



## Optimization of Management Information Systems (MIS) in Improving the Quality of University Libraries

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### Abstract

**Keywords:**

Data-Based  
Evaluation;  
Library  
Management;  
Management  
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System;  
Qualitative  
Case Study;  
Strategic  
Planning;

The development of library digitization in Indonesia still faces obstacles, especially in planning and evaluating service quality, which is not yet fully data-driven. Management Information Systems (MIS) offer strategic solutions through real-time transaction recording, objective data presentation, and evidence-based decision-making support. This study aims to analyze the role of MIS in library management planning and evaluation, while formulating strategies for improving service quality based on data. The qualitative research method, with a case study approach, is focused on implementing MIS in university libraries. Data collection techniques include in-depth interviews, participatory observation, and documentation, with validity maintained through triangulation. The study results show that MIS plays a significant role in service effectiveness, facilitates user access, improves reporting accuracy, and strengthens data-based evaluation. Quality improvement strategies were implemented through strengthening human resource competencies, developing data-driven Standard Operating Procedures (SOP), digitizing services, and utilizing analytical dashboards. These implementations demonstrate that libraries can become more responsive, efficient, and adaptive to the digital literacy needs of the academic community. Optimizing MIS is crucial for developing sustainable and inclusive library quality management.

**Abstrak:****Kata Kunci:**

Evaluasi Berbasis  
Data; Manajemen  
Perpustakaan;  
Sistem Informasi  
Manajemen; Studi  
Kasus Kualitatif;  
Perencanaan  
Strategis;

Perkembangan digitalisasi perpustakaan di Indonesia masih menghadapi berbagai hambatan, terutama dalam perencanaan dan evaluasi kualitas layanan, yang belum sepenuhnya didasarkan pada data. Sistem Informasi Manajemen (SIM) menawarkan solusi strategis melalui pencatatan transaksi secara real-time, penyajian data yang objektif, dan dukungan pengambilan keputusan berbasis bukti. Studi ini bertujuan untuk menganalisis peran SIM dalam perencanaan dan evaluasi manajemen perpustakaan, serta merumuskan strategi untuk meningkatkan kualitas layanan berdasarkan data. Metode penelitian kualitatif dengan pendekatan studi kasus difokuskan pada implementasi MIS di perpustakaan universitas. Teknik pengumpulan data meliputi wawancara mendalam, pengamatan partisipatif, dan dokumentasi, dengan validitas dijaga melalui triangulasi. Hasil penelitian menunjukkan bahwa MIS memainkan peran signifikan dalam efektivitas layanan, memudahkan akses pengguna, meningkatkan akurasi pelaporan, dan memperkuat evaluasi berbasis data. Strategi peningkatan kualitas diimplementasikan melalui penguatan kompetensi sumber daya

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manusia, pengembangan Prosedur Operasional Standar (SOP) berbasis data, digitalisasi layanan, dan pemanfaatan dashboard analitis. Implementasi ini menunjukkan bahwa perpustakaan dapat menjadi lebih responsif, efisien, dan adaptif terhadap kebutuhan literasi digital komunitas akademik. Optimasi MIS sangat penting untuk mengembangkan manajemen kualitas perpustakaan yang berkelanjutan dan inklusif.

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## I. INTRODUCTION

The ideal concept of university library management emphasizes integrating information services, using digital technology, and implementing quality-based management to support the maximum implementation of the three pillars of higher education. Libraries are no longer merely seen as storage spaces for collections but function as collaborative, adaptive learning centers supported by data utilization. University libraries should be developed as flexible learning commons digitally connected to the academic ecosystem (Sweeney, 2008). In this context, adaptive managerial strategies and the utilization of information systems play a crucial role in ensuring the quality, accessibility, and ease of access to information services, while supporting sustainable academic innovation (Rowley & Hartley, 2017).

Automating and digitizing library services in Indonesia is still relatively slow and uneven across institutions. Most libraries have not yet fully adopted automation systems, so digitization is generally limited to providing online catalogs (OPAC). Meanwhile, bibliometric findings indicate that although the number of studies on digital libraries has increased since the COVID-19 pandemic, the primary focus remains on service theory and collection development, rather than user-centered digital system applications (Ilyasa dkk., 2025). Additionally, there are still several weaknesses in resource management and limitations in disseminating practical innovations nationally (Ansar dkk., 2024).

The quality of library management is often hampered by weak planning and evaluations that are not fully data-driven, resulting in strategic decisions that do not fully reflect the real needs of users. In many libraries, especially in schools and universities, reporting systems are still manual and subjective, without integrated information support (Sweeney, 2008). This situation impacts the effectiveness of services, limits accountability, and delays responses to digital literacy demands. Meanwhile, a Management Information System (MIS) can record real-time transactions, user preferences, and service performance (Roy, 2025). This situation underscores digital transformation's importance in building data-driven quality management capable of creating adaptive and professional libraries.

Studies on data-driven planning and evaluation strategies through MIS

in library management, systematically integrated with data analytics and information systems in the context of quality improvement, remain limited (Sukula dkk., 2023). Recent research confirms that big data analytics can improve library users' operational efficiency and service quality (Blummer & Kenton, 2018; Buchanek, 2023). Evaluation methods based on the Analytical Hierarchy Process (AHP) and fuzzy comprehensive evaluation also show a new trend in service performance measurement (R. Zhang, 2022). On the other hand, the organization's readiness for data-based decisions still needs to be significantly improved (Li dkk., 2024).

In the digital transformation era, libraries must function as information providers and institutions capable of managing services effectively, accountably, and responsively to change. Management Information Systems (MIS) are seen as having a strategic role in providing real-time data that supports evidence-based decision making. However, its implementation in various institutions is still limited and has not been carried out in a structured manner. Given this situation, this study aims to examine the integration of MIS in library management planning and evaluation. The objectives of this research include: first, identifying the contribution of MIS to planning and evaluation; second, formulating strategies for improving data-driven management quality through optimizing MIS.

This study is expected to produce a strategic overview of the role of Management Information Systems (MIS) in strengthening data-based library management planning and evaluation. The main findings will identify key MIS elements that improve service quality, such as collection management efficiency, reporting accuracy, and real-time performance monitoring. This research will also formulate effective and adaptive MIS implementation strategies tailored to library needs, particularly in school and university environments.

## **II. METHOD**

This study uses a qualitative method with a case study approach selected to examine the data-based planning and evaluation process in university libraries. Through case studies, researchers can understand management information systems (MIS) implementation in a real context, including service documentation, report preparation, and decision-making processes. This approach allows for a more comprehensive analysis of data-driven management practices, including how human resource involvement improves service effectiveness. Additionally, this method enables the identification of library quality improvement strategies supported by a comprehensive and contextual information system.

This research was conducted over three months, from May to July 2025, at the National Islamic Institute (IAIN) Laaroiba, Bogor. This location was selected based on the institution's readiness to implement the Management Information System (MIS) and its commitment to improving the quality of data-based library services. During the research period, the researcher conducted fieldwork to document all management activities that utilized the MIS in

planning and evaluating services.

The data in this study includes: First, data related to the role of the Management Information System (MIS) in supporting the planning and evaluation processes of library management, including service effectiveness, ease of access, reporting accuracy, and user involvement in evaluations. Second, data on strategies for improving the quality of data-based library management through MIS optimization, such as strengthening human resources, standardizing data-based services, digitizing access, and using analytical dashboards. Data sources were obtained from key informants: library heads, librarians, system administrators, and active users (students and lecturers), who were selected randomly.

Table 1 Data and Data Sources

No	Data Type	Key Indicators	Data Sources
1	The role of MIS in library management planning and evaluation	Service effectiveness, ease of access, automatic reporting, survey-based evaluation, and MIS data	Library director, librarians, students, faculty
2	Data-driven library management quality improvement strategies through MIS optimization	Human resource development, data-driven SOPs, service digitization, analytical dashboards, collection planning	Library director, librarians, MIS administrators, students

In this study, data collection was conducted through in-depth interviews as the primary method to gain a detailed understanding of the informants' experiences, perspectives, and practices in implementing MIS in library management. The semi-structured interviews allowed flexibility while remaining focused on the research indicators. As supporting techniques, participatory observation and document analysis were used to verify interview findings, including MIS-based service activities, dashboard utilization, and report documents and SOPs. The researcher was the primary instrument in this process, supported by tools such as voice recorders, cameras for visual documentation, and writing instruments to systematically and regularly record field data.

Data validity in this study was maintained through source and method triangulation techniques to ensure the validity and consistency of the findings (Paulus & Lester, 2022). Triangulation was carried out by comparing the results of in-depth interviews with various informants (library heads, librarians, MIS managers, students, and lecturers) with the results of direct observation and documentation in the form of MIS reports, meeting minutes, and service SOPs. Additionally, data credibility was strengthened through the researcher's intensive involvement in the field for three months, enabling a deep contextual understanding. Member checks were also conducted by confirming interview results with informants to avoid interpretive bias. This procedure ensures the data is valid, reliable, and scientifically accountable.

Data analysis in this study uses the interactive model by Miles and Huberman, which includes three main stages: data reduction, data presentation, and concluding/verification (Miles & Huberman, 2014). In the data reduction stage, the researcher filtered and summarized the interview, observation, and documentation data into main themes in line with the research focus, such as the role of MIS and strategies for improving library quality. Data presentation was carried out using matrices and tables to make it easier for the researcher to see patterns, relationships between categories, and dynamics between actors. Conclusions are drawn gradually and continuously verified with field data to maintain the validity of interpretations. This cyclical process allows for a deep and reflective understanding of the phenomenon being studied.

### **III. RESULTS AND DISCUSSION**

#### **1. Result**

##### **A. The Role of MIS in Library Planning and Evaluation**

Based on observations at the research site, researchers found that the management information system has been actively used to record all service activities, from circulation to visit statistics. The dashboard displayed to researchers showed real-time and structured data on borrowing and collection preferences. Several monthly reports were automatically generated through the system and became material for discussion in internal library coordination meetings. These findings reinforced the library head's statement that MIS supports service effectiveness and speeds decision-making.

*"MIS greatly affects service effectiveness, because all administrative and circulation activities are now documented digitally and in real time. We can immediately see visit data, popular collection types, and borrowing reports quickly. This makes decision-making more efficient and accurate"* (Mulyadi, personal communication, May 20, 2025).

Interviews with students showed that using MIS has significantly improved access to services. Students can check the availability of collections and renew loans without visiting the library in person. This experience confirms that digitizing services through MIS provides convenience and efficiency that were not found in the previous manual system.

*"Library services have become much more practical and faster. I can check book availability from home and even renew loans online. This system is very convenient, especially compared to the previous manual system"* (R. Amelia, personal communication, June 24, 2025).

Librarians regularly access statistical reports from the MIS to monitor the types of collections most frequently used by students. Search histories and borrowing transactions are neatly recorded in the system and used as a basis for meetings to propose new book acquisitions. This proves that the collection development process and service programs are truly data-driven.

*"We use data from the MIS to propose collections that are more relevant and frequently sought after by students. The MIS also stores user needs history, useful when planning future service programs. So it is not just*

*guesswork, but based on concrete data"* (F. Handayani, personal communication, May 22, 2025).

Based on observations and documentation, researchers found that libraries regularly distribute information needs and service satisfaction surveys through an online platform connected to the MIS. The survey results are documented in graphs and digital reports, showing that user input is part of the service evaluation process.

*"I have noticed that the library now regularly conducts updates and surveys. Perhaps this is because data from the MIS is used as the basis for evaluation. I feel more valued as a user because our voices are recorded in the system"* (A. Riyanto, personal communication, May 22, 2025).

Through observations, researchers noted that the MIS automatically generates periodic statistical reports covering borrowing data, visit frequency, and staff service activities. These reports are used in internal library evaluation forums, indicating that the performance evaluation process is now data-driven, as stated by the library director below.

*"The MIS provides reports that are very helpful in periodic evaluations. We can assess user activity, collection effectiveness, and staff performance through the system logs. Evaluations are no longer just opinions but are based on objective data"* (Mulyadi, personal communication, May 20, 2025).

The observation results show that the library regularly holds monthly coordination meetings involving librarians to discuss MIS reports. The meeting documentation shown to researchers contains statistical data on service usage and strategic decisions such as adjusting operating hours and implementing literacy classes. This finding reinforces that MIS data serves as an objective basis for service decision-making processes, as stated by the library director.

*"We are involved in monthly meetings that discuss MIS data. From there, decisions emerge, such as changes to service schedules, the launch of literacy classes, or extended operating hours. Data makes discussions more objective and measurable"* (Mulyadi, personal communication, May 20, 2025).

The Management Information System (MIS) has significantly supported library management's effectiveness, planning, and evaluation. SIM facilitates services and access for users and serves as the primary tool for more objective and measurable decision-making. All these findings indicate that data-based MIS integration can strengthen library governance toward a responsive and adaptive quality management system.

## B. Strategy for Improving Library Quality Through MIS

The strategy for improving library management quality is carried out through a comprehensive and sustainable approach. The primary focus of this strategy includes improving the quality of human resources, updating collections to suit user needs, and transforming services towards digitalization. Additionally, external collaboration with information resource providers is part of the effort

to expand access and strengthen service functions. Researchers also note that routine internal evaluations serve as a quality control mechanism that drives consistent service improvements year after year.

*"The strategies we implement include strengthening human resource competencies, updating collections based on user needs, and digitizing services. We also collaborate with other institutions to gain access to open resources. The consistency of internal evaluations has improved our services yearly"* (D. Pratama, personal communication, June 17, 2025).

The researchers' observations show that the library has organized its service flow with a more user-friendly approach, including providing digital service guides and an online queuing system. In the librarians' workspace, the researcher found SOP documents compiled based on statistical reports from the MIS, reflecting data-driven standardization efforts. Additionally, there is evidence of routine evaluations in meeting minutes and user feedback forms used as the basis for service improvements.

*"One of the most effective strategies is to make services more user-friendly and accessible. We also propose the development of SOPs based on statistical data from the MIS to standardize services. Routine evaluations are the basis for refining every operational aspect"* (B. Santoso, personal communication, June 26, 2025).

Based on observations and documentation, researchers found that librarians actively access statistical reports from the MIS to develop annual work plans, including information literacy activities and new user training. The planning documents shown contain graphs of collection usage and visit patterns, which are the basis for determining service priorities. This shows that decision-making in the librarian environment is now based on measurable data, not assumptions, and is in line with the following informant's statement.

*"Data-driven management means we no longer work based on assumptions, but on clear statistics. We use MIS data to design literacy programs, user training, and collection proposals. All of this increases trust in library management"* (A. Riyanto, personal communication, May 22, 2025).

The MIS system used in the library is equipped with an interactive dashboard feature that displays borrowing data, visitor statistics, and collection statistics in an easy-to-read visual format. The system can be accessed by management and technical staff to support quick, evidence-based decision-making. Researchers also noted regular system updates aimed at improving data accuracy and ease of interpretation, as stated by library managers in the following interview.

*"We continue to refine the system to provide insights that management can access quickly. All data can be interpreted and acted upon with dashboard technology and visual analytics. This system benefits the library director and technical staff"* (D. Pratama, personal communication, June 17, 2025).

The observation results show that students can access various library services online through the MIS, including searching for collections, borrowing, and renewing books. Researchers also found from data in documentation in the form of system screenshots and user guides that support the findings that the services are real-time, easy to use, and support the learning process without having to be physically present in the library.

*"For us, an optimal MIS is easy to use and always up to date. If the information is accurate and access is smooth, it certainly facilitates research and learning. The effectiveness is felt when all services can be done without coming directly"* (S. Kurniawati, personal communication, June 25, 2025).

Observations show that the library information system has automatic reporting features and visual analytics accessible to the entire team through their accounts. Researchers also noted that library leadership actively utilizes the data presented as an archive and in evaluation meetings and service planning.

*"We designed the system to generate automatic reports that all team members can read. We made the analytics feature interactive so the library director can use it directly for evaluation and planning. Data becomes a guiding tool, not just an archive"* (Mulyadi, personal communication, May 20, 2025).

The researcher's observations show that the library actively monitors journal access and borrowing data through the MIS to determine the need for additional collections. There is documentary evidence in the form of usage statistics reports used as the basis for acquiring new collections, reflecting that user aspirations are honestly responded to based on data.

*"As a user, I feel that our aspirations are given more attention. For example, when many users access a particular journal, the collection is immediately expanded. I believe such decisions are based on data, not just verbal requests"* (Wulandari, personal communication, June 26, 2025).

Table 2. Research Findings

No	Research Focus	Findings
<b>The Role of MIS in Library Planning and Evaluation</b>		
1.1	Effectiveness of services through MIS	MIS records service activities in real time and generates automatic reports that accelerate decision-making.
1.2	Easy access to services for users.	Students can check collections and renew loans online without visiting the library in person.
1.3	In data-driven collection and program planning	librarians use MIS to monitor user preferences and develop service programs based on statistical data.

1.4	Service evaluation through user surveys.	Needs and satisfaction surveys are conducted through MIS and form the basis for periodic service evaluations.
1.5	Data-driven performance evaluation	MIS reports include borrowing data, staff activity, and visit frequency, which serve as the basis for performance assessment.
1.6	Data-driven decision-making based on MIS reports.	MIS reports are discussed in coordination meetings and lead to strategic decisions regarding services.

**Strategies for Improving Library Quality Through MIS**

2.1	Human resource development and internal evaluation	The strategy includes staff training, service digitization, and periodic data-based evaluations for quality control.
2.2	Service standardization through data-based SOPs.	SOPs are compiled based on MIS statistics and used to improve service flow and quality measurably.
2.3	Planning of literacy programs and user training	Librarian work programs are developed based on MIS data analysis to align with student information needs.
2.4	Use analytical dashboards for quick decision-making	MIS is equipped with interactive visual dashboards that management and technical staff use for evaluation and planning.
2.5	Flexible MIS-based online services for users.	Users benefit from efficient, easily accessible digital services that support research and distance learning.
2.6	Collection expansion based on journal access data and MIS	Usage statistics is the basis for expanding the collection, aligning with user needs factually and measurably.

Based on interviews, observations, and documentation, implementing MIS has become important in improving the overall quality of library management. MIS facilitates service processes and user access and encourages more objective, rapid, and data-driven decision-making. These findings indicate that MIS optimization directly contributes to strategic planning, periodic evaluation, and strengthening service systems that are adaptive to user needs.

**2. Discussion**

Management Information Systems (MIS) play an important role in improving the speed and effectiveness of library services. Based on research findings, this system can record all administrative and circulation activities in real time, allowing managers to directly monitor borrowing data, visitor numbers, and the most accessed collections (Ofori & Cobblah, 2024). As a result, decision-making processes can be carried out more quickly and data-driven, without waiting for manual reports that are often delayed. This facility is the initial foundation for libraries to implement systematic, measurable, and targeted improvements supporting service quality enhancement.

In addition to supporting internal management, the MIS provides tangible convenience for users, especially students. They no longer need to visit the library in person to check book availability or extend loans, as everything can be done from home via the online system (Smita, 2023). This fast, flexible, and user-friendly access to services has enhanced student satisfaction and engagement with library services. This reinforces previous research findings indicating a significant correlation between the quality of digital library services and student satisfaction, with 52% of satisfaction attributed to service quality (Siregar & Syam, 2024). From this, it is clear that MIS not only benefits staff but also has a significant impact on user convenience.

Regarding planning, librarians now have a stronger foundation for designing work programs and developing collections based on users' needs. Through the MIS, data related to borrowing, search intensity, and the types of collections most frequently used provide a clear picture of information usage patterns. As a result, decision-making is no longer based solely on intuition or old traditions, but on measurable evidence (Sukula dkk., 2023). This data-driven approach makes collection acquisition policies more relevant, efficient, and able to reach targets accurately in line with user needs (Berti Atika Putri, 2022). Thus, MIS is a strategic tool for directing library development planning in a more responsive and adaptive direction.

Library service evaluations are now conducted more systematically using the Library Management Information System (MIS) to collect and process user feedback data. With the integrated online survey feature, the library regularly collects input from students and faculty members, then presents it as visually appealing reports that are easy for the management team to understand. This information serves as the basis for reflection and guidance in formulating service improvement strategies. User interactions and library management are more open, transparent, and data-driven through a structured feedback recording mechanism (Ramadhani & Wulandari, 2021). This can strengthen the accountability of library service management in the digital age.

In addition to supporting user-based evaluation, the automatic reporting feature in the Management Information System (MIS) also strengthens the library's internal performance assessment mechanism. Data related to the number of daily transactions, librarian activity records, and visitor frequency are documented in detail and can be accessed by management in real time. This information is a quantitative indicator in routine evaluations, whether monthly meetings or year-end assessments. With this system, library directors no longer rely on manual reports that tend to be subjective but instead utilize objective and measurable data. This makes management policy direction clearer, more transparent, and accountable (Nugroho & Cahyani, 2020).

One of the notable aspects of MIS utilization is the use of data as a basis for regular joint decision-making forums. At monthly meetings, information presented through the MIS dashboard is used as the primary reference for librarians and leaders in determining strategic policies, such as adjusting operating hours, adding to collections, and developing information literacy

programs. Staff engagement has increased because they are actively involved in data-driven decision-making processes, rather than relying solely on personal opinions. This fosters a reflective organizational culture and promotes continuous learning. Using data as a shared foundation makes every decision more fair, transparent, and accountable (Hernawan & Yuliani, 2021).

The strategy for improving library management quality through the Management Information System (MIS) begins with strengthening human resources (HR) as the primary foundation determining the system's effectiveness. The library director emphasizes the importance of technical training so that all staff cannot only input data but also read, analyze, and strategically utilize information. When librarians and system administrators possess adequate digital literacy, decision-making processes become faster, more accurate, and data-driven. Librarians' competence in operating the MIS significantly impacts service quality and management accountability (Ansardkk., 2024). Therefore, improving human resources is crucial in optimizing data-based SIM.

Library service SOPs are now compiled based on utilization data recorded in MIS, such as visit intensity and collection borrowing patterns. Referring to internal documents, librarians design standard operating procedures that align with current user needs, rather than simply following old practices. In this way, services become more efficient, consistent, and easily evaluated regularly. This approach improves service quality and strengthens operational legitimacy through a data-driven approach. Implementing structured and standardized SOPs makes library management more systematic and focused on continuous quality improvement (Sari & Rohmat, 2023).

The library actively utilizes Management Information System (MIS) data to develop relevant information literacy programs and user training. Based on an analysis of collection usage, such as borrowing data and search patterns, librarians identify the most popular categories of information and those still underutilized. With this approach, library services become proactive, tailoring literacy programs and training to the actual needs of students and faculty. Quality improvement strategies now originate from internal management and meaningful interactions with the user community. The presence of the MIS enables library services to be adaptive, providing information and supporting the learning process more effectively (Hutami & Putra, 2022).

MIS optimization is also carried out through the development of interactive and easy-to-understand analytical dashboard features, thereby accelerating the evaluation and strategic decision-making process. This dashboard enables direct data interpretation in coordination forums, making MIS a responsive and evidence-based managerial tool. The data visualization feature in MIS improves the efficiency of service analysis and strengthens management accountability (Smita, 2023). The library implements a comprehensive service digitization strategy so that users can access various features without being limited by space or time. Self-service through MIS, such

as borrowing, renewing, and searching for collections, is the facility that students find most beneficial (Teshome, 2025).

Well-managed digitization is a key factor in building an adaptive and inclusive library. When the management information system (MIS) shows a significant increase in searches or downloads of a particular journal, librarians respond immediately by proposing additional purchases or extending subscriptions to those resources. This strategy ensures that the library collection is accurately aligned with users' evolving needs, rather than being based solely on assumptions or annual budgets. Research findings indicate that developing a digital collection that adapts to user access behavior improves service efficiency and user satisfaction (Salmi Addin dkk., 2024). Access to data is no longer merely an administrative record but has transformed into a strategic tool for developing a more precise and contextual collection.

#### **IV. CONCLUSION**

Based on the findings and discussion, the following conclusions can be drawn: First, the Management Information System (MIS) plays a role in supporting library management planning and evaluation in a more efficient, objective, and data-driven manner. MIS is proper in decision-making, program development, and performance evaluation, transforming manual reporting processes into a structured and measurable system. Second, strategies for improving library management quality through MIS optimization include strengthening human resource competencies, standardizing data-driven services, digitizing user access, and utilizing analytical dashboards.

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