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# Academic Quality Acceleration: An Evaluation of Digital System and Information Quality

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Academic Quality Acceleration; Higher Education; Information Quality; System Quality.

**Abstract:**
Academic information systems are now central to university administration, but their contribution to academic quality depends on more than technical performance. Drawing on the DeLone and McLean Information Systems Success Model, this study examined how System Quality and Information Quality were associated with Academic Quality Acceleration. Survey data were obtained from 296 undergraduate students, lecturers, and administrative staff at the Faculty of Tarbiyah, Universitas KH. Abdul Chalim Mojokerto and analyzed through multiple linear regression in SPSS. The model was statistically significant, $F(2, 293) = 201.545$, $p < .001$, and explained 57.6% of the variance in Academic Quality Acceleration. Information Quality was a strong positive predictor ($\beta = .821$, $p < .001$), whereas System Quality did not make a significant unique contribution after their shared variance was considered ($\beta = -.090$, $p = .090$). The findings suggest that users experience academic benefits most clearly when the information delivered by the system is accurate, timely, complete, and accessible. Universities should therefore connect investment in technical infrastructure with sustained improvements in data quality and user evaluation. Because the study was conducted in a single faculty and relied on self-reported perceptions, broader multisite research using objective indicators is needed.

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## Introduction

Digital systems have become central to the way universities organize academic services, communicate information, and monitor institutional performance. As administrative demands grow more complex, conventional procedures alone are increasingly unable to provide the speed and coordination expected by students, lecturers, and staff (Anthony Jnr, 2024; Lisana & Susanto, 2026). Academic information systems now support core activities across teaching, research, and administration (A. F. Ali et al., 2024; Al Naqbi, 2024; Sailin & Zain, 2023). When these systems are dependable and responsive, they can reduce delays, simplify routine processes, and allow institutions to devote more attention to academic quality and student development (Reascos et al., 2025; Salisu et al., 2025).

The DeLone and McLean (2003) Information Systems Success Model offers a useful basis for understanding how digital systems create value. Within this model, net benefits refer to the individual and organizational gains that emerge from system use. In the present study, these benefits are represented by Academic Quality Acceleration, reflected in administrative

efficiency, task productivity, and more agile decision-making. System Quality concerns the technical performance of the platform, including reliability, stability, response time, and ease of access during periods of heavy use (Hariprawira, 2026; Sailin & Zain, 2023). Information Quality refers to whether the data provided are accurate, relevant, complete, and timely enough to support academic and administrative decisions (Lisana & Susanto, 2026; Srimulyo et al., 2024). Both dimensions are therefore expected to shape the practical value users derive from an academic information system (A. F. Ali et al., 2024; Alkathiri et al., 2026).

Evidence on System Quality, however, is not uniform. Its contribution appears to vary with the setting in which a platform is introduced and the way users encounter it in daily work (Lisana & Susanto, 2026; Salisu et al., 2025). Systems with extensive functionality may still create hesitation, cognitive burden, or workflow bottlenecks when their design does not match users' needs (I. M. Ali et al., 2024; Alkathiri et al., 2026). Technical sophistication therefore does not automatically translate into better academic or operational outcomes (A. F. Ali et al., 2024; Wei et al., 2022). The value of a system depends not only on its architecture, but also on whether it supports familiar tasks in a clear and manageable way (Al Naqbi, 2024; Anthony Jnr, 2024).

Research on Information Quality presents a similarly varied picture. Some studies report weak or inconsistent relationships with user outcomes, particularly in digital learning environments where infrastructure and institutional support remain uneven (Alterkait & Alduaij, 2024; Wei et al., 2022). Other work identifies accuracy, completeness, relevance, and timeliness as the features most closely associated with meaningful system benefits, even when the technical platform is less than ideal (Lisana & Susanto, 2026; Salisu et al., 2025). These differences suggest that evaluations of digital transformation should move beyond system availability or general satisfaction and consider whether the information produced actually improves academic work and decision-making (Anthony Jnr, 2024; Reascos et al., 2025).

This study uses a focused adaptation of the DeLone and McLean (2003) model, examining System Quality (X1) and Information Quality (X2) as direct predictors of Academic Quality Acceleration (Y). Service Quality, System Use, and User Satisfaction were not included in order to keep the model aligned with the institutional context (Petter et al., 2013; Urbach & Müller, 2012). SIAKAD operates mainly as a self-service platform, so most interaction takes place through the software rather than through support personnel (Anthony Jnr, 2024; Li & Lin, 2006). Its use is also mandatory for routine academic administration, leaving little meaningful variation in voluntary adoption (Binaymin et al., 2020; Mensah et al., 2021). Excluding User Satisfaction allowed the analysis to concentrate on the direct relationship between system and information characteristics and the operational benefits perceived by users (Salisu et al., 2025).

The study therefore compares the relative contribution of System Quality and Information Quality to Academic Quality Acceleration as an operational form of net benefit (Al-Ghonmein et al., 2023; Desmaryani et al., 2022). Rather than assuming that technical performance and information quality matter equally, it asks which dimension is more closely associated with improvements in academic workflows (Reascos et al., 2025; Saadilah & Dirgantari, 2023). The results are intended to support institutional leaders in directing digital investment toward the features that users find most consequential for academic services (Abdullah & Burhanuddin, 2023; Adom et al., 2025). Three hypotheses guided the analysis:

H1: System quality is a positive predictor of academic quality acceleration.

H2: Information quality is a positive predictor of academic quality acceleration.

H3: System quality and information quality jointly account for a significant proportion of variance in academic quality acceleration.

## Methods

A quantitative explanatory design was adopted to examine statistical associations and predictive contributions rather than temporal causality (Riyanto, 2001). The study focused on the relationship between System Quality, Information Quality, and Academic Quality Acceleration as a perceived net benefit of technology use. Data were collected at the Faculty of Tarbiyah, Universitas KH. Abdul Chalim Mojokerto, where the web-based Academic Information System (SIAKAD) has been used since 2021 for course registration, grading, and administrative reporting. The faculty was selected because it is the university's largest academic unit and records the highest volume of routine interaction with the system among students, lecturers, and administrative staff.

The population consisted of 1,357 active SIAKAD users. Participation was limited to students, lecturers, and administrative staff who had used the platform for at least one semester, so that responses reflected direct experience. Yamane's formula with e = .05 yielded a target of 309 respondents. Proportionate stratified random sampling was used to represent the three user groups, and the questionnaire was distributed through Google Forms. Of 320 submissions, 296 complete and eligible responses were retained, giving a completion rate of 92.5%. The final sample comprised 223 undergraduate students (75.3%), 51 lecturers (17.2%), and 22 administrative staff (7.5%). Although this total was slightly below the Yamane target, it represented 95.8% of the required sample and an estimated margin of error of approximately 5.14%. It also exceeded commonly recommended minimums for multiple regression with two predictors (Hair et al., 2019).

The 35-item questionnaire was adapted from the DeLone and McLean (2003) framework and translated into Indonesian. Two senior academics in educational technology and information systems reviewed the translated version for relevance, clarity, and consistency with the intended constructs. The revised instrument was then piloted with 30 respondents who were not included in the main study. Because the sample included different user groups, the items were phrased in role-neutral terms and referred to features that all participants encountered, such as loading speed, interface clarity, data accuracy, and workflow efficiency. The full operationalization of the variables and the English version of each item are presented in Supplementary Table S1.

The data were analyzed in SPSS version 26. Item quality was examined through Pearson item-to-total correlations, while internal consistency was assessed with Cronbach's alpha. Items were retained when their correlations exceeded both the critical value and the practical threshold of $r = .30$; coefficients of $\alpha \geq .70$ were treated as acceptable. Full item-level and reliability outputs are available in Supplementary Tables S2 and S3. Before estimating the regression model, the analysis considered linearity, residual distribution, influential observations, and multicollinearity. Linearity results are reported in Supplementary Table S4, residual and influence diagnostics in Supplementary Table S5, and tolerance and VIF statistics in Supplementary Table S6. Because the relationship between Information Quality and Academic Quality Acceleration departed significantly from strict linearity, the regression coefficients are interpreted as average linear associations. Multiple linear regression was then used to evaluate overall model fit and the unique contribution of each predictor (Field, 2018; Hair et al., 2019). Complete SPSS output is provided in Supplementary Table S6.

## Results

### Demographic Characteristics

The analysis included 296 valid responses from active SIAKAD users. This total represented 95.8% of the Yamane target and an estimated margin of error of 5.14%. Most

participants were undergraduate students (n = 223, 75.3%), followed by lecturers (n = 51, 17.2%) and administrative staff (n = 22, 7.5%). Experience with the platform was generally substantial: 245 respondents (82.8%) had used SIAKAD for more than one year, including 208 (70.3%) with one to three years of use and 37 (12.5%) with more than three years. The responses therefore came largely from users who were familiar with the system in routine academic settings.

**Table 1. Demographic Characteristics of Respondents**

| Characteristic | Category | Frequency (n) | Percentage (%) |
|---|---|---|---|
| Academic Status | Undergraduate Students | 223 | 75.3 |
| | Lecturers | 51 | 17.2 |
| | Administrative Staff | 22 | 7.5 |
| Duration of SIAKAD Use | < 1 Year | 51 | 17.2 |
| | 1 – 3 Years | 208 | 70.3 |
| | > 3 Years | 37 | 12.5 |
| Total | | 296 | 100.0 |

Source: Primary data processed, 2026

**Descriptive Statistics and Bivariate Correlations**

Table 2 summarizes the score distributions and bivariate relationships among the three constructs. System Quality (12 items) had a mean total score of 48.37 (SD = 8.528), equivalent to an item mean of 4.03 on the five-point scale. Information Quality (11 items) averaged 43.94 (SD = 7.457), or 4.00 per item. Academic Quality Acceleration (12 items) averaged 46.52 (SD = 8.415), corresponding to an item mean of 3.88. Overall, respondents evaluated the system, the information it produced, and its perceived academic benefits positively.

All three variables were positively related. System Quality correlated with Information Quality at $r = .698$ ($p < .001$) and with Academic Quality Acceleration at $r = .483$ ($p < .001$). The strongest bivariate relationship was between Information Quality and Academic Quality Acceleration, $r = .758$ ($p < .001$). None of the correlations exceeded .80, and the subsequent tolerance and VIF results did not indicate problematic multicollinearity.

**Table 2. Descriptive Statistics and Pearson Correlation Matrix**

| Variable | Observed Min | Observed Max | Mean Total (Item Mean) | Std. Deviation | 1 (X1) | 2 (X2) | 3 (Y) |
|---|---|---|---|---|---|---|---|
| 1. System Quality | 12 | 60 | 48.37 (4.03) | 8.528 | 1.000 | | |
| 2. Information Quality | 11 | 55 | 43.94 (4.00) | 7.457 | .698** | 1.000 | |
| 3. Academic Quality Acceleration | 12 | 60 | 46.52 (3.88) | 8.415 | .483** | .758** | 1.000 |

*Note. Item means are based on a five-point Likert scale. ** p < .01 (two-tailed).*

**Instrument Validity and Reliability**

Each of the 35 items met both the critical item-to-total correlation value of $r = .114$ and the practical criterion of $r = .30$ (all $p < .001$). Correlations ranged from .622 to .816 for System Quality, .599 to .824 for Information Quality, and .690 to .779 for Academic Quality Acceleration. Internal consistency was also high across the three scales, with Cronbach's alpha values of .920, .904, and .920, respectively (Table 3). The complete item-level and reliability outputs are reported in Supplementary Tables S2 and S3.

**Table 3. Measurement Quality Summary**

| Construct | Items | Item-Total r Range | Cronbach's α | Interpretation |
|---|---|---|---|---|
| System Quality (X1) | 12 | .622–.816 | .920 | Valid and reliable |
| Information Quality (X2) | 11 | .599–.824 | .904 | Valid and reliable |
| Academic Quality Acceleration (Y) | 12 | .690–.779 | .920 | Valid and reliable |

*Source: Processed data from SPSS version 26; detailed outputs are provided in Supplementary Tables S2–S3.*

**Diagnostic and Common Method Bias Tests**

The diagnostic results supported an approximately linear relationship between System Quality and Academic Quality Acceleration. Information Quality showed a strong linear component, although the significant deviation-from-linearity test indicated that the relationship was not perfectly linear. Residual and influence statistics did not identify a single case that dominated the estimates, and the tolerance and VIF values were within acceptable limits. In Harman's single-factor screening, the first factor explained 40.36% of the variance. This result suggests that one general factor did not dominate the measures, but it does not rule out common method variance. Full linearity, residual, influence, and collinearity outputs are presented in Supplementary Tables S4–S6.

**Hypothesis Testing and Regression Analysis**

The regression results are summarized in Table 4. The table reports the coefficient estimates and hypothesis decisions, while the complete model summary, ANOVA, coefficients, and collinearity statistics are available in Supplementary Table S6.

**Table 4. Multiple Linear Regression and Hypothesis Testing Results**

| Predictor | B | SE | β | t | p | 95% CI | Decision |
|---|---|---|---|---|---|---|---|
| Constant | 10.112 | 2.029 | — | 4.985 | < .001 | [6.119, 14.105] | — |
| System Quality (X1) | −.089 | .052 | −.090 | −1.702 | .090 | [−.191, .013] | H1 not supported |
| Information Quality (X2) | .927 | .060 | .821 | 15.513 | < .001 | [.809, 1.045] | H2 supported |

*Model fit: R = .761, $R^2$ = .579, adjusted $R^2$ = .576, SE of the estimate = 5.478, F(2, 293) = 201.545, p < .001. H3 was supported. Dependent variable: Academic Quality Acceleration (Y). Residual df = n - k - 1 = 293.*

System Quality did not retain a statistically significant unique association with Academic Quality Acceleration after Information Quality was included in the model, B = -.089, SE = .052, β = -.090, t = -1.702, p = .090, 95% CI [-.191, .013]. Because the confidence interval crossed zero, H1 was not supported. The negative coefficient should not be read as evidence that better technical quality reduces academic performance; rather, it shows that System Quality added little unique explanatory value once the shared variance with Information Quality was considered.

Information Quality, in contrast, was strongly and positively associated with Academic Quality Acceleration, B = .927, SE = .060, β = .821, t = 15.513, p < .001, 95% CI [.809, 1.045]. With System Quality held constant, each one-unit increase in the Information Quality score corresponded to an average increase of .927 units in Academic Quality Acceleration. The size and direction of the coefficient, together with the confidence interval, supported H2.

Taken together, the two predictors produced a statistically significant model, F(2, 293) = 201.545, p < .001, supporting H3. The model yielded R = .761, $R^2$ = .579, adjusted $R^2$ = .576, and a standard error of the estimate of 5.478. System Quality and Information Quality therefore accounted jointly for 57.6% of the observed variance in Academic Quality

Acceleration. The significant F test confirms the usefulness of the predictor set as a whole, but it does not imply that both variables made significant unique contributions (Field, 2018; Hair et al., 2019).

**Discussion**

Within this sample, System Quality and Information Quality jointly accounted for 57.6% of the variance in Academic Quality Acceleration. This finding indicates that respondents' perceptions of system performance and information quality were closely associated with the academic and administrative benefits they experienced through SIAKAD. Because the study used cross-sectional survey data, the result should be interpreted as an association within the observed setting rather than evidence of a causal effect (Bates & Bates, 2019; Salisu et al., 2025; Selwyn, 2017).

The two predictors did not contribute equally. System Quality was moderately related to Academic Quality Acceleration at the bivariate level ($r = .483$, $p < .001$), but its coefficient became small and nonsignificant after Information Quality was included in the model ($\beta = -.090$, $p = .090$). Since System Quality and Information Quality were also strongly correlated ($r = .698$), this attenuation is more consistent with shared predictive variance than with a negative effect of technical quality. Users may experience technical performance and information delivery as closely connected, leaving System Quality with limited additional explanatory value once Information Quality is considered (I. M. Ali et al., 2024; DeLone & McLean, 2003).

One possible interpretation is that technical quality operates as an enabling condition. A platform must be sufficiently stable and accessible for routine academic work, but these features may become less noticeable once the system functions adequately. Users may then evaluate the platform more directly through the accuracy, completeness, timeliness, and availability of the information it provides. This interpretation remains tentative because the study did not directly measure interface friction, technostress, perceived ease of use, or other mechanisms that could clarify the relationship (Gummadi, 2025; Venkatesh et al., 2012).

The composition of the sample also warrants attention. Undergraduate students represented 75.3% of respondents, whereas lecturers and administrative staff formed smaller groups. These users interact with SIAKAD for different purposes and may assess its quality against different expectations (Alkathiri et al., 2026; Almaiah et al., 2022). The aggregate findings may therefore reflect student priorities more strongly, particularly the need for timely access to grades, schedules, and administrative information. Direct comparisons across user groups would provide a clearer account of whether the observed relationships vary by academic role.

Information Quality showed the clearest unique association with Academic Quality Acceleration ($\beta = .821$, $p < .001$). Higher scores for accuracy, completeness, timeliness, and information availability corresponded with higher perceived academic benefit after System Quality was held constant (Lisana & Susanto, 2026; Petter et al., 2013). This result does not make technical infrastructure unimportant. Rather, it suggests that the value of infrastructure is experienced through the information it enables users to access and apply in academic and administrative decisions.

At the institutional level, this pattern is consistent with a data-informed approach to academic management (Lintag et al., 2025; Mandinach, 2022). Students rely on accurate grades, schedules, and progress records to plan their studies, while lecturers and institutional leaders use academic data for curriculum review, workload monitoring, and policy decisions (Bazah & Sánchez-Fuentes, 2025; Reascos et al., 2025). The findings therefore place information quality within the broader coordination of academic work, while remaining

limited to the perceptions measured in this study.

## Practical Implications

The findings suggest a balanced approach to academic information-system development. Technical upgrades should be accompanied by sustained attention to data accuracy, completeness, timeliness, consistency, and accessibility. Institutions may also benefit from simplifying digital workflows, monitoring database integrity, and gathering regular feedback from students, lecturers, and administrative staff. These actions should be treated as context-sensitive priorities rather than universal prescriptions, since the present evidence comes from one faculty and reflects perceived rather than objectively measured outcomes.

## Limitations and Future Research

Several limitations shape the interpretation of the results. The study was cross-sectional, relied on self-reported perceptions, and was conducted in one faculty at a single university, which restricts causal inference and broader generalization. The sample was dominated by undergraduate students, and the model examined only System Quality and Information Quality, without Service Quality, System Use, or User Satisfaction. In addition, the Information Quality relationship showed a significant deviation from strict linearity, and Harman's single-factor screening cannot eliminate the possibility of common method variance. Future research should use multisite or longitudinal designs, compare user groups, test nonlinear and robust models, and combine survey responses with system logs and objective indicators of academic performance.

## Conclusion

Among 296 SIAKAD users, System Quality and Information Quality formed a statistically significant model of perceived Academic Quality Acceleration. Information Quality showed the strongest unique association, whereas System Quality did not add a statistically significant contribution after their shared variance was considered. Within the limits of this study, the findings suggest that reliable technical infrastructure is most useful when it delivers information that users regard as accurate, timely, complete, and accessible. Academic information-system improvement should therefore maintain platform reliability while giving equal attention to the quality of the information available to users.

## Supplementary Materials

Supplementary Tables S1–S6 are published as an integral companion to this article. They provide the complete questionnaire, item-level correlation and reliability outputs, linearity tests, residual and influence diagnostics, common-method screening, and full multiple regression output. The supplementary PDF shares the article DOI and should be cited together with the main publication: https://doi.org/10.18592/moe.v12i2.20705

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