Development of integrated library automation system: a case study of Universitas Negeri Semarang

A Purwinarko1,*, W Hardyanto 2 and M A Adhi 3

1 Department of Computer Science, Faculty of Mathematics And Natural Sciences, Universitas Negeri Semarang, Indonesia
2 Department of Physics, Faculty of Mathematics And Natural Sciences, Universitas Negeri Semarang, Indonesia

*Corresponding author: aji.purwinarko@mail.unnes.ac.id

Abstract. Based on the evaluation of Technology Acceptance Model (TAM) that has done on the library automation system of Universitas Negeri Semarang, it is necessary to improve the existing system to meet the needs of the users. System improvements are compiled using Rapid Application Development (RAD). The output of this research is an integrated library information system. The system is applied in all majors in Semarang State University so that users can borrow libraries across the majors.

1. Introduction

Information systems have an essential role in inevitable decision making, which encourages organizations to be able to provide excellent service to end users. Likewise with the Library service contained in the Library Guidelines [1] which explains that libraries as supporting elements of higher education, then together with other factors, participate in realizing the vision and mission of the college. According to section 24, paragraph 3 [2], it is explained that libraries need to develop information and communication technology-based services. Furthermore, in section 24, paragraph 4 states that universities need to allocate funding sources for library development following national education standards and national library standards. The national standard of the library itself is regulated in SNI 7330: 2009 and SNP 010: 2011 [3-4].

The library at Universitas Negeri Semarang (UNNES) has been trying to utilize information and technology (IT) services since 2009, using the library management system as an effort to improve services to the academic community. This system has provided benefits for the development of library automation, through this system, data processing membership, circulation, and cataloging can be done automatically [5]. Through a system that has been developed by the UNNES Library, it is expected that the UNNES academic community can fulfill all information needs.

However, the system that has been developed is still far from perfect expectations. Many obstacles that must be resolved are mainly related to the design, speed, and accuracy when accessing information, as well as the completeness of the data. Besides, the system contained in the UNNES Library is not yet integrated, so that data on lending library materials is still in the unit library or department.

With various obstacles that are still incomplete for the library, it affects the level of user visits to the library and data accountability. Other factors such as the ability of users to use the library management system, infrastructure in the UNNES Library environment, and periodic socialization as
it should be noted to restore user expectations to the library management system of the UNNES Library.

Based on the results of the evaluation of the library management system of the UNNES with the method of Technology Acceptance Model (TAM), it is necessary to develop an information system that can be well received by the stakeholders [6-9]. Furthermore, it is crucial to integrate data between the UNNES Library and the unit library or department. Moreover, the results of this development will be utilized at UNNES.

2. Method
The library management system of UNNES was developed using the Rapid Application Development (RAD) model [10-11].

![Figure 1. RAD Model](image)

Based on Figure 1, the RAD consists of:
a) Business Modeling
This section covers the flow of information between the various functions contained in the project. For example, what types of information are generated by each function and which are functions to handle that information. It is essential to do a complete business analysis to get valuable business information.
b) Modeling Data
After getting information in the business modeling phase, it is refined into a set of objects and is very important for the business flow. The attributes of each object are then identified and defined the relationship between objects.
c) Modeling Process
The data object defined in the previous phase is changed to meet the information flow to implement the business model. The process description is made to add, modify, delete, or retrieve data objects.
d) Application Generation
In this phase, the actual system is made. In building the system using automatic tools.

e) Testing and Turnover
Tests were carried out independently of the prototype at each iteration so that the overall testing time was reduced. Both the data flow and the interface of all components are thoroughly tested.

3. Result and Discussion
This study produces a library management system, as shown in Figure 2.

![Figure 2. Admin page](image)

Figure 2 is the initial display when successfully entered into the library automation system. Admin has several facilities, which is to submit book master data, as shown in Figure 3.

![Figure 3. Master book location](image)

The Add Data button is used to add new data so the form input location book will appear, as shown in Figure 4.
Library conditions can be entered through the master menu, as shown in Figure 5.

The Add Data button is used to display the input form for book conditions, as shown in Figure 6.

The master library type can be inputted through the book type menu; the display of this menu is shown in Figure 7.
Library data can be accessed through the library menu. This menu display is shown in Figure 8. Add Data button is used to add new book data to the system.

To enter the borrower's books can be inputted through the library borrowing menu. The display of this menu shows with Figure 9.
To add new users to the system can be done through the Add User menu on the User management menu. The appearance of the Add user menu is shown in Figure 10.

4. Conclusion
Based on the results that have been achieved, the library management system of the UNNES Library with the unit library or department has been integrated. Library management system contained in the Library of UNNES under national education standards and library national standards. The design, speed, and accuracy when accessing information, as well as the completeness of the library management system contained in the UNNES Library are in line with user expectations.

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