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Research article

Development and Evaluation of a Web-based Training Project Management System for Administrative Digitalization in Higher Education

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Abstract: Administrative digitalization in higher education institutions (HEIs) extends beyond pedagogical technologies and requires the reengineering of internal administrative workflows. This study reports the development and evaluation of a web-based Training Project Management System for a faculty of management science at a public university operating under resource constraints. A Research and Development design was employed. The system was built with PHP and MySQL following a structured system development life cycle, and its technical quality was assessed by a panel of five information systems specialists using the ISO/IEC 25010 quality model ($\bar{x}$ = 4.60). End-user acceptance was then evaluated with 300 lecturers, administrative staff, and students using a 24-item instrument covering perceived ease of use, information quality, system responsiveness, functional suitability, performance efficiency, and reliability (Cronbach's alpha 0.731–0.858). Construct means ranged from 3.16 to 3.58, indicating moderate to high acceptance, with perceived ease of use rated highest ($\bar{x}$ = 3.58) and information quality lowest ($\bar{x}$ = 3.16); overall satisfaction averaged 3.44. Correlation analysis found no meaningful association between the six quality dimensions and overall satisfaction (r = −0.121 to 0.105), so the data do not support conclusions about which quality attributes drive satisfaction in this setting. The study contributes a documented, low-cost development and evaluation procedure for faculty-level administrative systems, together with a transparent account of what its evaluation data can and cannot establish.

Keywords: Administrative digitalization; web-based information system; system development; ISO/IEC 25010; user acceptance

1. Introduction

Digital transformation has emerged as a fundamental driver of structural and organizational change within higher education institutions (HEIs) worldwide [1]. Beyond the mere digitalization of learning environments, true digital transformation requires a comprehensive overhaul of business processes, institutional culture, and strategic management to stay afloat and thrive amidst an increasingly complex educational landscape [2]. While HEIs have made significant strides in adopting educational technologies, the transformation of internal administrative processes such as project management, budgeting, and capacity-building workflows often lags, remaining heavily reliant on fragmented and manual procedures.

The shift toward fully automated and paperless administrative systems is no longer optional but a strategic necessity for enhancing operational efficiency and data transparency [3]. Traditional paper-based workflows inevitably lead to data redundancy, operational bottlenecks, and an increased administrative workload, which collectively hinder data-driven decision-making. Recent empirical evidence demonstrates that effective digital transformation within educational administration has a profound impact on achieving outstanding institutional performance, empowering administrators to meet both technical and human requirements more effectively [4]. However, the transition from legacy workflows to centralized web-based platforms often encounters organizational resistance, highlighting the critical role of change management and the need for systems that truly align with user expectations.

Consequently, deploying a new administrative information system is only the first step; ensuring its successful adoption requires rigorous evaluation of both its technical robustness and user-centric quality. Integrating technical system quality frameworks, such as the ISO/IEC 25010 software quality model, with user satisfaction metrics provides a holistic approach to evaluating information systems (IS) success [6]. By assessing dimensions like functional suitability, reliability, and service quality, HEIs can ensure that their technological interventions translate into sustainable, positive organizational change rather than becoming abandoned IT projects.

To address these systemic inefficiencies in a resource-constrained environment, this study develops and evaluates a web-based Training Project Management System within a faculty of a public university. The objectives of this study are threefold: (1) to develop a web-based Training Project Management System that supports the digitalization of faculty-level training project administration; (2) to evaluate the technical quality of the developed system using the ISO/IEC 25010 software quality model; and (3) to assess end-user acceptance and satisfaction with the system following deployment.

2. Literature review

This review synthesizes five interconnected bodies of literature that inform the design and evaluation of the system reported here: digital transformation and change management in higher education, web-based information systems for administrative workflow optimization, IS quality evaluation via the ISO/IEC 25010 framework, functional suitability and its role in IS adoption, and IS success and user acceptance. Together, these streams identify the research gap addressed by this study and provide the conceptual basis for the evaluation constructs used.

2.1 Digital transformation and change management in higher education

Digital transformation in higher education institutions (HEIs) has evolved from being a mere technological upgrade to a fundamental mechanism for structural and organizational change [1]. Beyond the integration of technology into pedagogical practices, genuine transformation requires the reengineering of administrative processes, strategic management, and institutional culture to navigate an increasingly complex educational landscape [2]. In particular, shifting administrative workflows towards fully automated and paperless systems is now recognized as a strategic necessity to enhance transparency, minimize data redundancy, and improve operational agility [3]. Recent empirical studies affirm that embedding digital technologies into educational administration significantly contributes to achieving outstanding institutional performance [4]. However, transitioning away from legacy systems frequently encounters organizational resistance. This highlights the critical necessity of employing effective change management strategies to ensure that administrative staff and academic personnel can seamlessly adopt and adapt to new information systems [5].

2.2 Web-based information systems for administrative workflow optimization

Within the context of public HEIs, which often operate under stringent resource constraints, administrative processes such as training project management, budget approval, and participant registration are prone to severe bottlenecks due to a reliance on traditional, paper-based documentation [3]. The implementation of web-based information systems acts as a centralized operational hub, significantly reducing documentation burdens and streamlining cross-departmental communication [6]. Such web-based platforms promote operational agility, empowering university administrators to engage in real-time, data-

driven decision-making [4]. Furthermore, designing systems that are context-specific to the unique requirements of a particular faculty or department can effectively bridge communication gaps and eliminate complexities within the administrative chain of command, proving more cost-effective and practical than adopting large-scale, generic enterprise resource planning (ERP) solutions [8].

2.3 Evaluating IS quality via the ISO/IEC 25010 framework

For an information system to be successfully implemented and embraced by its end-users, it must undergo a rigorous and standardized quality evaluation [6]. The ISO/IEC 25010 standard is internationally recognized as a comprehensive framework for evaluating software product quality, particularly within public sector and educational IS deployments [7]. Evaluating critical dimensions such as functional suitability, performance efficiency, and reliability is essential to guarantee that the system meets operational requirements. Integrating these technical performance metrics with end-user satisfaction assessments yields a holistic evaluation of the system's success [8]. This integrated approach provides administrators with the empirical assurance needed to confirm that the newly developed web-based system functions not merely as a digital tool, but as a sustainable driver of organizational change.

2.4 Functional suitability and its role in IS adoption

In the context of information systems evaluation, functional suitability refers to the degree to which a system provides functions that meet stated and implied user needs under specified conditions [9]. It encompasses three sub-characteristics: functional completeness, functional correctness, and functional appropriateness. In administrative information systems, functional suitability is particularly critical because end-users rely on the system to accurately execute complex operational tasks such as budget calculations, project proposal management, and document routing. Drawing from the DeLone and McLean IS Success Model [6], system quality, of which functional suitability is a core dimension, directly influences user satisfaction and behavioral intention to use the system. Within the domain of higher education administration, where staff members may lack advanced technical proficiency, a system that accurately and completely meets operational requirements reduces cognitive burden and facilitates smoother transitions from paper-based workflows. This study therefore includes functional suitability both in the expert evaluation of technical quality and among the constructs on which end-users rated the deployed system.

2.5 IS success and user acceptance

While the ISO/IEC 25010 standard addresses the technical robustness of an information system, technical quality alone does not guarantee organizational adoption or successful digital transformation. Behavioral theories, particularly the DeLone and McLean Information Systems Success Model and the Unified Theory of Acceptance and Use of Technology (UTAUT), provide critical lenses for understanding how users interact with newly introduced technologies. The construct of perceived ease of use, which is among the dimensions evaluated in this study, originates in the Technology Acceptance Model [10] and was subsequently incorporated into UTAUT [11]. According to these theoretical frameworks, system quality encompassing dimensions such as functional suitability, performance efficiency, and reliability directly influences user satisfaction and the behavioral intention to use the system. In the context of higher education administration, where staff members may exhibit strong resistance to transitioning from familiar paper-based workflows to novel digital platforms, achieving high user satisfaction is paramount. When administrators and academic staff perceive a web-based system as user-friendly and highly beneficial to their daily operational tasks, their resistance diminishes. Consequently, prioritizing user acceptance alongside technical quality facilitates smoother change management and fosters a sustainable culture of digital adoption across the institution [6]. These frameworks inform the selection of the constructs used to evaluate user acceptance in this study: perceived ease of use, information quality, system responsiveness, functional suitability, performance efficiency, and reliability. The present study does not test the complete DeLone and McLean or UTAUT model, and no causal claim is made about the relationships among these constructs. They are used to characterize the level of acceptance achieved after deployment.

2.6 Research gap and the proposed framework

A critical review of the existing literature reveals that a significant portion of digital transformation research in higher education is heavily skewed towards pedagogical technologies, student-centric learning management systems (LMS), or large-scale, resource-intensive Enterprise Resource Planning (ERP) systems. Consequently, there remains a notable research gap concerning the digital transformation of internal, micro-level administrative workflows, specifically training project management, budget allocation, and capacity-building administration within faculty-level environments operating under strict resource constraints. Previous studies have frequently overlooked the specific change management strategies required to transition these localized operational bottlenecks from manual to fully paperless systems. Directly related studies of administrative information systems at faculty or departmental level in resource-constrained institutions [16–18] have evaluated systems supporting internal academic-administrative workflows including research proposal submission and approval, and official correspondence and records management using either expert-based software quality assessment or technology acceptance models. These studies report favorable assessments of system quality alongside persistent barriers at the point of use, such as the need for early training, limited technical support, and a continued preference for paper-based practice. The present study differs from that work in combining ISO/IEC 25010 expert validation with a structured end-user acceptance evaluation of the same deployed system, at the level of faculty administrative workflows rather than at the pedagogical or enterprise level. To address this gap, the present study documents the full development and evaluation cycle of a tailored, web-based Training Project Management System: requirements elicitation from faculty staff, construction using open-source technologies, expert verification of technical quality against ISO/IEC 25010, deployment, and measurement of end-user acceptance. The contribution is a practical and replicable procedure for faculty-level administrative digitalization in resource-constrained institutions, rather than the validation of a predictive model of user satisfaction.

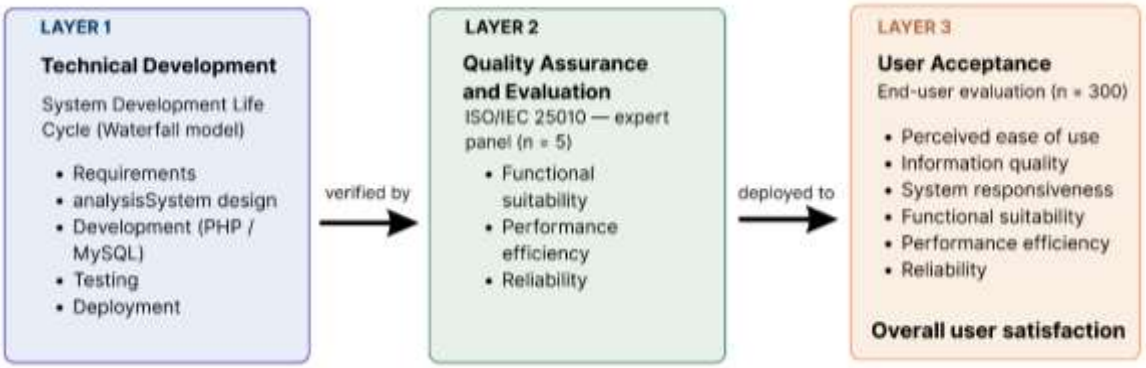


Figure 1. The development and evaluation framework of the web-based training project management system

As illustrated in Figure 1, the study proceeds across three interdependent layers. The first is the Technical Development Layer, which encompasses the system development lifecycle using the Waterfall model: requirements analysis, system design, development, testing, and deployment. This layer ensures that the resulting system meets the functional requirements of administrative workflows such as training project proposals and budget management. The second is the Quality Assurance and Evaluation Layer, in which the developed system is assessed against the ISO/IEC 25010 standard along three dimensions: functional suitability, performance efficiency, and reliability. This layer confirms system readiness before the system reaches the end-user population. The third is the User Acceptance Layer, in which end-user response is measured across six constructs: perceived ease of use, information quality, system responsiveness, functional suitability, performance efficiency, and reliability. These constructs are used to describe the level of acceptance achieved after deployment.

3. Materials and methods

3.1 Research design and context

This study employed a Research and Development (R&D) methodology integrated with a quantitative evaluation approach. The research was conducted within a faculty of management science at a public university in Southeast Asia. This context was purposively selected because the faculty operates under resource constraints and has historically relied on fragmented, paper-based administrative workflows, making it an ideal environment for investigating the impact of a digital transformation intervention.

3.2 System development and change management process

The web-based Training Project Management System was developed using a structured System Development Life Cycle (SDLC) framework. The Waterfall model was adapted to establish a systematic progression from requirements analysis to system deployment [15]. To minimize organizational resistance and ensure alignment with actual administrative workflows, end-user involvement was prioritized. In-depth requirements were gathered from faculty administrators and academic staff to identify critical bottlenecks in the manual project proposal and budgeting processes. The system was subsequently developed using open-source technologies (PHP and MySQL) to ensure cost-effectiveness, centralized data management, and operational transparency. The Research and Development procedure followed six sequential phases. Phase 1 (Analysis): current paper-based workflows were documented, and requirements were elicited from faculty administrators and academic staff. Phase 2 (Design): system architecture, database schema, and user interfaces were designed to address the identified bottlenecks. Phase 3 (Development): the system was implemented using PHP and MySQL. Phase 4 (Expert validation): five information systems specialists evaluated the prototype against the ISO/IEC 25010 quality model, and their recommendations were incorporated before release. Phase 5 (Deployment and trial): the validated system was deployed in the faculty and used in routine training project administration. Phase 6 (Evaluation): end-user acceptance and satisfaction were measured, and the results were used to identify further refinements. Phases 1-3 correspond to the Technical Development Layer of the proposed framework, Phase 4 to the Quality Assurance and Evaluation Layer, and Phases 5-6 to the Behavioral Acceptance and Change Management Layer.

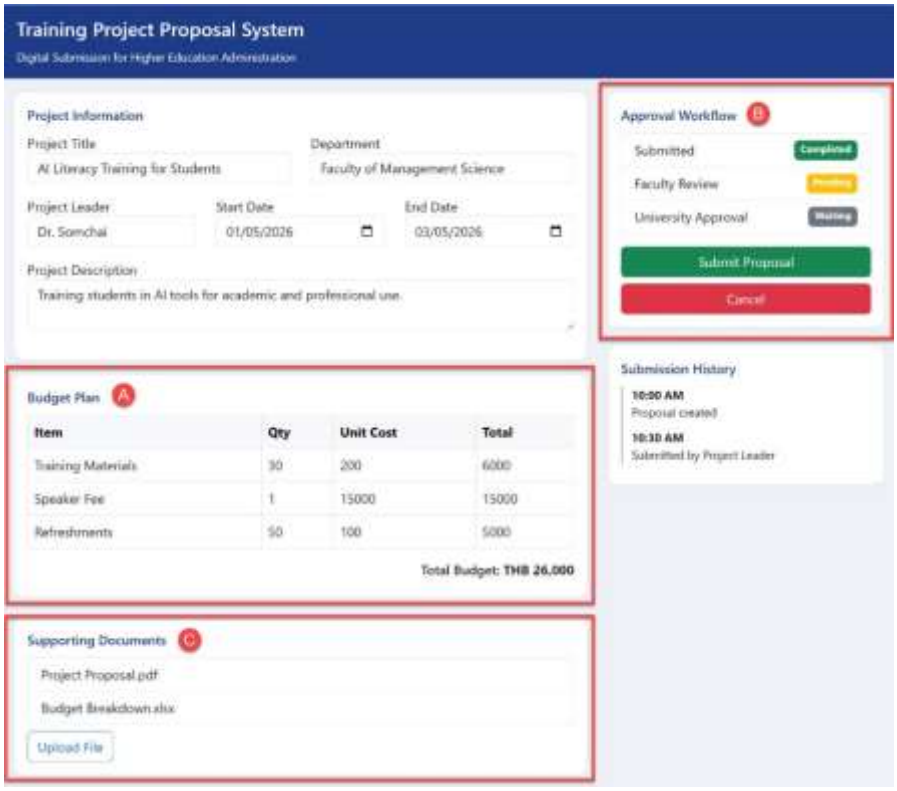


Figure 2. The training project proposal interface showing (A) integrated budget calculation, (B) approval workflow, and (C) document management modules.

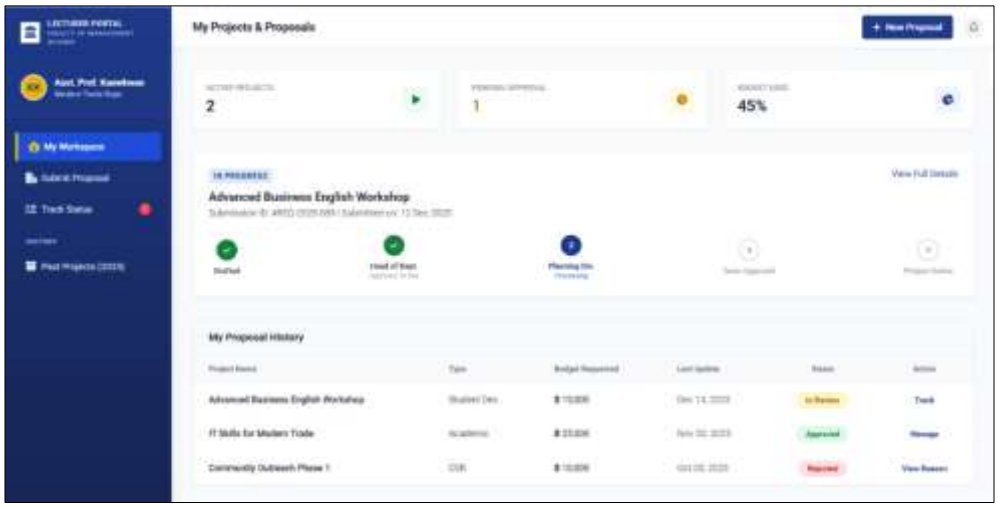


Figure 3. The lecturer portal displaying the five-stage proposal approval workflow and submission history with real-time status tracking.

3.3 Population and sampling

The evaluation phase involved two distinct groups of participants to ensure a comprehensive assessment of both technical robustness and user acceptance:

System experts: Five IS specialists with a minimum of five years of professional experience in software engineering and system auditing were purposively selected to constitute an expert validation panel. This panel served as a qualitative pre-deployment verification mechanism, not as a statistical sample, and their role was to confirm system readiness across the three ISO/IEC 25010 quality dimensions prior to end-user deployment. End-users: The target population comprised lecturers, administrative staff, and students within the faculty. A sample of 300 end-users was selected using a simple random sampling method. According to the foundational guidelines for survey research, this sample size is statistically robust and sufficient for evaluating user satisfaction and behavioral adoption within a defined organizational population [14].

3.4 Research instruments

Two structured questionnaires were developed to collect quantitative data:

Technical Quality Assessment Tool: Designed for the expert group, this instrument was based on the internationally recognized ISO/IEC 25010 software quality standards [9]. It specifically measured three primary dimensions: functional suitability, performance efficiency, and reliability. User Acceptance and Satisfaction Tool: Designed for the end-users, this instrument comprised 24 items measuring six constructs: perceived ease of use, information quality, system responsiveness, functional suitability, performance efficiency, and reliability, together with overall user satisfaction as the dependent variable, utilizing a 5-point Likert scale (ranging from 1 = Strongly Disagree to 5 = Strongly Agree). The number of items per construct corresponds to Table 1. Functional suitability, performance efficiency, and reliability were therefore assessed twice and for different purposes: by the expert panel as indicators of technical product quality under ISO/IEC 25010, and independently by end-users as perceptual predictors of satisfaction in the acceptance model. To ensure the quality of the research instruments, content validity was verified by three independent subject-matter experts using the Index of Item-Objective Congruence (IOC). As presented in Table 1, IOC scores ranged from 0.67 to 1.00 across all 24 items and six constructs, with all values exceeding the minimum acceptable threshold of 0.50 [13], confirming satisfactory content validity and expert consensus. Internal consistency reliability was assessed using Cronbach's alpha coefficient computed on the full sample of 300 respondents. As shown in Table 1, all six constructs yielded alpha values in the range of 0.731 to 0.858, all of which surpass the widely accepted threshold of 0.70 [12], confirming acceptable to good internal consistency. Data were collected over a four-week period during the academic semester following system deployment. The expert quality assessment questionnaire was administered in person to the five IS specialists. The end-user satisfaction questionnaire was distributed electronically via the university's internal communication platform

to the 300 sampled academic and administrative staff members. Participation was voluntary. All 300 sampled staff members completed the questionnaire, and all 300 returned questionnaires were complete and usable, giving a response rate of 100%. All responses were collected anonymously to minimize social desirability bias.

3.5 Research ethics

Before completing the questionnaire, participants were informed of the purpose of the study and of the intention to use their aggregated responses for research purposes, and they consented to this use. Participation was entirely voluntary: staff and students were free to decline to participate, to leave items unanswered, or to withdraw at any point, with no consequence for their employment or their studies. No personally identifying information was requested or recorded; all responses were collected anonymously and were accessible only to the research team. Permission to conduct the study within the faculty was granted by the Dean prior to data collection. This study was non-interventional: it collected anonymous questionnaire responses concerning participants' experience of a workplace information system, and involved no clinical, biomedical, or behavioral intervention and no collection of sensitive personal data. In accordance with the journal's ethical requirements, informed consent was obtained from all participants, and the confidentiality and privacy of respondents were protected throughout the study. Because the study was non-interventional, it was not submitted to a human research ethics committee, and no ethical approval code is reported.

Table 1. Summary of content validity (IOC) and reliability (Cronbach's alpha) of research instruments

Construct	Items	IOC Range	IOC Status	α (Alpha)
Perceived Ease of Use	5	0.67–1.00	Passed	0.837
Information Quality	5	0.67–1.00	Passed	0.795
System Responsiveness	5	1.00	Passed	0.731
Functional Suitability	3	0.67–1.00	Passed	0.802
Performance Efficiency	3	0.67–1.00	Passed	0.789
Reliability	3	0.67–1.00	Passed	0.858

Note: IOC acceptance criterion ≥ 0.50 (DeVellis, 2017); Cronbach's alpha acceptance criterion ≥ 0.70 (Hair et al., 2019); n = 300 (full sample). Alpha range 0.80–0.89 = Good reliability.

3.6 Data analysis

Quantitative data obtained from the evaluations were analyzed using descriptive statistics, namely the arithmetic mean and standard deviation. The interpretation of mean scores was categorized into five levels: 4.21–5.00 highest, 3.41–4.20 high, 2.61–3.40 moderate, 1.81–2.60 low, and 1.00–1.80 lowest. Cronbach's alpha was computed for each construct to verify internal consistency. Pearson product-moment correlations were then computed among the six acceptance constructs and overall user satisfaction, in order to examine whether the perceived quality attributes were associated with satisfaction. Multiple regression analysis was initially considered but was not retained: the dependent variable was measured with a single five-point item, and the residuals violated both the normality assumption (Shapiro–Wilk $W = 0.949$, $p < 0.001$) and the constant-variance assumption (Breusch–Pagan $\chi^2 = 36.204$, $p < 0.001$) required for ordinary least squares. Findings are therefore reported at the descriptive and correlational level only. All analyses were performed using IBM SPSS Statistics version 23.

4. Results and discussion

The findings are presented in three parts: the technical quality of the developed system as judged by the expert panel, the level of end-user acceptance and satisfaction after deployment, and the relationship between the acceptance constructs and overall user satisfaction.

4.1 Technical robustness of the web-based system (ISO/IEC 25010)

Prior to full-scale deployment, the technical quality of the Training Project Management System was validated by an expert validation panel comprising five IS specialists using the ISO/IEC 25010 framework as a qualitative pre-deployment confirmation mechanism, verifying system readiness across three technical dimensions.

Table 2. Expert evaluation of system quality (ISO/IEC 25010)

Evaluation Dimension	Mean ($\bar{x}$)	S.D.	Interpretation
1. Functional Suitability	4.80	0.45	Highest
2. Performance Efficiency	4.50	0.55	Highest
3. Reliability	4.50	0.50	Highest
Overall System Quality	**4.60**	**0.50**	**Highest**

As shown in Table 2, the overall technical quality of the system achieved the highest level ($\bar{x}$= 4.60, S.D. = 0.50). Notably, functional suitability received the highest score ($\bar{x}$= 4.80), indicating that the system accurately met the complex requirements of training project proposals and budget calculations within the target academic program. Furthermore, the high system reliability score ($\bar{x}$ = 4.50) ensures the security and stability of administrative data, which is a critical technological prerequisite for mitigating user apprehension during digital transformation.

4.2 User acceptance and organizational change adoption

While technical robustness is essential, the ultimate success of an information system depends heavily on end-user adoption. The user acceptance and satisfaction assessment was conducted with a sample of 300 academic and administrative staff members.

Table 3. End-user evaluation of system acceptance and satisfaction

Construct (Based on IS Success Model)	Mean ($\bar{x}$)	S.D.	Interpretation
1. Perceived Ease of Use	3.58	0.88	High
2. Information Quality	3.16	0.91	Moderate
3. System Responsiveness	3.22	0.85	Moderate
4. Functional Suitability	3.24	1.12	Moderate
5. Performance Efficiency	3.19	1.01	Moderate
6. Reliability	3.52	1.10	High
Overall User Satisfaction and Acceptance	**3.44**	**1.39**	**High**

As shown in Table 3, end-user acceptance was moderate to high across the six constructs, with means ranging from 3.16 to 3.58. Perceived ease of use received the highest rating (3.58, S.D. = 0.88) and information quality the lowest (3.16, S.D. = 0.91). Overall user satisfaction, measured with a single item, averaged 3.44 (S.D. = 1.39). Standard deviations between 0.85 and 1.12 at the construct level indicate substantial variation in how respondents experienced the system: the distribution of the overall satisfaction item shows 158 respondents (52.7%) rating 4 or 5, while 85 respondents (28.3%) rated 1 or 2. The system was therefore accepted by a majority of users, but not uniformly, and information quality emerges as the weakest area in the current release.

4.3 Relationship between acceptance constructs and overall satisfaction

To examine whether perceived quality attributes were associated with overall satisfaction, Pearson correlations were computed among the six acceptance constructs and the overall satisfaction item.

Table 4. Pearson correlations among acceptance constructs and overall user satisfaction (n = 300)

Variable	1	2	3	4	5	6	7
1. Perceived Ease of Use	1.000						
2. Information Quality	0.624	1.000					
3. System Responsiveness	0.520	0.545	1.000				
4. Functional Suitability	0.583	0.410	0.537	1.000			
5. Performance Efficiency	0.179	0.133	0.263	0.359	1.000		
6. Reliability	0.469	0.391	0.402	0.371	0.500	1.000	
7. Overall User Satisfaction	-0.058	0.008	-0.121	0.105	-0.042	-0.078	1.000

The six acceptance constructs were moderately intercorrelated, with coefficients ranging from 0.133 (information quality with performance efficiency) to 0.624 (perceived ease of use with information quality), indicating that respondents who rated one aspect of the system favorably tended to rate others favorably as well. However, none of the six constructs showed a meaningful association with overall user satisfaction: correlations ranged from −0.121 (system responsiveness) to 0.105 (functional suitability), and only system responsiveness reached statistical significance ($p = 0.037$) with a coefficient too small to be substantively interpretable. The data therefore do not support any conclusion about which quality attributes determine user satisfaction in this setting. This near-zero pattern is itself notable and is examined in Section 4.4.

4.4 Discussion of the findings

This study set out to develop a web-based Training Project Management System for faculty-level administrative work and to evaluate it from two perspectives: technical quality as judged by information systems specialists, and acceptance as reported by the staff and students who use it. The two perspectives produced different pictures, and the gap between them is the most informative result of the study. The expert panel rated the system highly against ISO/IEC 25010, whereas end-user ratings were moderate to high and considerably lower than the expert assessment. A system can satisfy technical quality criteria while still being experienced as merely adequate by the people who use it daily. The lowest-rated construct among end-users was information quality (3.16), which concerns the accuracy, currency, completeness, and presentation of the information the system returns an area that expert inspection of software properties is not well positioned to assess. For institutions planning similar deployments, this suggests that expert quality verification should not be treated as a proxy for user acceptance, and that post-deployment feedback on information content deserves attention at least equal to that given to functional correctness. The absence of any meaningful correlation between the six acceptance constructs and overall satisfaction requires comment, because it is contrary to the expectations of the IS Success Model, in which system and information quality are held to shape user satisfaction. Two explanations are plausible and cannot be distinguished with the present data. The first is measurement: overall satisfaction was captured with a single five-point item, which carries substantially more measurement error than a multi-item scale and can attenuate observed relationships. The second is substantive: satisfaction with a workplace administrative system may be driven less by perceived software attributes than by factors not measured here, such as workload change, familiarity with the previous paper-based process, or the amount of support available during the transition. Resolving this requires a multi-item satisfaction scale and the inclusion of organizational variables in future evaluations.

Taken together, the results support a modest and specific claim. A tailored, low-cost, web-based system for faculty-level training project administration can be developed with open-source tools, can pass expert quality verification, and can achieve moderate to high acceptance among non-specialist staff within weeks of deployment. The results do not support claims about which quality attributes cause user satisfaction, and no such claim is made here. Relative to prior work, this study addresses a level of analysis that has received limited attention: previous research has concentrated on pedagogical technologies, student-facing learning management systems, and enterprise-scale resource planning deployments, whereas the present system targets micro-administrative workflows within a single faculty. Canlas et al. [16] evaluated a faculty research management system against ISO/IEC 25010 using an expert panel and reported favorable technical quality, but did not pair this with an end-user acceptance assessment of the same system. Gasaymeh et al. [18] found that faculty attitudes toward a digitized research management system were generally positive, while noting that this positivity was shaped partly by comparison with the previous paper-based procedure and was accompanied by repeated requests for early training and guidance. Ng'wanakilala and Ngudungi [17] reported that an e-office system in a resource-constrained public university achieved limited uptake because of inadequate training, weak technical support, and a persistent preference for paper-based practice. The present findings are consistent with this pattern in one important respect: expert assessment of technical quality was favorable, whereas end-user ratings were only moderate to high, with information quality rated lowest of the six constructs.

4.5 Theoretical implications

The theoretical contribution of this study is deliberately limited. The study applies constructs drawn from the DeLone and McLean IS Success Model and from technology acceptance research to a setting in which they have rarely been examined: micro-administrative workflows in a resource-constrained public university, but it does not test either model, and its results neither confirm nor extend them. The one finding of theoretical interest is negative: in this setting, perceived system and information quality showed no association with overall satisfaction. Whether this reflects the single-item measurement of satisfaction or a genuine boundary condition of the IS Success Model in workplace administrative contexts is a question the present data cannot settle, and it is offered here as a direction for further study rather than as a theoretical claim.

4.6 Practical implications

For university administrators, the practical value of this study lies chiefly in the development procedure rather than in the acceptance results. The system was produced with open-source technologies at minimal cost, was tailored to workflows the faculty already followed, and passed expert quality verification before release, a sequence that other faculties can reproduce without the budget required for enterprise resource planning software. Requirements were elicited directly from the administrators and academic staff who would use the system, which is a practical safeguard against building functionality that does not match actual working practice. The acceptance results also carry a practical caution. Expert approval of technical quality did not translate into uniformly positive user response, and information quality was the weakest area in user ratings. Institutions deploying similar systems should therefore establish post-deployment feedback mechanisms that ask specifically about the accuracy, completeness, and presentation of the information the system produces, and should not treat a successful expert evaluation as evidence that adoption will proceed smoothly.

5. Conclusion

This study developed and evaluated a web-based Training Project Management System intended to move faculty-level training project administration from paper-based workflows to a centralized digital platform. The system was assessed as high quality by an expert panel using ISO/IEC 25010, and achieved moderate to high acceptance among 300 end-users, with construct means from 3.16 to 3.58 and overall satisfaction of 3.44. Perceived ease of use was rated highest and information quality lowest. No meaningful relationship was found between the six acceptance constructs and overall satisfaction, and the study therefore makes no claim about the determinants of satisfaction. What the study offers is a documented and replicable procedure for developing and verifying a low-cost administrative system in a resource-constrained faculty, together with evidence that technical quality verification and user acceptance are not interchangeable forms of evaluation. Several limitations should be acknowledged. The dependent measure of overall satisfaction consisted of a single five-point item, which limits reliability and may have attenuated the associations between acceptance constructs and satisfaction; a validated multi-item satisfaction scale should be used in future evaluations. The evaluation was conducted within a single faculty of management science at one public university, and all data were collected from this single source within a four-week window in the first semester of the 2025 academic year. Hence, the findings reflect user perceptions at one point in the adoption cycle. Institutional type is likely to matter, since mission, size, budget, and digital maturity differ across university types, and a single-institution design cannot establish whether the pattern generalizes. The study also relied on self-reported perceptual measures, which are susceptible to common method bias. It did not measure organizational factors such as organizational culture, leadership support, or change in workload variables the change management literature identifies as important determinants of adoption and which may account for satisfaction better than the software attributes measured here. Future work should employ a longitudinal design with objective system usage metrics alongside perceptual measures, a multi-item satisfaction scale, and multiple faculties or institutions at differing stages of digital maturity.

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References

[1] Castro Benavides, L. M.; Tamayo Arias, J. A.; Arango Serna, M. D.; Branch Bedoya, J. W.; Burgos, D. Digital Transformation in Higher Education Institutions: A Systematic Literature Review. *Sensors* **2020**, *20*(11), 3291. https://doi.org/10.3390/s20113291

[2] Antonopoulou, K.; Begkos, C.; Zhu, Z. Staying Afloat Amidst Extreme Uncertainty: A Case Study of Digital Transformation in Higher Education. *Technol. Forecast. Soc. Change* **2023**, *192*, 122603. https://doi.org/10.1016/j.techfore.2023.122603

[3] Kayanja, W.; Kyambade, M.; Kiggundu, T. Exploring Digital Transformation in Higher Education Setting: The Shift to Fully Automated and Paperless Systems. *Cogent Educ.* **2025**, *12*(1), 2489800. https://doi.org/10.1080/2331186X.2025.2489800

[4] Khatir, N.; Madani, H. The Impact of Digital Transformation on Achieving Outstanding Performance in Educational Administration. *Int. J. Educ. Manage.* **2024**, *38*(7), 1821–1838. https://doi.org/10.1108/IJEM-06-2023-0289

[5] Gkrimpizi, T.; Peristeras, V.; Magnisalis, I. Classification of Barriers to Digital Transformation in Higher Education Institutions: A Systematic Literature Review. *Educ. Sci.* **2023**, *13*(7), 746. https://doi.org/10.3390/educsci13070746

[6] DeLone, W. H.; McLean, E. R. The DeLone and McLean Model of Information Systems Success: A Ten-Year Update. *J. Manage. Inf. Syst.* **2003**, *19*(4), 9–30. https://doi.org/10.1080/07421222.2003.11045748

[7] Tatomyr, I.; Kvasnii, L.; Shulzhyk, Y., Eds. *Global Digital Trends and Their Impact on National Economic Progress*; OKTAN PRINT: Praha, Czech Republic, 2024; 418 pp. https://doi.org/10.46489/gdtatione-05-24

[8] Azzahra, S. F.; Ramadani, L.; Rahmad, B. Integrating System Quality, Information Quality, and Service Quality for Evaluating IS Quality. In *Proceedings of the International Conference on Enterprise and Industrial Systems (ICOEINS 2023)*; Atlantis Press, 2023; pp 206–218. https://doi.org/10.2991/978-94-6463-340-5_19

[9] International Organization for Standardization. *ISO/IEC 25010:2011 Systems and Software Engineering—Systems and Software Quality Requirements and Evaluation (SQuaRE)—System and Software Quality Models*; ISO: Geneva, Switzerland, 2011.

[10] Davis, F. D. Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. *MIS Q.* **1989**, *13*(3), 319–340. https://doi.org/10.2307/249008

[11] Dwivedi, Y. K.; Rana, N. P.; Jeyaraj, A.; Clement, M.; Williams, M. D. Re-Examining the Unified Theory of Acceptance and Use of Technology (UTAUT): Towards a Revised Theoretical Model. *Inf. Syst. Front.* **2019**, *21*, 719–734. https://doi.org/10.1007/s10796-017-9774-y

[12] Hair, J. F.; Black, W. C.; Babin, B. J.; Anderson, R. E. *Multivariate Data Analysis*, 8th ed.; Cengage Learning, 2019.

[13] DeVellis, R. F. *Scale Development: Theory and Applications*, 4th ed.; SAGE Publications, 2017.

[14] Krejcie, R. V.; Morgan, D. W. Determining Sample Size for Research Activities. *Educ. Psychol. Meas.* **1970**, *30*(3), 607–610. https://doi.org/10.1177/001316447003000308

[15] Valacich, J.; George, J. *Modern Systems Analysis and Design*, 9th ed.; Pearson Education, 2020.

[16] Canlas, R. B.; Piad, K. C.; Lagman, A. C. An ISO/IEC 25010 Based Software Quality Assessment of a Faculty Research Productivity Monitoring and Prediction System. In *Proceedings of the 2021 9th International Conference on Information Technology: IoT and Smart City (ICIT 2021)*; Guangzhou, China, December 22–25, 2021; ACM: New York, NY, 2021. https://doi.org/10.1145/3512576.3512619

[17] Ng'wanakilala, M.; Ngudungi, C. C. Explore the Challenges Encountered in Implementing the E-Office System for Mail Management: A Case Study of the University of Dodoma (UDOM). *East Afr. J. Inf. Technol.* **2026**, *9*(1), 244–260. https://doi.org/10.37284/eajit.9.1.4991

[18] Gasaymeh, A.; Matrouk, K.; AlMohtadi, R. Faculty Members' Attitudes and Perceptions toward the Digitization of the Scientific Research Management System at Al-Hussein Bin Talal University: A Qualitative Study Guided by a Modified Version of the Unified Theory of Acceptance and Use of Technology. *Front. Commun.* **2026**, *11*, 1849212. https://doi.org/10.3389/fcomm.2026.1849212