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Implementation of SLiMS: Library Automation Innovation at Islamic Junior High School

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A b s t r a c t

Information technology in educational institutions is the focus of attention in efforts to improve efficiency and service quality. One relevant technology implementation is a Free Open Source-based library automation system implemented at Madrasah Tsanawiyah Negeri 2 Jember using Senayan Library Management System (SLiMS) software. Libraries utilize information technology to provide the best service to teachers and students who use the library as a place to study. This research aims to describe the library automation system and apply features such as the Online Public Access Catalog (OPAC), bibliography, circulation, and membership in SLiMS. The research method used is qualitative, with data collection techniques through observation, interviews, and documentation. Data was analyzed through the stages of collection, condensation, presentation, and drawing conclusions using triangulation of sources and techniques to ensure the validity of the data. The research results show that SLiMS is effectively implemented at Madrasah Tsanawiyah Negeri 2 Jember, supporting the library's vision and mission to optimize services. Implementing the OPAC, bibliography, circulation, and membership features in SLiMS provides significant benefits for librarians in managing Free Open Source-based libraries in accordance with their main tasks and functions. This research contributes to understanding the use of technology to improve the efficiency and quality of library services in educational environments, especially in the context of Free Open Source.

I. Introduction

The development of information technology has fundamentally changed the landscape of various sectors of life and professions. This era is characterized by the widespread penetration of computers and related technologies that replace many manual processes with more efficient automated solutions (Hakim, 2019; Susanto, 2017; Wahyudi, 2017). Libraries, as centers of knowledge in educational institutions, resist this transformation. The application of information technology in libraries is critical to improving the efficiency and quality of the services provided. Conventional systems that rely on human power are slowly shifting towards automated systems,

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allowing librarians to focus more on developing user collections and services (Mulyadi, 2012; Sismanto, 2017; Supriyanto & Muhsin, 2018). Implementing an automation system, such as that done with the Senayan Library Management System (SLiMS), is an essential solution to overcome the limitations of conventional systems that still depend on human labor (Rahmadhani & Marlini, 2015). By adopting SLiMS as open-source software, the Madrasah Tsanawiyah Negeri 2 Jember (State Islamic Junior High School 2 Jember) library seeks to adapt to technological advances, which not only make it easier to access information through features such as OPAC and circulation services but also provide a better user experience.

Various studies regarding using SLiMS have shown positive results in various contexts. Jefri Eko Cahyono (2015) found that SLiMS effectively increased library management efficiency in Salatiga using the Technology Acceptance Model (TAM) approach. Ni Wayan Marti (Marti et al., 2021) reported successfully implementing a digital library at SDN 1 Banjar Bali. Aang Gunaidi (2017) noted a significant increase in the work efficiency of librarians with the implementation of SLiMS Meranti. Firman et al. (2022) explained that the Adobe Dreamweaver application helps the recording process by automating borrowing, returning, and borrowing requests and helps speed up the book search process for library members. Moh. Safii et al. (2020) and Palmerya Christina Sau et al. (2019) showed that SLiMS has succeeded in improving the quality of library services at the University of Timor and UNIMOR. Laksmi Dewi and Asep Dudi Suhardini (2014) concluded that library management training increased participants' knowledge and skills in managing madrasa libraries. Agus Wahyudi (2017) identified technical obstacles in developing a library automation system at the Semarang Maritime Science Polytechnic, while Amar Sani (2017) recommended the use of SLiMS to overcome various deficiencies in the H. Bata Ilyas STIE AMKOP Makassar Library.

This research fills the gaps in several previous studies, which focused more on utilization, impact on performance, and collection management using SLiMS. In contrast to previous research on these aspects, this research focuses on directly implementing a free open source-based library automation system, namely SLiMS. Thus, this research canprovides an in-depth understanding of the advantages and disadvantages of implementing SLiMS in educational environments, especially Madrasas. These differences enrich insight into how SLiMS can be adapted and managed effectively to improve the efficiency and quality of library services and make a real contribution to the development of digital literacy among library users. Thus, this research fills the gap in previous studies that focused more on other aspects of SLiMS, thereby enhancing understanding of the implementation of this technology in educational contexts.

This research aims to describe a free open source-based library automation system by implementing SLiMS software at Madrasah Tsanawiyah Negeri 2 Jember, as well as to evaluate the implementation of OPAC, *bibliography*, *circulation* and *membership* in SLiMS at the Madrasah Tsanawiyah Negeri 2 Jember. The benefits of this research include theoretical and practical aspects. Theoretically, this research is expected to contribute to the literature on library automation systems, especially in the context of SLiMS implementation in madrasas/schools. This study starts from the argument that using SLiMS will optimize library services through features such as online OPAC, bibliography, circulation, and membership, thereby improving the quality of information management and services provided to library users. Thus, using SLiMS as a free open source-based automation system will bring significant benefits in improving library operations and supporting learning and research in madrasas/schools.

II. Methods

The location of this research is Madrasah Tsanawiyah Negeri 2 Jember, which is located on Jalan Merak No. 11, Puring Slawu, Patrang District, Jember Regency, East Java. The research location was chosen based on the uniqueness of the library at Madrasah Tsanawiyah Negeri 2 Jember, which implements the free open source-based SLiMS library automation system. This

system is a transition from conventional systems to automation, especially in librarians' management of library services. This uniqueness is the focus of research to explore the implementation and management of library automation systems in these educational institutions. This location was selected based on a desire to understand in depth how this system is implemented and managed in an educational context.

The approach used in this research is qualitative research. This qualitative research focuses on an in-depth analysis of phenomena or events experienced by research subjects, such as behavior and actions, which are then described in narrative form (Sugiyono, 2016). The data that will be examined includes words, images, interview results, documents, and other notes (Moleong, 2017) to provide an in-depth understanding of the implementation of SLiMS in the educational context at Madrasah Tsanawiyah Negeri 2 Jember. A qualitative approach is considered effective in uncovering data to understand and research a free open-source library automation system using the SLiMS software at the madrasah.

The data collection technique in this research is the main instrument for obtaining quality and relevant data. This approach strategically collects information to support an in-depth analysis of the free open source-based library automation system using SLiMS at Madrasah Tsanawiyah Negeri 2 Jember. The participatory observation method is used to directly observe routine library activities, such as implementing SLiMS and using features such as OPAC, bibliography, circulation, and membership. Meanwhile, semi-structured interviews were conducted with the head of the madrasah, the head of the library, administrative managers, and several selected students to gain an in-depth perspective on the problem under study. The selection of informants was based on their involvement in library operations so that the data obtained could accurately reflect the field situation. Documentation is also essential, including library profiles, SLiMS usage guidelines, and documents related to automation system implementation. With this combination of techniques, this research can provide a comprehensive understanding of modern library management in an educational environment.

This research data analysis uses the Miles and Huberman data analysis model. Researchers continuously collect data until they obtain comprehensive information. The data condensation stage involves selection, focus, abstraction, simplification, and transformation of data to understand emerging patterns and themes. Data is presented through narrative text to facilitate readers' understanding of the research results. Conclusions are still tentative because qualitative research continues to develop after field data collection. The validity of the data is strengthened through the triangulation of sources and techniques by cross-checking and ensuring that the data used is accurate and reliable from various relevant sources. This method is expected to provide an in-depth understanding of information management in an educational context.

III. Results and Discussion

Implementation of a Library Automation System Using Free Open Source-Based SLiMS Software

The library automation system at Madrasah Tsanawiyah Negeri 2 Jember is a revised innovation that previously existed. This innovation is presented again in the latest version with optimal student empowerment efforts. Initially, manual or traditional systems are now turning into automated systems that utilize information technology. An automated system will utilize sophisticated information technology to organize the work of librarians assisted by machine power. This transition follows technological developments, one of which is in the field of education. Education must be included in a wholly digitalized system (Soeatminah, 2012). This transition is intended to pursue the world of education to enter a higher level. Especially in Indonesian education, some of them need adequate technological skills. Several informants explained as follows:

Table 1. Informant's Statement about the Library Automation System at Madrasah Tsanawiyah Negeri 2 Jember

Informant	Position	Statement
NA	Headmaster	The library almost did not operate like the previous library because it was hampered by the library manager who resigned, and no one had replaced the library manager position. However, not long after, a replacement was found, namely Mr. Azis himself, who now has control over the management and administration of the library.
RKP	Head of Library	Even though this library still uses a manual system, we will continue to try to increase the number of services and book collections to include the library. As library managers, we can meet the needs of the students to support their learning process at this school. Book collections are subject-to-subject and general collections that teachers and staff can use.
AP	Administrator	In 2017, this library used a digital library, which was still pioneering. However, its development was hampered by the resignation of a librarian named Mr. Viki, who pioneered the digital library at Madrasah Tsanawiyah Negeri 2 Jember with the capital of the training he attended at IAIN Jember, which has now been transferred became UIN Kiai Haji Achmad Siddiq Jember, after he resigned no one was able to restore the digital library that once existed so this library was forced to return to the beginning with a manual system.
RF	Student	I really like studying in the library. Especially in Indonesian language subjects, where the teacher is Mrs. Ria, she always asks the class to move to the library so I don't get bored when studying in class continuously. The library is my favorite place to study.
CHA	Student	I like learning in an outdoor classroom model. I can enjoy the outdoor atmosphere a little, which, in my opinion, makes my mind more open. Yes, even though there are lots of people passing by outside the room, it is not a big problem for me. I can still focus even though I have to study in a crowd. That is why I like libraries that have outdoor reading rooms. Libraries provide various facilities for the different needs of their students.

Agus Wahyudi (2017) explains that an automation system manages work using machines. This way, librarians' work can be controlled optimally, and the time spent is shorter, thereby increasing efficiency and effectiveness. This opinion is in line with Saeful Amri, Khoiruddin, and Noer Prasetyo's study, which states that digital libraries are the application of information technology to collect, combine, classify, and access digital documents and data by users. The use of digital libraries requires technology as the primary means to meet these needs (Amri et al., 2021).

This opinion is also supported by Mulyadi (2012), who emphasizes the importance of library automation in the modern era because human labor is increasingly expensive. Human power is always needed to carry out a job, especially when someone is a professional in a particular field, which causes the costs to be higher. Information technology is a solution with an automation system that can replace human labor and continue improving educational institutions' quality (Astuti, 2013; Fitria, 2018).

The findings in the field regarding a free open-source-based library automation system by implementing the SLiMS software at Madrasah Tsanawiyah Negeri 2 Jember show that the school library implements library automation with the help of SLiMS. This software supports librarians' performance in administering library services at Madrasah Tsanawiyah Negeri 2 Jember. Librarians continue to provide excellent service to users so that the library can meet the needs of all groups.

The library automation system requires several supporting facilities to implement SLiMS software, including computers, barcode readers, scanners, computer networks, and SLiMS software, which are visualized in Figure 1.

Figure 1. Library Facilities of Madrasah Tsanawiyah Negeri 2 Jember

1. Collection and classification of books The classification of book collections in the Madrasah Tsanawiyah Negeri 2 Jember library uses the Dewey Decimal Classification (DDC) system. This chart functions as a grouping of library materials containing subject or book content. This is to make it easier for librarians to group collections and help users quickly find the books they are looking for.	
2. Computer The Madrasah Tsanawiyah Negeri 2 Jember library has four computers: one server and four client computers. The server computer installs the SLiMS program, and the client computer is used by visitors who want to run or operate SLiMS in the library.	
3. Barcode Reader and Printer This device digitally scans barcodes in book collections. Users simply point the barcode reader sensor at the barcode on the book when carrying out a loan or return transaction. The printer prints for a librarian or user administration needs.	 

These facilities must be prepared before library automation using SLiMS is carried out. Libraries can automate as long as several facilities, including hardware and software, are prepared in advance. Some of these facilities have existed since libraries were still conventional, so in implementing library automation, there is no real need for new facilities because the existing facilities are still suitable for use. These facilities are part of the library facilities and infrastructure that support the formulation of the library's fourth mission, namely making the library a motivation for learning by providing adequate facilities and infrastructure (Azwar, 2013; Cahyono & Heriyanto, 2015; Mulyadi, 2012).

Apart from facilities and infrastructure, services in library management are also part of the library's mission, as stated in the library's first mission, namely providing quality services as a source of information and education for all Madrasah Tsanawiyah Negeri 2 Jember residents. Quality services help libraries realize their mission. Theoretically, libraries should be managed by librarians who have adequate competence and qualifications in the library field. Librarians are not only tasked with carrying out library services but also collecting collections, processing library

materials, and distributing them to users so that they can take advantage of the facilities provided by the library (Astuti, 2013; Dewi & Suhardin, 2014; Sani, 2017). Aang Gunaidi's research (2017) revealed that 71.43% of library staff said implementing SLiMS could improve library performance. The benefits obtained can be seen in work effectiveness, making the work carried out by library staff faster and easier, and the existing menu by the standards required by librarians in their world of work.

An open-source-based automation system is implemented in accordance with the library's vision and mission so that the library's goals can be realized optimally. Researchers also found that the implementation of SLiMS provides benefits in the field of information technology for students, teachers, and madrasa staff. This shows the importance of library automation in facing increasingly modern technological developments.

Implementation of OPAC, *Membership, Bibliography, Circulation,* and SliMS Application

Online Public Access Catalog (OPAC) is the initial display when accessing SLiMS and functions to search library collections. Users can enter data such as author name, book title, subject, or related keywords to find the needed book. OPAC processes the entered keywords and displays appropriate search results, making it easier for readers to find collections available in the library. Based on user searches, OPAC displays book images, titles, and author names. There is a "Details" button to view a more detailed bibliography of the book you are looking for. The OPAC display can be adjusted to the user's wishes, with various background options available in SLiMS, thus making book searches more exciting and user-friendly (Wahyudi, 2017).

Figure 2. OPAC and Bibliography Display in SLiMS Library of Madrasah Tsanawiyah Negeri 2 Jember

	
View OPAC SLiMS Library	Bibliography Display in SLiMS Library

Meanwhile, a bibliography is a bibliography that includes a detailed description of a book collection, including title, author's name, edition, printing, city of publisher, year of publication, number of pages, book size, and ISBN. This process provides a descriptive overview of the book collections in the library. The purpose of the bibliography is to identify a list of book collections with details that have been input by the librarian, making it easier to search in OPAC because the data has been integrated into SLiMS. However, inputting data into SLiMS requires precision so that the data entered is accurate and free from errors (Dewi & Suhardin, 2014; Gunaidi, 2017). Observations show that only some books in the library have been input into SLiMS, mainly student textbooks. A few books with general themes have been recorded, although subject collections continue to be developed according to the curriculum.

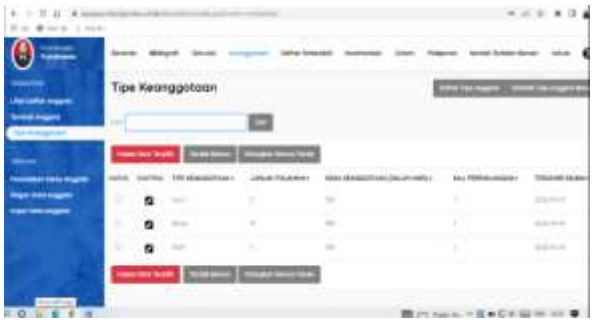
The bibliography feature in SLiMS helps librarians manage book collections effectively and supports student learning processes (Amri et al., 2021; Sani, 2017; Sau et al., 2019). However, more effort is still needed to input all book collections so that libraries can provide optimal services for

all users. Observations in the field show that several textbook collection titles have been entered, but many books still need to be recorded.

Library Membership

Madrasah Tsanawiyah Negeri 2 Jember library members include all teachers, staff, and students. Teachers and staff have the right to use library facilities, including accessing various general book collections and those that support their work. The library strives to provide collections that suit the needs of the entire school community, not only for students but also for all parties involved.

Figure 3. Library Membership Type and Library Card Display of Madrasah Tsanawiyah Negeri 2 Jember

	
Library Membership Type Display	Library Card Display

The library's main priority is students because this facility is designed to support their learning process. Students can use the library for independent study outside of class hours. The number of books that library members can borrow is limited: students can borrow a maximum of ten books, while teachers and staff can borrow five books each. Loan durations are up to three days and one extension.

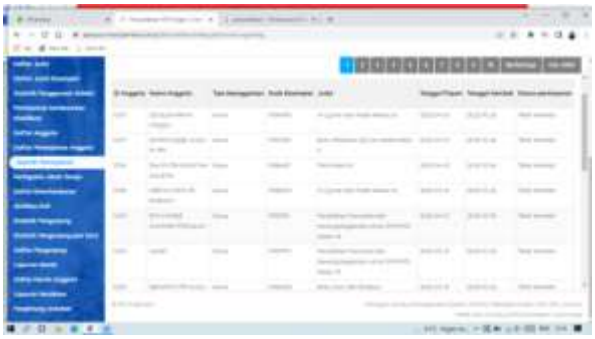
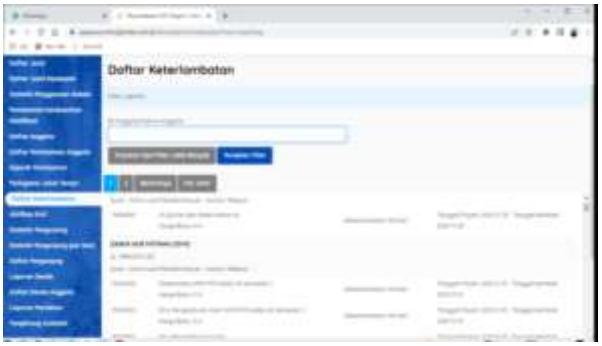
To become a library member, students must submit a request and present a student ID. Although not all students have a library card, a student card can be used as a substitute ID. Existing membership data shows various members, from students to staff, who utilize library facilities according to their needs.

Library Circulation

Transaction processes in library services, such as borrowing, returns, delays, and fines, require high accuracy. Borrowing begins with the user scanning the barcode of the book they want to borrow. Data on borrowed books is input into SLiMS so that every transaction is recorded neatly in the system (Costaner et al., 2020; Rahmadhani & Marlini, 2015; Rahmayanti & Ardoni, 2019). Based on observations, the system displays the names of borrowers, membership type, book title, borrowing date, return date, and borrowing status, making it easier for librarians to manage the library. AP, one of the informants explained:

> The loan and return features in SLiMS help my performance as a librarian. Because it can be done quickly during the process, all data regarding library service transactions can be recorded in one application. With this, of course, I also have to learn about the information technology available in SLiMS so that education continues progressing from world developments in informatics. The existing data is also stored well, so it helps my performance (Interview, 03/29/2022).

Figure 4. Library Circulation Display of Madrasah Tsanawiyah Negeri 2 Jember

	
Display History of Borrowing and Returning Books	Display of List of Late Book Returns

Book return delays occur frequently, and SLiMS helps librarians monitor these delays. The system records delays automatically, allowing librarians to know who is late returning books. The deadline for returning books is usually 4-5 days, and users can extend the loan if necessary. Observations show complete data about lateness, including borrower name, book description, and number of days late, which helps calculate fines and ensure discipline in returning books. This proves that SLIMS is an almost perfect library application for organizing the data and information needed (Costaner et al., 2020; Diana et al., 2023; Sofyan et al., 2022).

IV. Conclusion

The Madrasah Tsanawiyah Negeri 2 Jember Library implements a free open-source automation system using the SLiMS software. The implementation of SLiMS supports the library's vision and mission to realize its goals optimally, as well as providing benefits in the field of information technology for students, teachers, and school staff. With features such as an OPAC, bibliography, circulation, and membership, SLiMS increases librarians' work efficiency in managing digital libraries. Besides that, SLiMS provides easy access to information and literature that all library users need. Implementing SLiMS is essential in facing increasingly modern technological developments, making libraries easier to access and manage. This implementation also allows the library to optimize existing resources, improve library performance, and provide a better experience for all its users.

The theoretical implication of this conclusion is that implementing a free open-source library automation system, such as SLiMS, supports the vision and mission of educational libraries. Integrating information technology in library management increases the efficiency of librarians and expands access to information for students, teachers, and staff. SLiMS features, such as OPAC and circulation, speed up administrative and managerial processes. This supports the theory that digital libraries can be dynamic learning centers responsive to user needs. The implementation of SLiMS emphasizes the importance of adapting technology in education to improve services and user experience and shows the potential of open-source solutions in library management. On that basis, Madrasah Heads are expected to tidy up library management by implementing SLiMS. Madrasah Tsanawiyah Negeri 2 Jember library managers must carry out services according to SOPs and maximize existing facilities. Library users are expected to utilize the facilities as a source of knowledge and develop modern information technology.

This research has several limitations, including the limited scope of Madrasah Tsanawiyah Negeri 2 Jember, so the results may need to be more generalizable to other educational institutions with different characteristics. The data obtained was also limited because it only involved librarians, students, teachers, and staff at one madrasah, and it did not include perspectives from outside

parties or digital library experts. The short implementation of SLiMS due to the constraints of librarians' resignation means that this research may only partially describe this system's long-term benefits and challenges. In addition, technological and infrastructure limitations and a lack of supporting data reduce the comprehensiveness of the analysis. Future research is recommended to conduct comparative studies between madrasas or schools that have implemented SLiMS with varying degrees of success, conduct longitudinal studies to evaluate long-term impacts, involve various stakeholders for a broader perspective, and explore the influence of technology and infrastructure. Research should also evaluate user needs and development of SLiMS features, their impact on the learning process, training and support needs for librarians, operational efficiency, and library user satisfaction.

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VI. Author Contributions Statement

NNS is responsible for data collection. ZA is responsible for preparing research instruments and presenting and analyzing data.

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