Web Based Internal Quality Management Information System: A Design and Prototyping

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ABSTRACT

Improving the quality of education in higher education institutions is crucial to support the development of human resources and the progress of the nation. Utpadaka Swastika University, as one of the higher education institutions in Indonesia, is committed to producing high-quality and competitive graduates. To ensure this quality, an effective and efficient internal quality assurance system (SPMI) is necessary. This research aims to design and build an internal quality assurance system based on the web using PHP and MySQL at Utpadaka Swastika University with the prototyping method. Software testing is conducted through Black Box Testing. This internal quality assurance system aims to ensure the quality of higher education provided by universities through the implementation of the Tridharma of Higher Education, in order to realize the vision and meet the needs of stakeholders. The achievement of quality assurance goals through the internal quality assurance system will be accredited through external quality assurance systems. This system can assist in presenting document information accessible to program heads, leaders, auditors, administrators, and quality assurance body (LPM) leaders. It facilitates program heads in the process of collecting and submitting documents for evaluation and audit instruments, allowing the LPM to directly identify issues and quality standards in the internal quality assurance process. This system is expected to be used as a reference for further development of an Internal Quality Assurance System so that the system can have better features.

KEYWORDS: SPMI, Quality Assurance IS, Prototyping

1. Introduction

The internal quality assurance system aims to ensure the quality of higher education provided by universities through the implementation of the Tri Dharma of Higher Education, in order to realize the vision and meet the needs of stakeholders. [1]. The achievement of quality assurance objectives through the Internal Quality Assurance System (SPMI) will be accredited by BAN-PT through the External Quality Assurance System (SPME). This process can be carried out internally by the respective universities and audited by the National Accreditation Board for Higher Education (BAN-PT) [2] or other external agencies. Therefore, the objectivity of assessments regarding the continuous maintenance and improvement of academic quality at universities can be achieved.

The current system is still not optimal. For instance, at the beginning of the year, LPM distributed books to the faculties containing the Quality Manual of the Internal Quality Assurance System, policies and directions of the Internal Quality Assurance System, SOPs, academic quality standards of Utpadaka Swastika University, and faculty quality standards. Faculties were expected to disseminate these books to their respective study programs. However, during an LPM meeting, study programs reported that they had not received any dissemination regarding these books, requiring LPM to redistribute them. Additionally, there is a self-verification as an initial audit step conducted by the heads of study programs, which must be completed

and returned to LPM. However, audits from all study programs have not been fully returned even after two months.

Utapadaka Swastika University currently lacks any program-based system to manage its Internal Quality Assurance System (SPMI). This has resulted in slow decision-making processes and delays in preparing quality audit reports within the institution. The absence of a structured framework for implementing SPMI has hindered the university's operational efficiency and transparency in internal evaluation processes. The impact of this situation extends to various aspects, including resource management, the improvement of educational quality, and the overall accountability of the institution. Therefore, serious efforts are needed to develop and implement an SPMI program to expedite decision-making and ensure sustainable quality at Utapadaka Swastika University. This research was conducted from April 2023 to July 2023.

2. Research Methods

Steps taken to research the internal audit process are as follows:
 a. Searching for and reading literature on internal audits.
 b. Studying the internal audit process to identify the strengths and weaknesses of the current process.
 c. Collecting data related to the internal quality assurance system.
 d. Designing a web-based internal quality assurance system at Utpadaka Swastika University.

In this research, the data sources used by the author are primary and secondary data.
 a. Primary data is the data obtained directly by the researcher from the original source at the research location. In this research, primary data is obtained directly from the research site through observation or through direct interviews with users related to the current internal audit system.
 b. Secondary data is research data obtained indirectly through intermediary media, obtained and recorded by other parties. Secondary data generally consists of evidence, records, or reports compiled in archives.

3. Current System Analysis

The analysis is conducted using Unified Modeling Language (UML) [3].
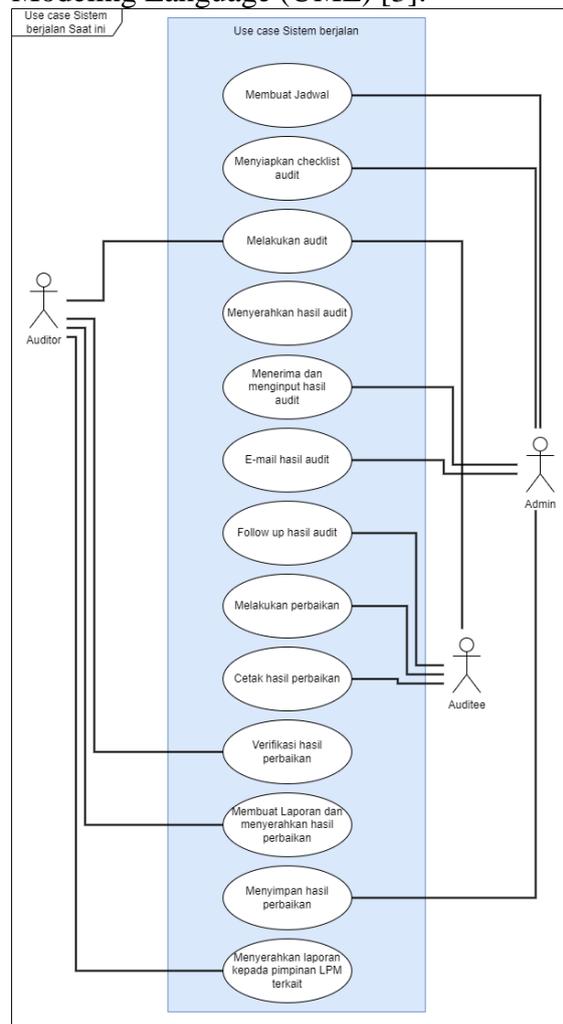

Figure 1. Current system use case diagram

The Admin is responsible for creating the audit schedule, preparing the audit checklist, inputting the audit results/reports, and storing the signed audit results/reports. The Auditor is responsible for conducting the audit, creating the audit results/reports, submitting the audit results/reports to the admin for input,

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and handing over the audit report to the relevant LPM management. The Auditee is responsible for conducting the audit process with the auditor, completing the audit results inputted by the admin concerning corrective actions, printing the corrective actions for verification and signature by the auditor, and then submitting the verified audit results to the admin for dissemination and archiving.
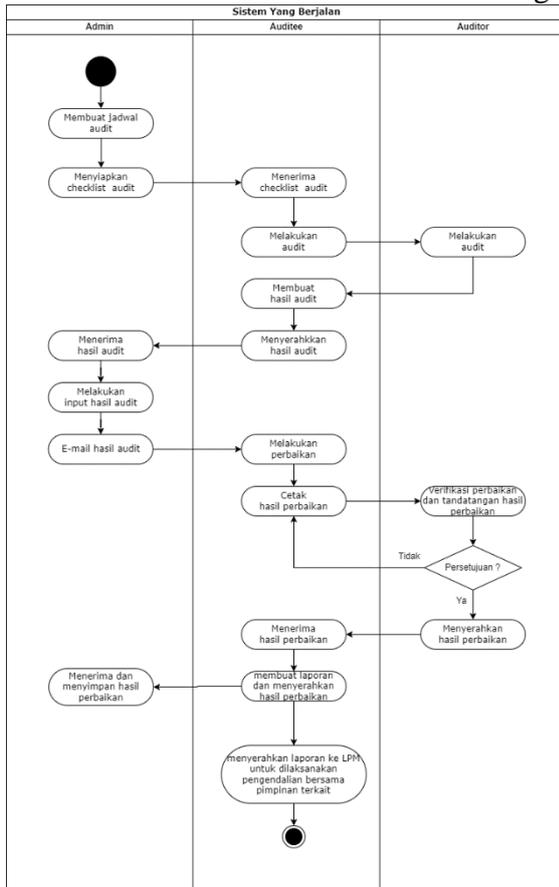

Figure 2. Current system activity diagram

The workflow of the Admin involves creating the audit schedule; preparing the audit checklist; the Auditor conducting the audit with the auditee according to the established schedule; the Auditor creating the audit results and submitting them to the admin; the Admin receiving the audit results from the auditor and inputting them into the computer; the Admin sending the audit results via email to the audited department; following the email from the admin, the auditee addressing the audit findings regarding any discrepancies; the Auditee completing the audit summary

inputted by the admin by detailing corrective actions and including photographic evidence of the corrections; the Auditor verifying the corrective actions, and if the verification is satisfactory, the auditor signing the completed audit summary with evidence of corrections, or if the verification is not satisfactory, the auditee making further corrections and printing the corrective action summary, followed by re-verification by the auditor; the Auditee submitting the signed audit results by the auditor to the admin; the Admin storing the corrective actions provided by the auditee; and finally, the Auditor submitting the report to LPM for joint control with the relevant management. The prototype program was developed using the PHP language, and the MySQL database, with the Laravel framework due to its speed of creation [4].

3.1 Problems
Several issues commonly faced in the Internal Audit System at Utpadaka Swastika University include:

a. Currently, the issuance of quality documents is still done manually for each study program at the university, indicating challenges in implementing the internal quality assurance system.

b. The process of filling out and returning internal audit instruments from the auditee to the auditor is slow, hindering the internal audit analysis process.

c. Identified shortcomings in the implementation of a system that can automate the process of filling out and sending internal audit instruments.

5. System Design
After identifying the existing issues, the author strives to resolve them by developing a web-based internal quality assurance system. This system is expected to facilitate all parties at Utpadaka Swastika University in conducting internal quality audits, monitoring quality documents, and storing all quality documents effectively in a database. Consequently, the presentation of audit

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results can be done more effectively and efficiently.

Figure 3. Proposed system use case diagram

Class diagrams are created to give an overview of the class, and what data needs to be stored in the system.

Figure 4. Proposed system class diagram

Equipped with two Unified Modeling Language (UML) designs, the development of the information system interface proceeds. These UML designs provide a starting point of blueprint, detailing the structure and behavior of the system. They serve as crucial guides, ensuring that the interface is aligned with the system's functional and technical requirements.

5.1 User Interface Design

Figure 5. Landing page design

The initial page design can be seen in *Figure 5*, displaying information for users who have not yet logged in. This landing page serves as the first point of interaction between the user and the system, providing critical information and navigational cues even before accessing the main features. It ensures that users are well-informed about the system's purpose, capabilities, and the benefits of logging in. Additionally, the page is designed to be intuitive and user-friendly, guiding users smoothly through the login process with clear instructions and visually appealing elements. This thoughtful design aims to enhance the user experience right from the start, setting a positive tone for their engagement with the system..

Figure 6. Dashboard design

The dashboard page viewed by users upon their first login can be seen in *Figure 6*. This dashboard serves as the central hub where users can access and manage various aspects of their account and the system. It provides a streamlined overview of key functions and features, ensuring that users can navigate the platform effortlessly. The design focuses on user experience, making it intuitive and visually appealing, allowing users to quickly find the information they need and take

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necessary actions. This initial view sets the stage for an efficient and productive interaction with the system, enhancing user satisfaction and engagement right from their first login.

Figure 7. Report display design

The report page contains reports that can be printed by users who have logged in, in accordance with their respective security policies. This page is designed to offer users convenient access to a variety of reports relevant to their needs. It ensures that sensitive information is handled securely, only allowing authorized users to print documents based on predefined security protocols. The interface is user-friendly, allowing quick navigation and seamless retrieval of reports. This functionality not only enhances user productivity but also maintains the integrity and confidentiality of the information, ensuring compliance with institutional security standards.

Figure 8. Instrument list display design

The instrument list is used to view, add, and modify the SPMI instruments in the system. This functionality ensures that users can easily manage the various quality assurance instruments, keeping them updated and relevant to current needs. By allowing for the addition and modification of instruments, the system ensures continuous improvement

and adaptability to new standards or requirements. This feature is designed to be user-friendly and intuitive, making the management of quality assurance instruments efficient and straightforward. Users can navigate through the list, make necessary changes, and ensure that the instruments are always up-to-date and aligned with the university's quality assurance policies.

6. Testing

Testing is conducted using the black-box method to validate the developed features. This approach focuses on evaluating the functionality of the system without considering its internal structures or workings. By using black-box testing, testers can verify that the software behaves as expected in various scenarios, ensuring that all features operate correctly from a user's perspective. This method helps in identifying any discrepancies or issues in the system's output, thus ensuring the reliability and effectiveness of the developed features. The aim is to guarantee that the system meets its design specifications and user requirements, providing a robust and user-friendly experience. [5].

Table 1. Test case

No.	Test	Result
1	Sistem akan menolak akses login dan menampilkan pesan "Password Salah".	Valid
2	Sistem akan melakukan Cek kesesuaian username dan password, apabila benar maka sistem akan masuk dan menampilkan halaman utama.	Valid
3	Sistem akan menampilkan daftar indikator penilaian terbaru, apabila benar maka akan muncul notifikasi "Data berhasil ditambahkan".	Valid
4	Sistem akan menampilkan Daftar instrumen yang sudah diberi nilai.	Valid
5	Sistem akan menampilkan daftar terbaru dengan notifikasi "Data Berhasil Dihapus"	Valid
6	Sistem akan menampilkan hasil daftar instrumen terbaru dengan notifikasi "instrumen berhasil dibuat"	Valid

7. Conclusion

Based on the research and testing of the

Internal Quality Assurance System (SPMI) conducted by the author, several conclusions can be drawn. First, this system helps present SPMI document information that can be accessed by the head of the study program, leadership, auditors, administrators, and LPM leaders. Second, it facilitates the head of the study program in the process of collecting and submitting documents for evaluation and audit instruments, enabling LPM to directly identify issues and quality standards in the SPMI process. Third, the system displays SPMI activity information conducted by the head of the study program, administrators, leadership, and LPM leaders, ensuring that the SPMI process is well-documented. Finally, this system can generate reports from the SPMI process more quickly and accurately based on the data inputted into the system.

References

[1] Indonesia, *Peraturan Menteri Pendidikan dan Kebudayaan Nomor 3 Tahun 2020 tentang Standar Nasional Pendidikan Tinggi,* Jakarta: Kementerian Pendidikan dan Kebudayaan, 2020.

[2] B. A. N. P. Tinggi, *Peraturan Badan Akreditasi Nasional Perguruan Tinggi Nomor 1 Tahun 2022 Tentang Mekanisme Akreditasi Oleh Badan Akreditasi Nasional Perguruan TInggi,* Jakarta: Badan Akreditasi Nasional Perguruan Tinggi, 2022.

[3] R. a. K. P. Pooley, "The unified modelling language and performance engineering," in *IEE Proceedings-Software*, 1999.

[4] D. a. N. A. I. Ambriani, "Rancang bangun repository publikasi ilmiah dosen berbasis web menggunakan framework laravel," *J. Manaj. Inform,* vol. 10, no. 1, pp. 58-66, 2020.

[5] S. a. D. J. Nidhra, "Black box and white box testing techniques-a literature review," *International Journal of Embedded Systems and Applications (IJESA),* vol. 2, no. 2, pp. 29-50, 2012.

[6] T. a. o. Sugesti, "Management of the Internal Quality Assurance System (SPMI) for Higher Education," *Holistic Science,* vol. 3, no. 3, pp. 146-151, 2023.