

The Role of the Academic Management Information System (SIMAK) in Enhancing Educational Management Effectiveness and Service Quality

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Abstract

The Academic Management Information System (SIMAK) is a strategic tool in modern educational governance as it serves to integrate academic data, streamline administrative processes, and improve the quality of services provided to the academic community. This study aims to analyse the role of SIMAK in enhancing the effectiveness of management and the quality of educational services. The research utilised a literature review (library research) employing a descriptive qualitative approach. Data were obtained from various scholarly sources, including books, journals, articles, and relevant research findings. The results indicate that SIMAK plays a significant role in improving the efficiency of academic administration, the accuracy of data management, the transparency of information, and the quality of services provided to students and teaching staff. Furthermore, SIMAK supports data-driven decision-making and strengthens the effective governance of educational institutions. However, the implementation of SIMAK still faces challenges in the form of limitations in technological infrastructure, human resource competencies, and data security. Therefore, a sustainable development strategy is required to ensure that the utilisation of SIMAK can provide optimal benefits for improving the quality of education.

Keywords: Academic Management Information System (SIMAK), Digital Transformation, Management Effectiveness, Quality of Educational Services.

1. Introduction

Advances in information and communication technology have brought about significant changes across various sectors of life, including the education sector. In the context of higher education, academic information systems form a vital foundation for the integrated management of data relating to students, lecturers, the curriculum, timetables, assessment and administrative services (Thelma et al., 2024). These changes are not merely technical in nature, but also structural, as they affect the working practices of educational organisations, service relationships with users, and the quality of institutional governance.

The digital age demands that educational institutions be able to manage information quickly, precisely and accurately. They are also required to provide high-quality services to all stakeholders, including students, educators, support staff, parents and the wider community. This is necessary to deliver effective and efficient services, and requires an information management system capable of integrating all academic activities within a single, structured platform (Maharani & Yeni, 2026). Academic data management that is still carried out manually often gives rise to various challenges, such as delays in service delivery, data recording errors, duplication of information, and low work efficiency (Laudon & Laudon, 2004).



The Academic Management Information System (SIMAK) serves as one solution to address these various academic management issues. SIMAK is an information technology-based system designed to manage various academic data and processes in an integrated manner (Jamil & Azis, 2025). This system covers the management of student data, timetables, curricula, marks, attendance, and academic reporting (Oktora & Sa'ud, 2019). From an educational management perspective, this is crucial because the effectiveness of management is no longer measured solely by the completeness of administrative records, but also by response times, the accuracy of services, and user satisfaction (Winoto et al., 2026).

SIMAK plays a central role in enhancing the effectiveness of educational management as it unifies previously fragmented administrative processes into a single integrated platform. This integration facilitates the management of data relating to students, lecturers, the curriculum and other academic activities, thereby making work processes more efficient and measurable. In the context of educational management, this efficiency translates to a reduction in duplication of work, a minimisation of data entry errors, and improved timeliness of services (Rerung & Ramadhan, 2018).

From a managerial perspective, SIMAK strengthens the functions of planning, implementation, monitoring, and evaluation. Systematically stored academic data can be used by institutional leaders to analyse trends in attendance, learning outcomes, teaching workload, and resource requirements (Majid, 2023). Consequently, the decisions made become more evidence-based and do not rely solely on administrative intuition. This is one tangible example of SIMAK's contribution to the effectiveness of educational management (Sallis, 2014).

The implementation of SIMAK serves not only as an administrative tool but also as a strategic instrument in supporting managerial decision-making. The information generated through SIMAK can be used by the leadership of educational institutions to formulate appropriate policies aimed at improving the quality of education. As such, SIMAK plays a vital role in realising effective, transparent and accountable educational governance (Mulyasa, 2013). Furthermore, from the perspective of service quality, SIMAK helps to improve the accessibility and speed of services for students, lecturers and educational staff. Students can access academic information at any time without having to visit the administration office in person, whilst lecturers find it easier to enter marks, record attendance and monitor lectures (Soedjono, 2022).

Nevertheless, the implementation of SIMAK has not always been optimal. A number of studies have reported a gap between user expectations and system performance, particularly regarding the security of personal data, system navigation, and the quality of service interactions. The effectiveness of SIMAK is not automatically achieved simply because the system is available. The quality of the system is greatly influenced by the readiness of human resources, infrastructure support, and sound data governance. While prior studies have generally examined SIMAK's technical performance, service quality, or implementation challenges as separate concerns, this review's contribution lies in synthesizing these strands into a single integrated framework, linking SIMAK's role across three levels of management effectiveness (operational automation, data integration, and data-driven decision-making) with a reconceptualization of the SERVQUAL service quality dimensions within the SIMAK ecosystem. Therefore, this study is important to explain how SIMAK plays a role in improving the effectiveness of management and the quality of educational services, while identifying the factors that determine its success.

2. Literature Review

2.1. Academic Management Information System (SIMAK)

An academic information system is a technology-based system designed to manage academic data and information in a structured manner, ranging from registration, course registration forms (KRS), academic transcripts (KHS), timetables, attendance records, to academic reporting. In practice, this system facilitates faster service delivery and reduces reliance on error-prone manual processes. Academic information systems are also closely linked to good educational governance. A professionally managed system can support transparency, accountability and data integration across organisational units.

At the institutional level, SIMAK is not merely an administrative record-keeping tool, but also a strategic instrument for strengthening institutional management and the quality of educational services. In terms of service quality, SIMAK can be analysed through the dimensions of usability, information quality and service interaction quality. The WebQual and Importance Performance Analysis (IPA) approaches show that accurate and relevant information tends to increase user trust, whilst weaknesses in data security and user interfaces can lower perceptions of service quality (Syaifullah & Soemantri, 2016).

2.2. Management Effectiveness

Effectiveness in educational management refers to an institution's ability to carry out the functions of planning, organizing, implementing, and evaluating in an appropriate, timely, and accurate manner (Mulyono, 2008). In the context of SIMAK, management effectiveness is reflected in a reduction in the manual administrative workload, improved data accuracy, and the creation of more efficient work processes. An integrated system enables management and academic staff to access information in real time, allowing decisions to be made based on up-to-date data.

2.3. Quality of Educational Services

Educational services encompass all forms of academic and administrative support provided to students, lecturers and educational staff. Epistemologically, the quality of educational services is a multidimensional concept that integrates the principles of service quality management into the academic ecosystem. In an academic context, service quality is not merely defined as 'free from defects', but rather as the degree of alignment between the expectations of stakeholders, particularly students, parents and the wider community, and the reality of the services provided by the educational institution.

The quality of educational services is largely determined by response speed, accuracy of information, ease of access, and a sense of security when using digital services. This is because the quality of educational services reflects the extent to which an educational institution is able to meet the needs and expectations of users of educational services. According to the concept of Total Quality Management (TQM), service quality is determined by effectiveness, efficiency, reliability, responsiveness, and user satisfaction. In this context, SIMAK plays a role in improving service quality by providing information that is faster, more accurate, and easily accessible at any time.

2.4. Digital Transformation

Digital transformation in education is the process of shifting from manual working systems to digital technology-based systems that are more integrated, adaptive and efficient. This transformation encompasses not only the use of software but also changes in organisational culture, communication patterns and decision-making models. In the context of educational management, digital

transformation drives the emergence of information systems capable of connecting various service components within a single integrated ecosystem.

From an educational management perspective, SIMAK is a tangible manifestation of digital transformation. This system acts as a bridge between academic administrative needs and the demands of modern, technology-based services. When SIMAK is managed effectively, digital transformation not only yields internal efficiency but also enhances the quality of the relationship between the institution and service users. Therefore, digital transformation and SIMAK are two mutually reinforcing concepts in the endeavour to build an education system that is adaptable to the changing times.

Nevertheless, digital transformation is not without its challenges. The main obstacles that frequently arise are resistance to change, infrastructure limitations and the need for staff training. In many cases, educational institutions already possess digital tools but have not yet been able to fully integrate them into effective work processes. Consequently, digital transformation must be understood as an organisational process requiring leadership commitment, staff readiness and institutional policy support.

3. Methods

This study employs a literature review method using a qualitative descriptive approach. Data were obtained from various sources of literature, such as books, scientific journals, research articles, seminar proceedings and official documents relating to the Academic Management Information System. This approach was chosen because the study aims to examine in depth the concepts, roles and implications of the Academic Management Information System (SIMAK) in improving the effectiveness of management and the quality of educational services in the era of digital transformation. The descriptive qualitative approach enables the researcher to understand the phenomenon conceptually, systematically and comprehensively through a review of various relevant scientific sources.

The data sources for this study consist of secondary data obtained from various scientific journal articles, conference proceedings, academic books, and scientific publications discussing SIMAK, educational management, the quality of educational services, and digital transformation. The literature was selected based on criteria of thematic relevance, the recency of the information, the credibility of the publisher, and direct relevance to the research variables.

The data collection process was carried out through a literature search on various academic databases, such as Google Scholar, Scopus, and Dimensions, using keywords such as “Academic Management Information System (SIMAK)”, “Management Effectiveness”, “Educational Services”, and “Digital Transformation”.

Data analysis was carried out using content analysis and thematic analysis techniques. In qualitative methods (particularly library research), content analysis does not merely count the frequency of word occurrences (a quantitative approach), but focuses on latent content (Zed, 2017), that is, the deepest, implicit meanings and textual nuances contained within the scientific documents, regulations, and literature under review. The process began with data reduction (coding), the systematic presentation of data, and the drawing of conclusions (verification) in order to construct a solid theoretical synthesis regarding the role of SIMAK.

4. Results and Discussion

4.1. SIMAK as a Catalyst for Effective Educational Management

The effectiveness of management within educational institutions is measured by the extent to which an organisation is able to achieve its strategic objectives through the optimal utilisation of resources. Based on a review of the literature, SIMAK transforms educational management at three main levels. Firstly, Operational Automation and Bureaucratic Efficiency, transactional processes such as completing Study Plan Forms (KRS), lecturers entering marks, timetabling lectures, and verifying graduation, which previously took weeks, can now be completed instantly. The reduction in paperwork directly reduces operational costs (cost-efficiency).

Secondly, about data integration and minimum redundancy. Prior to the SIMAK era, student data was often scattered across various departments (the Academic Affairs Office, Finance, and Faculties), leading to data inconsistencies. SIMAK applies the Single Source of Truth (SSoT) principle, whereby a single centralised database serves all the organisation's needs. And finally, Acceleration of Data-Driven Decision-Making: designed for institutional leaders (Rector, Deans, Heads of Study Programmes), SIMAK provides an analytical dashboard presenting real-time data on the lecturer-to-student ratio, trends in the Cumulative Grade Point Average (CGPA), on-time graduation rates, and budget utilisation. This information is crucial for curriculum evaluation and the formulation of evidence-based policy.

Theoretically, SIMAK's role as a catalyst confirms the principles of Modern Systems Theory, which states that a reliable technological subsystem will strengthen an organisation's superstructure. SIMAK compels educational institutions to shift from a 'reactive-traditional' work culture towards a 'proactive-digital' one. The management effectiveness resulting from SIMAK's acceleration ultimately becomes the cornerstone of achieving good university governance.

Recent research indicates that the success of SIMAK's implementation is largely determined by the quality of the system, the quality of the information, and the quality of the services provided. A study at Darunnajah University found that SIMAK plays a significant role in improving the operational efficiency of education, but the quality of SIMAK's website services still requires improvement, particularly in certain aspects of the user experience (Jamil & Azis, 2025). These findings demonstrate that academic information systems must be continuously evaluated to ensure they remain aligned with user needs and technological developments.

On the other hand, studies evaluating SIMAK-type systems using frameworks such as the HOT-FIT method have found that obstacles such as login difficulties, an unattractive interface, incomplete features, and a lack of up-to-date information can reduce the system's success rate. This underscores that a good SIMAK is not merely a system that is accessible, but also one that is user-friendly, secure, and relevant to ever-changing academic needs.

4.2. The Impact of SIMAK on the Quality of Educational Services

The quality of educational services can be analysed through the SERVQUAL dimensions proposed by Parasuraman et al. (1988), which have subsequently been adapted to the context of the digital ecosystem. These dimensions, summarized in Table 1, illustrate the shift from conventional to digital system-based governance across five areas.

Table 1. Matrix for the Reconceptualization of the SERVQUAL Dimensions within the SIMAK Ecosystem

SERVQUAL Dimension	Manifestations of Conventional Governance	Digital System-Based Transformation (SIMAK)
Tangibles	a) Fragmentation of physical administrative spaces b) Accumulation of paper documents (paper-heavy) c) Physical queues at service counters	a) Intuitive user interface (UI) architecture b) Responsive and adaptive system design across devices (mobile-friendly)
Reliability	a) Vulnerability to distortion, loss or damage to physical records. b) High risk of human error due to manual data entry	a) Precise automated calculations for academic transcripts (GPA/credit points) b) Centralised data integrity through the Single Source of Truth (SSoT) principle c) Implementation of an automated data backup mechanism
Responsiveness	a) A linear document approval process b) The lead time for document processing takes several days	a) Self-service features b) Instant issuance of digital documents based on Electronic Signatures (TTE)
Assurance	a) Information asymmetry regarding regulations and academic requirements b) Subjective and non-transparent operational procedures	a) Legal certainty through regulatory transparency integrated into the system b) User privacy protection through the implementation of cyber encryption protocols
Empathy	a) Rigid restrictions on service accessibility (limited to formal office hours).	a) Unrestricted asynchronous access (24/7) b) Integration of an adaptive complaints channel (helpdesk system)

Source: Processed data

Table 1 shows that this transformation unfolds differently across each dimension. Under Tangibles, the shift from fragmented physical administrative spaces, paper-heavy documentation, and physical queues toward an intuitive, mobile-friendly user interface reflects a move from physical to digital infrastructure as the primary point of user contact. Under Reliability, replacing manual data entry (with its risk of distortion, loss, or human error) with automated transcript calculations, centralized data integrity through the Single Source of Truth (SSoT) principle, and automated backup mechanisms directly addresses the data integrity concerns raised earlier.

Under Responsiveness, the shift from a linear, multi-day document approval process to self-service features and instant, Electronic Signature-based document issuance reduces the lead time that previously constrained service delivery. Under Assurance, moving from information asymmetry and non-transparent procedures toward regulatory transparency and cyber encryption protocols directly connects to the cybersecurity threats discussed elsewhere in this review: the same encryption protocols positioned here as a service quality improvement also serve as the safeguard needed against the data breaches and grade manipulation risks identified as a structural barrier to SIMAK implementation. Under Empathy, replacing rigid, office-hours-only accessibility with unrestricted asynchronous access and an adaptive helpdesk channel extends service availability beyond the constraints of conventional governance.

Through this digital transformation, the satisfaction levels of students, lecturers and parents have increased linearly. Students can monitor their academic progress independently, whilst lecturers can devote more time to carrying out the three pillars of higher education (education, research and community service) rather than being bogged down by administrative burdens. Studies on user perceptions of SIMAK-type systems indicate that the quality of the system's services is a key factor in determining user satisfaction, while research on the quality of academic information systems more broadly has found that the security of personal data remains a priority for improvement in digital academic services. This suggests that SIMAK-based educational services must prioritise a balance between efficiency, convenience and the protection of user data.

4.3. Challenges and Obstacles to Implementation

Although SIMAK offers significant functional benefits, a review of the literature indicates that there are several structural and cultural barriers to its implementation:

- 1) Resistance to Change: Senior administrative staff or lecturers are often reluctant to adapt to new systems due to limited digital literacy (technophobia).
- 2) Infrastructure Gaps: Unstable internet connections and a lack of supporting hardware in some areas lead to system malfunctions.
- 3) Cybersecurity Threats: Academic databases are vulnerable to cyber-attacks such as personal data breaches or the manipulation of grades by unauthorised parties. Therefore, the implementation of encryption protocols, firewalls and regular cybersecurity audits is absolutely essential.

A study on improving the efficiency of academic data management shows that an integrated management information system is capable of improving workflows and minimising administrative barriers. This indicates that the effectiveness of management is determined not only by the existence of a system, but also by how that system is integrated into the organisation's working culture. If SIMAK is utilised to its full potential, educational institutions can boost work productivity and strengthen managerial accountability.

A number of studies (Aljanazrah et al., 2022; Mhlanga, 2024; Singun, 2025) indicate that digital transformation presents several challenges and obstacles. The main obstacles that frequently arise are resistance to change, infrastructure limitations, and the need for staff training. In many cases, educational institutions already possess digital tools but have not yet been able to fully integrate them into effective work processes. Therefore, digital transformation must be understood as an organisational process requiring leadership commitment, human resource readiness, and institutional policy support.

5. Conclusion

The implementation of the Academic Management Information System (SIMAK) plays a vital and strategic role in the modern education ecosystem. Based on various sources, it can be concluded that SIMAK plays a key role in supporting effective, efficient, and accountable education management. This system also contributes to the improvement of educational services through access to information that is fast, accurate, and user-friendly. Meanwhile, digital transformation serves as a broad framework driving educational institutions to continually adapt to technology in order to strengthen the quality of services and academic governance.

Therefore, the development of SIMAK must be accompanied by concrete institutional action on three fronts. First, system quality should be evaluated on an ongoing basis, specifically addressing the interface, login reliability, feature completeness, and information currency issues identified as recurring weaknesses in prior evaluative studies, rather than treating system deployment as a one-time project. Second,

institutions should invest in structured digital literacy and technical training for administrative staff and lecturers to reduce resistance to change and technophobia, paired with infrastructure investment (stable internet connectivity and adequate hardware) in areas where these gaps have been identified as barriers to system reliability. Third, institutional policy should mandate specific data security standards, including encryption protocols, firewalls, and regular cybersecurity audits, given the vulnerability of academic databases to breaches and unauthorized grade manipulation. Without such support, SIMAK risks becoming merely a formalistic system that fails to deliver substantive impact. With the right approach, SIMAK can become a strategic instrument in realizing effective educational management and high-quality services.

Consequently, this literature review emphasizes that SIMAK should not be understood merely as an administrative tool, but rather as a strategic element in the development of educational quality. The success of its implementation requires alignment between the system, human resources, leadership, and institutional policies. Consequently, research on SIMAK remains relevant to be examined within the context of enhancing the effectiveness of management and the quality of educational services in the era of digital transformation.

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