J-INTECH (Journal of Information and Technology)
Accredited Sinta 4 Ministry of Higher Education, Science and Technology
Republic of Indonesia SK No. 10/C/C3/DT.05.00/2025
E-ISSN: 2580-720X || P-ISSN: 2303-1425

Assessing Technology Acceptance for SIAKAD Usage among Scholarly Community

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Keyword:

Delone & Mclean; PLS-SEM; UTAUT2; Technology Acceptance

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Abstract

The deployment of academic information systems in higher education institutions necessitates both technological preparedness and user acceptance to guarantee sustained utilization. In practice, users frequently encounter challenges, including confusion when retrieving academic material, doubts regarding the accuracy of presented data, and dependence on manual verification despite the system's availability. Such circumstances diminish trust and render the system seen as a mere formal obligation rather than a beneficial academic resource. Differences in user perceptions of system quality, information quality, and behavioral aspects consequently affect the efficacy of system adoption. By integrating UTAUT 2 with the Delone & Mclean Model, this research aims to analyse the variables that influence user acceptance and the usage behaviour of the current academic information system. A quantitative explanatory approach was employed, utilizing survey data collected from 450 active users. PLS-SEM was employed to examine the data for the assessment of both measurement and structural models. The findings demonstrate that performance expectancy, effort, facilitating conditions, habit, system quality, and knowledge all have a substantial impact on behavioral intention and usage behavior. Conversely, social influence does not substantially impact behavioral intention, indicating that system utilization is primarily motivated by functional requirements rather than normative pressure. Practically, the results suggest that universities should prioritize system reliability, accurate and timely academic information, responsive user support, and routine integration of SIAKAD into core academic workflows to strengthen continued usage.

1. Introduction

Digital transformation in higher education has encouraged universities to adopt Information systems to improve the efficacy of academic administration[1],[2]. Academic Information Systems (SIAKAD) serve as a core infrastructure for managing student registration, course enrollment (KRS), grade processing, and the monitoring of learning activities [3]. The implementation of digital academic Systems have demonstrated an enhancement in service efficiency and information transparency for the academic community [4],[5].

Globally, the Student Information System (SIS) is the most widely implemented system in higher education institutions, with an adoption rate reaching 87.7% [6], which presents the level of technology system implementation in universities. In Indonesia, the use of digital academic systems has become a routine operational component of higher education institutions rather than an optional tool [7]. This trend is further which depicts the utilization of SIAKAD across Indonesian universities. These findings indicate that information systems have evolved from being merely administrative tools into primary platforms for delivering academic services [8].

Institut Teknologi Indonesia (ITI) has implemented SIAKAD since 2021 to provide integrated academic services. However, in practice, issues such as access delays during peak registration periods and inconsistencies in academic schedule information have been observed. These challenges indicate limitations in system service quality that affect user experience [9],[10]. Such conditions may reduce users' confidence in the information supplied by the system [11].

On the other hand, the utilization of SIAKAD features is not evenly distributed among users. Some users tend to rely primarily on basic functions, while academic monitoring features are relatively underutilized. This condition indicates variations in how users interact with the system. Furthermore, perceptions of SIAKAD usage may differ among students, lecturers, and administrative staff, resulting in non-uniform user experiences [12]. This phenomenon suggests that system usage is influenced not only by technological availability but also by how users perceive, understand, and integrate the system's functions into their daily academic activities [13],[14].

Within the J-INTECH literature, academic information-system improvement has also been associated with usability redesign and process integration. Studies on SIAKAD UI/UX refinement and academic-module development indicate that interface quality, responsiveness, and support for concrete academic workflows remain central to meaningful system use [15],[16]. Related work by Yuni Sugiarti also highlights the importance of usability evaluation in digital services, showing that navigation clarity and interface problems can materially influence user experience and perceived ease of use [17].

Technology is frequently employed in UTAU2 to elucidate behavioural intents [18], [19]. Performance expectancy, effort expectancy, social influence, enabling conditions, hedonic motivation, price value, and habit are some of these constructs. However, the model was primarily developed for consumer technology settings and does not explicitly capture the quality of the system and the information. In a mandatory academic information system such as SIAKAD, hedonic motivation and price value are less salient because system use is institutionally required and not directly linked to consumer payment decisions [16]. In this context, users are more likely to evaluate whether the system is reliable, accessible, and able to provide accurate academic information.

Conversely, System and information quality are key prerequisites for efficient system use and individual-level IS success, according to the DeLone and McLean Information Systems Success Model. [20],[21],[22]. Although this perspective captures the technological side of system success, it is less explicit in explaining how users form intention and translate that intention into actual use behavior. As a result, prior studies on higher-education systems often explain adoption either from a behavioral-acceptance perspective or from an IS-quality perspective, while fewer studies integrate both viewpoints in a single framework for mandatory academic system use [23],[24]. Related studies coauthored by Yuni Sugiarti on mobile learning system performance and e-Halal system acceptance likewise suggest that digital-platform evaluation often requires attention to both quality dimensions and user-acceptance mechanisms [25],[26].

Accordingly, this study addresses two related gaps. The first is a theoretical gap: the limited explanation of how behavioral determinants from UTAUT2 interact with system quality and information quality in a mandatory academic information-system context. The second is an empirical gap: despite the institutional deployment of SIAKAD, users still verify information manually, underutilize certain features, and do not always regard the system as a dependable academic support tool. In order to fill in these deficiencies, this study incorporates system quality and information quality into UTAUT2 while removing hedonic incentive and pricing value from the DeLone and McLean model. The proposed framework contributes theoretically by linking user beliefs and technology-quality attributes in one parsimonious model, and it differs from prior single-model studies by explaining students' actual use behavior as well as their behavioral intention, lecturers, and administrative staff in one mandatory-use setting. More recent studies on Mobile AIS have further extended this line of inquiry toward continuance and loyalty, but they focus primarily on post-adoption mobile-service use rather than the integrated explanation of behavioral intention and actual use in institution-wide SIAKAD environments [27],[28].

The proposed research model and the hypothesized relationships between variables are shown in Figure 1. Adjusted indicators from previous research are used to measure each construct. This is also placed within the context of higher education institutions' academic information systems. Table 1 shows the operationalization of all variables.

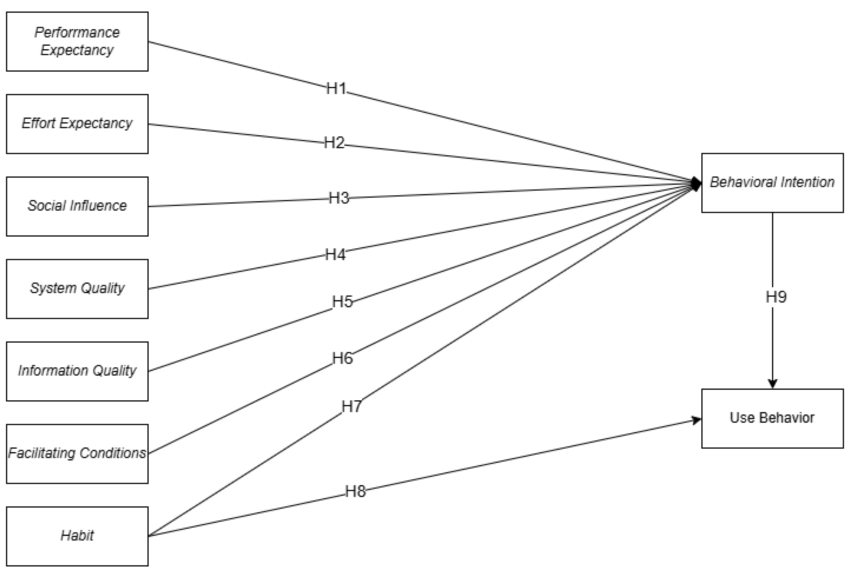

Figure 1. The Proposed Research Model

Table 1. Operationalization of Research Variables

Variable	Code	Measurement Item	Source
PE	PE1	The use of SIAKAD ITI helps me complete academic activities more quickly.	[18]
	PE2	SIAKAD ITI improves my effectiveness in managing academic activities.	
	PE3	SIAKAD ITI makes academic processes more efficient and productive.	
	PE4	Using SIAKAD ITI provides clear benefits in supporting academic activities.	
EE	EE1	SIAKAD ITI is easy to learn and use.	[18]
	EE2	Interaction with SIAKAD ITI is clear and understandable.	
	EE3	I do not need much effort to operate SIAKAD ITI.	

Variable	Code	Measurement Item	Source
	EE4	The interface of SIAKAD ITI facilitates ease of use.	
SI	SI1	People around me encourage me to use SIAKAD ITI.	[18]
	SI2	The university recommends the use of SIAKAD ITI.	
	SI3	I use SIAKAD ITI due to influence from the academic environment.	
	SI4	The use of SIAKAD ITI is considered important by people around me.	
SQ	SQ1	SIAKAD ITI is accessible anytime without disruption.	[11],[4]
	SQ2	SIAKAD ITI rarely experiences technical errors.	
	SQ3	The features of SIAKAD ITI function properly and stably.	
	SQ4	The system displays information with adequate speed.	
IQ	IQ1	The information displayed by SIAKAD ITI is accurate and reliable.	[11]
	IQ2	The information provided is up-to-date and relevant.	
	IQ3	The information is easy to understand.	
	IQ4	The academic data presented are complete and consistent.	
FC	FC1	I have the necessary resources to use SIAKAD ITI.	[18]
	FC2	I have sufficient technical knowledge to use SIAKAD ITI.	
	FC3	I receive adequate technical support when encountering problems.	
	FC4	Campus IT infrastructure supports the use of SIAKAD ITI.	
HB	HB1	Using SIAKAD ITI has become a habit for me.	[18]
	HB2	I feel the need to use SIAKAD ITI in academic activities.	
	HB3	I use SIAKAD ITI routinely without much thought.	
	HB4	I feel comfortable using SIAKAD ITI because I am accustomed to it.	
BI	BI1	I intend to continue using SIAKAD ITI in the future.	[18]
	BI2	I am interested in maximizing the features of SIAKAD ITI.	
	BI3	I intend to recommend SIAKAD ITI to others.	
	BI4	I will continue using SIAKAD ITI because it is beneficial.	
UB	UB1	I frequently use SIAKAD ITI to manage academic activities.	[18]
	UB2	I use SIAKAD ITI to access academic information regularly.	
	UB3	I use SIAKAD ITI according to academic needs each semester.	
	UB4	Using SIAKAD ITI has become an essential part of my academic activities.	

2. Research Method

This study uses a quantitative explanatory approach to look into the causal relationships among variables affecting user acceptability of the SIAKAD. This methodology is employed to investigate the links across constructs via hypothesis testing grounded in numerical data, facilitating empirical validation of the suggested theoretical model[30], [31].

The study integrates UTAUT2 with the Information Systems Success Model by removing the hedonic motivation and price value constructs and incorporating system quality and information quality. This specification is theoretically appropriate for SIAKAD because the system is mandatory, institutionally provided, and not directly associated with consumer payment decisions. The integration is intended to capture two complementary explanations of acceptance: users' cognitive and behavioral evaluations of the system, and their assessment of the quality of the system and the information it produces. In this way, the model is expected to provide a more comprehensive explanation of both behavioral intention and actual system use.

2.1 Sample and Data Collection

The research population comprised all active SIAKAD users at ITI, including students, lecturers, and administrative staff. Purposive sampling was employed because the study required respondents who had direct and repeated experience with SIAKAD and were therefore capable of assessing both the behavioral and quality dimensions of the system. To meet this requirement, only users who had used SIAKAD for at least one semester were included. This criterion ensured that respondents had encountered core academic functions such as course registration, schedule access, grade checking, and academic monitoring, thereby making their evaluations theoretically relevant to the constructs examined [31].

A total of 450 respondents were acquired. This sample size is adequate for PLS-SEM because the model contains multiple latent constructs and indicators and the analysis is prediction-oriented [32],[30]. The number of respondents also allows stable estimation of the structural paths for the proposed model. The dominance of students in the sample is substantively reasonable because students are the most frequent users of SIAKAD for course registration, schedule access, grade checking, and academic monitoring. Nevertheless, this composition may place greater weight on student-facing usability and information access issues than on lecturer or administrative-service functions.

Data were gathered using an online questionnaire disseminated to participants through the institution's academic communication channels. The research instrument consisted of statements related to users' experiences in using SIAKAD and was formulated based on corroborated metrics from previous research. The use of questionnaires is considered effective for systematically and consistently gathering large-scale user perception data [33],[34].

This research utilized a five-point Likert scale to assess respondents' perceptions of each variable indicator. The scale was selected because it offers a balance between measurement sensitivity and respondents' ease in understanding the response options, and it is commonly recommended for perception-based SEM research [35],[36]. At the same time, the use of purposive sampling and a single-institution setting limits broad statistical generalization. The resulting findings should therefore be interpreted as analytically generalizable to similar mandatory SIAKAD contexts rather than as directly representative of all higher-education institutions. Future studies may strengthen external validity through multi-institutional sampling, stratified respondent quotas, or probability-based designs.

2.2 Instrument Development and Data Analysis

The validated indicators in the suggested research model, aligned with prior studies and contextualised with SIAKAD, were utilised to develop the research instrument. The data analysis utilised SmartPLS 4 and comprised two primary phases: evaluation of the structural model (inner model) and the measurement model (outer model) [35], [37]. In the structural model assessment, collinearity diagnostics should also be considered through inner VIF values before interpreting path coefficients, especially because several predictors are theoretically related. In addition to R^2, predictive relevance may be assessed through Q^2 or PLSpredict to bolster the model's capacity for out-of-sample explanation [32],[37].

1. Measurement Model Evaluation (Outer Model)
   The purpose of the measurement model evaluation is to assess the reliability and validity of latent constructs through convergent validity, discriminant validity, and reliability testing.
   A. Convergent Validity
      The degree to which the indicators accurately reflect the associated latent dimension determines convergent validity. The outer loading value and the Average Variance Extracted (AVE) value are the two measures used to evaluate this stage.
      - Loading Factor (Outer Loading)
        When the outer loading value exceeds 0.70, an indication is said to have convergent validity. In exploratory research, a result between 0.60 and 0.70 is still acceptable [32].
      - Average Variance Extracted (AVE)
        When the construct's AVE value is higher than 0.50, it is deemed valid. This is because it shows that over 50% of the indicator variance can be explained by the latent construct. [37].
   B. Discriminant Validity
      Every model construct is empirically guarantee to be different from the others due to discriminant validity, through two methods:
      - Fornell–Larcker Criterion
        The construction must have a square root of AVE greater than its correlation with other model structures [32].
      - Heterotrait–Monotrait Ratio (HTMT)
        A HTMT value of ≤ 0.90 is considered to meet discriminant validity [38].

C. Reliability Testing

Reliability reflects the internal consistency of indicators in measuring their respective constructs. This assessment is also conducted using two methods:

- Composite Reliability (CR)

  When a construct's Composite Reliability (CR) rating is higher than 0.70, it is deemed reliable [32].
- Cronbach's Alpha

  For each construct, Cronbach's alpha values of > 0.70 suggest satisfactory internal consistency [32].

2. Structural Model Evaluation (Inner Model)

The purpose of structural model evaluation is to investigate the cause-and-effect relationships between the latent variables of the research model. The evaluation of the inner model is performed by three approaches, specifically Coefficient of Determination (R^2), Path Coefficient, and Significance Testing.

a. Coefficient of Determination (R^2)

R2 shows how well the model predicts the endogenous variable. Significant, moderate, and low explanatory power are indicated by values of 0.75, 0.50, and 0.25, respectively. [32].

b. Path Coefficient

Path coefficients are a measure that shows the strength and direction of the latent variables' association.

c. Significance Testing (Bootstrapping/T-Statistic & p-value)

The connection between variables is considered statistically significant when the p-value is less than 0.05 at a 5% significance level and the T-statistic value is more than 1.96 [32]. Furthermore, when the Q2 value is higher than zero, the model is deemed predictively useful [37].

3. Data Analysis

With the use of SmartPLS 4 software, data were examined using the PLS-SEM approach. This approach was chosen because it can analyze complex models, it is prediction-oriented in its explanation of technology usage behavior, and it does not require assumptions about normal data distribution [32].

2.3 Research Stages

The research stages presented in Figure 2 illustrate the systematic flow of the study, beginning with problem formulation, followed by research model development, instrument design, data collection, and concluding with data analysis using the PLS-SEM approach.

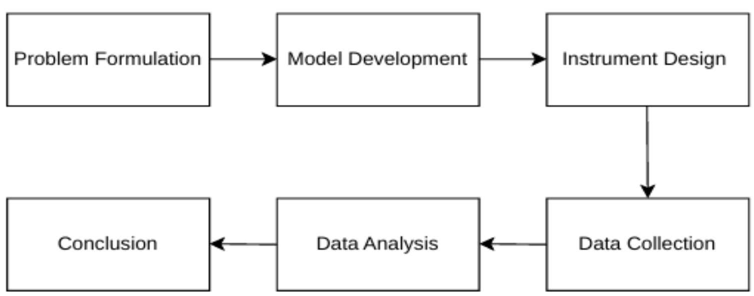

Figure 2. Research Stages

3. Result and Discussions

3.1 Respondent Characteristics

Based on Table 2, the study involved 450 respondents, predominantly male (60.20%). The majority were aged 20–25 years (67.10%), most were students (80.90%), and most had used SIAKAD for 1–2 years (73.80%) while accessing the system several times per week (70.20%). This profile indicates that the findings mainly reflect regular student users; therefore, the results are especially informative for student-facing academic services, whereas lecturer and administrative perspectives should be generalized with caution.

Table 2. Respondent Characteristics

Demographic Type	Category	Total	Percentage
Sexual Category	Masculine	271	60,20%
	Feminine	179	39,80%
Years old	< 20 Years	62	13,80%
	20–25 Years	302	67,10%
	26–30 Years	21	4,70%
	> 30 Years	65	14,40%
Status	Student	364	80,90%
	Lecturer	67	14,90%
	Administrative Staff	19	4,20%
Duration of SIAKAD Usage	< Year	60	13,30%
	1–2 Years	332	73,80%
	>=3 Years	58	12,90%
Usage Frequency	Daily	81	18%
	Several Times per Week	316	70,20%
	Once per Week	52	11,60%
	Rarely (Specific Periods Only)	1	0,20%

3.2 Measurement Model Evaluation

For readability, each indicator's outer loading is compiled in Table 3. All retained indicators exceed or approximate the recommended threshold, demonstrating sufficient convergent validity and indicator reliability at the item level. AVE value and the composite reliability value are subsequently employed to assess convergent validity and construct reliability.

Table 3. Indicator Reliability Summary

Construct	Indicator	Outer Loading	Decision
BI	BI1	0,707	Retained
BI	BI2	0,855	Retained
BI	BI3	0,77	Retained
BI	BI4	0,742	Retained
EE	EE1	0,76	Retained
EE	EE2	0,727	Retained
EE	EE3	0,792	Retained
EE	EE4	0,744	Retained
FC	FC1	0,798	Retained
FC	FC2	0,724	Retained

Construct	Indicator	Outer Loading	Decision
FC	FC3	0,773	Retained
FC	FC4	0,781	Retained
HB	HB1	0,725	Retained
HB	HB2	0,746	Retained
HB	HB3	0,719	Retained
HB	HB4	0,78	Retained
IQ	IQ1	0,784	Retained
IQ	IQ2	0,761	Retained
IQ	IQ3	0,752	Retained
IQ	IQ4	0,727	Retained
PE	PE1	0,738	Retained
PE	PE2	0,74	Retained
PE	PE3	0,755	Retained
PE	PE4	0,737	Retained
SI	SI1	0,71	Retained
SI	SI2	0,772	Retained
SI	SI3	0,725	Retained
SI	SI4	0,768	Retained
SQ	SQ1	0,715	Retained
SQ	SQ2	0,875	Retained
SQ	SQ3	0,785	Retained
SQ	SQ4	0,709	Retained
UB	UB1	0,759	Retained
UB	UB2	0,764	Retained
UB	UB3	0,77	Retained
UB	UB4	0,706	Retained

As shown in Table 4, All constructs demonstrate satisfactory convergent validity and internal consistency with composite reliability values above 0.70 and AVE values above 0.50. Discriminant validity was also checked during the PLS-SEM procedure by comparing indicator loadings across constructs; each indicator loaded highest on its intended construct. Taken together, these findings show that the measuring model is suitable for structural-model testing.

Table 4. Construct Validity and Reliability

Construct	AVE	Composite Reliability	Description
BI	0.593	0.776	Delighted
EE	0.572	0.755	Delighted
FC	0.592	0.779	Delighted
HB	0.552	0.731	Delighted
IQ	0.572	0.754	Delighted
PE	0.551	0.733	Delighted
SI	0.554	0.743	Delighted
SQ	0.599	0.788	Delighted
UB	0.563	0.741	Delighted

3.3 Structural Model Evaluation

The structural model, also known as the inner model, is examined once the measurement model's validity and reliability have been confirmed. The purpose of this evaluation is to determine how well the model explains the dependent variable. Additionally, hypothesis testing is used to determine how constructs relate to one another.

Table 5 indicates that the R2 value for behavioral intention is 0.936, showing its significance. In contrast, the usage action has an R2 value of 0.574, signifying moderate explanatory efficacy. The data suggest that the integrated model significantly influences both the intention and actual utilization of the system.

Table 5. Coefficient of Determination (R^2) Values

Variabel	R-square	Description
BI	0,936	Substansial
UB	0,574	Moderate

Subsequently, during the bootstrapping procedure to evaluate the hypothesis, the path coefficients and t-statistic values are analyzed. If the t-statistic surpasses the established critical threshold, the correlation between the variables is deemed significant. Table 6 displays path coefficients, t-statistic coefficients, and significance levels.

Table 6. Hypothesis Testing Results (Path Coefficients and T-Test)

Hypothesis	Relationship	β	T-statistic
H1	PE → BI	0,445	1.970
H2	EE → BI	0,173	2.554
H3	SI → BI	0,032	0,419
H4	FC → UB	0,901	5.789
H5	HB → BI	0,661	3.328
H6	HB → UB	0,594	2.052
H7	SQ → BI	0,432	4.051
H8	IQ → BI	0,487	12.510
H9	BI → UB	0,364	1.970

The findings indicate that most hypothesized relationships are supported. While facilitating conditions, habit, and behavioral intention have a substantial impact on actual use behavior, performance expectancy, effort expectancy, habit, system quality, and information quality have a large impact on behavioral intention.
By contrast, behavioral intention is not greatly impacted by social influence. This pattern suggests that acceptance of a mandatory academic information system is shaped more by instrumental value, infrastructure

readiness, repeated use, and the perceived quality of the system than by peer or organizational pressure. Overall, the structural model demonstrates strong explanatory power, although the exceptionally high R^2 for Behavioral Intention should be interpreted together with additional collinearity and predictive diagnostics.

3.4 Interpretation of Results

This section interprets the structural-model results based on the path coefficients (β), bootstrapping significance, and the theoretical implications of the findings.

H1: Performance Expectancy → Behavioral Intention

The relationship shows a positive and statistically significant effect (β = 0.445; t = 1.970). This indicates that the more users perceive SIAKAD as useful for completing academic tasks efficiently, the stronger their intention to continue using it. This finding is consistent with UTAUT-based studies that identify performance expectancy as a major predictor of technology-use intention in higher education [18],[39].

H2: Effort Expectancy → Behavioral Intention

The relationship is positive and significant (β = 0.173; t = 2.554). Although its effect is smaller than that of performance expectancy and habit, ease of use still contributes to users' intention to use SIAKAD. This result supports the UTAUT argument that systems perceived as easier to learn and operate are more likely to be accepted [18],[39].

H3: Social Influence → Behavioral Intention

The relationship is not significant (β = 0.032; t = 0.419). This result suggests that SIAKAD usage is not primarily driven by peer encouragement or normative pressure. In a mandatory university system, users may rely more on functional necessity and their own experience than on social expectations, which is in line with prior work showing that social influence can weaken in institutional or obligatory-use settings [40].

H4: Facilitating Conditions → Use Behavior

The relationship shows a strong positive and significant effect (β = 0.901; t = 5.789). This implies that the availability of infrastructure, access, technical support, and enabling resources directly affects actual system use. In other words, even when intention exists, actual behavior still depends on whether the system can be accessed and supported reliably during academic activities. This finding is consistent with the original UTAUT logic that facilitating conditions are closely associated with actual use behavior [18].

H5: Habit → Behavioral Intention

The relationship is positive and significant (β = 0.661; t = 3.328). Habit emerges as one of the strongest determinants of intention, indicating that repeated exposure to SIAKAD in routine academic processes strengthens users' tendency to keep using it. This result is aligned with prior UTAUT2 studies that identify habit as an important mechanism linking repeated experience to continued usage intention [18],[41].

H6: Habit → Use Behavior

The relationship is also positive and significant (β = 0.594; t = 2.052). This finding indicates that habit not only shapes intention but also translates directly into actual use behavior. In a mandatory system, repeated interaction can normalize system use and make it part of users' routine academic actions [41].

H7: System Quality → Behavioral Intention

The relationship shows a positive and significant effect (β = 0.432; t = 4.051). This result indicates that users are more willing to continue using SIAKAD when they perceive it as stable, accessible, and technically reliable. The finding supports the DeLone and McLean perspective that system quality is a foundational determinant of sustained system use and perceived success [20],[21], and it is consistent with studies on digital learning systems that emphasize service reliability and usability [23].

H8: Information Quality → Behavioral Intention

The relationship is positive and significant (β = 0.487; t = 12.510). This suggests that accurate, up-to-date, understandable, and consistent academic information strengthens users' intention to rely on the system. For an academic information system, trustworthy information is central because users make course, schedule, and performance-related decisions based on what the system displays. This result is in line with the Information Systems Success Model and related empirical studies [20],[21],[23].

H9: Behavioral Intention → Use Behavior

The relationship is positive and statistically significant (β = 0.364; t = 1.970). This confirms that intention remains an important direct predictor of actual system use. Although SIAKAD is mandatory, users with stronger intention are still more likely to use the system consistently and meaningfully. This finding is consistent with the core logic of UTAUT and prior studies on e-learning and digital-system adoption [18],[42].

3.5 Theoretical and Practical Implications

This study demonstrates that acceptance of SIAKAD in a mandatory higher-education context is jointly shaped by behavioral determinants and information-system quality determinants. Facilitating conditions, habits, and behavioral intents substantially influence actual usage behavior, while performance expectations, effort expectations, habits, system quality, and information quality considerably impact behavioral intentions. Social influence is not significant, suggesting that SIAKAD usage is driven more by instrumental value, infrastructure readiness, repeated practice, and system reliability than by normative pressure. Practically, universities should improve system stability and response time, maintain accurate and timely academic data, provide responsive user guidance and help-desk support, and integrate SIAKAD into routine academic processes so that continued use develops into habit. This practical emphasis is also consistent with recent Mobile AIS studies showing that system quality, information quality, habit, trust, and continuance intention are important for strengthening sustained usage and user loyalty in academic digital services [27],[28].

This study helps integrate UTAUT2 with certain constructs from the DeLone and McLean Information Systems Success Model. The novelty of the proposed model lies in combining user-belief variables and quality variables in one parsimonious framework for a mandatory academic information-system context while excluding hedonic motivation and price value, which are less relevant in institutionally mandated and non-commercial settings. This integration provides a more comprehensive explanation of acceptance than studies that rely on only one model, and it aligns with recent J-INTECH discussions on usability refinement and academic-system process integration [15],[16].

However, the findings should be interpreted with caution. The study was conducted in one institution and employed purposive sampling of experienced users, with students forming the majority of respondents (80.90%). Consequently, the results are more suitable for analytical generalization to similar SIAKAD contexts than for broad statistical generalization to all higher-education institutions. The strong student representation means that the model most clearly captures student-facing acceptance and usage patterns, whereas lecturer and administrative perspectives require further validation. Future studies should validate the model across multiple institutions and complement the structural results with full collinearity assessment and predictive relevance testing.

4. Conclusions

This study demonstrates that acceptance of SIAKAD in a mandatory higher-education context is jointly shaped by behavioral determinants and information-system quality determinants. Performance expectancy, effort expectancy, habit, system quality, and information quality significantly influence behavioral intention, whereas facilitating conditions, habit, and behavioral intention significantly influence actual use behavior. Social influence is not significant, suggesting that SIAKAD usage is driven more by instrumental value, infrastructure readiness, repeated practice, and system reliability than by normative pressure.

From a theoretical perspective, the study contributes by integrating UTAUT2 with selected constructs from the DeLone and McLean Information Systems Success Model. The novelty of the proposed model lies in combining user-belief variables and quality variables in one parsimonious framework for a mandatory academic information-system context while excluding hedonic motivation and price value, which are less relevant in institutionally mandated and non-commercial settings. This integration provides a more comprehensive explanation of acceptance than studies that rely on only one model.

However, the findings should be interpreted with caution. The study was conducted in one institution and employed purposive sampling of experienced users, with students forming the majority of respondents. Consequently, the results are more suitable for analytical generalization to similar SIAKAD contexts than for broad statistical generalization to all higher-education institutions. Future studies should validate the model across multiple institutions and complement the structural results with full collinearity assessment and predictive relevance testing.

To improve external validity and the findings' generalizability, future study is advised to evaluate the suggested model across several educational institutions or information system kinds. A more thorough analysis of the elements affecting the sustainability of system usage may also be possible by include further variables such system trust, data security, user experience, and perceived danger.

A longitudinal approach may also be used in future research to track changes in usage patterns over time, allowing for a more thorough examination of the connection between behavioral intention and actual system use. A mixed-methods approach, including firsthand observations or interviews, could be used in addition to quantitative methods to better interpret statistical results and examine user experiences in a more contextualized manner.

In order to gain a more comprehensive knowledge of the long-term sustainability of academic information system usage, future research is recommended to incorporate psychological and system security variables and to investigate the model in various institutional or system contexts.

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