End-user satisfaction analysis on library management system unnes using technology acceptance model towards national standard of integrated library

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Abstract. The library which is the gate of the University should be supported by the existence of an adequate information system, to provide excellent service and optimal to every user. Library management system that has been in existence since 2009 needs to be re-evaluated so that the system can meet the needs of both operator and Unnes user in particular, and users from outside Unnes in general. This study aims to evaluate and improve the existing library management system to produce a system that is accountable and able to meet the needs of end users, as well as produce a library management system that is integrated Unnes. Research is directed to produce evaluation report with Technology Acceptance Model (TAM) approach and library management system integrated with the national standard.

1. Introduction

Information systems as support in management processes and decision making are inevitable, where every element of the organization is expected to provide fast and accountable service to end users or end users. Similarly, the services contained in the Library, in the Guidelines of Higher Education Libraries [1] explained that the college library is a supporting element of universities, together with other supporting elements, participate in implementing the achievement of vision and mission college. According to article 24, paragraph 3 [2], explained that the library of universities to develop library services based on information and communication technology. Furthermore, in article 24, paragraph 4 states that each college allocates funds for library development under legislation to meet national standards of education and national standards library. The national standard of the library itself is regulated [3,4].

In line with that, since the year 2009, Unnes library unit attempt to utilize IT services in the form of library management system to improve service to the academic community. Library management system has contributed to the development of library automation regarding data processing membership, circulation, and cataloging [5]. Through the library management system that has been developed by Unnes Library Units expected Unnes academic community in particular and outside Unnes in general able to meet all the information needs.

However, in its journey, since it was first developed, the library management system is far from perfect. Many of the obstacles that must be solved are mainly related to library management system design, speed, and accuracy when accessing information, as well as completeness of library
management system. Also, the library management system that runs on the Unnes library unit is still running partially, the data on library material borrowing is still in the library unit or department.

With the many obstacles that are still a homework for libraries, it affects the level of user visits to libraries and data accountability. Other factors such as the ability of users in using the library management system, infrastructure in the Unnes library unit, as well as periodic socialization should begin to be considered to restore user expectations of the library management system in the Unnes library unit.

In response to these problems, it is deemed necessary to conduct an initial evaluation of the library management system of Unnes library unit with the method of Technology Acceptance Model (TAM) Approach, to know the extent to which the information system developed by the institution can be well received by the stake holder. Furthermore, there needs to be data integration between Unnes library unit with library unit or department.

1.1 Library information systems

Information systems as organizational support are expected to provide fast and accurate service to users [6, 7]. Library automation is one form of utilization of information technology including software and hardware to carry out various tasks of service and library management [8, 12]. A good library automation system is an integrated system, from library procurement systems, library processing, library retrieval, circulation systems (borrowing, return and loan renewal), membership, member permissions settings, fines of late returns, booking systems and reporting system of library activities with various parameters of choice. More perfectly, if the library automation system is equipped with barcoding, and web-based data access mechanism and internet [8].

1.2 Technology Acceptance Model

TAM shows how users receive and use new technologies. This model explains the factors that influence user decisions about how and when they will use new technology [9, 11]. Miller and Khera have analyzed data implemented on digital library systems at agricultural universities in two developing countries (Kenya and Peru) as a whole regarding perceived ease of use and perceived usefulness (two TAM constructs), and individual actions that shape the overall steps. The result of this research is that TAM works well in describing the factors influencing the use of digital libraries in developing countries, with perceived usefulness as the main predictor for using this system (The Essential Electronic Agricultural Library, or TEEAL) [10].

2. Methods

Stakeholder Library Management System UNNES which includes students, lecturers, and librarians as library management system users. The research method is surveying with descriptive analysis approach. The survey questionnaires were distributed to the library’s visitors at UNNES, both the Library Unit and the Department's library. Then the visitors are asked to fill out the questionnaire based on the automation.

The model of analysis in this study can be seen in Figure 1. Exogenous variables include Perceived Ease of Use (PEU), a level where one believes that technology can be easily used. Also, there are endogenous variables, i.e., factors predicted by one or more constructs. Endogenous constructs can predict one or more other endogenous constructs, but endogenous constructs can only be causally related to endogenous constructs. In this study, endogenous constructs include Perceived Usefulness (PU), Attitude Toward Using (ATU), Behavioral Intention To Use (ITU) and Actual System Usage (ASU).
Processing and data analysis is done with multivariate Structural Equation Model technique using AMOS 19 software with following stages:

a) Development of the theory-based model  
b) Development of path diagram (path)  
c) Conversion of flowcharts into equations  
d) Selecting input matrix and model estimation  
e) Inferential Analysis (Assumption Test, Fit Model Test)  
f) Test Parameter Model

3. Result and Discussion

SEM is a statistical technique used to build and test statistical models that are usually in the form of causal models. SEM is a hybrid technique that includes confirmatory aspects of factor analysis, path analysis, and regression.

This research method is developed by distributing questionnaires to each library, and that has been returned and declared valid for the library is as much as 32 questionnaires. Each questionnaire consisted of 55 parameters. With this TAM, it can be proposed the following hypothesis:

- H1: Relevance will affect Perceived Ease of Use  
- H2: Terminology will affect Perceived Ease of Use  
- H3: Screen Design will affect Perceived Ease of Use  
- H4: Knowledge of Search Domain will affect Perceived Ease of Use  
- H5: Computer Self-Efficiency will affect Perceived Ease of Use  
- H6: Relevance will affect Perceived Usefulness  
- H7: Terminology will affect Perceived Usefulness  
- H8: Screen Design will affect Perceived Usefulness  
- H9: Perceived Ease of Use will affect Perceived Usefulness  
- H10: Perceived Ease of Use will affect Attitude  
- H11: Perceived Usefulness will affect Attitude  
- H12: Attitude will affect Behavioral  
- H13: Perceived Usefulness will affect Behavioral  
- H14: Behavioral will affect Actual

Hypotheses can be formulated based on the number of relationships between independent and dependent variables that exist in the structural model and as a basis for decision making is to see the Figure and Table in column P (probability), namely:
• If $p > 0.05$ then $H_0$ is rejected (no relationship)
• If $p < 0.05$ then $H_0$ is accepted (there is a relationship)

*Standardized Regression Weights: (Group number 1 - Default model)*

Based on the Regression Weights table can be concluded that:
• Computer Self-Efficiency will affect Perceived Ease of Use ($H_5$)
• Perceived Ease of Use will affect Perceived Usefulness ($H_9$)
• Perceived Usefulness will affect Attitude ($H_{11}$)
• Attitude will affect Behavioral ($H_{12}$)
• Behavioral will affect Actual ($H_{14}$)

*Test Reliability*

Based on the results of reliability testing it can be concluded that all items are reliable, this is shown by the value of Cronbach's Alpha $> 0.6$.

*CMIN / DF*

The value of CMIN / DF is 1:59, this indicates that the fit model.

*Validity test*

This validity test is used to know Standardized Factor Loading (r value). The lower value limit used to measure the validity test results $0.7$.

4. Conclusion

Based on the data analysis found that the model used is fit, this is supported by the value of CMIN / DF of 1.59. Then the data used is feasible because it has been following the test results validity ($> 0.7$) and test reliability (Cronbach's Alpha $> 0.6$). Then based on the model in get the conclusion that: (1) Computer Self-Efficiency will affect Perceived Ease of Use ($H_5$); (2) Perceived Ease of Use would affect Perceived Usefulness ($H_9$); (3) Perceived Usefulness will affect Attitude ($H_{11}$); (4) Attitude will affect Behavioral ($H_{12}$); (5) Behavioral will affect Actual ($H_{14}$).

So Perceived Ease of Use (ease of use) automation application is expected for visitors. Perceived Ease of Use is influenced by Computer Self-Efficiency, application design and complicated or not in using the application. The ease of use will have an impact on the sense of utility in using automation applications.

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