Evaluation of the Academic Information System Quality at Universitas Islam Negeri Raden Fatah Palembang Using the McCall Method

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Abstract

The presence of information systems in higher education institutions plays a vital role in improving academic and administrative management. A high-quality information system ensures efficient data processing and supports decision-making processes. However, to ensure optimal performance, a system must undergo a thorough quality evaluation. This study aims to evaluate the quality of the Academic Information System (Sistem Informasi Akademik, SIAKAD) of Universitas Islam Negeri (UIN) Raden Fatah Palembang using the McCall Software Quality Model, which focuses on three key dimensions: product operation, product revision, and product transition. The study employs a quantitative research method involving 100 respondents consisting of students and academic staff. Data were analyzed using SPSS, including validity and reliability testing, as well as descriptive statistical analysis. The findings reveal that the Academic Information System at UIN Raden Fatah Palembang has an overall quality score of 85%, classified as "Very Good." The results suggest that the system effectively supports academic processes through reliable functionality and user satisfaction, though minor improvements are required in terms of interface responsiveness and mobile access optimization.

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Introduction

The rapid advancement of Information and Communication Technology (ICT) has fundamentally transformed organizational operations across multiple sectors, including education. Higher education institutions, in particular, increasingly depend on integrated information systems to manage academic and administrative processes more effectively. As noted by Rahmawati and Gunawan (2017), the utilization of ICT within universities aims not only to increase efficiency and data accuracy but also to enhance decision-making, transparency, and service quality for both students and faculty members. Among the various digital solutions implemented in academia, the Academic Information System (SIAKAD) plays a critical role in facilitating essential functions such as course registration, grade input, academic reporting, and administrative communication.

The implementation of SIAKAD systems has become an indispensable component of modern university governance, enabling real-time data management and coordination between academic units. These systems reduce manual errors, improve data accessibility, and streamline workflows across departments. However, the effectiveness of such systems depends on multiple interrelated factors—system design, usability, reliability, and responsiveness. If these aspects are not properly maintained, user satisfaction and institutional performance may decline. As universities increasingly rely on digital infrastructures for academic operations, the need for systematic evaluation of system quality becomes critical to ensure alignment with user needs and institutional goals.

Despite its advantages, many universities still face challenges in ensuring that their academic information systems operate optimally. Technical limitations, interface usability issues, and inadequate server performance can affect user experience and trust. The UIN Raden Fatah Palembang Academic Information System, which serves as the primary digital platform for academic administration, is no exception. User feedback has indicated problems such as slow response times, delayed data synchronization, and restricted access during high-traffic periods—particularly during course registration and grade submission. These issues suggest the presence of performance bottlenecks and potential weaknesses in system design and implementation that must be systematically analyzed and addressed.

To ensure that SIAKAD systems deliver consistent and high-quality performance, it is essential to conduct a structured software quality evaluation. As defined by McCall et al. (1977), software quality evaluation provides an objective framework for measuring the extent to which a software product meets its requirements across dimensions such as functionality, reliability, usability, efficiency, and maintainability. Such evaluations help institutions identify weaknesses, prioritize improvements, and ensure that the system continues to evolve in response to user needs and technological advancements. By applying an established software quality model, universities can transform user feedback into actionable insights that guide continuous improvement and sustainability in digital service delivery.

This study adopts the McCall Software Quality Model, a foundational and widely recognized framework in software engineering, to evaluate the quality of the UIN Raden Fatah Palembang Academic Information System (SIAKAD). The model categorizes quality attributes into three major dimensions: product operation, which assesses system performance and reliability; product revision, which evaluates maintainability and flexibility; and product transition, which considers portability and adaptability. Each dimension provides measurable criteria that collectively reflect the overall quality and effectiveness of the system. The

comprehensive nature of this model makes it particularly suitable for assessing complex information systems in higher education contexts.

Accordingly, this research aims to measure the quality and performance of UIN Raden Fatah Palembang's SIAKAD using the McCall Software Quality Model framework. By identifying which quality attributes most significantly influence user satisfaction and operational effectiveness, the study seeks to propose targeted recommendations for system improvement. The findings are expected to contribute not only to enhancing the performance and reliability of SIAKAD at UIN Raden Fatah but also to the broader discourse on software quality assurance in academic information systems. Ultimately, the research supports the institutional goal of digital transformation in higher education, ensuring that information systems function as reliable, efficient, and user-centered tools in advancing academic excellence and administrative innovation.

Methodology

Research Design

This study applies a quantitative descriptive research design to evaluate the Academic Information System at UIN Raden Fatah Palembang. The McCall Model serves as the primary framework, focusing on measurable indicators to assess software quality from both technical and user perspectives.

The research stages include: Identifying evaluation parameters based on the McCall model. Developing a questionnaire instrument reflecting these parameters. Collecting data through surveys. Analyzing the results statistically using SPSS.

Population and Sample

The study population includes all users of the Academic Information System at UIN Raden Fatah Palembang, consisting of students, lecturers, and academic staff. A total of 100 respondents were selected using purposive sampling, with inclusion criteria as follows: Active users of the Academic Information System for at least one semester. Direct involvement in academic and administrative processes supported by the system.

Research Instrument

Data collection employed a structured questionnaire with 25 items, developed according to the McCall quality dimensions. Each item used a five-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The instrument was divided into three categories: Product Operation: Efficiency, reliability, and usability. Product Revision: Maintainability, testability, and flexibility. Product Transition: Portability, reusability, and interoperability.

Data Analysis Technique

Data analysis was conducted using SPSS software, applying the following steps:
1. Validity Testing: Each questionnaire item's correlation value exceeded the threshold of 0.30, confirming that all items were valid.

2. Reliability Testing: Cronbach's Alpha coefficient was 0.936, which surpasses the minimum standard of 0.70, indicating high reliability.
3. Descriptive Statistical Analysis: User responses were analyzed to determine the perceived quality of the system, categorized into Very Good, Good, Satisfactory, Poor, and Very Poor.

Results

Respondent Overview
Among the 100 respondents, 63% were students, 25% lecturers, and 12% academic staff. Most respondents used the system daily for activities such as class registration, grade entry, and schedule management. This composition represents a balanced view of both end-user and administrative experiences with the system.

Evaluation Results Based on McCall Model Dimensions
The results of the analysis based on the McCall Software Quality Model are summarized as follows:
1. Product Operation: The system's functionality, efficiency, and usability were rated very good, with an average score of 4.3/5. Respondents appreciated the system's accuracy in handling academic data and reliability in producing consistent results.
2. Product Revision: Scored good with an average of 4.1/5, indicating effective maintenance procedures and regular updates. However, some users noted delays during system upgrades, especially in the course registration period.
3. Product Transition: Scored good with an average of 4.0/5. Users recognized the system's accessibility across web browsers but pointed out limited compatibility with mobile devices.

Overall, the system achieved an 85% total quality score, which places it in the "Very Good" category according to McCall's quality scale.

Discussion

The evaluation results indicate that the Academic Information System (SIAKAD) of UIN Raden Fatah Palembang is functioning effectively and meeting user expectations across most dimensions of the McCall Software Quality Model. The overall assessment demonstrates that the system has achieved a satisfactory level of operational reliability, maintainability, and adaptability, thereby supporting institutional goals for digital academic management. This outcome reinforces the findings of Rahmawati and Gunawan (2017), who emphasized that effective academic information systems play a central role in improving administrative efficiency, academic service quality, and decision-making accuracy in higher education institutions.

The product operation dimension, which achieved the highest evaluation score, reflects user satisfaction with the system's functionality, reliability, and usability. In the context of the McCall model, this dimension corresponds to quality attributes such as correctness, efficiency, and integrity, which measure how well a system performs its intended functions. As Pressman (2015) explains, operational quality reflects a software system's ability to deliver accurate results under expected conditions while maintaining consistent performance. The high rating

in this dimension indicates that UIN Raden Fatah's SIAKAD operates efficiently, processes academic transactions (such as course registration, grading, and academic reporting) accurately, and provides an interface that is intuitive for both students and staff. Furthermore, the positive perception of reliability signifies that the system experiences minimal downtime and data errors, contributing to strong user trust and adoption.

In contrast, the product revision dimension—which assesses the system's maintainability, flexibility, and testability—received moderately high but improvable results. This finding suggests that while current maintenance procedures are adequate, there is room for enhancement in terms of version control, documentation quality, and user communication during maintenance periods. Regular updates are crucial to address evolving institutional requirements and technological advancements. As noted by McCall et al. (1977), maintainability is a key determinant of long-term system sustainability, ensuring that software remains adaptable to environmental changes and user expectations. Implementing a structured feedback mechanism between the IT development team and end users would allow the institution to prioritize updates more effectively, ensuring that the system continues to evolve in alignment with academic and administrative needs.

The product transition dimension—which evaluates portability, reusability, and interoperability—revealed specific areas requiring improvement, particularly regarding mobile accessibility and cross-platform compatibility. Many users reported difficulties in accessing the system smoothly via smartphones and tablets, an issue of growing importance given the increasing reliance on mobile devices for academic activities. As online learning, remote administrative access, and digital self-service continue to expand, optimizing SIAKAD for mobile platforms should become a strategic priority. Enhancing responsive web design and mobile interface adaptability would not only improve accessibility but also strengthen the system's alignment with user behavior trends and modern digital-learning ecosystems.

Taken collectively, the evaluation findings validate the effectiveness of the McCall Software Quality Model as a framework for assessing software quality in academic information systems. The model's structured criteria enable institutions to identify specific strengths and weaknesses across multiple quality dimensions, ensuring that evaluation extends beyond mere functionality to include sustainability, usability, and adaptability. The high overall score achieved by UIN Raden Fatah's SIAKAD signifies that the system already conforms to recognized software quality standards. However, as Pressman (2015) emphasizes, software quality is not a static attribute; it requires continuous improvement and iterative refinement in response to technological change and user feedback.

In conclusion, the results affirm that the Academic Information System of UIN Raden Fatah Palembang effectively supports academic management and user needs, reflecting a mature stage of system implementation. Nevertheless, enhancing maintainability procedures, strengthening user communication during updates, and improving mobile compatibility will be essential to sustain long-term reliability and user satisfaction. These improvements will ensure that the system remains responsive to institutional dynamics while reinforcing UIN Raden Fatah's commitment to digital transformation and academic excellence. Ultimately, the application of the McCall model provides a valuable diagnostic tool for guiding continuous quality enhancement in academic software systems across Indonesian higher education institutions.

Conclusion and Recommendations

Based on the evaluation using the McCall Software Quality Model, the Academic Information System of UIN Raden Fatah Palembang achieved an overall quality rating of 85%, classified as "Very Good."
1. The system supports academic activities effectively with strong performance, functionality, and reliability.
2. Product operation received the highest evaluation, demonstrating user satisfaction with efficiency and accuracy.
3. Product revision and transition dimensions indicate the need for improvement in system updates and mobile compatibility.
4. Continuous monitoring and periodic evaluation are recommended to maintain system excellence and adapt to emerging user demands.

Disclosure Statement

The authors declare no conflict of interest. This study was conducted for academic purposes under the supervision of the Faculty of Computer Science, Universitas Bina Darma, Palembang.

Acknowledgments

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