

EVALUATION OF THE IMPLEMENTATION OF THE INDEPENDENT ACADEMIC INFORMATION SYSTEM (SIAMIR) AT STIKOM UYELINDO USING THE DELONE AND MCLEAN MODEL

Semlinda Juszandri Bulan*
STIKOM Uyelindo, Jl. Perintis Kemerdekaan Kupang, Indonesia
Email: seminda@yahoo.com

ABSTRACT

Academic information systems are an important element in supporting the effectiveness and efficiency of academic management in higher education. Academic information systems have a crucial role because they serve as the primary means of managing, integrating, and presenting academic data and services quickly, accurately, and efficiently to support the educational process in higher education. STIKOM Uyelindo uses an academic information system called SiAmir to serve the academic administration needs of students, lecturers, and staff. However, the success of this system implementation needs to be systematically evaluated so that its use can be continuously improved. This study aims to evaluate the implementation of SiAmir using the DeLone and McLean model consisting of six variables, namely system quality, information quality, service quality, system usage, user satisfaction, and net benefits. Respondents in this study were 165 SiAmir users, namely students and lecturers of STIKOM Uyelindo. The method used for data analysis was Partial Least Square (PLS) and was run with SmartPLS software version 3.0. The results showed that six hypotheses were accepted and three were rejected. Information Quality and Service Quality had a significant effect on User Usage and Satisfaction, while System Quality had no significant effect. User satisfaction proved to be the key mediator with the strongest influence on Net Benefits, while Usage had no direct effect. The findings confirm that information system success is determined more by the quality of content and services than by technical aspects, with user satisfaction being the primary mediator. Practical implications suggest that organizations need to prioritize investments in information and service quality to maximize the benefits of information systems.

Keywords: evaluation, academic information systems, DeLone and McLean, PLS

1. INTRODUCTION

Advances in information technology have encouraged various higher education institutions to utilize information systems to improve the efficiency and effectiveness of academic services. One example of this technology utilization is the development and implementation of an integrated academic information system. STIKOM Uyelindo, as a higher education institution in Indonesia, has responded by implementing an academic information system called SiAmir (Independent Academic Information System).

SiAmir is designed to support academic administration processes such as completing the Student Study Plan (KRS), managing grades, monitoring student attendance, and providing academic data for lecturers, students, and campus management. Although this system has been implemented recently, the effectiveness and quality of its implementation need to be thoroughly evaluated to ensure that it truly provides the benefits it was originally developed for. Several issues that frequently arise include aspects of system quality related to ease and reliability of use, the quality of information produced, whether it is accurate, relevant, and timely, and the Service Quality in providing technical support to users. Furthermore, the level of user usage and satisfaction with this system, as well as the tangible benefits obtained by both individuals and organizations, are still unknown. Therefore, it is necessary to evaluate the implementation of SiAmir using the DeLone and McLean information system success model to identify the system's weaknesses and can support the improvement of the quality of academic services at STIKOM Uyelindo.

Information system evaluation requires a holistic approach that goes beyond purely technical aspects, by considering user satisfaction, the quality of information output, and the implications for individual and organizational performance. The DeLone and McLean information system evaluation model was chosen because it is a comprehensive, tested, and widely used evaluation framework in assessing the success of information system implementation.

The DeLone and McLean model has become a leading evaluation model in the information system domain through its six fundamental components: system quality, information quality, service quality, user satisfaction, usage level, and net benefits that are interrelated so that they can provide a comprehensive picture of the effectiveness of an information system [1]. Compared to other evaluation models, DeLone and McLean are superior because they are able to connect technical aspects (such as system reliability and usability) with non-technical aspects (such as user satisfaction and impact on organizational performance). Thus, the use of this model in evaluating the Independent Academic System (SiAmir) at STIKOM Uyelindo will provide objective, structured results and can be a basis for future system improvements and development.

Previous studies using the DeLone and McLean model include [2] evaluating the success of the Integrated Academic Information System (SIAT) at Gorontalo State University, respondents from this study were lecturers, operators and students totaling 96 people, data analysis using descriptive analysis, the results of the analysis indicate that of the nine hypotheses tested, the quality of information is proven to be the dominant factor influencing the success of SIAT through the level of user satisfaction. [3] evaluating the success of the Unisan Academic Information System (SIKUN) at Ichsan University Gorontalo, respondents from this study were 100 students and lecturers, data analysis using partial least square SEM (PLS-SEM), the evaluation results show that the average value on the Likert scale is in the agree category, with the percentage of success included at level 4 or the high category. Thus, the implementation of SIKUN in managing academic data at Ichsan University Gorontalo can be declared successful. [1] conducted an evaluation of the Success of the Integrated Information System for Study Program Services (SIPLO) at the Faculty of Engineering, Mulawarman University, the respondents of this study were 200 students, data analysis was carried out using the SEM method based on Partial Least Square (PLS) using SmartPLS software, the results of the study stated that the nine hypotheses proposed were accepted, because each variable had a positive and significant relationship with each other.

From the three studies, none have specifically examined the implementation of the Independent Academic System (SiAmir) at STIKOM Uyelindo, a higher education institution in East Nusa Tenggara (NTT) with characteristics, infrastructure challenges, and user needs that differ from large universities in other regions. In addition, previous studies have mostly used descriptive analysis and PLS-SEM, but have not explored in depth the aspects of user satisfaction, service quality, and real benefits in the context of private universities in developing regions. Therefore, this study is important to fill this gap by providing a comprehensive evaluation of SiAmir using the DeLone and McLean models, so that it can produce relevant recommendations for the development of academic information systems at STIKOM Uyelindo and similar universities in Eastern Indonesia. The method used to analyze the data is Partial Least Square with the help of SmartPLS software.

The population of this study was all users of the Independent Academic System (SiAmir) at STIKOM Uyelindo in June 2025, namely lecturers and students with a total of 1,029 people. The determination of the number of samples was carried out using the Slovin formula with a margin of error of 10%, resulting in a sample size of 91 respondents. The sample was taken from lecturers and students as direct users of SiAmir, so that the results of the study are expected to provide a representative picture of the effectiveness of system implementation at STIKOM Uyelindo.

Using the DeLone and McLean Model as an evaluation framework, this study aims to assess the extent to which the implementation of SiAmir at STIKOM Uyelindo has met user expectations and provided a tangible contribution to the academic process. The results of this evaluation are expected to serve as a basis for future system development and improvement, while also providing strategic recommendations for institutional managers in data-driven decision-making.

2. MATERIALS AND METHODS

Information System Evaluation

Evaluation is a process carried out systematically and continuously to explain, obtain, and present relevant data in determining the quality or value of an object, based on certain criteria and considerations in decision making [4]. In the context of information systems, evaluation is an important aspect that needs to be implemented to ensure the level of effectiveness of system use, while providing feedback that can be used to overcome emerging problems [4]. The main objectives of information system evaluation include assessing technical capabilities, system utilization, and measuring success or failure in the operational implementation of information systems [4].

Independent Academic Information System (SiAmir)

An academic information system is a system that functions to provide various information related to academic activities, such as grade data for each course, lecture schedules, and other information [5]. The SiAmir system implemented at STIKOM Uyelindo serves as a support system for academic administration, encompassing registration verification, course contract development, student attendance documentation, and academic grade data management. Implementation of this system has been ongoing since 2015, involving the entire academic community of STIKOM Uyelindo Kupang, including teaching staff, students, and administrative staff.

DeLone dan McLean Model

DeLone and McLean is a model for measuring the success of an information system developed by William H. DeLone and Ephraim R. McLean. The DeLone and McLean model is a model used to measure the success of an information system from the user's perspective [6]. The six variables in this model are Information Quality, System Quality, Service Quality, Use, User Satisfaction, and Net Benefits [7].

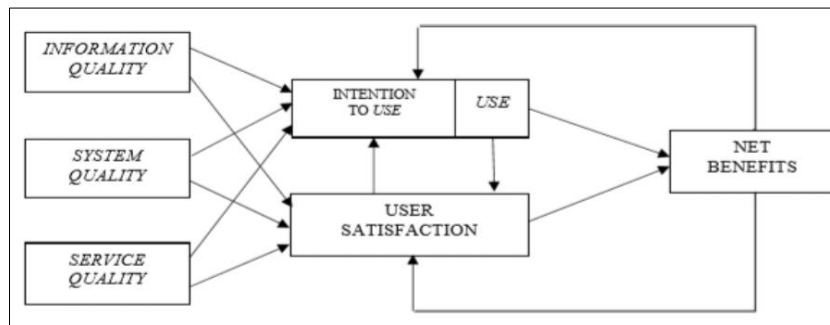


Figure 1. DeLone dan McLean Model [8]

The following is an explanation of each variable contained in the DeLone and McLean model (Figure 1).

- Information Quality**
Information quality is a variable used to assess the quality of output from a system. This aspect includes measurements of accuracy, timeliness, completeness, relevance, and how to present information [9].
- System Quality**
System quality is a framework that describes the capabilities of a device. This aspect aims to assess the level of ease of use, which is measured through a number of parameters, including: usability, availability, reliability, adaptability, and response [9].
- Service Quality**
Service quality is defined as the comparison between user expectations and their perception of the service they actually receive. The success of a system is also influenced by aspects of service quality, which can be measured through several components, namely: quick responsiveness, assurance, and empathy [9].
- Use**
Usage is a variable used to identify the intensity of information system use by users. This aspect is measured through frequency of use, duration, number of accesses, interaction patterns, and level of dependence on the system [9].
- User Satisfaction**
User satisfaction is the response a user receives from a system's output. This level of satisfaction is measured using several indicators, including: effectiveness, efficiency, and satisfaction with the system used. User interface and user experience aspects are examples of elements that influence this satisfaction [9].

Partial Least Squares (PLS)

Partial Least Squares (PLS) is a type of Structural Equation Modeling (SEM) that uses a variance-based approach [10]. This method is presented as a solution to overcome the limitations of covariance-based SEM. PLS offers several advantages, including the ability to model complex relationships between variables. This method is also very useful because it can overcome multicollinearity problems and produce stable (robust) conclusions even though the data conditions are not ideal, such as the presence of non-normal or missing data. In addition, PLS is flexible because it can be applied to small samples and supports data from various measurement scales, ranging from nominal, ordinal, to continuous.

Research Hypothesis

A hypothesis is a tentative statement proposed as an initial response to a formulated research question. This statement is usually formulated in the form of a sentence containing an assumption or prediction. The hypothesis in this study is adapted from previous research [11] (Figure 2).

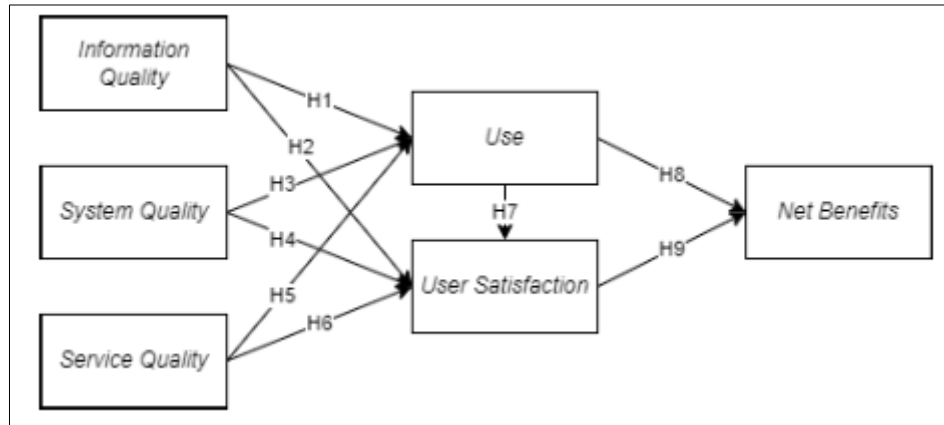


Figure 2. Research Hypothesis

In this study the following hypothesis is used [11]:

- H1 : Information Quality has a significant effect on Use.
- H2 : Information Quality has a significant effect on User Satisfaction.
- H3 : System Quality has a significant effect on Use.
- H4 : System Quality has a significant effect on User Satisfaction.
- H5 : Service Quality has a significant effect on Use.
- H6 : Service Quality has a significant effect on User Satisfaction.
- H7 : Use has a significant effect on User Satisfaction.
- H8 : Use has a significant effect on net Benefits.
- H9 : User Satisfaction has a significant effect on Net Benefits.

Data Collection

Data collection was conducted by distributing questionnaires to lecturers and students at STIKOM Uyelindo. The questionnaire used a 5-point Likert scale, with a score of 5 representing Strongly Agree and a score of 1 representing Strongly Disagree.

Research Instruments

In this study, the research instrument used was adapted from research [11]. This study has 6 variables and 20 statement items (Table 1).

Table 1. Research Instruments

Variable	Dimension	Statement	Code
Information Quality	Information Presentation	I feel the information displayed on each SiAmir menu/page is easy to understand and meets user needs (home page, information page, schedule page, transcript page).	KA1
	Accuracy of Information	I feel that all the information displayed by SiAmir is accurate for users in accordance with academic activities.	KA2
	Timeliness of information	I feel that the information displayed on each menu/page in SiAmir is always up-to-date (home page, information page, schedule page, transcript page).	KA3
	Completeness of information	I feel that all the activities I do on SiAmir are neatly arranged and displayed in the form of information issued by SiAmir.	KA4
System Quality	Ease of use	The appearance of each menu or page on SiAmir is user friendly so I feel comfortable using the system.	KS1
	System usability	The features/menus available on SiAmir suit my needs.	KS2
	System reliability	SiAmir is capable of performing error recovery processes quickly.	KS3
Service Quality	Responsiveness	The SiAmir management staff were responsive in resolving the issues I encountered regarding using SiAmir.	KL1
	Reliability	SiAmir management staff always resolve issues promptly and accurately.	KL2

	Assurance	SiAmir management officers always provide a time guarantee regarding the repair of the problems that I convey through my complaints.	KL3
	Emphaty	The SiAmir management staff were very friendly whenever I conveyed complaints regarding the use of SiAmir.	KL4
Use	Frequency of use	I regularly use SiAmir.	PG1
	Real use	I used SiAmir for a long time (1-2 hours per day).	PG2
	Facility	I made tuition payments, course contracts, and learned about my study results using SiAmir.	PG3
User Satisfaction	System output	I am satisfied with all the information provided by SiAmir.	KP1
	Management services	I am satisfied with all the services provided by SiAmir.	KP2
	System accuracy	I feel helped in completing the academic process by using SiAmir.	KP3
	User expectations	I feel that all the available features and functions are in accordance with user expectations.	KP4
Net Benefits	Job effects	I feel that SiAmir simplifies the entire academic process.	MB1
	Efficiency	I feel that the entire process carried out to carry out academic activities becomes efficient and effective by using SiAmir.	MB2

Research Stages

In this study, the data analysis process was carried out using a statistical method known as Partial Least Square (PLS). PLS was used because it is able to handle complex models despite limited sample sizes, and is effective in predicting and confirming relationships between latent variables. Furthermore, PLS can identify and explain relationships between constructs that are not directly visible. Analysis using PLS was carried out in two major stages: outer model evaluation to ensure valid and reliable indicators, and inner model evaluation to test relationships between constructs and hypotheses [12].

3. RESULTS AND DISCUSSION

Respondent Profile

The questionnaire was distributed online from June to July 2025 to lecturers and students of STIKOM Uyelindo. Based on the questionnaire distribution, a sample of 165 SiAmir user respondents was obtained.

Data analysis

The hypothesis testing conducted in this study used the Partial Least Squares (PLS) method using SmartPLS version 3.0 software. This method was chosen because it does not require normally distributed data and can be used with small sample sizes. The following is a path diagram of the model used in this study in Figure 3.

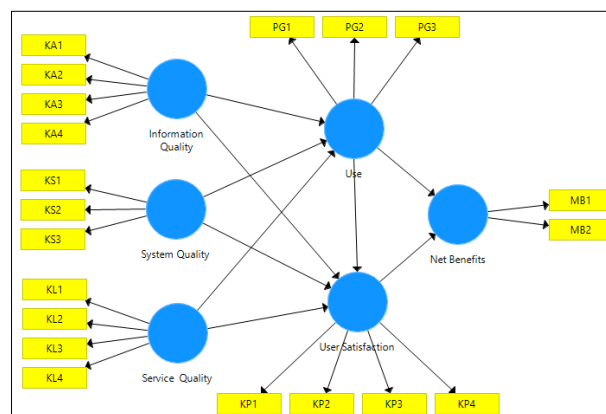


Figure 3. Path Diagram

Evaluation of Measurement Model (Outer Model)

Measurement outer model aims to evaluate the relationship between latent constructs and their measurement parameters. This external model also plays a role in examining how each measurement parameter correlates with the corresponding latent construct [13]. Validity testing is carried out by looking at the convergent validity and AVE values. Convergent validity can be seen through the correlation between indicator scores and their loading factor values. An indicator is deemed to meet validity criteria if the

loading factor value for each indicator exceeds 0.70. Furthermore, a p-value below 0.05 indicates an adequate level of significance [14] (Table 2).

Table 2. Outer Loading Valid

	User Satisfaction	Information Quality	Service Quality	System Quality	Net Benefits	Use
KA1		0.929				
KA2		0.936				
KA3		0.931				
KA4		0.910				
KL1			0.916			
KL2			0.935			
KL3			0.929			
KL4			0.909			
KP1	0.943					
KP2	0.957					
KP3	0.951					
KP4	0.922					
KS1				0.930		
KS2				0.908		
KS3				0.826		
MB1					0.974	
MB2					0.975	
PG1						0.934
PG2						0.731
PG3						0.908

In addition to evaluating convergent validity, the Average Variance Extracted (AVE) value can be used. A construct is considered valid if the AVE value is greater than 0.50 (Table 3).

Table 3. Average Variance Extracted (AVE)

Construction	AVE
User Satisfaction	0.890
Information Quality	0.858
Service Quality	0.850
System Quality	0.791
Net Benefits	0.950
Use	0.744

Validity testing is performed by examining the composite reliability value. Composite reliability is the component used to test the reliability of indicators in a variable. A variable can be declared to meet composite reliability if it has a composite reliability value > 0.6 . Reliability testing with composite reliability can be strengthened by using the Cronbach's alpha value. A variable can be declared reliable or meet Cronbach's alpha if it has a Cronbach's alpha value > 0.7 [15] (Table 4).

Table 4. Composite Reliability dan Cronbach Alpha

Construction	Composite Reliability	Cronbach's Alpha
User Satisfaction	0.970	0.959
Information Quality	0.960	0.945
Service Quality	0.958	0.941
System Quality	0.919	0.868
Net Benefits	0.974	0.947
Use	0.896	0.826

Structural Model Evaluation (Inner Model)

The evaluation of the measurement inner model is intended to measure the consistency of indicators within a particular construct through the use of composite reliability values. A construct can be categorized as reliable if it exhibits a composite reliability value exceeding 0.6. Additional validation can be performed using the Cronbach's Alpha coefficient, where a construct is considered to have adequate reliability when its value is above 0.7 [15] (Table 5).

Table 5. Composite Reliability dan Cronbach Alpha

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Information Quality	0.960	0.945
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System Quality	0.919	0.868
Net Benefits	0.974	0.947
Use	0.896	0.826

Hypothesis Testing

The hypothesis is submitted based on the T Statistics value on the coefficient path using a significance level of 5%.

Table 6. Path Coefficients (Mean, STDEV, T-Values)

Construction	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
User Satisfaction -> Net Benefits	0.701	0.684	0.114	6.128	0.000
Information Quality-> User Satisfaction	0.224	0.234	0.097	2.303	0.022
Information Quality-> Use	0.367	0.356	0.131	2.797	0.005
Service Quality-> User Satisfaction	0.360	0.359	0.083	4.348	0.000
Service Quality-> Use	0.270	0.263	0.107	2.524	0.012
System Quality -> User Satisfaction	0.113	0.103	0.093	1.212	0.226
System Quality -> Use	0.246	0.262	0.180	1.363	0.173
Use -> User Satisfaction	0.304	0.302	0.063	4.816	0.000
Use -> Net Benefits	0.217	0.230	0.129	1.688	0.092

In Table 6, a path relationship is significant if it has a T Statistics value of more than 1.96. Based on the data in Table 6, then:

H1: Information Quality has a significant effect on Use

Information Quality on Use gives a T Statistics value of 2.797 which means it is significant (>1.96) so that H1 is declared **accepted**.

H2: Information Quality has a significant effect on User Satisfaction

Information Quality on Use gives a T Statistics value of 2.303 which means it is significant (>1.96) so that H2 is declared **accepted**.

H3: System Quality has a significant effect on Use

System Quality on Use gives a T Statistics value of 1.363 which means it is not significant (<1.96) so H3 is **rejected**.

H4: System Quality has a significant effect on User Satisfaction

System Quality on User Satisfaction provides a T Statistics value of 1.212 which means it is not significant (<1.96) so H4 is **rejected**.

H5: Service Quality has a significant effect on Use

Service Quality on Use gives a T Statistics value of 2.524 which means it is significant (>1.96) so that H5 is declared **accepted**.

H6: Service Quality has a significant effect on User Satisfaction

Service Quality on User Satisfaction provides a T Statistics value of 4.348 which means it is significant (>1.96) so that H6 is declared **accepted**.

H7: Use has a significant effect on User Satisfaction

Use on User Satisfaction gives a T Statistics value of 4.816 which means it is significant (>1.96) so that H7 is declared **accepted**.

H8: Use has a significant effect on Net Benefits

Use of Net Benefits gives a T Statistics value of 1.688 which means it is not significant (<1.96) so H8 is **rejected**.

H9: User Satisfaction has a significant effect on Net Benefits

User Satisfaction with Net Benefits gives a T Statistics value of 6.128 which means it is significant (>1.96) so that H9 is declared **accepted**.

The results of the hypothesis testing can be seen in Table 7.

Table 7. Hypothesis Results

Hypothesis	T-Statistic Value	Information
H1: Information Quality has a significant effect on Use	2.797	Accepted
H2: Information Quality has a significant effect on User Satisfaction	2.303	Accepted
H3: System Quality has a significant effect on Use	1.363	Rejected
H4: System Quality has a significant effect on User Satisfaction	1.212	Rejected
H5: Service Quality has a significant effect on Use	2.524	Accepted
H6: Service Quality has a significant effect on User Satisfaction	4.348	Accepted
H7: Use has a significant effect on User Satisfaction	4.816	Accepted
H8: Use has a significant effect on Net Benefits	1.688	Rejected
H9: User Satisfaction has a significant effect on Net Benefits	6.128	Accepted

4. CONCLUSION AND SUGGESTIONS

The analysis results show that of the nine hypotheses tested, six hypotheses were accepted and three hypotheses were rejected. Information quality significantly influences usage ($T = 2.797$) and user satisfaction ($T = 2.303$), while system quality does not significantly influence usage ($T = 1.363$) or user satisfaction ($T = 1.212$). Service quality is proven to significantly influence usage ($T = 2.524$) and user satisfaction ($T = 4.348$). Furthermore, usage influences user satisfaction ($T = 4.816$) but not net benefits ($T = 1.688$). The most dominant factor is user satisfaction which significantly influences net benefits ($T = 6.128$), so it can be concluded that the success of an academic information system is more determined by information quality, service quality, and user satisfaction.

System managers are advised to improve the quality of information and services, as these have been shown to impact usage and satisfaction, while maintaining system stability. Users should actively provide feedback and utilize the system optimally. Further research could include other variables, such as management support or ease of use, and expand the research area for more comprehensive results.

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