



Extending the Technology Acceptance Model with Scientific Sanad: Evidence from SIAKAD Adoption in Islamic Higher Education

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Extending the Technology Acceptance Model with Scientific Sanad: Evidence from SIAKAD Adoption in Islamic Higher Education

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Abstract

This study examines students' acceptance of the Academic Information System Platform (SIAKAD) at the State Islamic Institute (IAIN) Kerinci by extending the Technology Acceptance Model (TAM) with the construct of scientific sanad. Using a quantitative cross-sectional survey design, data were collected from 306 active students selected through purposive sampling and analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS 4. The findings indicate that students' acceptance of SIAKAD is generally moderate to high. Attitude Toward Using was the strongest predictor of Behavioral Intention to Use ($\beta = 0.618$; $p < 0.001$), while Sanad Urgency significantly influenced Perceived Ease of Use ($\beta = 0.726$; $p < 0.001$), Perceived Usefulness ($\beta = 1.358$; $p < 0.001$), and Behavioral Intention to Use ($\beta = 0.190$; $p = 0.008$). Conversely, Self-Efficacy showed a significant negative effect on Perceived Usefulness ($\beta = -0.436$; $p < 0.001$). These results suggest that integrating scientific sanad into academic platforms is not merely a technical innovation but also an epistemological need in Islamic higher education. This study contributes to TAM literature by incorporating Islamic scholarly authority into technology acceptance research and offers practical implications for developing a Digital Sanad feature in SIAKAD.

Keywords: Technology Acceptance Model; Scientific Sanad; SIAKAD; Academic Platform; Islamic Higher Education; Sanad Urgency; PLS-SEM.

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INTRODUCTION

The development of information and communication technology (ICT) has revolutionized the landscape of higher education globally, including in Indonesia, where digital transformation is a sustainable strategic need to improve the efficiency, accessibility, and quality of academic services in the era of Industry 4.0 towards society 5.0 [1], [2], [3]. The academic information system platform (SIKAD) emerged as the main infrastructure that supports administrative processes, student data management, and integrated learning services in universities [4], [5], [6]. At the State Islamic Institute (IAIN) Kerinci, SIKAD acts as an integrated system that facilitates various academic activities of students in a sustainable manner. Student acceptance of this kind of platform is not only determined by the technical aspect, but also by the perception of usability (perceived usefulness) and ease of use (perceived ease of use), as described in Technology Acceptance Model (TAM) submitted by and further developed by. The TAM model has become the dominant theoretical framework in explaining information technology adoption behavior in various educational contexts, with recent trends pointing to the expansion of this model towards the integration of artificial intelligence (AI) and the sustainability of digital education [7], [8], [9].

In the midst of the post-COVID-19 pandemic digital transformation wave, the adoption of academic platforms in Indonesian universities is increasingly widespread, becoming a continuous acceleration point in the development of educational technology [10], [11], [12]. However, the level of acceptance of this technology often varies between student groups, especially in religious higher education institutions such as IAIN, where the technological aspect is inseparable from the religious and epistemological dimensions. Technological advances offer easy access to information, administrative efficiency, and opportunities for AI integration in adaptive and inclusive learning processes [13], [14], [15]. On the other hand, in the Islamic scientific tradition, the transmission of knowledge is not only technical, but must also guarantee the authenticity and authority of knowledge through *Sanad Ilmu*—authentic, responsible, and verified chain of transmission as embedded in hadith science and the classical Islamic education system [16], [17], [18]. This integration between modern technology and religious values is becoming increasingly relevant in the era of digital disruption, where traditional scientific authorities (sanad-based) dealing with data-driven algorithmic authority and digital popularity, thus demanding a sustainable approach to preserving the Islamic scientific heritage in the midst of technological advances.

Although research on TAM in Learning Management System (LMS) and academic platforms in Indonesia have been quite numerous, the majority of these studies still focus on technical and general aspects without exploring the integration of Islamic epistemological values in depth and continuously. For example, and recent research on the adoption of AI in Indonesian universities emphasizes the factors of perceived usefulness and convenience, but rarely touches on the context of religion or Islamic value-based education [19], [20], [21]. Similarly, the study of scientific sanad is still dominant in the context of traditional pesantren and not many have associated it with academic digital platforms holistically. The SIKAD platform at IAIN Kerinci itself has never been empirically evaluated using the TAM approach, and there has been no research that specifically measures students' perceptions of existence and urgency *Sanad Ilmu* as a feature of digital innovation. This gap shows that previous research

has not succeeded in integrating the technological and religious dimensions in a sustainable manner in the context of academic platforms in Islamic higher education institutions, so a more comprehensive approach is needed to ensure the sustainability of digital transformation that is in line with scientific values.

The urgency of this research is even more urgent in the midst of the ongoing digital transformation of religious higher education, where the latest trends show the acceleration of the integration of AI and adaptive technology in Islamic education to support sustainable and inclusive learning. Academic platforms are no longer enough to be technically functional, but must be based on cultural and religious values to be in harmony with the identity of Muslim students and support the achievement of the Sustainable Development Goals in the field of education. In the era of technological disruption and the emergence of artificial intelligence, the preservation of *Sanad Ilmu* as an authentic chain of knowledge transmission is crucial to maintain the quality, authenticity, and integrity of science in Islamic higher education. Therefore, a more concrete identification is needed first regarding the level of acceptance of SIAKAD technology and students' perception of the urgency of scientific sanad. This empirical identification is an essential and sustainable foundation before the further development of the "Sanad Digital" feature on the SIAKAD platform. This feature is expected to facilitate the transparency of the scientific chain of lecturers and students, thereby increasing trust, the quality of lecturer selection, and the relevance of the Islamic-based vocational learning process in the long term.

This research has significant novelty. First, this study is the first study to combine the Technology Acceptance Model (TAM) with the framework of Islamic epistemology (scientific sanad) in the context of academic platforms in Indonesia, while answering the latest research trends on the integration of AI and religious values. Second, this study integrates two original instruments: the validated TAM instrument and the scientific sanad perception instrument developed specifically for this research. Third, this research provides practical contributions in the form of recommendations for technological product innovations that combine Islamic scientific values with modern technology, thereby enriching the TAM literature which has been more dominant in the technical aspect and supporting the sustainability of the digital transformation of Islamic higher education. Based on the above background, gap analysis, and urgency, the formulation of the research problem is formulated as follows:

1. What is the student acceptance rate for the SIAKAD Platform based on the Technology Acceptance Model (TAM)?
2. What is the student's perception of the existence of scientific sanad elements on the SIAKAD Platform today?
3. What is the urgency of integrating scientific sanad as an academic platform innovation according to student perceptions?

Theoretically, this study enriches the development of TAM with the integration of Islamic epistemology, thereby expanding the scope of the TAM model in the context of religious value-based education and supporting the sustainability of educational technology literature. Practically, the results of the research can be a recommendation material for IAIN Kerinci managers in the development of SIAKAD, especially the addition of the Sanad Digital feature, as well as a reference for other Islamic universities in designing academic platforms

that are more meaningful, inclusive, and in line with Islamic scientific traditions in the sustainable digital era.

This study examines and relates various main variables derived from two research instruments. The variables studied include Digital Literacy (DL) and Self-Efficacy (SE) as individual factors, Sanad Awareness (SA) and Sanad Urgency (SURG) as new dimensions that represent students' perception of the existence and urgency of scientific sanad, as well as the core variables of the Technology Acceptance Model (TAM), namely Perceived Ease of Use (PEOU), Perceived Usefulness (PU), Attitude Toward Using (ATU), and Behavioral Intention to Use (BIU). This research model is designed to examine the direct and indirect influence of these variables on the intention to use the SIAKAD Platform. In particular, this study places Sanad Urgency (SURG) as an important variable that not only affects the perception of convenience and usability, but also directly affects the intention of use, thus enriching the TAM framework with an Islamic epistemological perspective. The conceptual framework of this research is presented in Figure 1.

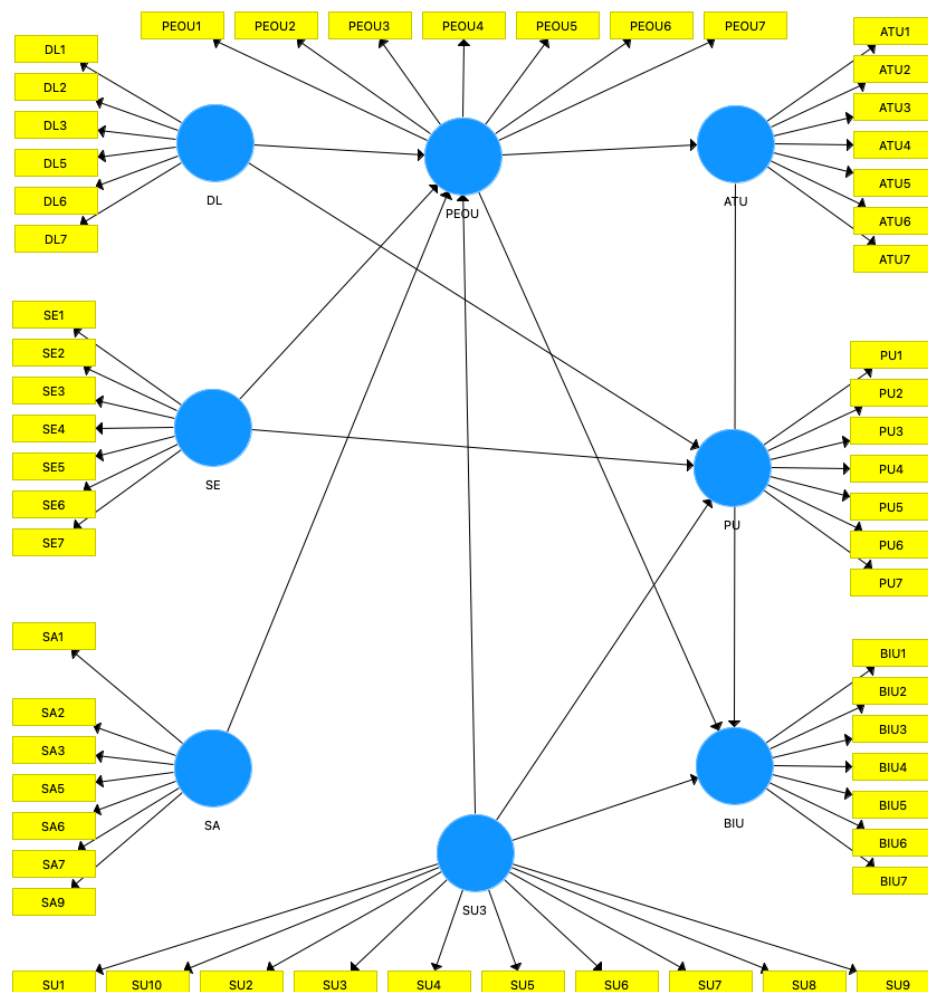


Figure 1. Test Model Framework

METHODS

Research Design

This research is a quantitative research with a descriptive and explanatory survey approach. The research design is cross-sectional, that is, data collection is carried out in a certain period of time to comprehensively describe the conditions of technology acceptance and student perception. This approach was chosen because it is in accordance with the research objectives that want to analyze the acceptance rate of the SIAKAD Platform based on the Technology Acceptance Model (TAM) as well as measure students' perception of the existence and urgency of scientific sanad as an academic platform innovation. The survey design allows the collection of primary data that is representative and generalizable on the student population of IAIN Kerinci, while supporting inferential statistical analysis to test the relationship between variables.

Participants

Participants in this study are active students of the State Islamic Institute (IAIN) Kerinci who have used the SIAKAD Platform. Participant determination techniques using *purposive sampling* with the following inclusion criteria: (1) students who are currently in semesters 2 to 8, (2) have used SIAKAD for at least 6 months, and (3) are willing to fill out the questionnaire voluntarily. Based on the results of sample selection, 306 respondents were obtained who met all criteria.

Usage purposive sampling In this study, it is considered appropriate and in accordance with the characteristics of the analysis Partial Least Squares Structural Equation Modeling (PLS-SEM). PLS-SEM is a variance-based approach that is more oriented towards prediction and testing relationships between constructs. Therefore, this method does not require random sampling. Purposive sampling it allows researchers to select respondents who actually have experience using SIAKAD according to the purpose of the study, thereby increasing the relevance and validity of the measurement model. With a total of 306 respondents, this sample size met the minimum requirements for PLS-SEM analysis and was considered adequate to produce stable and reliable parameter estimates.

Table 1. Participant Demographics

Demographics	Categories	Frequency (n)	Percentage (%)
Gender	Male	220	71.9
	Women	86	28.1
Age	< 17 years old	12	3.9
	17–18 years old	48	15.7
	19–20 years old	98	32.0
	21–22 years old	92	30.1
	23–24 years old	28	9.2
	> 24 years old	28	9.1
Semester	Semester 1	65	21.2
	Semester 2	35	11.4
	Semester 3	85	27.8

Demographics	Categories	Frequency (n)	Percentage (%)
	Semester 4	40	13.1
	Semester 5	45	14.7
	Semester 6 and above	36	11.8
Time Using SIAKAD	Less than 6 months	85	27.8
	6 months–1 year	160	52.3
	More than 1 year	61	19.9
Frequency of Accessing SIAKAD	Every day	68	22.2
	2–3 times a week	98	32.0
	1 time a week	45	14.7
	Rare	85	27.8
	Others	10	3.3
Digital Literacy	Very High	85	27.8
	Quite High	120	39.2
	Medium	90	29.4
	Low	11	3.6
Domicile Region	City	198	64.7
	Districts	108	35.3

Research Instruments

Technology Acceptance Model (Adoption) Instrument

This instrument was adopted from the TAM, which was readjusted to research needs, resulting in 42 Likert scale statement items of 5 points (1 = Very Not Appropriate to 5 = Very Appropriate). The instrument measures six main variables: DL, SE, PU, PEOU, ATU, and BIU.

Table 2. Outline Instrument

No.	Variable	Sub-Variable / Indicator	Number of Items
1	Digital Literacy (DL)	Digital Literacy Indicators	7
2	Self-Efficacy (SE)	Self-Efficacy Indicator	7
3	Perceived Usefulness (PU)	Perceived Usefulness Indicator	7
4	Perceived Ease of Use (PEOU)	Perceived Ease of Use Indicator	7
5	Attitude Toward Using (ATU)	Attitude Toward Using Indicators	5
6	Behavioral Intention to Use (BIU)	Behavioral Intention to Use Indicators	7
Total			42

Instrument for Measuring Student Perception of the Existence and Urgency of Scientific Sanad on the SIAKAD Platform

This instrument was developed specifically for this study and consists of 20 5-point Likert scale items with five dimensions; Awareness and Understanding of Scientific Sanad (5 items); Perception of the Existence of Scientific Sanad Elements on the Current SIAKAD Platform (5 items); Perceptions of Urgency/Need of Scientific Sanad (5 items); Perception of the Relevance and Potential Benefits of Scientific Sanad (5 items).

Table 3. Outline of measuring students' perception of the existence and urgency of scientific sanad on the SIAKAD platform

No.	Leave variable	Sub Variables / Dimensions	Number of Items
1	Sanad Awareness	Awareness and Understanding of Scientific Sanad	5
		Perception of the Existence of Scientific Sanad Elements on the Current SIAKAD Platform	5
2	Sanad Urgency	Sense of Urgency / Need for Scientific Sanad	5
		Perception of the Relevance and Potential Benefits of Scientific Sanad	5

Validity and Reliability Tests

Table 4. Construct Reliability and Validity

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
OTHER	0,949	0,950	0,958	0,765
BIU	0,949	0,951	0,958	0,767
DL	0,905	0,906	0,927	0,678
SQUIRT	0,927	0,928	0,942	0,698
PUP	0,946	0,946	0,956	0,755
THE BATTLE	0,916	0,917	0,933	0,666
OR	0,918	0,924	0,935	0,672
SURG	0,950	0,951	0,957	0,690

Before structural analysis is carried out, the research instrument is first tested for validity and reliability through Measurement Model in Partial Least Squares Structural Equation Modeling (PLS-SEM). The validity and reliability of the construct are evaluated using the Reliability measured by Cronbach's Alpha, Composite Reliability (CR), and Rho_A (Dijkstra-Henseler's rho), with a minimum threshold of 0.70.

The results of the evaluation of the measurement model show that all constructs in this study have a very good level of reliability and validity. Based on the internal reliability test of consistency, the value of Cronbach's Alpha of the entire construct ranges from 0.905 to 0.950. This value is well above the minimum threshold of 0.70 and is even in the excellent category (> 0.90). Similarly, the rho_A value is in the range of 0.906–0.951 and the Composite Reliability (CR) ranges from 0.927–0.958. These two indicators also show a very high consistency between the indicators in measuring the same construct.

Meanwhile, the validity of the convergence is also well met. Value Average Variance Extracted (AVE) of the entire construct is above 0.50, which ranges from 0.666 to 0.767. These results indicate that each construct is able to explain more than 50% of the variance of its indicators. Thus, all constructs (ATU, BIU, DL, PEOU, PU, SA, SE, and SURG) are declared valid and reliable. The measurement model in this study has met the criteria suggested by and can be continued to the evaluation stage of the structural model.

RESULTS AND DISCUSSION

Results

Structural Model Evaluation Results

Structural model evaluation is carried out to test the predictive strength and overall validity of the model. Table 5 presents the values of the determination coefficient (R^2), Adjusted R^2 , and predictive relevance (Q^2). In addition, Table 6 shows the value of the Variance Inflation Factor (VIF) to check multicollinearity.

Table 5. Coefficient of Determination (R^2) and Predictive Relevance (Q^2)

	R Square	R Square Adjusted
OTHER	0,713	0,712
BIU	0,807	0,805
SQUIRT	0,758	0,754
PUP	0,978	0,978

The R^2 value indicates that the research model is able to explain the fairly high variation in the dependent variables. Notably, the Perceived Usefulness (PU) variable had an R^2 value of 0.978, which means that 97.8% of the PU variance could be explained by independent variables in the model. Similarly, the Behavioral Intention to Use (BIU) has an R^2 of 0.807 (80.7%), indicating the predictive power of a good model on the intention to use the SIAKAD Platform. The R^2 values for Perceived Ease of Use (PEOU) and Attitude Toward Using (ATU) are also in the medium to high category.

Furthermore, Table 6 presents the results of the Collinearity Statistics (VIF) test to examine the existence of multicollinearity problems between predictor variables

Table 6. Collinearity Statistics (VIF)

	VIVID
TU1	4,112
ATU2	4,133
TU3	4,616
TU4	2,865
ATU5	2,712
TU6	4,138
ATU7	3,932
BIU1	3,742
BIU2	4,280
BIU3	3,828
BIU4	3,391
BIU5	3,215
BIU6	3,096
BIU7	2,660
DL1	2,449
DL2	2,383
DL3	2,343

	VIVID
DL5	2,251
DL6	2,227
DL7	2,314
PEOU1	2,957
PEOU2	2,654
PEOU3	2,835
PEOU4	2,532
PEOU5	2,641
PEOU6	3,038
PEOU7	1,825
PU1	3,305
PU2	3,629
PU3	3,376
PU4	3,313
PU5	3,018
PU6	2,895
PU7	3,693
SA1	2,536
SA2	2,417
SA3	2,353
SA5	2,301
SA6	2,280
SA7	2,391
SA9	2,177
SE1	1,968
SE2	2,148
SE3	2,328
SE4	2,976
SE5	3,441
SE6	2,849
SE7	2,725
SU1	2,266
SU10	2,443
SU2	3,515
SU3	2,930
SU4	2,664
SU5	3,565
SU6	3,728
SU7	3,242
SU8	3,337
SU9	3,020

Hypothesis Test Results and Path Coefficients

The results of the hypothesis test and path coefficients that have been described above can be seen visually in Figure 2. The figure presents a complete representation of the structural model of the research, including the outer loadings value of each indicator as well as path coefficients between latent variables resulting from bootstrapping analysis.

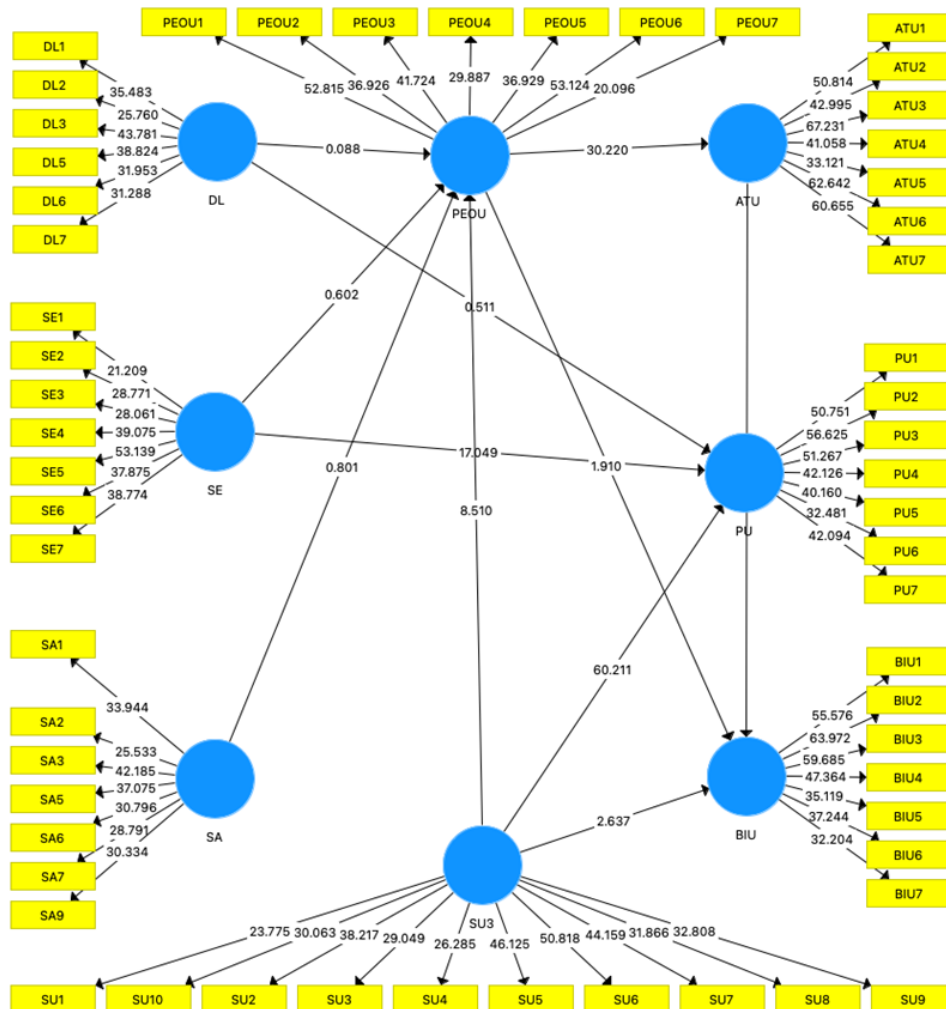


Figure 2. Extended TAM Model with Sanad Awareness (SA) and Sanad Urgency (SURG) Integration

Figure 2 clearly illustrates the strength and direction of the relationship between variables in the research model. It can be seen that the pathway of Sanad Urgency (SURG) shows a very strong and consistent influence on Perceived Ease of Use, Perceived Usefulness, and Behavioral Intention to Use. In addition, this visualization also shows a significant negative influence of Self-Efficacy (SE) on Perceived Usefulness (PU), as well as the dominance of the Perceived Ease of Use (PEOU) path on Attitude Toward Using (ATU). This model visualization further emphasizes the main findings of the research that the dimension of scientific sanad, especially the perception of urgency, has a strategic role in increasing the acceptance of the SIAKAD Platform among students

The results of bootstrapping analysis with 5,000 subsamples were used to test the significance of structural pathways in the research model. Table 5 presents the path coefficient (Original Sample), T-statistics, and p-value values for all the relationships tested.

Table 7. Path Analysis (Hypothesis Test Results and Path Coefficients)

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values	Remarks
TO > BIU	0,618	0,618	0,081	7,673	0,000	Significant
DL -> PEOU	-0,027	-0,050	0,319	0,085	0,932	Insignificant
DL -> PU	0,010	0,012	0,018	0,541	0,589	Insignificant
THE > OUT	0,844	0,846	0,026	32,006	0,000	Significant
PEOU -> BIU	0,126	0,127	0,066	1,902	0,058	Insignificant
THE >	0,254	0,281	0,324	0,784	0,434	Insignificant
OR > PEOU	-0,057	-0,057	0,093	0,614	0,539	Insignificant
OR -> PU	-0,436	-0,437	0,026	16,700	0,000	Meaningifikan
SURG -> BIU	0,190	0,188	0,071	2,666	0,008	Significant
SUR -> PEOU	0,726	0,724	0,090	8,087	0,000	Significant
SURG -> PU	1,358	1,358	0,022	60,838	0,000	Significant

The results of the analysis showed that ATU was the strongest predictor of the Behavioral Intention to Use (BIU) of the SIAKAD Platform ($\beta = 0.618$; $p < 0.001$). These findings are consistent with the classical TAM theory which places attitude as the main determining factor of the intention to use technology. In addition, PEOU had a very strong effect on ATU ($\beta = 0.844$; $p < 0.001$), emphasizing that ease of use is a crucial element in shaping students' positive attitudes towards SIAKAD.

The most important finding and the main novelty of this study is the significant influence of the Sanad Urgency (SURG) variable. This construct had a positive and significant effect on PEOU ($\beta = 0.726$; $p < 0.001$), PU ($\beta = 1.358$; $p < 0.001$), and BIU ($\beta = 0.190$; $p = 0.008$). These results prove that students' perception of the urgency of integrating scientific sanad not only increases the perception of the ease and usability of the platform, but also directly strengthens the intention to use SIAKAD. This shows that the Islamic epistemological dimension has a strategic role in increasing the acceptance of academic technology in Islamic universities.

On the other hand, SE showed a significant and strong negative influence on *Perceived Usefulness* ($\beta = -0.436$; $p < 0.001$). This finding is interesting because it indicates that students with a high level of self-confidence tend to feel that the current SIAKAD Platform does not fully support their scientific needs. Meanwhile, DL and SA did not show a significant influence on PEOU or PU. The PEOU \rightarrow BIU pathway was also insignificant ($p = 0.058$). This implies that digital literacy and sanad awareness alone are not enough; What is more decisive is the perception of the urgency of scientific sanad.

Interesting findings that contradict the conventional TAM literature appear on the SE to PU pathway. The results of the analysis showed a significant and strong negative influence ($\beta = -0.436$; $p < 0.001$). This means that the higher the level of self-confidence of students in using technology, the lower their perception of the usefulness of the SIAKAD Platform. In the context of this study, the negative effects can be explained as follows: students with high *self-efficacy* tend to have higher expectations of platform features. They may feel that SIAKAD is still not able to meet the needs of deeper science, especially related to the transparency of the scientific chain (*sanad*) of lecturers. Thus, strong self-confidence actually triggers criticism and dissatisfaction with the usefulness of the existing system.

Discussion

The results of the structural model analysis and hypothesis tests that have been described in the previous section provide a clear empirical picture of student acceptance of the SIAKAD Platform and the role of scientific *sanad*. This section will discuss these findings in depth by reconnecting them to the TAM theoretical framework, related literature, and the context of Islamic higher education at IAIN Kerinci. The discussion focused on three main formulations of research problems to provide a comprehensive and meaningful interpretation.

Student Acceptance Rate to the SIAKAD Platform Based on the TAM

The results of the study show that the student acceptance rate for the SIAKAD Platform as a whole is in the medium to high category. This is mainly driven by a positive attitude (Attitude Toward Using – ATU) which is the strongest predictor of Behavioral Intention to Use (BIU) with $\beta = 0.618$ ($p < 0.001$). These findings are in line with TAM's core proposition that user attitudes are the main determinant of technology adoption intentions. In addition, Perceived Ease of Use (PEOU) has a very strong effect on ATU ($\beta = 0.844$; $p < 0.001$), indicates that ease of use is a crucial element in shaping positive perceptions of students. However, the PEOU direct line \rightarrow BIU was not significant ($p = 0.058$), which suggests that ease of use plays a more indirect role through attitude. These findings are consistent with several TAM studies on academic information systems in Indonesian universities.

Students' Perception of the Existence of Scientific Sanad Elements on the Current SIAKAD Platform

Students tend to feel that the elements of scientific *sanad* on the current SIAKAD Platform are still not adequately reflected. This is reflected in the low influence of Sanad Awareness (SA) on Perceived Ease of Use and Perceived Usefulness (both of which are insignificant). This finding is in accordance with the gap that has been identified in the introduction, namely that academic platforms in Islamic universities still rarely integrate the dimension of Islamic epistemology explicitly [22], [23], [24]. Students seem to be aware of the importance of *sanad*, but feel that the current system does not provide transparent information about the lecturer's scientific chain.

The Urgency of Integrating Scientific Sanad as an Academic Platform Innovation

The most prominent finding of this study is the very high perception of students on the urgency of integrating scientific *sanad*. Variable *Sanad Urgency* (SURG) shows a significant and strong positive influence on *Perceived Ease of Use* ($\beta = 0.726$; $p < 0.001$), *Perceived Usefulness* ($\beta =$

1,358; $p < 0.001$), and *Behavioral Intention to Use* ($\beta = 0.190$; $p = 0.008$). This result proves that students not only want a technical platform, but also a platform that is able to maintain the authenticity and authority of Islamic science. These findings reinforce the view that in the era of technological disruption, the preservation of scientific sanad is crucial to maintain the integrity of Islamic higher education [25], [26], [27]. Thus, the integration of scientific sanad is not just an additional feature, but an urgent need that can increase the acceptance and meaning of the SIAKAD Platform.

Contradictory findings appeared on SE to PU pathway, which is a significant and strong negative influence ($\beta = -0.436$; $p < 0.001$). Students with high levels of self-confidence tend to consider SIAKAD less useful. This can be explained that the student has higher expectations for the depth of knowledge and transparency of sanad, so the current platform is felt to be inadequate. These findings enrich the perspective of TAM by showing that self-efficacy is not necessarily a driver of technological acceptance, but can rather be a catalyst for demand for improvement in the context of Islamic higher education [28], [29], [30].

These findings differ from the majority of previous TAM studies that generally reported a positive association between self-efficacy and perceived usefulness. In the context of this study, the negative effects can be explained as follows: students with a high level of *self-efficacy* tend to have higher expectations of the features and functions of academic platforms. They may feel that SIAKAD is still not able to meet the needs of deeper science, especially related to the transparency of the scientific chain (*sanad*) of lecturers. Thus, strong self-confidence actually triggers criticism and dissatisfaction with the usefulness of the existing system.

These findings enrich TAM's perspective by showing that self-efficacy does not always play a role as a driving factor in technology acceptance. In the Islamic higher education environment such as IAIN Kerinci, students who have a high level of confidence in digital technology actually demand a more sophisticated platform that is in line with Islamic scientific values, especially the integration of scientific sanad. This is in line with the view that Muslim students are not only looking for technical convenience, but also authenticity, authority, and scientific significance in academic information systems [31], [32], [33]. Thus, the negative effect SE on PU in this study reflects the unique characteristics of users in religious higher education institutions, where the demands on scientific quality often go beyond just technical aspects.

CONCLUSION

This study successfully analyzed the level of student acceptance of the SIAKAD Platform at IAIN Kerinci with the TAM approach which is expanded through the integration of the scientific sanad dimension. Overall, the results of the study show that the student acceptance rate for SIAKAD is in the medium to high category. ATU was proven to be the strongest predictor of BIU, while PEOU played an indirect dominant role through attitude. In terms of the perception of the existence of scientific sanad, students are aware of the importance of this element, but feel that the current SIAKAD Platform does not adequately reflect it. This is reflected in the insignificant influence of SA on the TAM variable. In contrast, SURG emerged as the most influential variable, showing a significant and strong positive influence on Perceived Ease of Use, Perceived Usefulness, and Behavioral Intention to Use. These findings prove that students not only want a technical platform, but also a platform that is able to

maintain the authenticity and authority of Islamic science. Another interesting finding is the negative influence of SE on PU. Students with high levels of self-confidence actually consider SIAKAD to be less useful, because their expectations for the depth of knowledge and transparency of the sanad are higher. Overall, this study successfully confirms that the integration of Islamic epistemological values through the Sanad Urgency variable makes a significant contribution to enriching the TAM framework in the context of religious higher education. This research is one of the first studies to combine TAM with the framework of scientific sanad, thereby expanding the scope of technology acceptance theory in the Islamic university environment.

LIMITATIONS

This study has several limitations that should be acknowledged. First, the cross-sectional survey design limits the ability to capture changes in students' technology acceptance and perceptions of scientific sanad over time. Second, the use of purposive sampling and the focus on 306 students from a single Islamic higher education institution, IAIN Kerinci, may restrict the generalizability of the findings to other institutional, cultural, or technological contexts. Third, although the measurement model demonstrated strong reliability and validity, the scientific sanad constructs were developed specifically for this study and therefore require further validation across broader samples and different Islamic higher education settings. Fourth, the data were based on self-reported questionnaire responses, which may be influenced by social desirability, subjective interpretation, or response bias. Finally, this study focused primarily on students' perspectives, while the views of lecturers, academic administrators, and system developers were not included; future studies should adopt longitudinal, mixed-method, or multi-stakeholder designs to provide a more comprehensive understanding of Digital Sanad integration in academic information systems.

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AUTHOR CONTRIBUTION

A.P.H. served as the principal investigator and led the entire research project. He was responsible for the conceptualization of the study, development of the theoretical framework, design of the research methodology, creation of the research instruments, coordination of data collection, primary statistical analysis using Partial Least Squares Structural Equation Modeling (PLS-SEM), and the drafting and finalization of the manuscript. Y.G. and A.T.P. provided substantial contributions to the refinement of the research methodology, instrument design, data analysis, and overall ideation of the study. Z.F. and S.Z. actively participated in the small-group discussions and critical review of the manuscript prior to its finalization. All authors contributed to the formulation of the research concept and the preparation of the manuscript. All authors have read and approved the final version of the manuscript.

CONFLICT OF INTEREST

"The authors declare no conflict of interest."

DECLARATION OF USE OF AI IN SCIENTIFIC WRITING

The authors used SuperGrok during the preparation of this work to assist in language refinement and structural editing of the manuscript. After utilizing the tool, the authors thoroughly reviewed and revised the content as necessary, and assume full responsibility for the content of this publication.

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