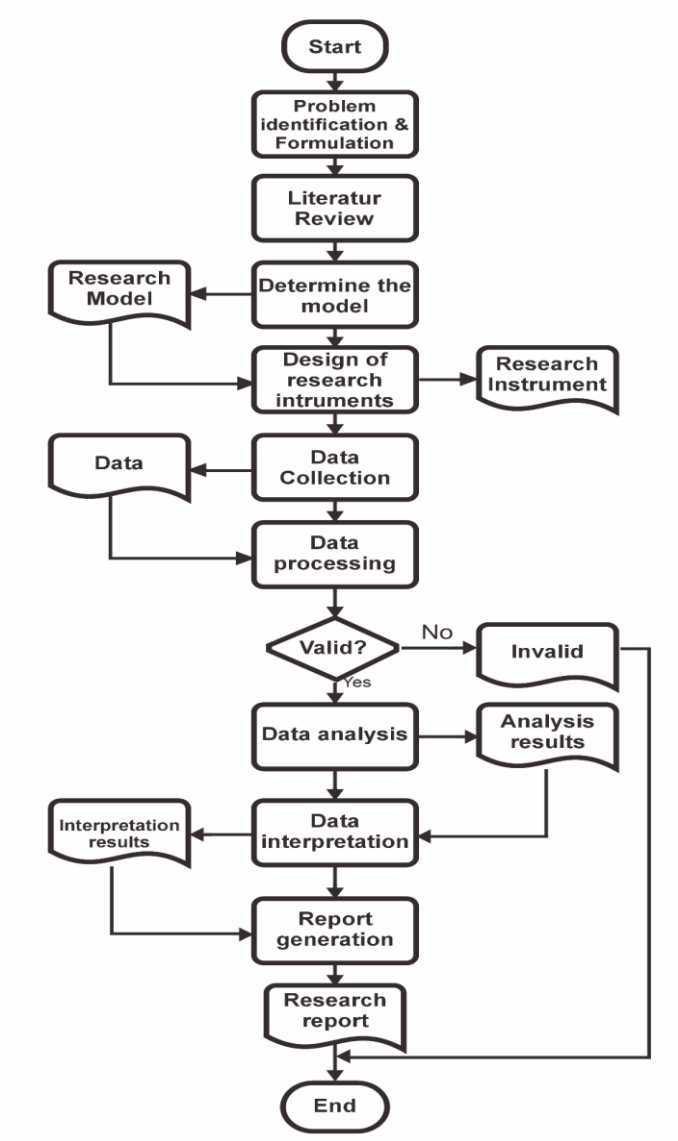

Figure 1: Research Process.

Figure 1 is the development of ongoing research. The main data in this study were collected through questionnaires to SiSKY LMS users according to a predetermined analysis, then secondary data were used to support the main data. This secondary data comes from literature researched from various sources, including the internet, books, journals, and seminar proceedings. The estimation of sample population size affects the selection of research methodology. After the collection of the research questionnaires, data analysis was conducted for additional data analysis. Prior to processing, the questionnaire responses were checked for validity and reliability.

3.1 Questionnaire

The research will use a questionnaire as a basis with a focus on questions related to SiSKY LMS User Satisfaction. By using SmartPLS Version 3, which will be used to process data from respondents. This research involves teachers and students who use LMS SiSKY directly. By using purposive sampling technique, it aims to obtain a sample of respondents who are representative and relevant to the research objectives,

namely related to LMS User Satisfaction. Table 1 is an indicator for each questionnaire variable.

Table 1. Questionnaire Indicators

Variable	Code	Item
Content	C1	The information in the application and the suitability of the information provided are tailored to user needs
	C2	SiSKY LMS provides a variety of content so that it can affect user satisfaction
	C3	SiSKY LMS provides quality content The ability of SiSKY LMS to provide useful information
	C4	Ability of SiSKY LMS to provide content that suits user needs
	C5	
Accuracy	A1	What is your level of satisfaction with the accuracy of the SiSKY LMS
	A2	Are you satisfied with the overall accuracy of the SiSKY LMS System
	A3	How satisfied are you with the reliability of the SiSKY LMS results How satisfied are you with the credibility (trustworthiness) of LMS SiSKY
	A4	
Format	F1	SiSKY LMS is very helpful to me.
	F2	The information available on LMS SiSKY is very easy to understand.
	F3	The layout of the display on LMS SiSKY makes me comfortable
	F4	SiSKY LMS display is very easy to understand
Ease of Use	E1	The SiSKY online education system is very user-friendly and simple to use.
	E2	The learning process is well supported by SiSKY LMS
Timelines	T1	I receive the information I need about the SiSKY LMS application quickly
	T2	Up to date information is provided by the SiSKY e-learning system.
Use	U1	I actively use SiSKY without the help of others.
	U2	How satisfied are you with the regular use of the SiSKY LMS System to support the education process
	U3	I have been using the SiSKY LMS education system for a long time.
System Impact	S1	How satisfied are you with the results of using the SiSKY LMS System in improving educational efficiency
	S2	How satisfied are you with the use of the SiSKY LMS for school
	S3	How satisfied are you with the impact of using the SiSKY LMS on your education To what extent are you satisfied with the contribution of the SiSKY LMS in improving the efficiency of the educational process you are undergoing
	S4	

3.2 Model Development

Given the many information system success models that have been developed by previous researchers, measuring the level of information system success is not an easy task. Of the various models available, the IS Success model and the EUCS Model were chosen because they are simple but considered valid by other researchers.

This method is used to identify the convenience and satisfaction of the SiSKY LMS which is built by combining the user satisfaction model in final computing first developed by Doll and Torkzadeh. This research not only maintains the EUCS model but also includes two additional variables from the IS Success Model: usage and system impact. The results of this analysis are to determine how comfortable and satisfied SiSKY LMS users are.

Figure 2: Development of EUCS Model and IS Success Model

This study uses a model with the addition of two DeLone and McLean variables as the basis for analysis which indicates that user satisfaction can be measured through evaluation of system impact, and user intentions on the IS Success Model [22].

3.3 Research Population and Sample

This research method analyzes the population of SiSKY LMS users at YSKI Junior and Senior High Schools, consisting of teachers and students who actively use the LMS during the education process. Respondents in the study were selected from the population of teachers and students as direct users of the SiSKY LMS. A total of 450 respondents were purposively selected according to the research objectives.

Table 2. Respondent Demographics

Aspects	Category	Total	Percentage
User Status	Teacher	57	12.7%
	Students	393	87.3%
School	Junior	232	51.6%
	Senior	218	48.4%
Class (Students Only)	7	38	9.7%
	8	65	16.5%
	9	102	26%
	10	53	13.5%
	11	57	14.5%
	12	78	19.8%

Gender	Male	211	47%
	Female	239	53%

In table 2, the characteristics of user status shows that the majority of respondents are students, as many as 393 respondents or 87.3%, and teachers as many as 57 respondents or 12.7%. As for the school level, the majority of respondents came from junior high schools, as many as 232 respondents or 51.6%, and high schools as many as 218 respondents or 48.4%. Then based on gender characteristics, it shows that the male gender is 211 respondents or 47%, while the female gender is 239 respondents or around 53%.

4. Results and Discussion

The current research will look for the relationship between users and the success and effectiveness of the use of the SiSKY LMS used by teachers and students in YSKI junior and senior high schools. The research data was obtained by giving questionnaires to teachers and students as active users of the SiSKY LMS service. Respondents filled out a questionnaire consisting of ease of using the application, system quality, UI/UX LMS SiSKY, and the impact of LMS in classroom learning. Next, the data will be processed and analyzed through research variables, convergent validity test, reliability test, Standardized Root Mean Square Residual, and Predictive Relevance Value Testing to determine the value results and evaluate the relationship between EUCS, LMS users, and the impact of using the system directly.

The results of the analysis show a mutually positive relationship between EUCS, users, and the impact of using the system. The following is an analysis and discussion during the research process.

4.1 Description of Research Variables

This research involves descriptive analysis of variables with the aim of obtaining information about the mean value, minimum value, and maximum value of each variable under investigation, with reference to the data obtained from the responses of 450 respondents. The process of interpreting the descriptive mean value of each variable is an important factor in making decisions in this study.

Table 3. Assessment of Mean Interpretation of Research Variables

Category	Average interval (mean)
Very satisfied	4.20–5.00
Satisfied	3.40–4.19
Less satisfied	2.60–3.39
Not satisfied	1.80–2.59
Very dissatisfied	1.00–1.79

Table 4. Descriptive Analysis of Variables

Variables	Indicator	Mean	Category
EUCS	Content	3.73	Satisfied
	Accuracy	3.63	Satisfied
	Format	3.66	Satisfied
	Timelines	3.66	Satisfied
	Ease of Use	3.76	Satisfied
IS Success	System Impact	3.59	Satisfied
	Intention to Use	3.68	Satisfied
	Average number	3.672	Satisfied

The end user computing satisfaction (EUCS) variable content indicator produces an average index value of 3.73, which falls into the satisfied category; the EUCS variable accuracy indicator produces a value of 3.63, which falls into the satisfied category; and the EUCS variable format indicator produces a value of 3.66, which falls into the satisfied category. Meanwhile, a value of 3.59 was given by respondents for the EUCS variable impact indicator, which fell into the satisfied category. Furthermore, a value of 3.68 was given to respondents for the intention to use the EUCS variable indicator, which fell into the satisfied category.

4.2 Inferential Statistical Analysis

Inferential analysis is a set of techniques used to process data so that conclusions are able to be drawn or hypotheses tested [23]. Parametric inferential statistical techniques provide assistance with analytical tools in accordance with the research model. Path causality analysis can be done using Path Analysis, while structural equation analysis uses SEM (Structural Equation Modeling) [24].

4.3 Convergent Validity Test

Convergent validity testing has the aim of checking whether the indicator variables used effectively reflect the construct variable. Convergent validity is tested by evaluating the outer loading or factor loading value of each indicator against its construct. The validity of an indicator is considered fulfilled if the outer loading or factor loading value exceeds 0.5. Indicators with results less than 0.5 will be removed and retested [25]. The results of convergent validation statistical testing for the measurement model can be displayed in the form of figure 3 and tables 5.

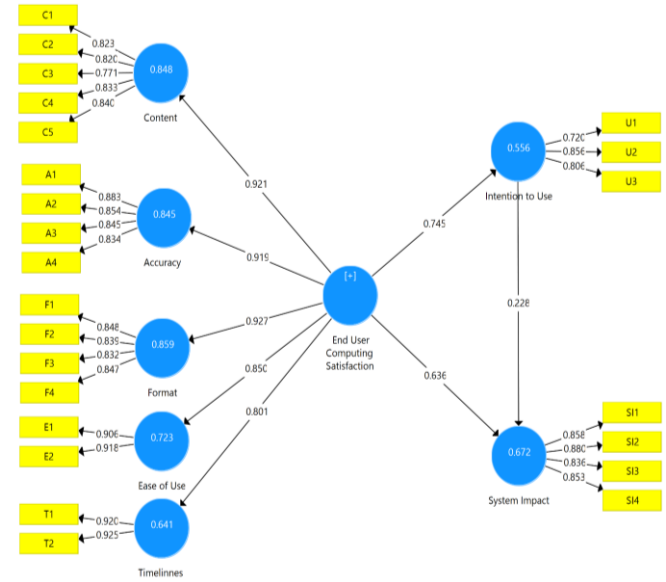

Figure 3: Path Diagram *Outer Loading/Factor Loading* Model

The results of the calculation and path diagram analysis of the validity test as measured using Factor Loading with a value of >0.5, so all variables are valid.

Table 5. Results of Convergent Validity Testing Based on Outer Loading

Variables	Indicator	Item	*Outer Loading / Factor Loading*	Desc
EUCS	*Accuracy*	A1	0.883	OK(valid)
		A2	0.854	OK(valid)
		A3	0.845	OK(valid)
		A4	0.834	OK(valid)
	Content	C1	0.823	OK(valid)
		C2	0.820	OK(valid)
		C3	0.771	OK(valid)
		C4	0.833	OK(valid)
		C5	0.840	OK(valid)
	Ease of Use	E1	0.906	OK(valid)
		E2	0.918	OK(valid)
	Format	F1	0.848	OK(valid)
		F2	0.839	OK(valid)
		F3	0.832	OK(valid)
		F4	0.847	OK(valid)
	Timelines	T1	0.920	OK(valid)
		T2	0.925	OK(valid)
IS Success Model	*Intention to Use*	U1	0.720	OK(valid)
		U2	0.856	OK(valid)
		U3	0.806	OK(valid)
	System Impact	SI1	0.858	OK(Valid)
		SI2	0.880	OK(Valid)
		SI3	0.836	OK(Valid)
		SI4	0.853	OK(Valid)

Based on the measurement model depicted in the path diagram in Figure 3 and the information contained in Table 5, it can be concluded that if the indicator factor loading value exceeds >0.5, it can be concluded that all indicators have validity, and thus convergent validity is met. The construct value can be evaluated to ensure that it meets convergent validity if the AVE value of the construct is >0.5 [26]. Table 6 is the result of convergent evaluation based on AVE value.

Table 6. Convergent Validity Test Based on AVE Value

Variables	Indicator	Desc	*Average Variance Extracted*
EUCS	*Accuracy*	OK(valid)	0.730
	Content	OK(valid)	0.669
	Ease of Use	OK(valid)	0.832
	Format	OK(valid)	0.708
	Timelines	OK(valid)	0.851
Intention to Use		OK(valid)	0.634
System Impact		OK(valid)	0.734

Analysis of the AVE results in table 6 results in each variable with a value of more than 0.5, so the conclusion is that all variables meet the AVE criteria.

4.4 Discriminant Validity Test

LMS SiSKY is tested using the Fornell-Larcker criteria to determine that each variable can be distinguished from other variables. The results of the criteria are considered fulfilled if the AVE value of a particular variable exceeds the correlation value with other variables [27]. Analysis of discriminant validity results referring to the Fornell-Larcker criteria, can be seen in table 7.

Table 7. Discriminant Validity Test Results Based on Fornell-Larcker Criterion

	Accuracy	*Content*	*Ease of Use*	*Format*	*Intention to Use*	*System Impact*	*Timelines*
Accuracy	0.854						
Content	0.791	0.818					
Ease of Use	0.723	0.725	0.912				
Format	0.807	0.804	0.782	0.842			
Intention to Use	0.695	0.687	0.643	0.671	0.796		
System Impact	0.748	0.745	0.683	0.733	0.702	0.857	
Timelines	0.706	0.667	0.643	0.682	0.606	0.654	0.923

The results of the analysis in Table 7, the AVE value of each variable is greater than the correlation value with other variables. Thus, the discriminant validity of the model has been accepted.

4.5 Reliability Test

The reliability test is carried out to assess the extent to which the level of internal consistency of the indicators in measuring variables. The reliability test process is carried out by applying a special formula relevant to this research. If the Cronbach's alpha and composite reliability values exceed 0.70, then the questionnaire is considered a reliable and consistent research instrument [28].

Table 7. Reliability Test

		Information	*Cronbach's Alpha*	*Composite Reliability*
Ease of Use	*Accuracy*	Reliabel	0.876	0.915
	Content	Reliabel	0.876	0.91
	Ease of Use	Reliabel	0.798	0.908
	Format	Reliabel	0.863	0.907
	Timelines	Reliabel	0.825	0.92
Intention to Use		Reliabel	0.712	0,838

Table 7 shows that the research variables exceeded 0.7. All settings are considered to meet the required reliability standards, so the analysis can proceed to the structural model assessment stage (internal model).

4.6 Standardized Root Mean Square Residual

The measurement model is then tested for goodness of fit model. Goodness of fit of the PLS model can be identified through the standardized root mean square residual (SMRM) value of the model. A PLS model is considered to meet the goodness-of-fit standard or is considered a good model if the SRMR value is ≤ 0.08 [29]. The SRMR results are shown in table 8.

Table 8. Value SMRM

	Desc	Saturated Model	Estimated Model
SRMR	Model Fit	0.076	0,078

Based on the data listed in Table 8, the SRMR value in the saturation model reaches 0.076 (less than or equal to 0.08), while the SRMR in the estimated model reaches 0.078 (also less than or equal to 0.08). The value results can be concluded that the research model meets the criteria for hypothesis testing.

4.7 Testing Predictive Relevance Value (Q^2)

Q-Square Predictive Relevance (Q^2) in PLS (Partial Least Square) evaluation reflects the model's ability to predict. If the Q^2 value of the model exceeds 0, so the model has high predictive accuracy. Conversely, if the Q^2 value is less than 0, it indicates that the model has limitations in providing relevant predictions [30].

Table 9. Value *Q Square Predictive Relevance* (Q^2)

Variabel Endogen	*Q Square Predictive relevance* (Q^2)	Desc
Intention to Use	0.347	Has good predictive relevance value
System Impact	0.488	Has good predictive relevance value

The results of the value calculation in Table 9 found that the Intention to Use and System Impact variables have a Q2 value of 0.347 and 0.488, respectively. The calculation results show that the predicted relevance value (Q2) of both in this study exceeds 0. Therefore, it can be concluded that based on the model decision, the predicted value is considered relevant, so it is eligible for hypothesis testing.

4.8 R Square

R Square shows how well the variable is able to explain changes in the variable. The R Square value ranges from zero to one, and the smaller the R Square value is close to zero, the better the independent variable explains the change in the variable. The strength of R Square can be classified as strong if the value is more than 0.67 moderate or medium if the value is more than 0.33 but less than 0.67 and weak if the value is more than 0.19 but less than 0.33 [28]. The coefficient of determination R Square of the study is shown in Table 10.

Table 10. R Square

Variabel Endogen	*R-Square*	Desc
Intention to use	0.556	Medium
System Impact	0.672	Strong

Table 10 shows that end-user satisfaction with the purpose of use affects simultaneously with the system effect of 0.672 or 67.2%, while the remaining 44.4% is influenced by other factors outside the model.

4.9 Significance Level of Path Coefficient (Hypothesis Testing)

The bootstrapping technique is used in analyzing significance in PLS-SEM to explore the direction and significance of the correlation between exogenous and endogenous latent variables. Evaluation of this relationship is done by examining the t-statistic or p-value. In this study, PLS-SEM hypothesis testing adopts a one-way approach with a 5% significance level. Based on this approach, if the t-value exceeds 1.645 or the p-value is less than 0.05, H0 will be rejected and H1 accepted. The results indicate that the independent variable has a significant influence on the dependent variable, with the direction of influence determined by the sign of the path coefficient. For a comprehensive overview of the results of testing the structure, also referred to as the inner model, please see Figure 4 and Table 11.

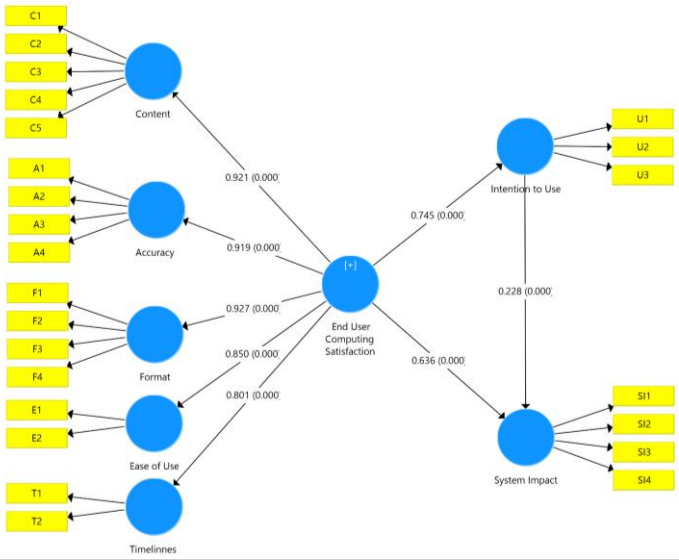

Figure 4: *Path Diagram Path Coefficients & t-Statistics* Model Struktural

Table 11. Hypothesis Testing of Direct Influence

	Path	*Original Sample (Path Coefficient)*	*T Statistics*	*P Values*	Desc	Results
H1	*End User Computing Satisfaction -> Intention to Use*	0,745	32,93	0,000	Accepted	Positively Affected
H2	*End User Computing Satisfaction -> System*	0,636	14,072	0,000	Accepted	Positively Affected

H3	*Impact Intention to Use -> System Impact*	0,228	4,774	0,000	Accepted	Positively Affected

The test results show that H1, H2 and H3 are accepted. Where end-user satisfaction affects user intention in using the e-learning system.

H1 : End User Computing Satisfaction (EUCS) has a positive effect on Intention to Use

Based on the data contained in Table 11 in End User Computing Satisfaction -> Intention to Use, the original sample value (path coefficient) is 0.745 with a t-statistic value of 32.93 (>1.645) and a p value of 0.000 (<0.05). Thus, based on a significant decision at the 5% level, it can be concluded that End User Satisfaction with LMS Usage has a positive and significant effect on intention to use. The results of the analysis of the first hypothesis (H1) which states that "End User Computing Satisfaction has a positive effect on intention to use" can be accepted, along with data that supports the hypothesis.

H2: End User Computing Satisfaction (EUCS) has a positive effect on System Impact.

Based on table 11 on End User Computing Satisfaction -> System Impact, the original sample value (path coefficient) is positive 0.636 with a t-statistics value of 14.072 (> 1.645) and a p-value of 0.000 (< 0.05). Thus, in accordance with decision making using a 5% significant test, from the results of the analysis it can be concluded that EUCS has a positive and significant effect on system impact. Thus the second hypothesis of the study (H2) results in EUCS has a positive effect on system impact is accepted or the data supports the hypothesis.

This shows that end user satisfaction directly contributes to the perceived overall impact of the SiSKY LMS. The higher the level of end-user satisfaction with the system, the greater the influence on overall system performance and effectiveness. End-user satisfaction is a key factor that influences users' perceptions of the quality and benefits provided by the SiSKY LMS.

H3: Intention to Use has a positive effect on System Impact

Based on table 11 on Intention To Use -> System Impact, the original sample value (path coefficient) is positive 0.228 with a t-statistics value of 4.774 (> 1.645) and a p-value of 0.000 (< 0.05). The results of the analysis with decision making using a 5% significant test, it can be concluded that intention to use has a positive and significant effect on system impact. Thus the third research hypothesis (H3) which assumes "User (intention to use) has a positive effect on system impact" is accepted or the data supports the hypothesis.

This shows that the active use of the SiSKY LMS system by YSKI Junior High School has a significant contribution to the overall impact felt from the system. The higher the level of use of the SiSKY LMS, the greater the positive impact felt by users on the performance and effectiveness of the system. Active use reflects strong adoption and intensive use, which in turn provides greater benefits to users and the system as a whole.

5. Conclusion

In conclusion, testing and analyzing the use of the SiSKY LMS as a whole gets a high level of satisfaction. This can be seen from the average value of 3.672. Further analysis shows that the three hypotheses tested show that End User Computing Satisfaction has a positive and significant effect on Intention to Use and overall system impact, with an R-Square value of 0.672 or 67.2%. EUCS variables, which include Learning Content, LMS Accuracy, System Display Format, Ease of use, and Timeliness, together provide an influence of 74.5% on Intention to Use and 63.6% on System Impact, with a positive impact. This study has several limitations that need to be considered. One shortcoming is that the research model only considers EUCS variables in influencing system usage and impact. There may be other variables outside this framework that have the potential to have a significant influence on these two variables. Therefore, future research is recommended to consider additional variables that can more comprehensively affect system usage and impact.

Future research can use broader variables that have a significant influence on the use and impact of LMS for teachers and students. In addition, research can expand the sample with more diversity, covering a variety of LMS contexts used in schools. For effective LMS development, attention should be paid to improving end-user satisfaction, encouraging active use, and ensuring the positive impact felt by users on the system as a whole.

Data Availability

You can get access to this research data if you request it, and you can also view the data used in this research. It is important to remember that protecting privacy and adhering to moral principles have limits. It is recommended that researchers interested in the data communicate with the authors via email.

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Authors' Contributions

Author-1, Dicky Yudha Pratama, researched the literature, collected data and organized the study. Author 2 supervised the preparation of the study and gave final approval of the article for publication.

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References

[1] Inge Widya Pangestika Pratomo, Rofi Wahanisa, "Pemanfaatan Teknologi Learning Management System (LMS) di Unnes Masa Pandemi Covid-19.", *Seminar Nasional Hukum Universitas Negeri Semarang*,**7(2)**, **547-560**, **2021**.

[2] Wilert Puriwat, Suchart Tripopsakul, "Preparing for Industry 4.0 – Will youths have enough essential skills: An Evidence from Thailand, "*International Journal of Instruction*, Vol.**13**, No. **3**, pp. **89–104**, **2020**.

[3] Achmad Tahar, Pompong B. Setiadi, and Sri Rahayu, "Strategi Pengembangan Sumber Daya Manusia dalam Menghadapi Era Revolusi Industri 4.0 Menuju Era Society 5.0," *Jurnal Pendidikan Tambusai*, Vol. **6**, **2022**.

[4] Kabiru Abdullahi, "Nigeria Technical and Vocational Education in the Metaverse Technology: A Systematic Review," *International Journal of Scientific Research in Computer Science and Engineering (IJSRCSE)*, vol. **11**, no. **5**, pp. **93–99**, **2023**.

[5] Hye Jeong Kim, Ah Jeong Hong, and Hae-Deok Song, "The Roles Of Academic Engagement And Digital Readiness In Students' Achievements In University E-Learning Environments," *Int J Educ Technol High Educ*, Vol. **16**, No. **1**, P. **21**. **2019**.

[6] Christian M. Stracke, Ramesh Chander Sharma, Aras Bozkurt, "Impact Of Covid-19 On Formal Education: An International Review Of Practices And Potentials Of Open Education At A Distance," *Irrodl*, Vol. **23**, No. **4**, pp. **1–18**, **2022**.

[7] Fandy Septia Anggriawan, "Pengembangan Learning Management System (LMS) Sebagai Media Pembelajaran Untuk Sekolah Menengah Sederajat," *Jurnal Tata Rias (JTR)*, Vol. **9**, No. **2**, pp. **1–10**, **2019**.

[8] Wisnu Priambodo, Kristiawan Nugroho, and Kristophorus Hadiono, "Impact of mBlock Interface Design on Student Interest and Motivation in Primary School Robotics: A Case Study in Indonesia," *International Journal of Scientific Research in Computer Science and Engineering (IJSRCSE)*, vol. **11**, no. **4**, pp. **01–07**, **2023**.

[9] Lala Meilania, Arif Imam Suroso, Lilik Noor Yuliatic, "Evaluasi Keberhasilan Sistem Informasi Akademik Dengan Pendekatan Model Delone Dan Mclean," *J. Sistem Info. Bisnis*, Vol. **10**, No. **2**, pp. **137–144, 2020**.

[10] Stedico Anderjovi, Muhammad Luthfi Hamzah, and Idria Maita, "User Satisfaction Analysis Of E-Learning Using End User Computing Satisfaction In Covid 19," In *Proceedings Of The International Conference On Industrial Engineering And Operations Management*, Nsukka, Nigeria: Ieom Society International, pp. **1–7**, **2022**.

[11] Tenry Nur Amriani, Azwar Iskandar, "Analisis Kesuksesan Implementasi Sistem Aplikasi Keuangan Tingkat Instansi (Sakti) Pada Satuan Kerja Di Lingkungan Badan Pendidikan Dan Pelatihan Keuangan (Bppk)," *Jurnal Kajian Ekonomi & Keuangan (KEK)*, Vol. **3**, No. **1**, pp. **54–74**, **2019**.

[12] Ö. Efiloğlu Kurt, "Examining An E-Learning System Through The Lens Of The Information Systems Success Model: Empirical Evidence From Italy," *Educ Inf Technol*, Vol. **24**, No. **2**, pp. **1173–1184**, **2019**.

[13] Edona Krasniqi, Dhuratë Hyseni, and Betim Cico, "An Evaluation Of E-Education System In Kosovo Based On Delone And Mclean Is Success Model," *In 2019 8th Mediterranean Conference On Embedded Computing (Meco)*, Budva, Montenegro: IEEE, pp. **1–4**, **2019**.

[14] Khusnia Nur Rachmah, Ahmad Nashirul Haq, Nur Hasan Assobarry, Fariza Nanda Sabila, and Tri Lathif Mardi Suryanto, "Edmodo E-Learning Analysis Using End-User Computing Satisfaction Method (Case Study: Senior High School 1 Sampang)," *Int. Intell. Research.*, Vol. **3**, No. **1**, pp. **01–06**, **2021**.

[15] Eka Fitri Rahayu, "Analisis Tingkat Kepuasan Pengguna Aplikasi Ug In Your Hand Dengan Metode End User Computing Satisfaction (Eucs)," *Icit Journal*, Vol. **6**, No. **2**, pp. **213–226**, **2020**.

[16] Hakkun Elmunsyah, Andrew Nafalski, Aji Prasetya Wibawa and Felix Andika Dwiyanto, "Understanding The Impact Of A Learning Management System Using A Novel Modified Delone And Mclean Model," *Education Sciences*, Vol. **13**, No. **3**, P. **235**, **2023**.

[17] Rehan Awad, Ali Aljaafreh, and Anas Salameh, "Factors Affecting Students' Continued Usage Intention Of E-Learning During Covid-19 Pandemic: Extending Delone & Mclean Is Success Model," *Int. J. Emerg. Technol. Learn.*, Vol. **17**, No. **10**, pp. **120–144**, **2022**.

[18] Adel Bessadok, "Analyzing Student Aspirations Factors Affecting E-Learning System Success Using A Structural Equation Model," *Educ Inf Technol*, Vol. **27**, No. **7**, pp. **9205–9230**, **2022**.

[19] Erick Sorongan, Qory Hidayati, "Integration Of Eucs Variables Into Delone And Mclean Models For E-Government Evaluation: Conceptual Models," *Register. Jurnal. Ilm. Teknologi. Sistem. Inf.*, Vol. **6**, No. **1**, P. **33**, **2020**.

[20] Ninik Ayu Nopitasari, Dwi Fatrianto Suyatno, "Analisis Kepuasan Pengguna Fitur Tiktok Shop Pada Aplikasi Tiktok Menggunakan Metode End User Computing Satisfaction (Eucs) Dan Delone And Mclean," *Journal of Emerging Information Systems and Business Intelligence (JEISBI)*, Vol. **04**, No. **03**, **2023**.

[21] Kristiawan Nugroho, Sugeng Murdowo, Farid Ahmadi, and Tri Suminar, "Mobile Cloud Learning Based On User Acceptance Using Delone And Mclean Model For Higher Education," *International Journal of Advanced Computer Science and Applications (Ijacsa)*, Vol. **11**, No. **1**, **2020**.

[22] Erick Sorongan, Hilmansyah, and Hadiyanto, "Pengaruh Variabel Kualitas Sistem Informasi Terhadap Kepuasan Pengguna Sistem Informasi Model Eucs," *Jurnal Rekayasa Sistem dan Teknologi Informasi (RESTI)*, Vol. **3**, No. **1**, pp. **23–28**, **2019**.

[23] Hafidzah, "Pengaruh Penggunaan Blended Learning Berbasis LMS Moodle Terhadap Nilai Akademik Mahasiswa," *Tekno*, Vol. **25**, No. **3**, pp. **249–260**, **2020**.

[24] Merle Taimalu, Piret Luik, "The Impact Of Beliefs And Knowledge On The Integration Of Technology Among Teacher Educators: A Path Analysis," *Teaching And Teacher Education*, Vol. **79**, Pp. **101–110**, **2019**.

[25] Sintia Safrianti, Veny Puspita, Seftya Dwi Shinta, and Afriyeni Afriyeni, "Tingkat Financial Technology Terhadap Peningkatan Kinerja Umkm Dengan Variabel Intervening Inklusi Keuangan Pada Pelaku UMKM Kota Bengkulu," *Journal Management and Business Review (MBR)*, Vol. **6**, No. **2**, pp. **212–227**, **2022**.

[26] Karnawi Kamar, Masduki Asbari, Agus Purwanto, Wakhida Nurhayati, Eva Agistiawati, and Rachma Nadhila Sudiyono, "Membangun Karakter Siswa Sekolah Dasar Melalui Praktek Pola Asuh Orang Tua Berdasarkan Genetic Personality," *Jinop*, Vol. **6**, No. **1**, P. **75**, **2020**.

[27] Aviasti Aviasti, Asep Nana Rukmana, Agus Nana Supena, and Reni Amaranti, "Analisis Keterkaitan Antara Green Design, Green Process, Green Dynamic Capabilities, Dan Absorptive Capacity Pada Perusahaan Manufaktur," *Teknik Industri*, Vol. **17**, No. **2**, Pp. **62–70**, **2022**.

[28] Rezha Nur Amalia, Ragil Setia Dianingati, and Eva Annisaa, "Pengaruh Jumlah Responden Terhadap Hasil Uji Validitas Dan Reliabilitas Kuesioner Pengetahuan Dan Perilaku Swamedikasi," *Journal of Research in Pharmacy*, Vol. **2**, No. **1**, pp. **9–15**, **2022**.

[29] Nathaza Gayatry Woen, Singgih Santoso, "Pengaruh Kualitas Layanan, Kualitas Produk, Promosi, Dan Harga Normal Terhadap Kepuasan Dan Loyalitas Konsumen," *Jurnal Maksipreneur (JMP)*, Vol. **10**, No. **2**, P. **146**, **2021**.

[30] Elfitra Azliyanti, Purbo Jadmiko, and Wiry Utami, "Peran Pemediasi Efikasi Diri Kreatif Pada Hubungan Antara Persepsi Terhadap Kepemimpinan Transformasional Pada Kreativitas Karyawan," *RELEVANCE: Journal of Management and Business*, Vol. **2**, No. **2**, **2019**.

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