



An Analysis of Library Management System Development in South Sulawesi

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Abstrak

Layanan perpustakaan berbasis website telah diimplementasikan di berbagai perpustakaan di Indonesia, khususnya yang ada di Sulawesi Selatan. Hampir setiap rutinitas pegawai pustakawan (pustakawan) sangat terbantu dengan hadirnya teknologi ini. Metode penelitian ini dilakukan dengan tujuan melakukan survei terhadap 33 perpustakaan yang telah menerapkan sistem otomasi perpustakaan. Sedangkan sisanya juga mengadopsi sistem serupa. Metode penelitian menggunakan metode deskriptif kualitatif melalui survei kuesioner dan kunjungan langsung ke beberapa perpustakaan di Sulawesi Selatan. Kami pertama melakukan eksplorasi lebih lanjut. Hasil survey menunjukkan bahwa dari 33 perpustakaan yang mengisi kuesioner, 24 diantaranya telah menggunakan sistem otomasi perpustakaan karena kemudahan yang diberikan oleh penggunaan teknologi ini. Hasil analisis data yang diperoleh selama penelitian menunjukkan bahwa penggunaan Library Management System di perpustakaan memenuhi dua aspek utama dari teori Technology Acceptance Model (TAM). Pemanfaatan Sistem Manajemen Perpustakaan dinilai bermanfaat untuk membantu pekerjaan di perpustakaan, diantaranya untuk membantu pengguna dalam proses pencarian informasi, perpustakaan memberikan layanan kepada pengguna dengan lebih cepat.

Kata kunci: Sistem otomasi perpustakaan; manajemen perpustakaan; teknologi perpustakaan

Abstract

Website-based library services have been implemented in various libraries in Indonesia, especially those in South Sulawesi. Almost every librarian employee (librarian) routine is greatly helped by the presence of this technology. This research method was carried out to conduct a survey of 33 libraries that have implemented a library automation system while the rest also adopted a similar system. The research method uses qualitative descriptive method through questionnaire surveys and direct visits to several libraries in South Sulawesi. We first do further exploration. The survey results showed that of the 33 libraries that filled out the questionnaire, 24 of them had used the library automation system because of the convenience provided by the use of this technology. The results of the analysis of the data obtained during the research show that the use of the Library Management System in the library fulfils two main aspects of the Technology Acceptance Model (TAM) theory. Utilization of the Library Management System is considered useful to help work in the library, including assisting users in the process of searching for information, the library provides services to users more quickly.

Keywords: Library automation system; library management; library technology

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INTRODUCTION

The routine that has been carried out by libraries for a long time, namely organizing knowledge (knowledge management) so that it can be accessed easily and quickly, continues to this day. From procuring library collections to serving them to users, this routine is still ongoing. However, today's library is different from the library a few decades ago (Hernon & Altman, 2010). In terms of collections, electronic documents now far exceed their counterparts in printed/physical form. Likewise, library governance and services have changed along with the development of communication and information technology. The presence of technology in the library should be able to help every routine in the library, instead of slowing down performance or even causing new problems (Priatna, 2018). However, some of the existing libraries still survive with conventional governance and forms of service for one reason or another, or because they don't want to be trapped in technology, which according to them makes it difficult.

One form of technology that is widely used in various types of libraries today is the library automation system (Singh, 2014). There are many offers regarding library automation systems, both paid/subscription and free ones. This depends on the library that wants to implement it, of course both of them have their own advantages and disadvantages, even though they still have the same function, namely so that library management and services can be improved and facilitated with the help of this system. Even a free system is not 100% free because it will still provide the hardware and human resources that will operate it, let alone a paid system (Fachrial, 2020). Some libraries benefit from the presence of a library automation system in library management. Therefore, the planning stages for presenting and implementing it need to be considered by every library, as written by (Tabusum Sz et al., 2013). Studies that state the benefits of library automation as written by Ukachi et al., (2014) where they say that this can reduce the stress level of the librarian's workload and even increase the range of its services to users who are in remote places.

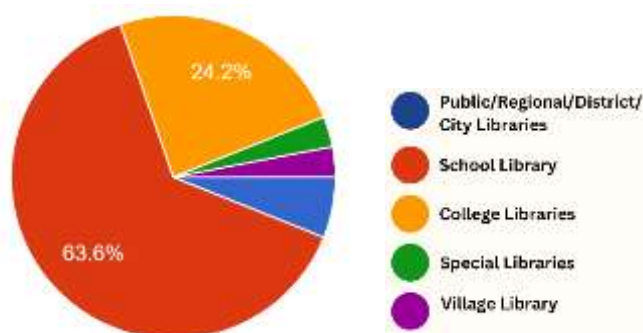
In developing countries, the use of library automation systems has increased. It is interesting to observe the study conducted by (Hopkinson, 2009) which shows that with the increasing network of the Internet, "library automation in developing countries will have the same capabilities as the industrial world, but do not have the finances to support it". The article describing the real conditions in that year shows that developing countries, even with a lack of financial support, continue to try to bring library automation systems. In fact, nowadays it seems that many libraries, whatever type they are, have started using library automation systems, especially open-licensed systems or known as free open source software (FOSS) which are the main choice of several libraries in developing countries, including Indonesia (Dennison, 2011), (Singh, 2017), (Singh, 2014), (Zou & Liu, 2009), as well as the book written by (Engard, 2010), which began to involve technology in professional library management.

The use of information technology in all sectors of life has unknowingly brought the world into the era of globalization faster than originally imagined. The current development of information technology is in the form of information technology infrastructure developments, such as hardware, software, data storage technology (storage), and communication technology (Wijaya & Aliyanto, 2016). The development of information technology that is so great has had a major impact on the fields of economy, health, education, government, including libraries (Venkatesh et al., 2014). Currently, almost all libraries already use technology in their daily activities. Its use varies, some are used as promotional media such as through websites, blogs, social networks, and others (Sinclair & Vogus, 2011). Another form of using information technology in libraries is for ordering and procurement, processing, classification using e-DDC, storing bibliographical data, and so on. Not only that, the use of information technology in libraries also covers the fields of membership, services, searches with online public access catalogs (OPAC), and others (Himmah & Azisi, 2019).

The use of information technology in libraries can be categorized into various levels based on their purpose. Computerized library, automated library, digital library and virtual library are the words used to describe them. Based on how SLiMS is used in libraries, this research will limit the use of information

technology for library automation (Haryono, 2013). Machines, computers and other technological devices are used to speed up library work. A number of manual jobs can be accelerated and simplified with the help of information technology. In addition, the processing of data collection increases in speed and accuracy. As technology has taken over some of the tedious tasks, librarians now have more time to focus on library development (Raschka et al., 2020).

There is no exact data yet on how many libraries in Indonesia have implemented a library automation system. However, by looking at the current developments, as well as the active librarianship activities related to technology, it can be said that there has been an increase in the use of technology in libraries (Mathar et al., 2021). Seeing the breadth of Indonesia and the large number of libraries in this country, of course it takes time and a good methodology to find out what system is used by the libraries that already use it. Therefore, this paper only focuses on several types of libraries in South Sulawesi through online surveys and direct visits to several library locations in this area. From the initial assessment, we received 33 responses from several types of libraries in South Sulawesi where more than 50% of those who responded came from the type of school library.



Picture1. library respondents

Of the 5 types of libraries above, 24 of them have used library automation systems in their respective libraries. From the description above, it shows that almost all libraries have used a technology-based library management system or what is known as an integrated library system. The data above is certainly interesting to study further related to the development of the system that has been used, the period of use, the budget issued, its advantages and disadvantages, as well as the challenges. The next section will describe the development in more detail (Huda, 2020).

Libraries in South Sulawesi already use SLiMS and have upgraded their automation software to the latest version of the Senayan Library Management System (SLiMS) (Akbar & Azwar, 2018). This aims to match the needs of adequate and up-to-date software. The upgrade to the latest SLiMS provides several new menus in SLiMS, for example a menu for printing book catalogs and a new display that adopts the metro concept. From the description above, the author is interested in studying how the new Senayan Library Automation System (SLiMS) is utilized in the library, which in this case is based on the Technology Acceptance Model (TAM) theory which aims to find out how to use the Senayan Library Management System (SLiMS) as a means of automation. in library. In this case the analysis that the researcher carried out was based on the aspects of benefit and convenience in the Technology Acceptance Model (TAM) theory (Kusumadewi et al., 2021).

RESEARCH METHODS

From 2019 to 2021, researchers collected data. We visited seven college libraries in person, while the rest we used questionnaires to collect data. Of the 34 libraries that responded to the research, 24 of them have implemented a library automation system. So, these are the 24 libraries that we use to dig deeper into the development of the system they have used. Research data is described in the form of tables and diagrams, which are then interpreted and then discussed. In this study, researchers tried to analyze the use of the Senayan Library Management System (SLiMS) in the library. The use of SLiMS is analyzed based on two main variables in

TAM theory, namely usability and ease of use (Akbar & Azwar, 2018). For this, the researcher used a qualitative descriptive approach with a survey research type (Lambert & Lambert, 2012).

Informants in this study, the authors determined by purposive sampling method. Purposive sampling is a sampling technique with certain considerations. By using purposive sampling, it is expected that the sample criteria obtained are truly in accordance with the research being conducted and are able to explain the actual situation of the object under study. The criteria for informants that the authors chose were library managers who were directly related to the use of SLiMS in libraries and users who used OPAC during the research. The informants consisted of library managers (Zou & Liu, 2009).

In this study the authors collect data through various ways. Data collection techniques that the authors use in this study are observation, interviews and the method of documentation. After collecting data, all the data collected was then processed by the researcher. Data were analyzed using a qualitative descriptive method, namely by thoroughly describing the data obtained during the research process. Creswell (2014), revealed that processing qualitative data was carried out through the stages of reduction, data presentation, and drawing conclusions;

1. Reduction. Reducing means summarizing, choosing the main and important things and then looking for themes and patterns. At this stage the researcher sorts out which information is relevant and which is not relevant to the research. After being reduced, the data will be narrower, smaller and lead to the core of the problem so as to be able to provide a clearer picture of the object of research.
2. Data Presentation. After reducing the data, the next step is presenting the data. The data is presented in the form of tables and descriptive explanations.
3. Conclusion Drawing. The final stage of data processing is drawing conclusions. After all the data is presented, the problems that are the object of research can be understood and then conclusions are drawn which are the results of this study.

RESULTS AND DISCUSSION

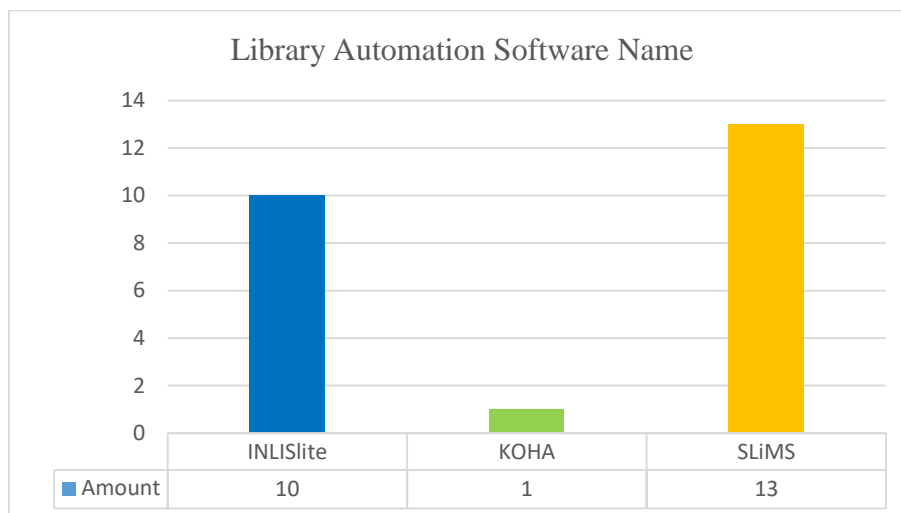
Of the 33 libraries we surveyed, 24 of them have used library automation systems. So we will explore the 24 libraries further, the system they use. The table below shows the library types of the 24 libraries that have used the library automation system.

Table1. Types of Libraries and Amount

LIBRARY TYPE	AMOUNT
Village Library	1
Special Library	1
College Library	7
School library	13
Regional/District Libraries	2
Amount	24

Library System Used

Of the 24 libraries above, there are 3 systems used. Of the three systems, there is 1 system that comes from abroad, namely KOHA. The other 2 are INLISlite and SLiMS, systems that are widely used in several libraries in Indonesia. INLISlite itself was first built and developed by the National Library of Indonesia in 2011 with the first version, namely 2.1.2 (Perpustakaan Nasional RI, 2021). Now, the system comes in version 3.0. Meanwhile, SLiMS or Senayan Library Management System is a system developed by the Senayan Developers Community (SDC). This system has been developed since November 2006 and the library that used it for the first time was the Library of the Ministry of National Education of the Republic of Indonesia (Senayan Developers Community, 2020). The KOHA is an open-licensed library system developed by the global library software community.

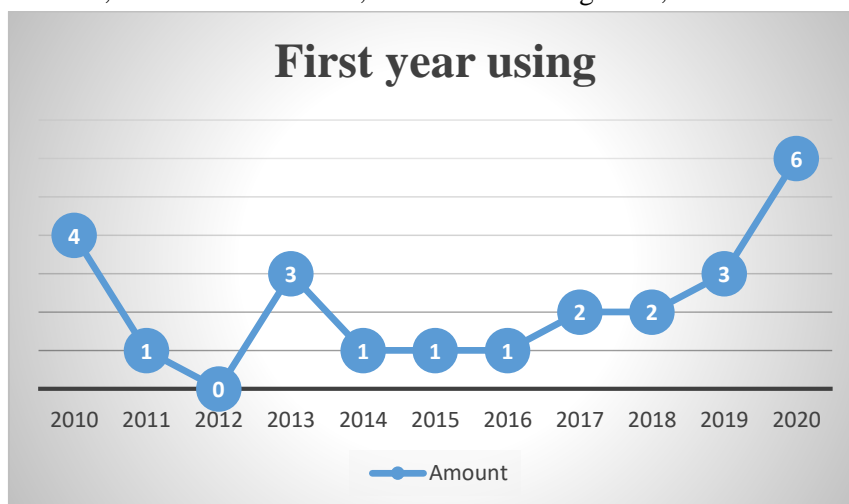


The 3 types of software above can be accessed on the internet. SLiMS which has been present in Indonesia for a long time is almost used in many types of libraries, including school libraries. Ease of installation and features that are easy to understand and use make the library a lot to try. Meanwhile, INLISlite, which has only been available in the last few years, has also experienced an increase in its use in libraries (Dewi et al., 2021). The system developed by the National Library of Indonesia, in terms of features, is very complex when compared to SLiMS. Regional/district libraries in each region generally use this system. Some school libraries also use it.

As for KOHA, a system originating from abroad, very few use it.

Initial year of use

For the period of use, from the 24 libraries, the first time using 2010, more details are as follows:

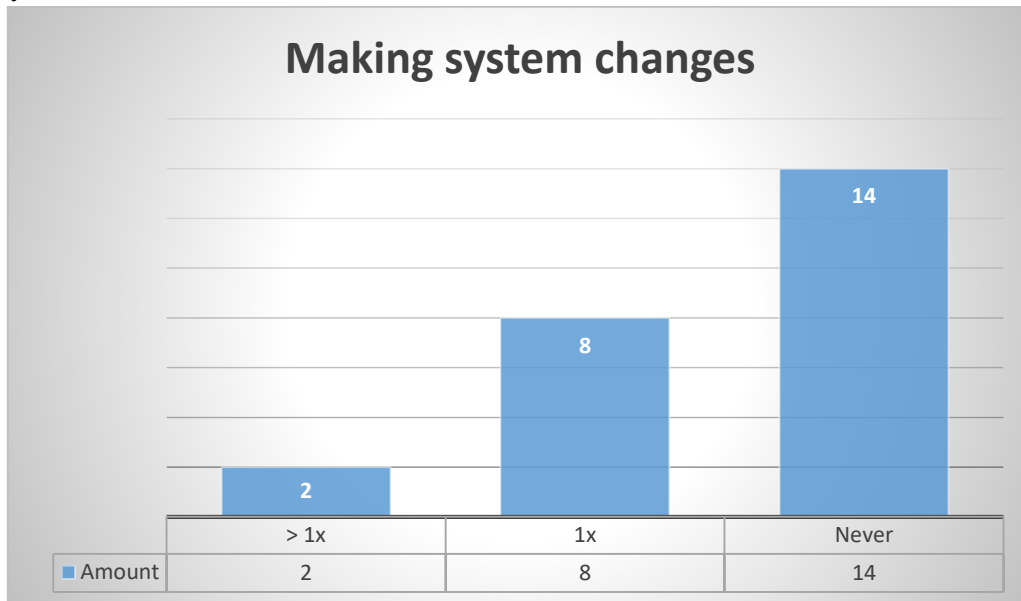


The library automation system in the Eastern Indonesia Region has grown in the last 10 years. This can be seen from the number of libraries that have tried to implement this technology in their libraries. Although in the process experienced various obstacles. This growth is influenced by the automation systems themselves which are also increasing, especially open source systems, training on the use of library automation systems. However, the library still faces obstacles in its implementation.

Migrating from one system to another

Some libraries admit to having switched from one system to another due to several factors. However, this occurs in libraries which generally suffer from damage to the hardware used to run the system itself. The

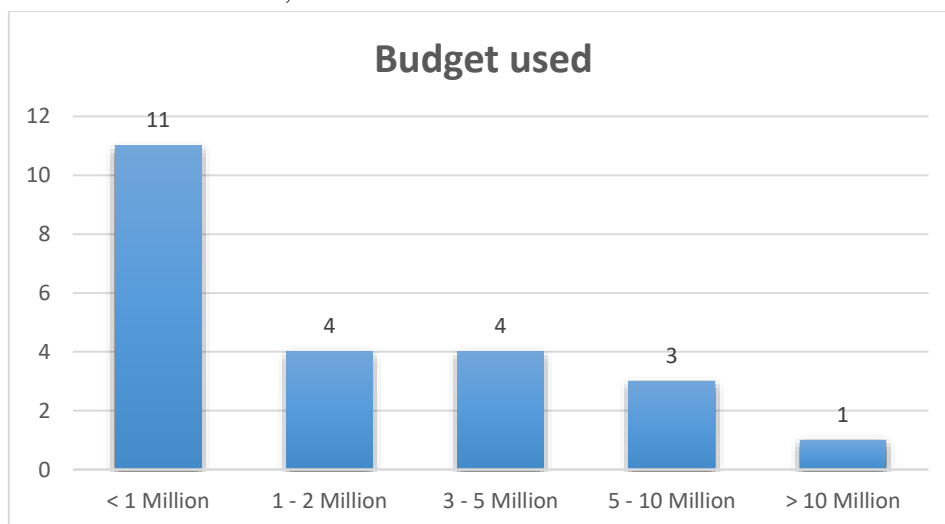
transition also occurred due to the existence of new systems that were felt to be more in line with the condition of the library.



Bringing technology in the library means preparing a large budget allocation for it. Although in general all automation systems used in libraries use open-source systems, that doesn't mean they don't use a budget. For example, budgeting for installation, hardware, human resources training, maybe even for wages for operators. This study also shows the allocation prepared by the library to implement a library automation system.

Cost

As for the costs allocated varied, as follows:



Benefits

Like other libraries that have implemented a similar system, the library in South Sulawesi also recognizes the benefits provided to the library by implementing a library management system. These benefits include the convenience of organizing book data, users can be served quickly, can connect wider information, accurate reports, and so on.

Barriers and challenges

Although these benefits are felt by the library, it turns out that there are also obstacles or challenges faced by the library. The obstacles from the survey that we found were the internet connection, hardware, the system

itself, and human resources. Interestingly, cost is not the main obstacle in implementing this automation system, but human resources are a challenge for every library, because human resources must master IT so they can operate the system used. The development of library automation systems in the Eastern Indonesia Region through the survey of the 24 libraries above shows that it continues to increase from year to year. Usefulness of SLiMS in Libraries. The use of SLiMS as a means of library automation has had a major impact on Regional Libraries in South Sulawesi. The benefits of implementing SLiMS are not only felt by library managers but also by users, especially when searching for information through OPAC (Mafriza et al., 2022);

1. Speed Up Work in the Library

The use of SLiMS in the library can cut the time needed to do some work in the library. This of course makes the work done more quickly. As stated by research informants, the acceleration of work is felt in terms of making complete books. Before there was SLiMS items were made one by one, now with only one input of data into the SLiMS database it can be used to make various book accessories such as barcodes and book labels (Akbar & Azwar, 2018; Singh, 2017).

The acceleration of work is also very pronounced for circulation. For a library with a high circulation rate, such as the Regional Library and Archives, it would be very inconvenient if records were done manually. Utilization of this SLiMS makes circulation can be done more quickly. Officers can serve one borrower in less than 2 minutes and returns can take less than 1 minute thanks to the express return menu on SLiMS. The increase in speed related to the use of SLiMS is also greatly felt by users to search library collections by users because only by entering keywords in the OPAC search field, information related to the collection they are looking for is already displayed.

2. Improving Job Performance

The use of SLiMS in the library immediately improves the performance of library managers. All informants agreed that the use of SLiMS in the library could improve their work performance. For example, for an inventory of new collections, it used to be recorded manually in the master book, now it's just a matter of entering it into the library database with very clear metadata fields. Because all work is processed by the program, the quality of work is better, this is because the library manager only has a role to enter data, which is then carried out by SLiMS. This is what reduces human error so that the work done gives better results. Since the existence of SLiMS in the library, users have also been greatly assisted in browsing collections with the OPAC menu (Rafols et al., 2010).

3. Increasing Work Productivity

Work productivity in the library has increased significantly by utilizing SLiMS for library automation. At the same time, using SLiMS enables managers to do work with more results (Sari et al., 2021). The results of data processing indicate an increase in productivity in terms of processing which is very large. Before using SLiMS in a day it could only process about 20 books, after SLiMS the number increased up to five times. In the field of circulation also increased productivity. Before using SLiMS, it was only able to serve one loan in five minutes, after SLiMS was able to serve 3 borrowers in five minutes. The use of SLiMS for browsing collections using the OPAC menu has also been able to provide a new experience for users. With this new search system they feel there is an increase in their ability to find what information they need, not necessarily with the same title because searching with OPAC allows them to find other collections with similar subjects. Readers are happy about this because with this they can find similar collections that can be used as additional sources of information.

4. There is Work Effectiveness

All informants believe that the use of SLiMS in their activities can increase the effectiveness of activities in the library. Utilizing SLiMS for daily activities in the library makes everything run well and there are no unnecessary errors. When the library was not automated with SLiMS, all library activities had been carried out

with the help of a computer, it's just that everything still required a very large role from the library manager (Mirsky, 2017). Computerized management of activities in the library is recognized as capable of accelerating activities but still prone to errors caused by user error (human error). Readers feel the same way, they experience increased success in browsing library collections.

Ease of Utilization of SLiMS in the Library

Many factors affect the use of a software. The TAM theory even describes that convenience is one of the two main factors determining the acceptance of a technology product. Easy software will be easily accepted by users and vice versa, including this SLiMS. The convenience offered by SLiMS is not only limited to ease of use but also ease of learning, ease of control and so on (Bailey et al., 2017).

SLiMS is Easy to Learn

SLiMS is an easy software to learn. There are many ways to learn about SLiMS, both through training that is held by the SLiMS community which is spread in various regions. The SLiMS community actively organizes events to promote SLiMS by making it easy to learn SLiMS for those who are interested (Engard, 2010). Apart from learning through the SLiMS community, learning SLiMS can also be done independently through guidebooks available on the official SLiMS website or through presentation slides which are widely available on the internet (Mirsky, 2017). Material about SLiMS is also given in lectures to make it easier for librarian science students to get to know SLiMS better. Material about SLiMS is given briefly, even though it has really helped students to get to know SLiMS. Slightly different from the library manager, users do not need a lot of learning processes to use the OPAC menu owned by SLiMS. The simple OPAC display really helps the user to understand how to use it for collection browsing. The OPAC display simplicity factor makes it very easy for the user (Akbar & Azwar, 2018). As soon as they encounter OPAC they will immediately know how to use it because in general they are all familiar with the appearance of the Google search engine.

Ease of Control (Controllable)

Everyone's ability to use a software differs from one individual to another. This difference can be caused by differences in educational background and differences in the level of interaction with technology, especially interactions with the software in question. Users who are used to using similar software find it easier to control the use of a software. He can control the software however he wants and has no trouble figuring out what he wants to do with it. The use of SLiMS is considered to be easily controlled by the library manager (Ukachi et al., 2014). Most of the informants admitted that they could easily find how to do a job using SLiMS. This is because the SLiMS interface is very clear and the SLiMS menus are grouped into several main menus according to the field of work in the library. In terms of OPAC, users have no significant difficulties in using the SLiMS OPAC. My three informants can understand how to search with the OPAC provided. They consider that using OPAC is very easy. The user can find what to do with the OPAC menu. The simplicity of the display is one of the main factors that allows users to understand OPAC relatively easily.

SLiMS is clear and easy to understand

One indicator of a program that is said to be easy is if the program is clear and can be understood by its users. Clarity here can be in the form of clarity from the appearance and menu layout in the software used. Librarians consider that their interaction with SLiMS is clear and understandable. They feel that they have been able to interact with SLiMS in a clear way (Mirsky, 2017). For example, users can easily use the menus in SLiMS. SLiMS actually has a very large and complex menu, it's just that the developer makes it look as simple as possible. The menus in SLiMS are divided into several major groups, each of which still contains a number of menus. Users greatly benefit from this grouping, they become able to use programs clearly and easily understood. The clarity of interaction with SLiMS is also felt by users who use the OPAC menu to browse collections (Mafriza et al., 2022). The OPAC menu itself looks very simple and is similar to the most popular

search engine today, Google. The center of the OPAC page is a simple search field, below it is a specific search menu and above it are several menus which are also very easy to access.

Flexible in Use and Modification

One of the advantages of programs with open source code (open source) is flexibility. SLiMS, which is an open source code software, offers convenience to modify easily according to the needs of the library. SLiMS at the Salatiga City Regional Library and Archives Office has undergone modifications in several parts. Modifications were made to the membership card printing menu, book labels and on the SLiMS OPAC page display. Membership card modifications are made to make library membership cards double-sided. This aims to make the membership card better and more informative because the library rules are included on the back. With this modification, new members can immediately get a membership card in just 5 minutes (Mafriza et al., 2022; Rafols et al., 2010).

Modification of membership cards and combining labels and barcodes is done by utilizing the plugin provided by the SLiMS community at <http://goslims.net>. The SLiMS admin only needs to make minor adjustments to the SLiMS source code using the available plugins. This is one of the positive sides of SLiMS, which is flexible to use. The flexible side of SLiMS is not only seen from the program side but also from the usage side. Many things can be done with SLiMS to adapt to the condition of the library, for example the type of membership, the design of the distribution of collection locations and shelf locations and the existence of rules that can be created and applied in each library automatically. Indeed, not all things can be accommodated by SLiMS, for example members who are late in returning are automatically penalized for not being able to borrow collections for a number of days of delay. This is not a big problem with SLiMS, there are still ways to close the gap. Since SLiMS has not been able to provide sanctions in the form of not being able to borrow for the number of days it is late, this is done by editing member data by suspending the member's membership.

Can Be Mastered Quickly

The ability of each individual to use a software is strongly influenced by high and low factors of interaction with the software. The higher the "flying hours" of someone using technology applications makes it easier for that person to use a new device. Of course, the habit factor is not the only one that affects a person's ability to operate new software. Easy-to-use software will remain the user's choice. It has been explained in the previous discussion that SLiMS is a program that is flexible, clear and understandable. With all these advantages, SLiMS users can become proficient in a relatively short time (Zou & Liu, 2009). The time needed for librarians to be proficient in using SLiMS in their daily activities is about one week. From the data obtained during the research, it can be concluded that within one week the user can already use SLiMS for daily activities. Not all menus indeed, within one week the informants were able to operate SLiMS on menus that were directly related to their work, but for other menus that were not normally used they still had to look around first even though in the end they were found. In contrast to library managers who have to use many menus, users who only deal with the OPAC menu need less time to become proficient in using the OPAC menu (Mirsky, 2017). Users use the OPAC menu only for collection browsing, while the member area menu has not been used. Readers can use OPAC directly even though they haven't reached the point of using custom search with boolean logic as previously described. Users can understand the use of OPAC in just one use, the initial difficulty lies in the information included in the collection search results (record details). Librarians could not understand the call number and rack location information, but in the end they understood it on their own even though they did not ask the librarian. From the explanation above, it can be concluded that in general SLiMS is software that is easy to use. Both library managers and users can use SLiMS to help activities in the library without experiencing significant difficulties, both to learn and to use it.

Constraints in the Utilization of SLiMS

To get optimal benefits from SLiMS, all features in SLiMS must be maximized. Until now the use of SLiMS at the Salatiga City Library and Archives Office has not been maximized, there are still SLiMS features that have not been utilized. SLiMS features that have not been utilized include the member area menu, serial control, copy cataloging and visitor counters. Initially, the menu for calculating the number of visitors was activated so that visitors can be counted by reading their member number using the provided barcode reader (Akbar & Azwar, 2018; Mathar et al., 2021).

The menu for calculating the number of library visitors in SLiMS was considered ineffective so it was deactivated again with the consideration that not all library visitors are members of the library. In addition to expanding the application of the program to other departments, the ability of library managers also needs to be improved. So far, most managers are proficient at using SLiMS only on menus related to their field of work. Librarians still have to try a little harder to use menus in SLiMS that they are not used to. Constraints in using SLiMS also occur in users. Although in general, users consider that the OPAC menu in SLiMS is useful and easy to use. However, users have not been able to maximize their search with OPAC. From the results of the interviews it is known that not all users have ever carried out specific searches and even all of the informants have never used Boolean logic to search collections.

CONCLUSION

From what has been described above, it shows that the use of the library system in South Sulawesi has started since 2010. Long before that, of course, there were libraries that implemented it, but only limited to the use of technology and not a system that was integrated with each other as understood by the library automation system. Its growth from year to year shows an increase, where in 2020 there are 6 new libraries using it. This is predicted to continue to increase in various types of libraries, especially school libraries. Meanwhile, the allocated costs varied, from those which could be said to be very economical to requiring large funds. This is of course adapted to each library. As for the system used. The benefits derived from implementing SLiMS for automation in this library include the ability to work faster, an increase in work performance and an increase in work productivity. This can be seen from the ability of library managers to process more library collections, which has increased up to five times compared to before using SLiMS.

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- 1145 *An Analysis of Library Management System Development in South Sulawesi - Ismaya, M Yunus Sudirman, Andi Ahmad Chabir Galib, Mawaddatul Maikam*
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