IJAMS
INTERNATIONAL JOURNAL OF ADVANCED MULTIDISCIPLINARY STUDIES
Volume V, Issue 7 July 2025, eISSN: 2799-0664

Assessment Of the Information Systems at Sacred Heart School-Ateneo De Cebu

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Abstract — This research focuses on evaluating the software quality of five key information systems at Sacred Heart School–Ateneo de Cebu (SHS-AdC): Admissions, Grading, Finance, Human Resources, and Registrar. Utilizing the ISO/IEC 25010:2011 quality standard, the study examines critical attributes such as functional suitability, performance efficiency, compatibility, usability, reliability, and maintainability. A descriptive quantitative methodology was adopted, with surveys administered to 205 stakeholders, including faculty, non-teaching staff, and administrators.

The results reveal that while the systems demonstrate moderate effectiveness in terms of functional suitability, they fall short in several other quality attributes. The Registrar and Human Resource systems were found to be particularly weak, especially in usability and reliability. In contrast, the Grading and Finance systems performed better but still presented challenges related to scalability, interoperability, and accessibility. These deficiencies significantly hinder operational efficiency and reduce overall user satisfaction.

By systematically evaluating these systems using ISO/IEC 25010, the study provides a detailed understanding of their strengths and weaknesses. The findings offer valuable insights for guiding targeted improvements to enhance system quality and support the institution's operational goals.

Keywords — ISO/IEC 25010, Software quality, Institutional systems, System interoperability, System scalability, Accessibility features

I. Introduction

The rapid advancement of technology is reshaping educational systems worldwide, compelling institutions to adapt to the evolving needs of 21st-century learners. Cenita and De Guzman (2023) emphasize the importance of aligning educational strategies with modern student expectations, while Patel et al. (2024) cite Singapore's leadership in future-ready educational practices. In Asia, countries such as the Philippines are also embracing digital tools to drive educational reform and institutional efficiency (DeVitis, 2016).

Sacred Heart School–Ateneo de Cebu (SHS-AdC), a leading private institution established in 1953, stands at a crucial point in its digital transformation. While its current information systems have historically supported core operations, recent evaluations have exposed inefficiencies, including outdated infrastructure, fragmented workflows, and unreliable data systems. These issues impede timely decision-making and affect the quality of educational services.

Modern information systems are essential in education, supporting communication, administrative efficiency, and data-driven decision-making (Bates, 2015). When integrated effectively, they enhance learning outcomes, teacher performance, and institutional productivity (Aldhafeeri & Khan, 2016). Conversely, poorly maintained systems lead to operational bottlenecks, service delays, and diminished stakeholder satisfaction.

At SHS-AdC, internal assessments have identified recurring challenges across key departments. Administrators struggle to access timely, accurate data for planning; staff face delays due to inefficient file management; and both students and teachers experience disruptions from system crashes and an underperforming grading portal. Parents, meanwhile, encounter enrollment and financial transaction delays, eroding trust in administrative processes (The Profile Measure, 2023).

These challenges mirror broader global trends in educational technology adoption, where institutions strive to align digital tools with pedagogical and operational goals (Guàrdia et al., 2021). Yet success depends on aligning these systems with institutional workflows, stakeholder needs, and usability considerations (Talu, 2020).

While global frameworks exist, their effectiveness relies on local contextualization. SHS-AdC's case illustrates the need for a tailored approach—one that incorporates user feedback and addresses specific institutional gaps. A systematic assessment is required to identify structural deficiencies and inform strategies for sustainable digital transformation.

This study aims to evaluate SHS-AdC's information systems across five core domains: Admissions, Grading, Finance, Human Resources, and Registrar services. By analyzing data from academic years 2024 to 2026, the research seeks to generate actionable insights that enhance system performance, user experience, and service delivery while anticipating future educational trends and technological shifts.

Ultimately, this evaluation intends to support evidence-based decision-making, optimize the school's digital infrastructure, and improve responsiveness. Most importantly, it aims to benefit all members of the SHS-AdC community—students, educators, administrators, parents, staff, and benefactors—by laying the foundation for a more efficient, secure, and future-ready educational environment.

Literature Review

In the ever-evolving field of education, the effective use of information systems (IS) is vital for creating enriched learning environments. This study focuses on evaluating and enhancing the current state of information systems at Sacred Heart School - Ateneo de Cebu (SHS-AdC). This literature review surveys significant scholarly resources and frameworks that underpin the research, offering a comprehensive overview and critical evaluation of studies related to IS assessment, quality standards, and strategic planning in educational institutions. While multiple

sources inform this study, the primary foundation rests on the ISO/IEC 25010 standard for evaluating system and software product quality.

Mamma (2023) presents a comprehensive framework on Information Systems Quality and Evaluation in Institutional Organizations, emphasizing the essential role of IS in achieving organizational success. The study utilizes Systems Theory to explore infrastructure, operations, and processes, providing valuable insights for examining SHS-AdC's information systems. This work is instrumental in identifying system inefficiencies and areas of improvement, although it lacks specific application to the educational sector, which this research addresses.

DeLone and McLean's IS Success Model is another core conceptual framework employed in this study. Their model emphasizes system quality, information quality, and user satisfaction as critical measures of IS effectiveness. Its application allows a structured and measurable approach to identify system limitations at SHS-AdC. The model has been widely validated across industries, making it a robust tool for educational settings as well.

Behnam et al. (2023) studied emergency information systems in Iran, focusing on user-centered design and usability. While this research pertains to healthcare, its emphasis on accessibility and user satisfaction is directly applicable to educational IS. The relevance lies in advocating for systems that are not only functional but also intuitive and inclusive—an area that SHS-AdC can prioritize.

Avila and Goepp (2015) introduced SAM static and dynamic metamodels aimed at aligning IS with institutional goals. These models offer a structured methodology for tailoring IS to specific educational challenges. While technical in nature, their metamodels bridge theoretical alignment with real-world IS planning, proving useful for strategic alignment at SHS-AdC.

Sivaji et al. (2014) integrated ISO/IEC 25010 with a focus on user experience and public value. Their emphasis on quality characteristics such as usability and satisfaction offers practical relevance to SHS-AdC, particularly in enhancing student and faculty interfaces. Their study strengthens the case for ISO/IEC 25010 as a comprehensive evaluation tool for public-facing information systems.

Collectively, these conceptual works provide a theoretical foundation for understanding IS quality, user alignment, and organizational integration. They contribute a valuable mix of frameworks and principles that guide the evaluation of SHS-AdC's IS.

Gunawan et al. (2017) evaluated the Hospital Information System of the Kasih Group using the Human, Organization, and Technology-Fit (HOT-FIT) Model. This model provides a multidimensional framework that assesses IS effectiveness across technical, human, and organizational dimensions. Though originally used in healthcare, its holistic nature is suitable for educational environments like SHS-AdC. However, it requires customization to account for the pedagogical context.

Building on technology acceptance frameworks, the study Validating Technology Acceptance Model (TAM) during IT Adoption in Organizations (2015) confirms the model's reliability for assessing IS implementation. This study validates the interplay of perceived ease of use and usefulness in successful IT adoption. This research incorporates TAM with D&M IS Success factors and adds management support and training dimensions, increasing the model's relevance to SHS-AdC.

Masrek and Gaskin (2016) focused on user satisfaction with digital library services, employing comprehensive questionnaires to evaluate system usability. Their emphasis on aligning functionalities with user expectations resonates with the SHS-AdC context. While their study is limited to digital libraries, the methodological approach to user satisfaction is applicable and replicable in this study.

Assifa, Setiadi, and Utomo (2023) combined ISO/IEC 25010 with the Kano Model to assess user satisfaction and software quality. Their integration of quality attributes and user perception frameworks highlights the dual need for technical soundness and user delight. This combined methodology provides a useful reference for improving IS quality at SHS-AdC, particularly in prioritizing user-driven enhancements.

Studies by Kurniawati and Kurniawati (2021), Prabowo (2024), and Pratama and Mutiara (2021) applied ISO/IEC 25010 to evaluate application quality in educational and government contexts. These works offer practical implementation strategies and reinforce the standard's utility in assessing maintainability, usability, and performance efficiency, all of which are central to the SHS-AdC IS evaluation.

In conclusion, the reviewed literature draws from diverse domains—including healthcare, digital libraries, and education—to establish a robust foundation for evaluating information systems. The integration of models such as ISO/IEC 25010, Technology Acceptance Model (TAM), DeLone & McLean IS Success Model, HOT-FIT, and the Kano Model ensures a comprehensive and multidimensional framework for assessing the effectiveness of information systems at SHS–Ateneo de Cebu. These scholarly contributions inform the research methodology and reinforce its relevance in the educational context, aiming to address current limitations and enhance system quality, usability, and user satisfaction.

II. Methodology

This research employed a descriptive design to tackle the research questions and fulfill the study's objectives. A comprehensive evaluation of the information systems at SHS-AdC was conducted through quantitative data collection and analysis. The primary data collection tool was a survey designed to gather numerical data that objectively measures the performance, functionality, and quality of the systems under study, based on the ISO/IEC 25010:2011 quality standard. The survey focused on gathering quantifiable insights from respondents to ensure a

systematic and data-driven evaluation of the software quality in the Admissions, Grading, Finance, Human Resources, and Registrar systems.

Population/Sample of the Study

The study's population included all stakeholders directly involved in the administration and operation of information systems in the departments of Sacred Heart School, Ateneo de Cebu's Admissions, Grading, Finance, Human Resources, and Registrar. There were 224 employees in this group, including administrators, non-teaching staff, and faculty members. Ten part-time faculty members and five Chinese teachers from the Senior High School department were not included in the survey because their positions did not allow them to have enough knowledge or expertise with the systems under review.

A universal sampling method was employed to ensure full representation of all eligible stakeholders. The breakdown of the respondents is as follows:

Office Name	Total (Frequency)	Percentage
Admission's Office Staff	5	2.43%
Finance Office Staff	7	3.41%
Registrar Office Staff	3	1.47%
Human Resources Office Staff	3	1.47%
Faculty Members	187	91.22%
Total	205	100%

This approach facilitated the collection of quantitative data from the entire target population, ensuring a comprehensive and representative evaluation of perspectives across all relevant departments.

Procedures

In this study the information systems at Sacred Heart School-Ateneo de Cebu, were systematically evaluated using a structured methodology based on the ISO/IEC 25010:2011 standard. To create the framework, a thorough literature review was conducted first. These studies included An ISO 25010-Based Quality Model for ERP Systems by Peters et al. (2020), Evaluation of Software Quality for I-Office Plus Application Using ISO/IEC 25010 and Kano Model by Assifa et al. (2023), and Analysis of File Document Application Quality Using ISO 25010:2011 Method by Kurniawati & Kurniawati (1021). These sources supported the decision to use ISO 25010:2011 as a foundational guide and provided comparative viewpoints on software quality assessment techniques.

Utilizing the ISO 25010:2011 standards, the researcher created a comprehensive questionnaire encompassing eight quality characteristics: functional suitability, performance efficiency, compatibility, usability, reliability, security, maintainability, and portability. To ensure its accuracy and reliability as an instrument of assessment, this questionnaire was presented to a panel of experts for validation. Upon receiving their feedback, the researcher refined it accordingly.

Prior to data collection, formal approval for the study was secured from both the research coordinator and the school president. Each participant received a consent form detailing the study's objectives, measures for confidentiality, and their rights as participants.

The completed questionnaire was circulated among faculty, staff, and administrators via Google Forms. To ensure data accuracy and promote thoughtful responses, it was administered in a proctored, face-to-face setting. Participants evaluated each quality characteristic of the information systems on a Likert scale from 1 (very ineffective) to 5 (very effective), ensuring consistent measurements across all responses. This Likert scale was adapted from the study by Maake, M.M.S., and Antwi, M.A. (2022), aligning the measurement criteria with established research methodologies to enhance the reliability and validity of the data collected in this study.

Measures

This study utilized a descriptive quantitative approach based on the ISO/IEC 25010:2011 quality model to assess information systems at Sacred Heart School, Ateneo de Cebu. The main tool was a structured survey aimed at evaluating system effectiveness according to the eight core quality characteristics outlined by ISO/IEC 25010:2011.

The main tool employed in this study was a specially designed survey aimed at evaluating the quality of the school's information systems, based on the ISO/IEC 25010:2011 quality model. This tool included items that evaluated eight important quality attributes. For functional suitability, it examined how well each system fulfilled its intended functions; for performance efficiency, it assessed these systems' responsiveness and resource usage. The survey looked at integration and interoperability with other current technologies to gauge compatibility. Questions about usability, intuitiveness, and user satisfaction were used to gauge usability. While security-related inquiries concentrated on data protection strategies and system access control mechanisms, reliability-related topics were addressed by looking at system stability and fault tolerance capabilities. While portability involved figuring out how flexible it was to adapt such solutions across various environments if needed; maintainability factors included evaluating how easily changes or updates could be applied to systems.

To allow respondents to provide a thorough evaluation of each criterion, each item was assessed using a five-point Likert scale, with 1 denoting very ineffective and 5 denoting very effective. To guarantee validity, the survey instrument was reviewed by a panel of experts, whose recommendations were implemented to enhance its relevance and clarity.

For the quantitative analysis, survey responses were assessed by computing the mean score for each ISO/IEC 25010:2011 quality characteristic. This method allowed the researcher to evaluate how effective each system feature was based on overall ratings.

By integrating these measures, the study conducted a thorough and multidimensional assessment of the school’s information systems. Utilizing validated tools and systematic methods

ensured reliable data collection to address the primary research question and formulate actionable recommendations for system enhancements.

Data Processing

The study collected quantitative data by distributing surveys through Google Forms to 224 participants, excluding 10 part-timers and 5 Chinese teachers who were not familiar with the system. These participants included faculty, non-teaching staff, and administrators from various departments at Sacred Heart School in Ateneo de Cebu. The surveys featured Likert-scale questions aimed at evaluating perceptions of the existing information systems.

The collected data was organized using MS Excel, enabling the coding and categorization of responses to simplify analysis. To maintain its integrity, all data was securely stored and backed up.

Descriptive statistics were used to summarize the survey responses, while the weighted mean was employed to identify significant differences between departments. The findings were analyzed with reference to existing information systems literature, using the ISO 25010:2011 standard for evaluating software product quality. This framework guided the analysis in identifying patterns and making conclusions relevant to the research questions.

Moreover, the study committed to upholding rigorous ethical research standards by securing informed consent and ensuring data confidentiality, safeguarding the integrity and dignity of all participants. This careful and principled approach aimed to support SHS-AdC in effectively assessing and improving its information systems, thereby enhancing operational efficiency, fostering collaboration, and advancing the institution’s pursuit of academic excellence.

III. Results and Discussion

This section outlined the statistical outcomes of the study, emphasizing the features and functions that respondents wished to have in the new information system. The results were categorized according to the evaluation criteria for existing systems, based on ISO 25010:2011 standards. Each system's assessment was presented individually.

Overall Software Product Quality Evaluation Across All Areas

Table 1 presents the results of a software product quality evaluation in terms of Functional suitability, with an overall mean score of 2.86, reflecting moderate effectiveness. While Functional Completeness and Functional Correctness were rated as moderately effective, Functional Appropriateness highlighted areas for improvement, suggesting that the systems are not fully optimized to meet the institution's needs.

Table 1. Functional Suitability Evaluation

	Mean	**Interpretation**
Functional Suitability		
Functional Completeness	3.01	Moderately Effective
Functional Correctness	2.87	Moderately Effective
Functional Appropriateness	2.68	Moderately Effective
Over-all	**2.86**	**Moderately Effective**

Table 2 presents the results of a software product quality evaluation in terms of Performance Efficiency, which emerged as a critical issue, with an overall mean score of 2.58, categorized as ineffective. While Time Behavior and Capacity were rated as moderately effective, Resource Utilization was very ineffective, indicating significant inefficiencies in system performance and scalability.

Table 2. Performance Efficiency Evaluation

	Mean	Interpretation
Performance efficiency		
Time Behavior	2.62	Moderately Effective
Resource Utilization	1.72	Very Ineffective
Capacity	2.68	Moderately Effective
Over-all	2.58	Ineffective

Table 3 presents the results of a software product quality evaluation in terms of Compatibility, with an overall mean score of 2.58, categorized as ineffective. While Co-existence was rated as moderately effective, Interoperability was very ineffective, reflecting limited integration and interaction between the systems and other institutional platforms.

Table 3. Compatibility Evaluation

	Mean	Interpretation
Compatibility		
Co-existence	2.62	Moderately Effective
Interoperability	1.72	Very Ineffective
Over-all	2.58	Ineffective

Table 4 presents the results of a software product quality evaluation in terms of Usability, with an overall mean score of 2.54, classified as ineffective. While Appropriateness Recognizability, Learnability, and Operability were rated as moderately effective, limitations in User Error Protection, User Interface Aesthetics, and Accessibility contributed to a poor user experience and significant accessibility issues.

Table 4. Usability Evaluation

	Mean	Interpretation
Usability		
Appropriateness Recognizability	2.73	Moderately Effective
Learnability:	2.73	Moderately Effective
Operability	2.70	Moderately Effective
User Error Protection	2.34	Ineffective
User Interface Aesthetics	2.50	Ineffective
Accessibility	2.23	Ineffective
Over-all	2.41	Ineffective

Table 5 presents the results of a software product quality evaluation in terms of Reliability, with an overall mean score of 2.41, categorized as ineffective. Low scores in Maturity, Availability, Fault Tolerance, and Recoverability highlight the systems' inability to ensure stable and reliable operation.

Table 5. Reliability Evaluation

	Mean	Interpretation
Reliability		
Maturity	2.44	Ineffective
Availability	2.50	Ineffective
Fault Tolerance	2.27	Ineffective
Recoverability	2.41	Ineffective
Over-all	2.41	Ineffective

Table 6 presents the results of a software product quality evaluation in terms of Security, with an overall mean score of 2.31, indicating ineffectiveness. Although Confidentiality and Authenticity were rated as moderately effective, low scores in Integrity, Accountability, Non-repudiation, and Archivability revealed vulnerabilities in protecting sensitive data.

Table 6. Security Evaluation

	Mean	Interpretation
Confidentiality	3.08	Moderately Effective
Integrity	2.24	Ineffective
Non-repudiation	2.67	Moderately Effective
Accountability	2.53	Ineffective
Authenticity	2.71	Moderately Effective
Archivability	2.54	Ineffective
Over-all	2.31	Ineffective

Table 7 presents the results of a software product quality evaluation in terms of Maintainability, with an overall mean score of 2.33, categorized as ineffective. Modularity,

Reusability, Analyzability, Modifiability, and Testability reflect limitations in the systems' design and maintenance capabilities.

Table 7. Maintainability Evaluation

	Mean	Interpretation
Maintainability		
Modularity	2.22	Ineffective
Reusability	2.52	Ineffective
Analyzability	2.60	Ineffective
Modifiability	2.40	Ineffective
Testability	2.26	Ineffective
Over-all	2.33	Ineffective

Table 8 presents the results of a software product quality evaluation in terms of Portability, with an overall mean score of 2.41, categorized as ineffective. Adaptability was rated as moderately effective, but Installability and Replaceability indicated challenges in system deployment and adaptability.

Table 8. Portability Evaluation

	Mean	Interpretation
Portability		
Adaptability	2.62	Moderately Effective
Installability	2.38	Ineffective
Replaceability	2.24	Ineffective
Over-all	2.41	Ineffective

While the evaluation revealed moderate effectiveness in isolated areas, the overall performance of the systems is inadequate to meet the institution's needs. Performance inefficiencies, compatibility limitations, usability issues, reliability concerns, security vulnerabilities, and challenges in maintainability and portability must be addressed.

To overcome these shortcomings, Sacred Heart School - Ateneo de Cebu should prioritize a comprehensive upgrade or replacement of its current systems. This effort should focus on improving system interoperability, resolving performance and security vulnerabilities, enhancing usability through intuitive user interfaces, and implementing robust maintenance protocols. These strategic improvements will not only address current needs but also ensure scalability and adaptability for future challenges, providing a secure and efficient foundation for managing institutional data.

Discussion

This study assessed the software quality of five information systems at Sacred Heart School – Ateneo de Cebu using the ISO 25010:2011 standard, covering eight quality characteristics:

Functional Suitability, Performance Efficiency, Compatibility, Usability, Reliability, Security, Maintainability, and Portability. The overall average performance score was 2.48, indicating general ineffectiveness in supporting the school's operational and strategic goals. The Admission Information System showed moderate strength in functional suitability and security but lacked usability, portability, and reliability, limiting scalability and user experience. The Grading System was relatively effective but had issues with accessibility and recovery. The Finance System met basic needs but faced challenges in compatibility, usability, and fault tolerance. The HR and Registrar Systems scored lowest (1.64 and 1.30), showing major weaknesses across most quality dimensions, which threatens data integrity, efficiency, and user satisfaction.

Overall, the systems lack the performance, interoperability, and reliability needed for a modern academic institution. These gaps impede departmental collaboration, disrupt operations, and hinder the school's ability to deliver a seamless digital experience. To address these issues, the study recommends a strategic overhaul focusing on interoperability, user-centered design, improved reliability, and scalable, maintainable solutions to support long-term digital goals.

IV. Conclusion

The evaluation identified major issues in system performance, usability, and security, which hinder SHS-AdC's academic and administrative goals, affecting learning, efficiency, and overall effectiveness. To address these, the study recommends key initiatives focused on systems management, infrastructure, data, innovation, and user support. Priorities include automating manual processes—especially in Admissions, Registrar, and Finance—upgrading infrastructure, integrating systems, and enhancing cybersecurity. Improving integration across systems (Admissions, Registrar, Finance, Grading, Library, Clinic, etc.) will boost data synchronization and reduce inefficiencies. Performance optimization, particularly for the Grading and Finance Systems, is essential, along with increasing server capacity and upgrading network hardware to improve reliability. Cybersecurity must be strengthened through regular audits and staff training. Expanding the ICT team and upskilling existing staff—especially in cloud computing and AI—will help meet future demands. Benchmarking with institutions like Ateneo de Manila, adopting AI and cloud technologies, and developing mobile apps can enhance accessibility and decision-making. A long-term investment strategy, including partnerships and external funding, is also needed.

Finally, regular user feedback and ongoing training will support continuous improvement and user adoption. These steps will improve system reliability, security, and user experience, positioning SHS-AdC to deliver innovative, high-quality, future-ready education.

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