Development of an information system for measuring the service satisfaction index for education personnel services

N R Utami1, A Marianti1, and A Purwinarko2,*

1Department of Biology, Faculty of Mathematics and Natural Sciences, Universitas Negeri Semarang
2Department of Computer Science, Faculty of Mathematics and Natural Sciences, Universitas Negeri Semarang

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

Abstract. The evaluation process of implementing the quality system in the Faculty of Mathematics and Natural Sciences, Universitas Negeri Semarang, is used to maintain the quality system's continuity with predetermined standards. Therefore, we need an information system to measure the service quality satisfaction index (SIANTIK), which is well-established to obtain accurate, credible, and accountable data for Faculty leaders' policymaking. Information system development using the RAD method. This information system testing uses the black bock method. The test results show that the system is feasible to use.

1. Introduction

The rapid development of technology encourages information systems technology to support human activities to be more effective and efficient [1]. An information system can be defined as collecting various interrelated elements to form a complete unit to integrate, process, and store data and distribute it as information [2].

An information system plays a role in supporting academic policy and can also support conservation policies through paperlessness. Paperlessness is an efficient step in preventing pollution and environmental damage, besides optimizing the learning process through information systems [3].

In line with this, Universitas Negeri Semarang, through its academic policies, seeks to design an information system to support the evaluation process of implementing the quality system that has been implemented in the faculty environment.

Measuring the service satisfaction index to users must be carried out in a programmed and continuous manner. The data that enters the system must be representative and can be processed for leadership consideration in policymaking; in order to support this, We need a support system that can ensure the continuity of the service quality satisfaction index measurement process [4].

An information system can answer this challenge. An established system is needed to obtain accurate, credible, and accountable data so that the results are suitable for use as material for policymaking for Faculty leaders. So far, there has been no standard system that is supported by information technology, which has been developed to obtain data on the service satisfaction index of education personnel even though the data is vital and necessary to support the quality assurance system.
2. Method
Waterfall model use by Hardyanto et al. [5] to design an information system. The waterfall model is a flexible model for designing an information system. Several steps need to be done in using the waterfall method [6, 7].

![Waterfall Model Stages](image)

**Figure 1.** The stages of the Waterfall Model [8]

2.1 Requirements Analysis
Requirements analysis is used to analyze the software's compatibility with the provisions of stakeholders in the application design process [9]. The inadequacy in determining the needs analysis for the software that is designed will have a fatal impact.

2.2 Design
Software design is not only about interface design but is more comprehensive, which includes designing algorithm designs, structural designs, concept designs, databases, and architectural software designs.

2.3 Implementation
The implementation stage is the stage of writing all code and then compiling it into an operational application. This stage realizes all business needs and design into a complete application and is the longest step in SDLC [10].

2.4 Testing
The purpose of software testing is to improve quality to become a more efficient software [11, 12]. It also aims to check requirements and objectives that have been set have been implemented appropriately into the software.

2.5 Maintenance
So far, the software maintenance process has undergone very significant changes [13]. Maintenance is a process for modifying software after it is implemented; this process aims to correct the software's errors and improve its performance and quality.
3. **Result and Discussion**

Figure 2 is a view of the system, showing a survey conducted by faculty management.

![Figure 2. View of system.](image)

The action button in the Action column is selected, then the display will change to the survey page, as shown in Figure 3.

![Figure 3. Survey form.](image)

To save the user's survey, the user can press the Save button in the lower-left corner. Then the data that has been stored will only be visible through the admin menu. To access the admin menu, users must log in using the registered user and password. Then when login is successful, the system display will change, as shown in Figure 4.

Figure 5 shows the data of respondents who have filled out the survey. From the respondent's data, it will be seen that user satisfaction with the services provided by academic staff at the faculty. This
level of service consists of 5 items, which include very unsatisfactory, unsatisfactory, adequate, satisfying, and very satisfying.

Direct testing using the black box testing technique so that can reduce errors that might occur. Function testing is done by providing input to each function to ensure that the function results are working properly. The black box testing requires a long computational time because the testers do not
know the application's internal structure, so it requires much effort to find bugs [14,15]. The black box testing results are shown in Table 1.

| Process Name         | System response                                                                 | Compatible |
|----------------------|---------------------------------------------------------------------------------|------------|
| Login                | If successfully login, it will display the dashboard. If it fails will return to the login page. | ✓          |
| Manage monitoring data | If successfully adding data, the success message will appear, and the monitoring data in the table will increase. | ✓          |
| Survey form          | If successfully adding data, a successful message will appear                      | ✓          |
| Manage reviews data  | If successfully adding data, a successful message will appear, and the amount of data in the table will increase. | ✓          |

4. Conclusion
Based on the results obtained, Institute can use a survey information system that produces by research. This survey system can be used to gather information about the services provided by faculty staff to students or lecturers. Furthermore, with the survey data, faculty managers can evaluate to improve services to users.

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