



An Analysis of the Factors Influencing Student Satisfaction with the Academic Management System (AMS)

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Abstract

The purpose of this study is to examine the reasons that influence user satisfaction in using the academic management system. This study used perceived ease of use (PEU), perceived usefulness (PU), facilitating conditions (FC), confirmation (CT), and academic management system satisfaction as variables. Data were obtained through a questionnaire completed by 300 respondents online. To test the designed constructs, the data obtained were analyzed using partial least squares structural equation modeling (PLS-SEM). The model analysis showed excellent reliability and validity for all constructs. The testing revealed that the four variables significantly and positively influenced AMSS. The influence of CM on AMSS was the strongest ($\beta=0.415$ and $p=0.000$), followed by FC on AMSS with $\beta=0.246$ and $p=0.002$, PU on AMSS with $\beta=0.183$ and $p=0.002$, and PEU on AMSS with $\beta=0.121$ and $p=0.020$. The structural model has a very strong prediction to explain the variance in AMSS ($R^2=0.797$). Overall, this study concludes that Confirmation is the main factor determining user satisfaction with the academic management system. The practical implications of this study prioritize improving technical support (FC) and meeting user expectations after use (CT) for optimal satisfaction levels.

Kata Kunci: *Academic Information System; PLS-SEM; Student Satisfaction.*

Abstrak

Tujuan dari penelitian ini adalah untuk mengkaji alasan yang mempengaruhi kepuasan pengguna untuk menggunakan sistem manajemen akademik. Studi ini menggunakan perceived ease of use (PEU), perceived usefulness (PU), facilitating condition (FC, confirmation (CT) dan academic management system satisfaction sebagai variabelnya. Data diperoleh dengan kuesioner yang diisi oleh 300 responden secara online. Untuk menguji konstruk yang dirancang, data yang diperoleh dianalisis dengan partial least squares structural equation model (PLS-SEM). Analisis model menunjukkan reliabilitas dan validitas yang sangat baik untuk semua konstruk. Pengujian mengungkapkan bahwa keempat variabel secara signifikan dan positif memengaruhi AMSS. Pengaruh CM terhadap AMSS adalah yang terkuat ($\beta=0,415$ dan $p=0,000$), diikuti FC terhadap AMSS dengan $\beta=0,246$ dan $p=0,002$, PU terhadap AMSS dengan $\beta=0,183$ dan $p=0,002$ dan PEU terhadap AMSS dengan $\beta=0,121$ dan $p=0,020$. Model struktural memiliki prediksi yang sangat kuat untuk menjelaskan varian dalam AMSS ($R^2=0,797$). Secara keseluruhan, penelitian ini menyimpulkan bahwa Confirmation menjadi faktor utama yang menentukan kepuasan pengguna sistem manajemen akademik. Implikasi praktir dari penelitian ini memprioritaskan peningkatan dukungan teknis (FC) dan memenuhi ekpektasi pengguna setelah penggunaan (CT) untuk tingkat kepuasan yang optimal.

Keywords: *Sistem Manajemen Akademik; PLS-SEM; Kepuasan Mahasiswa.*

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INTRODUCTION

The implementation of digital technology in higher education has undergone significant shifts, influenced by the demands of educational activities [1] that require comprehensive adaptation. Digital transformation goes beyond the mere implementation of technology, representing a comprehensive shift in institutional culture and operational processes [2]. The implementation of information systems is not only in learning activities but also in administration for efficiency, transparency, and competitiveness [3]. Thus, the application of an academic management system (AMS) is not only a complementary tool but also a projection for the sustainability of university activities [4]. The goal is to create a more inclusive, participatory, and technology-supported educational ecosystem that meets the evolving needs of modern students.

The development of education is becoming increasingly competitive and full of rivalry. Academic community satisfaction is no longer an option but a necessity and requirement for universities, especially students as the main users. Satisfaction can be viewed as how the system used meets user expectations or exceeds user expectations [5]. Paying attention to user satisfaction with the academic management system will have an impact on increasing moral values, productivity, and the overall success of the organization [3]. A quality system influences user satisfaction and intent, which, in turn, impacts the system's success [6]. Thus, higher education will continue to use the academic system in order to remain competitive and provide quality higher education [7].

Several pieces of evidence show that satisfaction with academic management systems and other technologies in higher education is influenced by several variables. Studies by [8] and [9] found that ease of use and usefulness affect satisfaction. Research by [10] found that confirmed expectations significantly influence satisfaction. Meanwhile, research conducted by [11] shows that satisfaction is significantly influenced by facilitating conditions. Meanwhile, research [12] highlights the stagnant pattern of AMS usage in the early stages to identify and address the factors that drive the success of the system. Common challenges in implementing academic management systems include low usability, ease of access, and inadequate technical support.

Previous studies have explored variables that influence satisfaction in the application of technology. Although no studies have directly investigated academic management systems, these variables can be applied in exploring user satisfaction with academic management systems. Research conducted by [13] on satisfaction with e-learning implementation found that ease of use and perceived usefulness positively affected student satisfaction. Research [14] also found that users' perceived usefulness of financial information systems had a positive effect on satisfaction. In addition, validated confirmation has a significant effect on satisfaction and usefulness [10]. Meanwhile, research [15] has confirmed that usefulness, ease of use, and facilitating conditions also have a significant effect.

Quite a lot of previous studies have analyzed satisfaction with technology implementation in higher education. However, no study has specifically explored

satisfaction with the implementation of academic management systems in universities. Therefore, it is hoped that this study will be able to fill this gap.

Previous studies have analyzed satisfaction in technology implementation using various theoretical approaches. For example, study [9] integrated variables in the Technology Acceptance Model (TAM) with satisfaction in e-commerce implementation. Research [8] integrated variables in TAM with Expectation Confirmation Theory (ECM) in analyzing interest in using ChatGPT. In addition, [16] combined variables in TAM, Unified Theory of Acceptance and Use of Technology (UTAUT), and Task Technology Fit (TTF) in exploring student satisfaction in using social media. Furthermore, research [17] uses TAM variables in validating user satisfaction in using online learning. There is also research conducted by [18] by modifying ECM in analyzing the sustainability of student learning using online courses.

However, the previously described research used satisfaction only as a mediator or independent variable in technology implementation. However, in this study, satisfaction will be used as a dependent variable, directly predicted. Furthermore, this research will explore the factors influencing student satisfaction in the implementation of an academic management system. This will provide scientific knowledge for decision-making in the further development of the academic management system, as a competitive asset, and to improve university quality. This research is expected to examine student satisfaction in using the academic management system and the factors that influence it. Furthermore, this research will serve as a consideration for decision-makers in developing a university development framework.

METHOD

Hypotheses and Framework

This study proposes five variables that can be used to explore user satisfaction in using academic management systems in higher education institutions. These variables were selected based on previous research and the needs of analyzing satisfaction with academic management systems. The variables were adopted from several methods of exploring system implementation: Perceived Ease of Use, Perceived Usefulness, Facilitating Conditions, Confirmation, and Academic Management System Satisfaction as the dependent variable. Therefore, the following hypothesis was formulated for this study:

H1 : Perceived Ease of Use has a significant effect on Academic Management System Satisfaction.

H2 : Perceived Usefulness has a significant effect on Academic Management System Satisfaction.

H3 : Facilitating Condition has a significant effect on Academic Management System Satisfaction.

H4 : Confirmation has a significant effect on Academic Management System Satisfaction.

Based on the hypothesis formula, the following research framework is described:

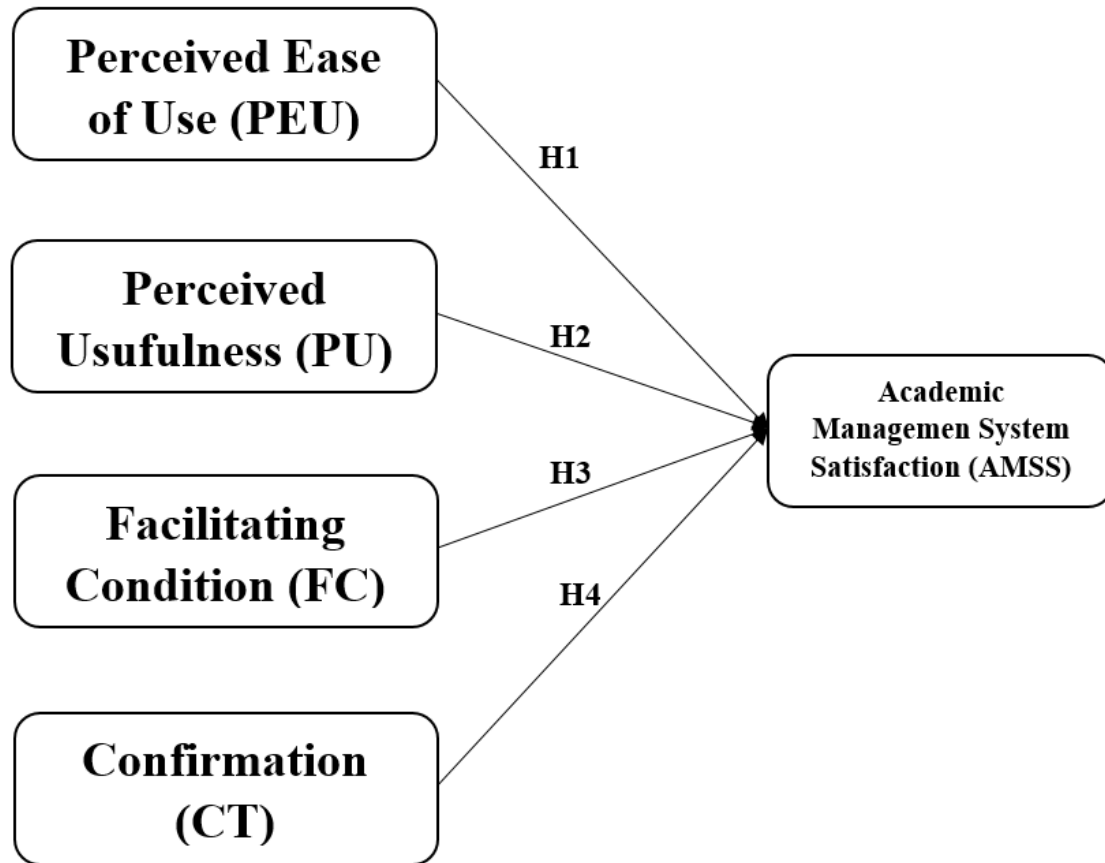


Figure 1. Research Framework

Measurement and Data Collection

The questionnaire consists of five constructs based on previous literature that have been adapted to the needs. Measurements for Perceived Ease of Use (PEU) and Perceived Usefulness (PU) were adopted from [19], Facilitating Conditions (FC) were adopted from [20] and Confirmation and Satisfaction were adopted from [21]. The questionnaire was designed and validated by previous research and formulated as reflective using 5-point Likert scale. Before the questionnaire was distributed, we conducted a trial to ensure that the measurements could be understood by potential respondents and that each item could be assessed accurately.

Table 1. Demography Respondent

Measure	Frequency	Percentage
Gender	90	30
Male	210	70
Female		
Age	87	
17-19	193	29
20-22	20	64.3
≥23	20	6.7

To obtain data for this study, questionnaires were distributed online to students who were confirmed to be using the academic management system and agreed to participate. Of the respondents who agreed to fill out the questionnaire, thirty-two

surveys were deemed unusable due to incomplete and biased data. Thus, of the 332 data obtained, 300 data were usable in this study, resulting in an effective response rate of 90 percent.

The percentage of male informants was 30 percent and female informants was 70 percent. In terms of age, 29 percent of informants were aged 17-19 years, 64.3 percent were aged 20-22 years, and 6.7 percent were aged 23 years and above. Details of the informant data are presented in Table 1.

RESULT AND DISCUSSION

Measurement Model Assessment

The data obtained was processed and analyzed using Structure Equation Model (SEM) in meeting strict psychometric quality requirements, so that it can be used to determine the reliability and validity of the proposed construct. Reliability to examine each indicator in the construct can be measured consistently. In this case, Cronbach's Alpha (CA) in Table 2 shows that value ranges from 0.865 to 0.938. Reliability is considered good and acceptable if the CA value is ≥ 0.70 [22] and many studies claim that this threshold is sufficiently reliable [23]. In addition, the composite reliability (CR) values ranged from 0.917 to 0.960. These values exceed the recommended threshold of ≥ 0.70 , which means that all constructs have very high and satisfactory composite reliability. Several studies have confirmed this threshold. Research [24] uses CR values as reliability criteria in educational research, while [24] applies the same threshold of 0.7 across various scales in academic research. Research [25] further validates this in organizational research, noting that CR values above 0.70 indicate reliable indicators.

Table 2. Measurement quality indicators

	CA	rho_A	CR	AVE
AMSS	0.938	0.938	0.960	0.889
CT	0.917	0.919	0.942	0.802
FC	0.865	0.872	0.917	0.787
PEU	0.896	0.907	0.923	0.707
PU	0.922	0.924	0.942	0.763

Noted: CA = Cronbach's alpha; CR=Composite reliability; AVE= Average Variance Extracted

In this study, to prove convergent validity, which shows the correlation between constructs and their indicators, average variance extracted and outer loading can be used. Table 2 shows the average variance extracted values ranging from 0.707 to 0.889. These values exceed the recommended minimum limit of 0.50. Various studies provide concrete evidence supporting this criterion in various research domains. Study [26] found average variance extracted values above 0.5 for all factors in the neonatal assessment scale, indicating convergent validity. This study validated the administrator attitude scale, with average variance extracted values of 0.59, 0.70, and 0.66, all of which exceeded the 0.50 threshold. Research [27] also confirmed convergent validity when AVE exceeded 0.5 in the adaptation of nursing technology. These consistent findings across various research contexts strongly support the AVE criterion of 0.50 for establishing convergent validity.

Furthermore, Table 3 and Figure 2 show very high outer loading values from 0.775 to 0.962, which exceeds the limit 0.70. This indicates that discriminant validity at the indicator level is also very well established, thereby strengthening the quality of the measurement model.

Table 3. OuterLoading

	AMMS	CM	FC	PEU	PU
AMMS 1	0.936	0.793	0.772	0.697	0.716
AMMS 2	0.962	0.810	0.810	0.718	0.776
AMMS 3	0.930	0.825	0.784	0.687	0.747
CT 1	0.796	0.895	0.764	0.663	0.700
CT 2	0.756	0.913	0.749	0.623	0.703
CT 3	0.793	0.908	0.773	0.684	0.725
CT 4	0.726	0.864	0.775	0.630	0.717
FC 1	0.736	0.757	0.886	0.664	0.686
FC 2	0.665	0.728	0.888	0.670	0.614
FC 3	0.811	0.784	0.888	0.707	0.764
PEU 1	0.692	0.669	0.704	0.842	0.727
PEU 2	0.555	0.526	0.566	0.805	0.536
PEU 3	0.501	0.500	0.541	0.775	0.449
PEU 4	0.630	0.635	0.668	0.900	0.586
PEU 5	0.707	0.688	0.716	0.875	0.675
PU 1	0.696	0.697	0.669	0.629	0.849
PU 2	0.641	0.635	0.646	0.644	0.834
PU 3	0.671	0.690	0.674	0.618	0.891
PU 4	0.715	0.728	0.696	0.610	0.902
PU 5	0.730	0.715	0.725	0.644	.891

Table 4 presents discriminant validity using the Fornell-Larcker criteria by comparing the square roots of the AVE for each correlation within each construct. All square root values of the AVE are greater than the correlation values between constructs in each row and column. Research [28] emphasizes the importance of reporting reliability, convergence, and discriminant validity, indicating that the Fornell-Larcker criteria are a systematic approach to ensuring construct distinction in measurement models. This adds strong evidence, along with the previous reliability and outer loading results, that the measurement model in this study is of high quality.

Tabel 4. Discriminant Analysis

	AMMS	CT	FC	PEU	PU
AMMS	0.943				
CT	0.858	0.895			
FC	0.837	0.854	0.887		
PEU	0.743	0.727	0.768	0.841	
PU	0.792	0.794	0.781	0.719	0.874

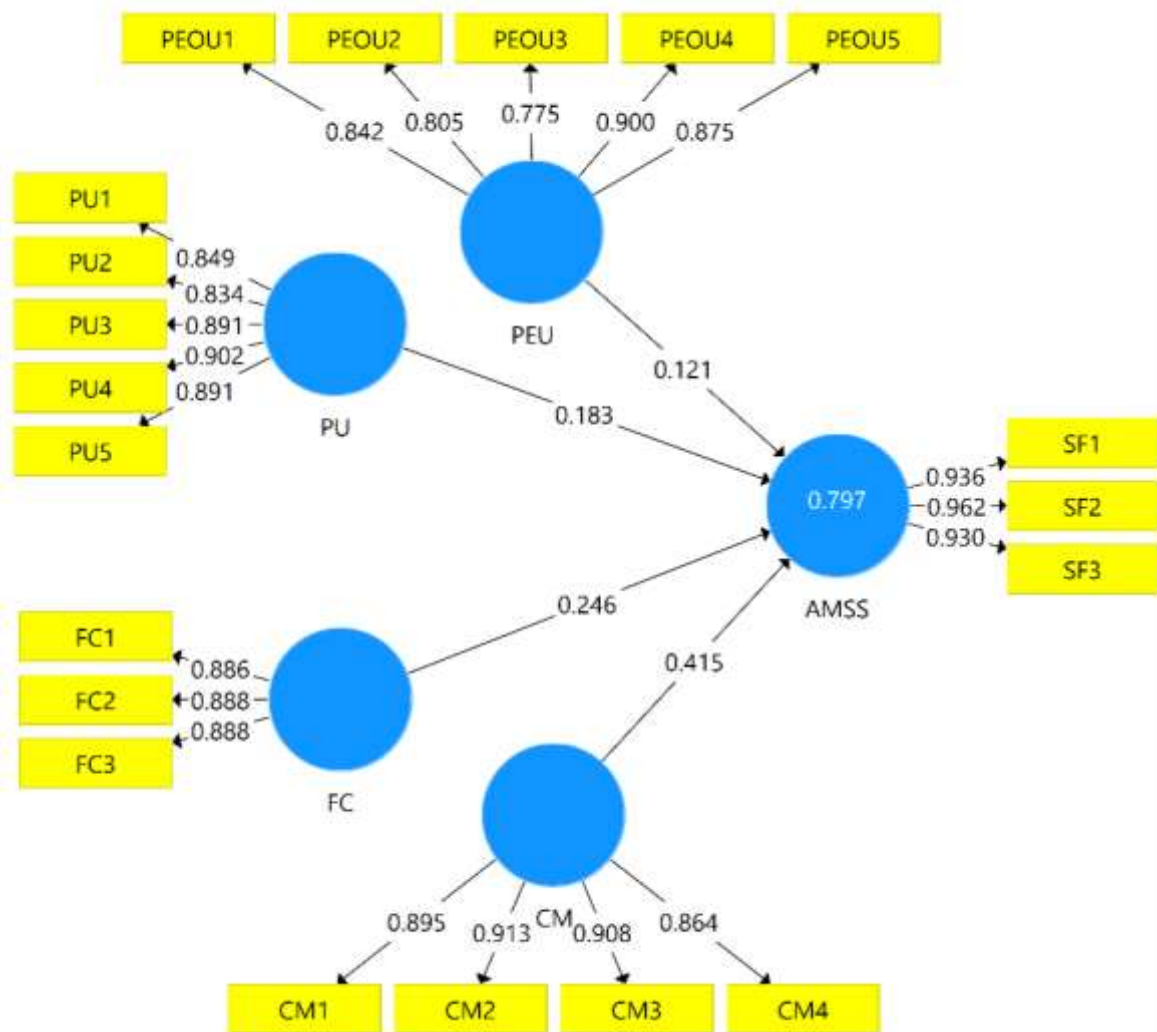


Figure 2. Research Model

Table 5. Mediation-Specific Indirect Effects

	Original sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics	P Value	Decision
PEU -> AMSS	0.121	0.118	0.052	2.329	0.020	Accepted
PU -> AMSS	0.183	0.181	0.057	3.178	0.002	Accepted
FC -> AMSS	0.246	0.248	0.078	3.160	0.002	Accepted
CT -> AMSS	0.415	0.419	0.079	5.283	0.000	Accepted

Table 5 present the significance of the constructs analyzed using t statistics and p values through bootstrapping. The study further explains that results are considered statistically significant when t exceeds 1.96 and p is less than 0.05 [29]. Research [30] demonstrates this by testing hypotheses using t-values and p-values in their structural equation model. PEU significantly affects AMSS with $\beta=0.121$ and $p=0.020$. The significant relationship between PU and AMSS with $\beta=0.183$ and $p=0.002$, FC significantly affects AMSS with $\beta=0.246$ and $p=0.002$, and CM significantly affects AMSS with $\beta=0.415$ and $p=0.000$.

Discussion

Overall, the results of construct testing using the PLS-SEM method show that all proposed variables, namely Perceived Ease of Use (PEU), Perceived Usefulness (PU), Facilitating Condition (FC), and Confirmation (CM), have a significant effect on Academic Management System Satisfaction (AMSS). Academic management system user satisfaction can be explained simultaneously by a combination of these four factors, which show very strong predictive power. The findings of this study not only validate the theoretical framework of academic management system user satisfaction, but also play a fundamental role in shaping system user satisfaction.

The results of the study have shown that PEU has a significant effect on AMSS with $\beta=0.121$ and $p=0.020$ (H1: $PU \rightarrow AMSS$). Students consider the academic management system easy to use because it is related to their lecture needs. The ease of using the academic management system is related to the ease of using a user-friendly system, ease of access due to the availability of internet access, and accessibility across various platforms. In addition, there is initial guidance in using the system through training provided to users. The ease experienced by students in using the academic management system leads to their satisfaction. These results are in line with studies conducted by [8], [9] and [17], which, despite having different research subjects, also found that ease significantly affects user satisfaction.

In addition, PU significantly affects AMSS with $\beta=0.183$ and $p=0.002$ (H2: $PU \rightarrow AMSS$). The perceived usefulness of the academic management system by students causes them to feel satisfied in using it. Almost all student academic activities use the academic management system, such as: compiling study plans, viewing study results, viewing and collecting assignments, recording class attendance, registering for seminars and final project hearings, and registering for graduation. The results are supported by research conducted by [8], [14], [17], and [31], although with different research subjects but using the same theory. This study shows that the usefulness of the system has a significant effect on user satisfaction.

This study also found that FC had a significant effect on AMSS with $\beta=0.246$ and $p=0.002$ (H3: $FC \rightarrow AMSS$). The availability of facilitating conditions supports student satisfaction in using the academic management system. These facilitating conditions include the availability of assistance services when students encounter obstacles, the availability of user guides in the form of books, application guides, and video guides, and the availability of internet access across all universities. In addition, the academic management system can be accessed through various platforms, so that students can use it with their smartphones anywhere and anytime. This is in line with research conducted by [11] and [32] which supports satisfaction in using the system based on facilitating conditions in using the system. However, unlike the research conducted by [15], facilitating conditions do not significantly affect user satisfaction in using technology.

Path coefficient analysis reveals that Confirmation (CM) is the strongest predictor of AMSS with the highest path coefficient value of $\beta=0.415$ and $p=0.000$ (H4: $CM \rightarrow AMSS$). This indicates that the higher the level of confirmation or fulfillment of users' initial expectations after using the Academic Management System, the higher their level of satisfaction with the system. This result is crucial, confirming that the actual experience of users and the fulfillment of system promises are dominant factors

in achieving long-term satisfaction. These findings are also supported by studies conducted by [18], [33], and [34] with different subjects. The same results show that users confirm their satisfaction after using the technology, as well as their satisfaction with the use of the academic management system.

Implicitly, these findings suggest that developers and managers of Academic Management Systems should shift their focus from merely facilitating fundamental interactions (PEU) to improving the post-adoption user experience, particularly by strengthening Confirmation (CM) and Facilitating Conditions (FC). The complete consistency of the four hypotheses with significant results indicates that all dimensions of technology adoption work synergistically to produce high user satisfaction. In practice, this study recommends a system maintenance strategy that focuses on after-sales service quality and technical support responsiveness (FC), as well as on ensuring that system features consistently meet or exceed user expectations (CM), as the most effective way to improve and maintain AMSS among the academic community.

CONCLUSION

This research contributes to the literature on technology adoption and satisfaction, particularly in the context of Academic Management System Satisfaction (AMSS). Methodologically, this study successfully validated and confirmed the high predictive power ($R^2 = 0.797$) of the combined framework of PEU, PU, FC, and CM factors in determining user satisfaction. A key finding is that Confirmation (CM) emerges as the strongest predictor ($\beta=0.415$), enriching theoretical understanding by emphasizing that post-adoption satisfaction in academic environments is primarily driven by the fulfillment of expectations, beyond merely perceived ease and usefulness. These results provide a strong empirical basis for future technology satisfaction models in the education sector.

This study provides clear practical guidance for managers and developers of academic information systems. First, investment and maintenance efforts should be prioritized on aspects related to Confirmation (CM), which means that system providers must proactively ensure that system features work as promised initially, and that the system continuously meets user needs. Second, the importance of Facilitating Conditions (FC) ($\beta=0.246$) indicates the need for adequate resource allocation for technical support, comprehensive training, and stable network infrastructure maintenance. Overall, the focus should shift from launching an easy-to-use system (PEU) to creating a full support ecosystem that ensures a positive post-implementation experience, thereby increasing user satisfaction and loyalty.

Although this study provides deep insights, there are several limitations that can guide future research. First, this study uses data collected over a single time period, which limits the ability to establish true causal relationships and track changes in satisfaction over time. We suggest that future research adopt a longitudinal design to observe the dynamics of CM and AMSS. Second, the model only considers factors from the perspective of individual users. Future research could expand the model by incorporating external factors such as Social Influence or Service Quality to provide a more comprehensive picture of the formation of satisfaction with the academic management system.

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