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Analysis of the implementation of Unpad Library Management System using the Technology Acceptance Model: librarian perspective

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Abstract. In 2017 Universitas Padjadjaran introduced Unpad Library Management System (ULiMS). All faculty libraries in Unpad then gradually migrate to ULiMS. The migration from one system to another requires readiness and acceptance of all supporting components, including librarians. This study aims to analyze the implementation of ULiMS by using the Technology Acceptance Model from the perspective of the librarians. This study uses qualitative research methods with a case study approach. Primary data was obtained from the results of observations and interviews with 11 librarians from 11 faculty libraries in Unpad. Triangulation is done by triangulation theory, namely through literature review. The results showed that all faculty libraries in Unpad could receive ULiMS as a system that could integrate all library databases in Unpad. Librarians can understand the weaknesses and advantages of ULiMS. In implementing ULiMS, faculty libraries at Unpad have migrated from the old system to ULiMS. However, some faculty libraries still run the old library management system together with ULiMS to overcome the weaknesses of ULiMS. This research is expected to provide input to policymakers in implementing a new library system so that it can be well received by all relevant components, especially by librarians.



1. Introduction

Universitas Padjadjaran (Unpad) was established on September 11, 1957, is one of the largest universities in Indonesia. This was marked by obtaining various good ratings by Unpad both in national and international ratings. For example, in 2018, Webometrics ranked Unpad in a 7th [1], and QS World University ranks Unpad as the 4th best university in Indonesia [2]. Likewise with the Ministry of Research, Technology and Higher Education (Kemenristekdikti) of the Republic of Indonesia, placing Unpad in the 9th best university ranking for the category of Non-Polytechnic Universities in Indonesia [3]. An excellent rating is supported by good human and institutional resources [4]. The library as one of the units in universities should have a role in preparing excellent and capable human resources [5].

There are at least four areas that become library tasks, namely curation which includes selecting, collecting, maintaining, storing and giving access to information; play a role in learning and research; play a role in the publication; creating and managing a place for information sources and users [6]. To be able to carry out these roles, the library needs support in various aspects, such as policy aspects, the readiness of human resources and technology.

Unpad has a Central Library called "Center of Information Scientific Resource and Library" (CISRAL). CISRAL has a function in carrying out the Tri Dharma of Higher Education as a means of teaching and learning, research, and community service [7]. With the spread of Unpad campus in several locations, there is a library in each faculty. Currently Unpad has 16 faculties, this means Unpad has 16 Faculty Libraries. In general, Unpad has 18 libraries, consisting of 1 Central Library (CISRAL), 1 Postgraduate School Library and 16 Faculty Libraries with 40 librarians [8]. In some faculties, such as in the Faculty of Mathematics and Natural Sciences, there is a Study Program Library. Until 2016, faculty libraries in Unpad were running using their respective library management systems. For example, the Library of the Faculty of Social and Political Sciences uses Delfi-5 and My SQL; Library of the Faculty of Nursing uses Library Information System (LIS); Library of Faculty of Industrial Technology and Agriculture uses SLiMS and Microsoft Excel; Library of the Faculty of Medicine uses SLiMS and Microsoft Excel; Library of the Faculty of Pharmacy uses LISI; Library of the Faculty of Communication Science Library uses Otomigen-X; Library of the Faculty of Mathematics and Natural Sciences uses MySQL; Library of the Faculty of Dentistry and the Faculty of Psychology use SLiMS, and Library of the Faculty of Agriculture using NCI Bookman.

In 2017 Unpad introduced Unpad Library Management System (ULiMS). All faculty libraries in Unpad then gradually migrate to ULiMS. Migration from one system to another requires readiness and acceptance of all supporting components, including librarians. This study aims to analyze the migration acceptance process from the old library management system used by each faculty library to a new library management system called ULiMS by using the Technology Acceptance Model from the perspective of the librarians.

The Technology Acceptance Model (TAM) was introduced by Fred Davis in 1985. In his dissertation, Davis used the SOR (Stimulus-Organism-Response) theory, where the capabilities and features of the system become a stimulus for organisms that have the motivation to use a system to produce responses as users an actual system [9]. According to Davis, the motivation to use a system by a person can be influenced by three factors, namely the perceived ease to use, perceived usefulness and attitude in using a system. [10]. Attitude factors are then developed into intention and behavior in the use of the system [11]. A research result states that TAM can explain the factors that influence the use of digital libraries in developing countries, where relevance, trust, and ease of access become essential factors in perceived usefulness, while social norms, knowledge areas, self-visibility, and efficiency show strength in one setting [12]. Other research results also show that TAM can measure interest in using Learning Management System [13].

This research is expected to provide input to policymakers in implementing a new library system so that it can be well received by all relevant components, especially by library managers.

2. Method

The research uses qualitative research methods with a case study approach. Case studies can investigate, explain, describe, evaluate, and theorize about complex issues in a context [14]. In this study we observed 11 of 16 Faculty Libraries in Unpad, namely Faculty of Social and Political Sciences (FISIP) Library, Faculty of Nursing (FKep) Library, Faculty of Agricultural Industrial Technology (FTIP) Library, Faculty of Agriculture (FaPerta) Library, Faculty of Geological Engineering (FTG) Library, Faculty of Medical Faculty (FK) Library, Faculty of Dentistry (FKG) Library, Faculty of Psychology (FaPsi) Library, Faculty of Pharmacy Library, Faculty of Mathematics and Natural Sciences (FMIPA) Library and Faculty of Communication Sciences (FIKOM) Library. Primary data was obtained through observations and interviews with 11 librarians who were the object of this study. Triangulation is done by triangulating theory from the results of the literature review. The research data is then categorized into categories, analyzed by being interpreted to produce results and conclusions.

3. Result And Discussion

3.1. Librarian Perceptions of Faculty Library Management Systems before Using ULIMS

The FISIP Unpad library has used Delfi 5, MySQL and Ms. Access to manage library collections. The Head of the FISIP Library considers that the Delfi 5 they use can provide fast and precise search results, especially for information on the number of books, classification numbers, number of copies and catalogs. Unlike Delfi 5, when using MySQL, the book data is based on the classification number, the title and copy cannot be obtained directly, but must go through the export and import data stages. Thus the FISIP Library requires a more integrated and straightforward system.

Librarians from the FKep Library view Library and Information System (LIS) that they use are still conventional in providing services to library users so they need a system that can automatically and effectively record user activity and library collection data. In line with the managers of FKep Library, FTIP Library and the FaPerta Library argue that they need an integrated library system, including access with one identity such as a student card in accessing library resources.

The FK, FKG and FaPsi libraries have used SLIMS which has quite complete features for a library system. However, the features used by FK and FKG libraries are only for cataloging, bibliographic and search data. They have not utilized the features in SLIMS to the maximum. Therefore they hope to utilize the library system more optimally, especially for circulation services. Librarians at the FaPsi Library added that they also needed a system that could integrate data from all libraries in Unpad.

Different opinions were given by the Faculty of Pharmacy Library Librarians where they think the system they use is LISI has a simple appearance so that library users use LISI more often than ULIMS. Likewise, with the FMIPA Library, librarians there assess MySQL as a database server program that is capable of receiving and sending data very quickly, multi-user and using basic SQL commands (Structured Query Language). Also MySQL has two forms of licenses, namely FreeSoftware and Shareware so that the program is free to use without having to buy or pay for the license. Another library that judges that the system used can fulfill the library automation function is the FIKOM Library with OtomiGen.X.

Thus, 8 of the 11 faculty libraries in Unpad which were the objects in this study stated that the system they used could not meet their needs. They need a new system that can complement the shortcomings of the systems they have used and make it easier for them to carry out their work. Meanwhile, three other faculty libraries have had the convenience of the systems they use. However, all faculty librarians at Unpad agreed that they still lacked human resources with information technology capabilities. This makes it difficult for faculty libraries when they have problems running a library management system.

3.2. Librarian's Perception of Unpad Library Management System

Unpad Library Management System (ULiMS) is a library management system built by Unpad by developing Senayan Library Management System (SLiMS). SLiMS is an open source library management system licensed under the GPL v3. SLiMS features include the Online Public Access

Catalog (OPAC), Digital contents/files, Documents record detail in Metadata Object Description Schema (MODS) XML format and JSON-LD format with schema.org, Really Simple Syndication (RSS) XML format, Open Archives Initiative Protocol for Metadata Harvesting (OAI-PMH) in Dublin Core format, Bibliographic/catalog database management, Union Catalog creation, Serial publication control, Federated search engine creation, Document items management with barcode support, Master Files Management and Circulation support [15]. As open source software, SLiMS can be developed according to library needs. Development of SLiMS into ULiMS can be accessed at <https://lib.unpad.ac.id>. ULiMS integrates all library databases in Unpad, so that all collections in one library unit can be accessed by all Unpad library users.

According to the librarian of FISIP Library, ULiMS is more practical because it can easily obtain information about the existence of the collection and display a wide selection of collections. Librarians from FKep and FTIP Libraries also feel the superiority of ULiMS compared to the old system they use, where all the transactions that occur in the library of each faculty can be recorded automatically when users make transactions in the library, starting from borrowing, returning, book status, to updating library collections. Librarians can easily find a list of users who are late in returning collections, users who borrow the collection most often, what titles are most often borrowed, etc. All information can also be printed if needed. In the case of borrowing and returning the borrowed books, transactions can be done using student cards, in addition to library cards. This means that there is already integration between student databases and library databases to ease the workload of librarians, especially in data input.

On the other hand, according to some librarians, ULiMS has a weakness where the metadata for all types of the same collection while in their library management system used previously, the metadata for each type of collection is different. In the ULiMS that distinguish the type of collection is at the option of the General Material Designation (GMD). The process of migrating from the old system to the new system requires time and effort because librarians must convert data from the old system to the new system. For example, there is a book identity that changes, then the title of the book becomes undetectable in the new system, cannot appear in the system, and the book of purchase and prize must be reprocessed) This obstacle makes the librarians in FISIP to reprocess the book data in the system. In the FTIP Library, the main database used is still in Ms. Excell, because in Ms. Excell they input all library data. Librarian of FMIPA Library considers that the technical input of user data on ULiMS is quite difficult because it has to go through several stages of data collection, especially updating user data regularly every year. The user must be re-registered every year and not automatically registered even though the technical set up. Another disadvantage of ULiMS which is considered to be a hassle for librarians is that there is an auto-login so librarians must re-login every few minutes, so there is time to wait for the process. Another disadvantage of ULiMS according to some librarians is related to the internet network. ULiMS works online or web-based, data input activities will be interrupted or not even stored when the internet network is unstable or disconnected. This also had an impact on faculty libraries that only had some computers that were insignificant with the number of library users, causing queues in accessing ULiMS in the library. For example, the average number of visits to the FTIP Library is 50 people per day, during busy times up to 200 visitors per day.

3.3. Intention Behavior of Faculty Librarians to Unpad Library Management System

Librarians of FISIP Library stated that they have the desire to promote and improve library services and management with the help of better and latest technology, but are often obstructed by procedural matters, so they need support regarding policies that can support these desires. Most librarians from the Faculty Libraries at Unpad assessed that ULiMS was considered suitable to be used in their library because it could provide easy access with a wider scope. Librarians from the Library of FIKOM also argue that ULiMS, which is built based on the web, provides access to all users with an internet connection allowing data updates to be carried out faster, systematically and on time. However, according to the Librarian of FMIPA Library, the integration of databases in ULiMS has not been accompanied by a policy of free lending between faculty libraries, even though the socialization has been conveyed to be

able to borrow between faculties. Librarians from the Faperta Library said that the lending policy for collections between faculty libraries was not accompanied by an efficient process. To borrow books between faculties, students must be assured of being loan-free in their original faculty, while data on students borrowing from their original faculties have not been recorded in other faculties' library databases. Therefore the Faperta Library must make contact with the faculty from students who want to borrow collections at the Faperta Library. This requires more service time for librarians. To overcome these problems, librarians from the Faperta Library suggested that ULiMS add features so that one faculty library could view student loan data from other faculties, or automatically cancel loans if there were students who were still dealing with other faculty libraries for energy and time efficiency of librarians.

Meanwhile, librarians from the FK Library, FaPsi Library, and FKG Library stated that they were more comfortable using SLiMS that had been used before than ULiMS. This is because there are unequal metadata so that some of the collections in the library cannot be found on ULiMS.

3.4. Implementation of Technology Acceptance Model at Unpad Library Management System from the Librarians Perspective

Briefly, Technology Acceptance Models for Unpad Library Management System from the perspective of librarians can be seen in Figure 1.

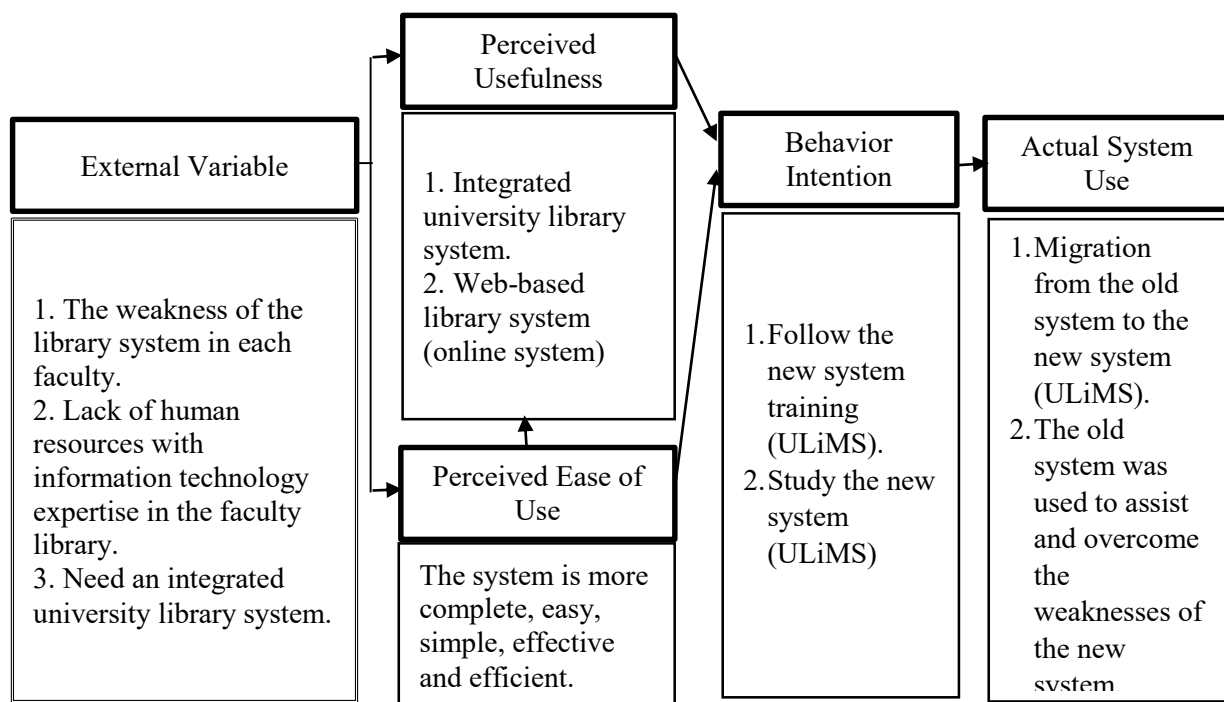


Figure 1. Technology Acceptance Model for Unpad Library Management System from the perspective of librarians. Adapted from the Venkatesh & Davis Technology Acceptance Model [11]

Based on the results of observations and interviews it can be seen that all faculty libraries in Unpad can receive ULiMS as a system that can integrate all existing library databases at Unpad. Librarians who have been given training on ULiMS can understand the weaknesses and advantages of ULiMS. In implementing ULiMS, faculty libraries at Unpad have migrated from the old system to ULiMS. However, some faculty libraries still run the old library system together with ULiMS to overcome the weaknesses of ULiMS. Based on the opinions of the faculty librarians that we have interviewed, ULiMS needs to improve the metadata of each type of collection, maintain the stability of the internet connection

so that the data input process can run well, make loan technical instructions between faculties so that the program can run effectively and efficiently and ULiMS simpler.

4. Conclusion

Migration from the old system used by each faculty library in Unpad to a new system called ULiMS has been implemented since 2017. However, several faculty libraries still run the old library system together with ULiMS to overcome the weaknesses of ULiMS. The factors that encourage all faculty libraries to migrate to ULiMS are because of the need for a more complete, easy, simple, effective, efficient and integrated library system. Developers from ULiMS are expected to improve the weaknesses of ULiMS so that ULiMS can be received and executed in its entirety by all libraries at Unpad, such as improving the metadata of various types of collections, maintaining the stability of internet connections so that the data input process can run well, making loan technical instructions between faculties so that the program it can run effectively and efficiently and simpler ULiMS.

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