

Development of External Reviewer Feature for Research and Community Service in the Information System of the Institute for Research and Community Service State University of Surabaya

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Abstract. State University of Surabaya aims to improve the quality and efficiency of the international standard of the three dharmas devotion, which will support the development of World Class University. Therefore, faster information exchange and increased collaboration and innovation in the implementation of research and community service are needed. To ensure the quality of research and community service implementation, the review, monitoring, and evaluation process is urgently needed. However, there are problems related to the implementation of research reviews and community service. This is due to the lack of integration of internal reviewer data with external reviewers at the Information System of the Institute for Research and Community Service State University of Surabaya. Therefore, research was carried out in the context of the Development of External Reviewer Features for Research and Community Service in the Information System of the Research and Community Service Institution of the State University of Surabaya. This research aims to integrate external reviewer data into the application. This feature includes functionality for inputting, managing, and coordinating external reviewers. It also includes mechanisms to provide feedback, track the progress of research proposals and community service and document results. Thus, the implementation of research and community service runs more optimally so that it will have an impact on improving the quality of the implementation of the three dharmas devotion of Higher Education with international standards, which will encourage the achievement of the State University of Surabaya as a World Class University.

Keywords: development, research, community service, reviewer, integration

Introduction

Higher Education is a level of education that can be taken after completing education. According to Indonesian Law Number 12 of 2012, Higher Education has several functions, one of which is the realization of Community Service based on reasoning and research works that are useful in advancing the general welfare and educating the nation's life. State University of Surabaya is one of the Legal Entity State Universities in Surabaya which is based on Government Regulation Number 37 of 2022 concerning Legal Entity State University of Surabaya. Currently, the State University of Surabaya has several levels of education, which include diploma, bachelor's, master's, doctoral, and professional programs. As a higher education provider, State University of Surabaya should implement the three dharmas of devotion to Higher Education, including research and community service.

State University of Surabaya in this case through the Institute for Research and Community Service, provides facilities to the entire academic community, both lecturers, education staff, and students, to carry out

research and community service. In its implementation, several research and community service schemes have been provided that can be chosen by the entire academic community through the Information System of the Institute for Research and Community Service. The scheme offered is not only within the internal scope of the State University of Surabaya but also in the national and even international scope. This aims to improve the quality and efficiency of the international standard of the three dharmas devotion, which will support the development of a World Class University. Therefore, faster information exchange and increased collaboration and innovation in the implementation of research and community service are needed.

To ensure the quality of the implementation of research and community service, the review, monitoring, and evaluation process is urgently needed. In addition to internal reviewers, external reviewers are also needed to provide diverse perspectives, expertise, and insights to enrich the evaluation process. However, there are problems related to the implementation of research reviews and community service. This is due to the lack of integration of internal reviewer data with external reviewers at the Information System of the Institute for Research and Community Service State University of Surabaya. Therefore, research was carried out in the context of the Development of External Reviewer Features for Research and Community Service on the Information System of the Institute for Research and Community Service State University of Surabaya. This study aims to integrate external reviewer data into the Information System of the Institute for Research and Community Service State University of Surabaya. This feature includes functionality for inputting, managing, and coordinating external reviewers. It also includes mechanisms to provide feedback, track the progress of research proposals and community service and document results. So that the review process will be more effective and efficient. Thus, the implementation of research and community service runs more optimally. In addition, the collaboration process is also becoming more optimal. This will have an impact on improving the quality of the implementation of the three dharmas devotion of the State University of Surabaya in Education to international standards, which will encourage the achievement of the State University of Surabaya as a World Class University.

With the integration of external reviewer features, hopefully, it can increase transparency, accountability, and accuracy in the assessment of research projects and community service. By engaging external reviewers, State University of Surabaya is able to maintain high standards of academic integrity and social relevance so that it will encourage greater trust and cooperation in the academic community and the general public.

Methods

A. Data Collection Methods

In the development of the External Reviewer for Research and Community Service feature on the Information System of the Research and Community Service Institute of the State University of Surabaya, the researcher collected research and community service data from the State University of Surabaya to collect data and collect external reviewer data by conducting interviews with the.

B. System Development Methods

The development method used in this study is the R&D (Research and Development) method. For development, it will involve several stages to produce functional and as-needed features. Here are the steps that can be applied:

1. Analysis

Several processes are carried out in the analysis, namely the following:

- Literature Studies: Studying systems and understanding how external reviewer features can improve the research review process and community service.
- Questionnaires and Interviews: Involve relevant parties, such as lecturers, internal reviewers, and Research and Community Service Institute staff, to identify their needs and expectations related to this feature.
- Analyse Existing Processes: Review the current workflow in the process of appointing reviewers to identify any issues or shortcomings that could be addressed with the new features.

2. Design

There are several stages in system design, which are as follows:

- Use Cases and Flowcharts: Create scenarios for how external reviewers will be integrated into the system. This includes the workflow from selecting reviewers assigning review assignments to review results integrated into the system.

- Wireframe and Prototyping: Developed an interface for the external reviewer module, which includes a reviewer registration page, review assignments, and an interface for uploading review reports. Based on the results of literature studies.
3. Development
Develop features based on the design that has been created. It involves integration with external reviewer databases, automation of the assignment process, and notification systems. Furthermore, tests will be carried out on each component developed separately to ensure that all features can function properly.
 4. Validation and Testing
In the trial stage, tests will be carried out on the developed features. This test can include scenarios of appointing reviewers, uploading review results, and managing data by Research and Community Service Institute admins. Furthermore, feedback will be collected from users involved in the trial to find out if there are any difficulties or features that need to be improved.
 5. Implementation
Implementation is carried out on the test results obtained. The analysis aims to provide an overview of the condition of the application and input on the direction of further development. Furthermore, the system will be disseminated to Research and Community Service Institute staff and external reviewers about the use of new features. The final stage of this implementation is to fully integrate the external reviewer module into the Information System of the Institute for Research and Community Service after final testing.
 6. Evaluation and Improvement
Post-Implementation Monitoring Continuous system usage to know if there are any issues or adjustments needed. Based on the feedback obtained, update the system to improve existing features.

Result and Discussion

A. System Design

The following are the business processes, use cases, data flow diagram, erd, and database design from the development of external reviewer features at the Information System of the Institute for Research and Community Service State University of Surabaya.

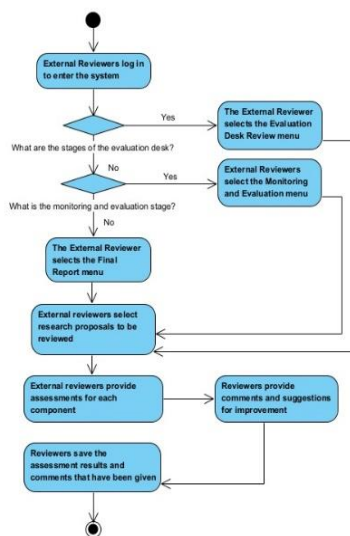


Figure 1 Business process features external reviewer.

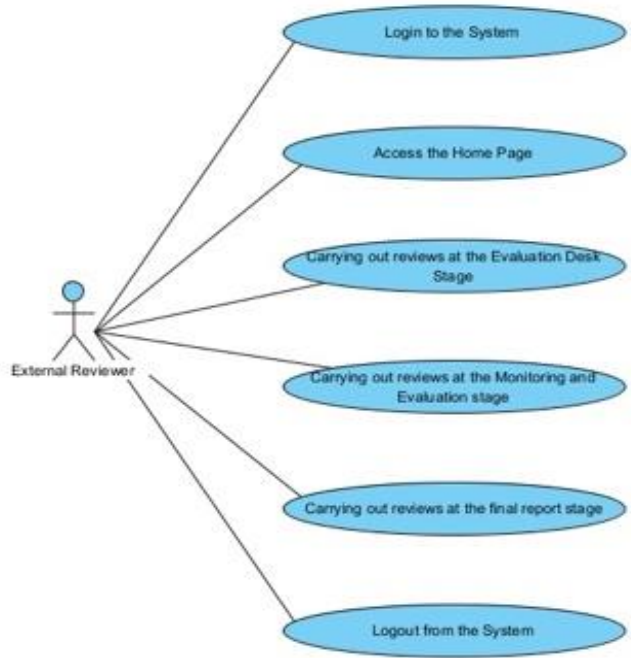


Figure 2 Use case diagram

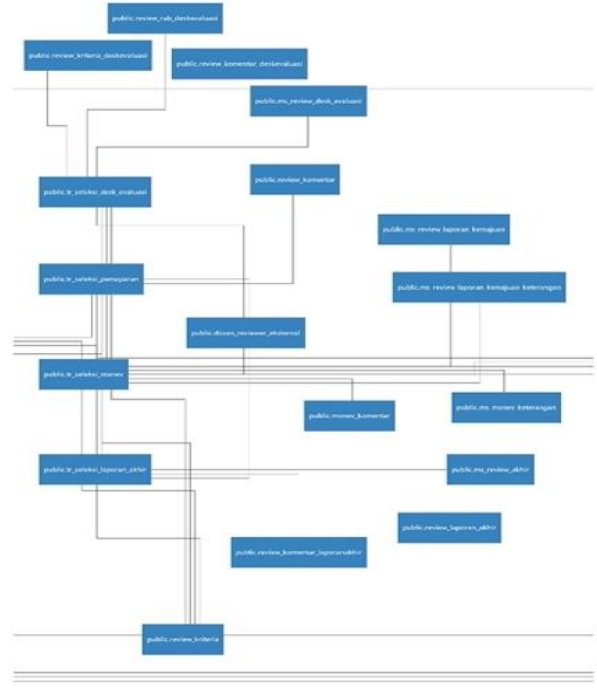


Figure 3 Database design

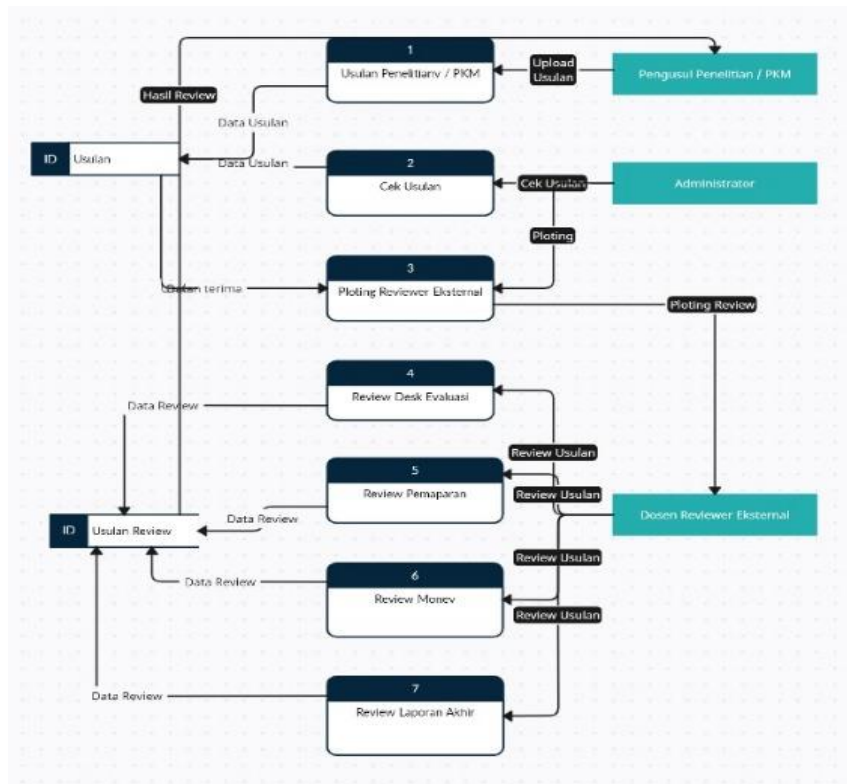


Figure 4 DFD

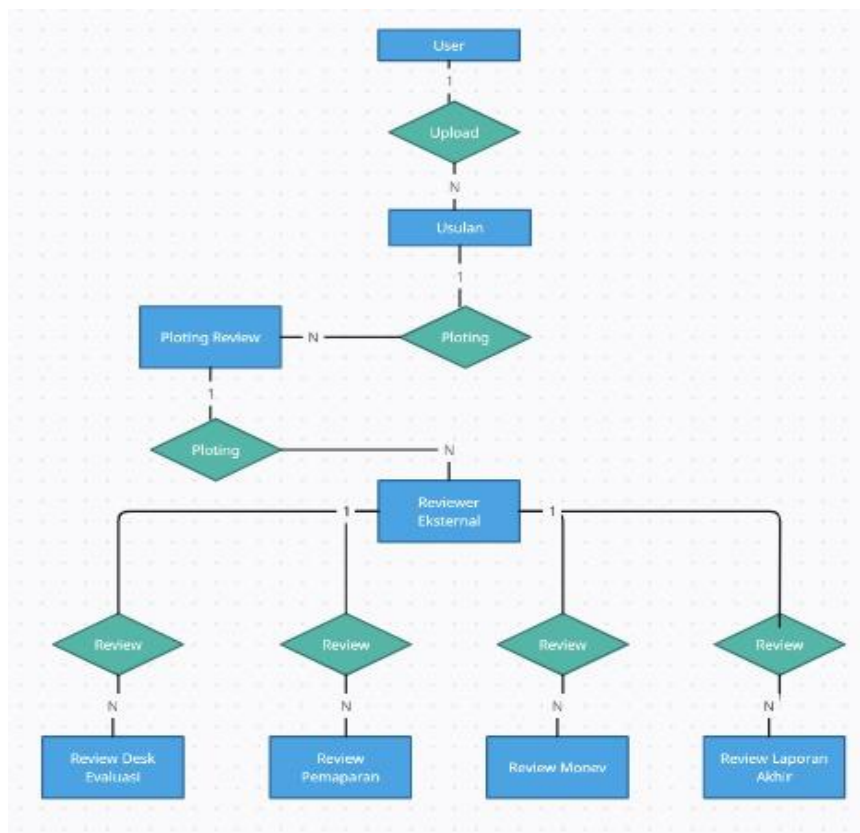


Figure 5 ERD

B. Implementation

1. Login Reviewer External

In addition to being reviewed by Internal Reviewers, there are certain schemes that are also reviewed by External Reviewers. To review the proposed research, the External Reviewer must first log in to the Information System of the Institute for Research and Community Service, as shown in Figure 6:




Figure 6 Login page

If the username and password entered are correct, the External Reviewer will enter the Home page on the Information System of the Institute for Research and Community Service. To be able to review research proposals and services, External Reviewers can use the features on the External Reviewer Menu, as shown in Figure 7. It can be seen that there are three features provided, namely Review Desk Evaluation, Monitoring and Evaluating, and Final Report.

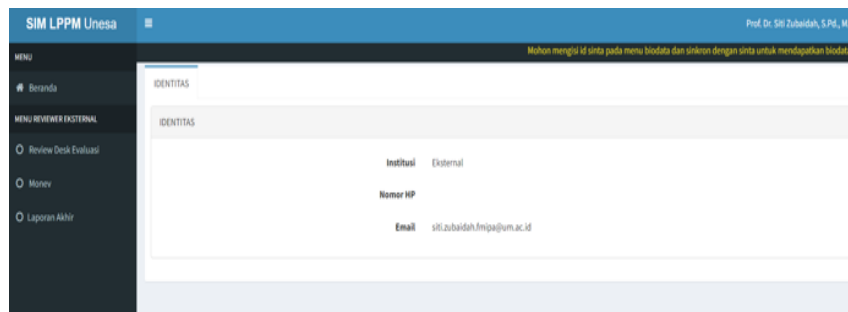


Figure 7 External User Pages

2. Review Evaluation Desk

Review Evaluation Desk is a feature used to review proposals at the Evaluation Desk stage. At this stage, proposals that need to be reviewed will appear, as shown in Figure 8.

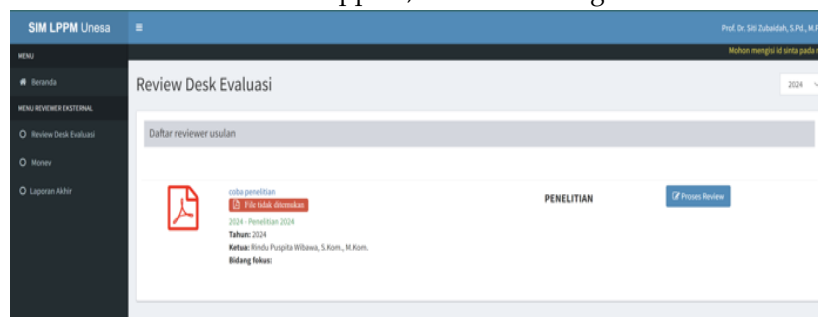


Figure 8 Evaluation Desk Review Page

On the page, several pieces of information will appear, including the review result file, proposal title, proposal proposal file, proposal type, status, and action button. To conduct a review, the reviewer can select and press the Review Process button located in the action button column, as shown in Figure 9.

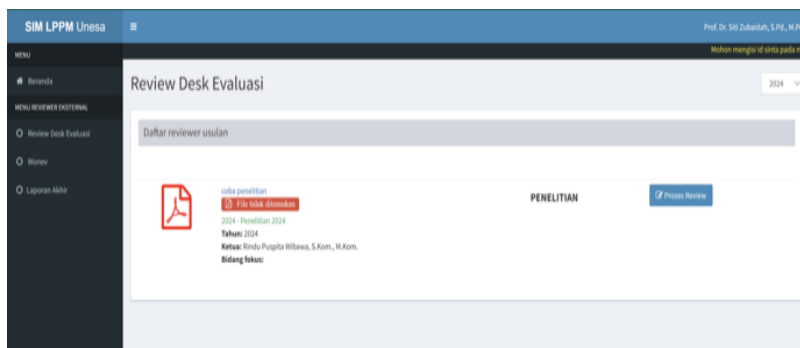


Figure 9 Review page

After the reviewer selects and presses the Review Process button, a page will appear that can be used to conduct a review. The page contains several information, including the identity of the proposer, proposal documents, outputs, and RAB. In the review process, reviewers can assess and comment on the proposal. Providing an assessment can be done in the column containing the assessment criteria, such as the following figure 10.

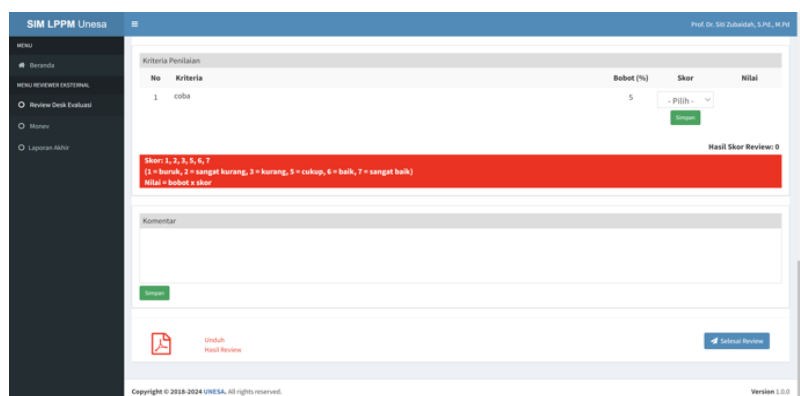


Figure 10 Review Page for Each Proposal

In the assessment column, reviewers can give an assessment of each criterion, by selecting the appropriate points in the score column. This can be seen in Figure 11. When the points have been selected, the Value will appear on each criterion.

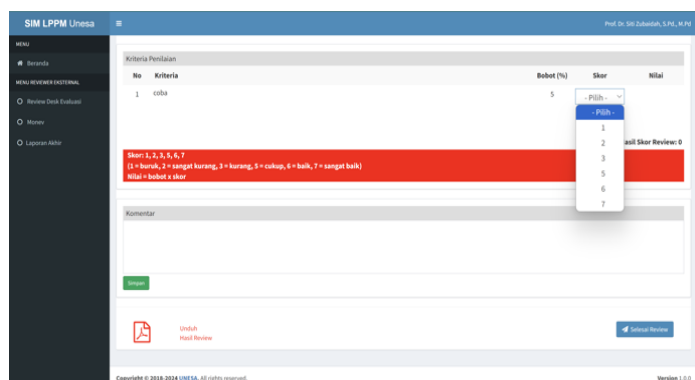


Figure 11 Assessment Process for Each Criterion

After assigning value points to each criterion, to save the value that has been given can be done by pressing the Save button. If the value has been successfully saved, the total value information for the proposal will appear. This is as shown by the following Figure 12.

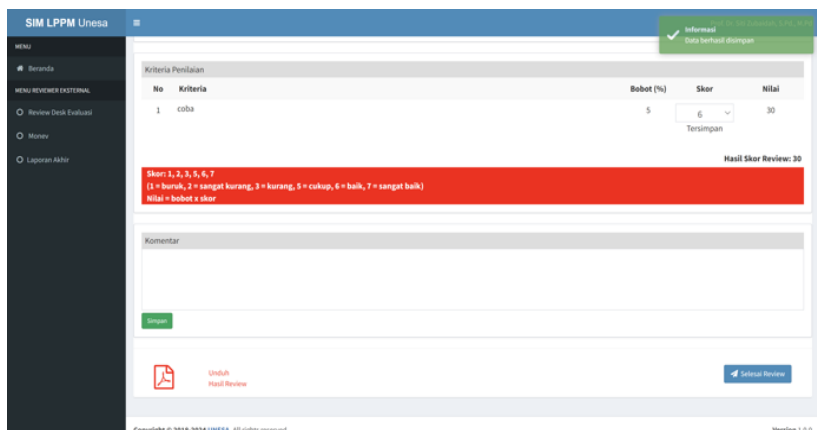


Figure 12 Value Storage Process

Furthermore, reviewers can provide comments on the columns that have been provided. To save the comment given, you can press the Save button. Then the reviewer can press the Finish Review button to end the review process carried out on the proposal. This can be seen in Figure 13 below.

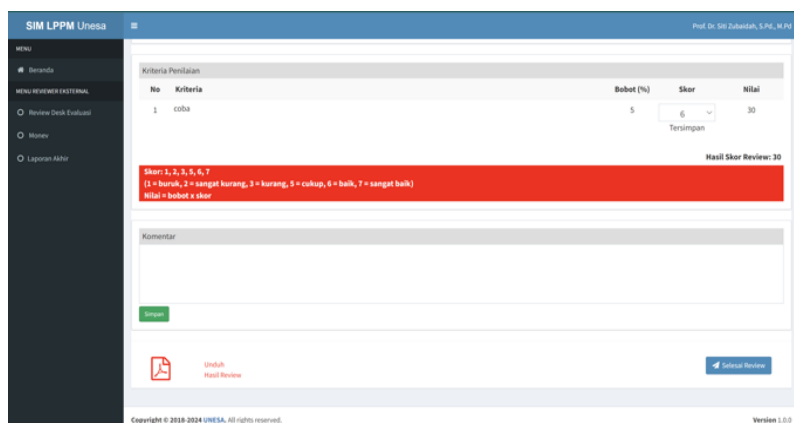


Figure 13 Comment Saving Process

3. Monitoring and Evaluating

Money Review is a feature that can be used to review proposals at the Money stage. At this stage, all the proposals received and funded will appear, as shown in Figure 14.

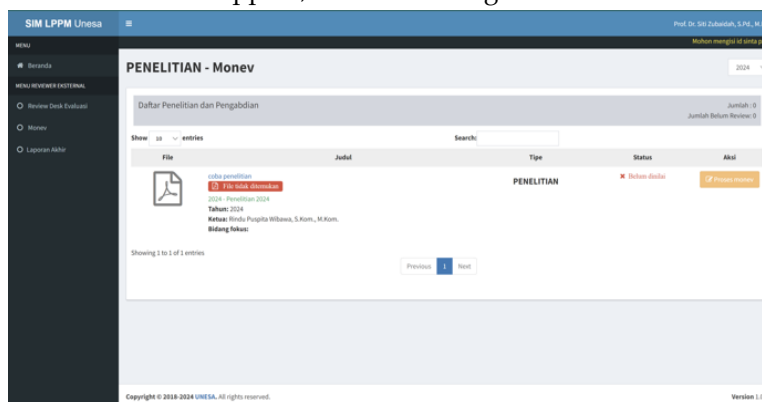


Figure 14 Money review page

Just like on the Evaluation Desk Review page, on the Monev Review page, several information will also appear, including the review result file, proposal title, proposal proposal file, proposal type, status, and action button. To conduct a review, the reviewer can select and press the Review Process button located in the action button column, as shown in the following Figure 15.

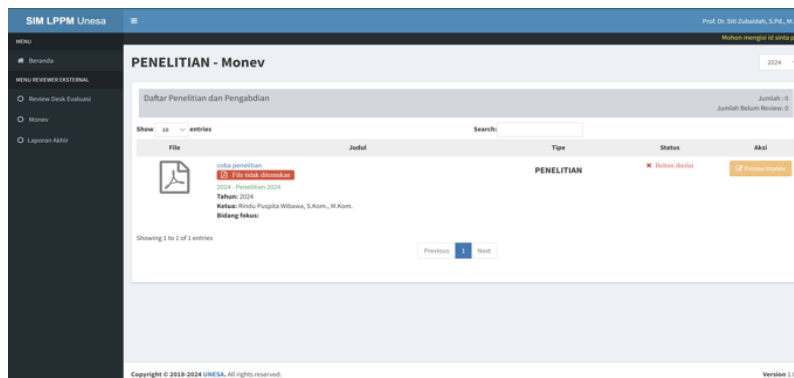


Figure 15 Review Process Menu

After the reviewer selects and presses the Review Process button, a page will appear that can be used to conduct a review. The page contains several information, including the identity of the proposer, the proposal document, the output, and the RAB, as shown by the following Figure 16.

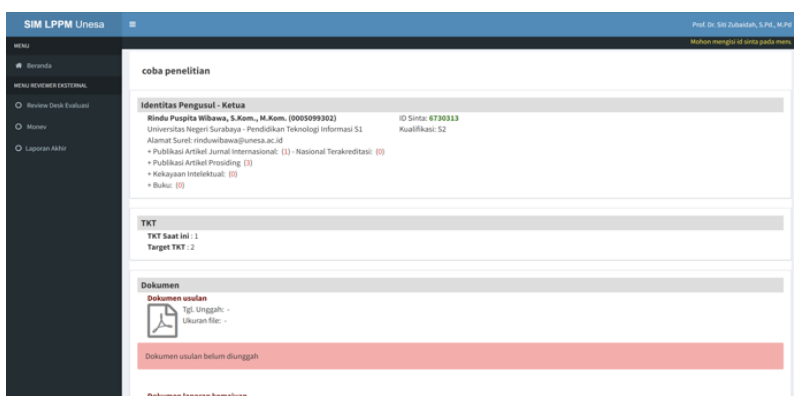


Figure 16 Review Page

In the review process, reviewers can assess and comment on the proposal. To provide an assessment, it can be done in the column containing the assessment criteria, as shown in the following Figure 17.

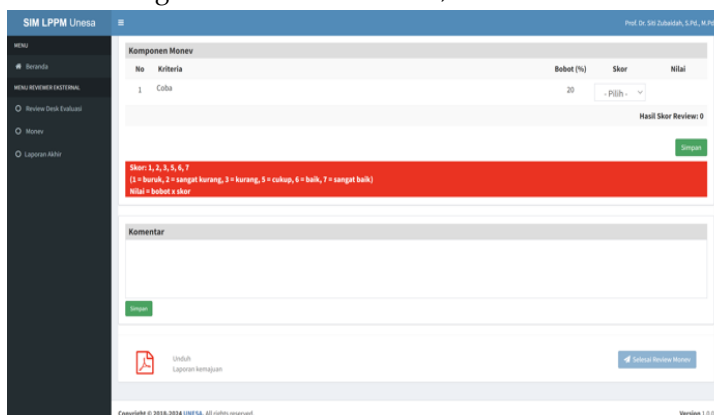


Figure 17 Review Page Rating Column

In the assessment column, reviewers can give an assessment of each criterion, by selecting the appropriate points in the score column. This can be seen in Figure 18. When the points have been selected, then the Value appears in each criterion.

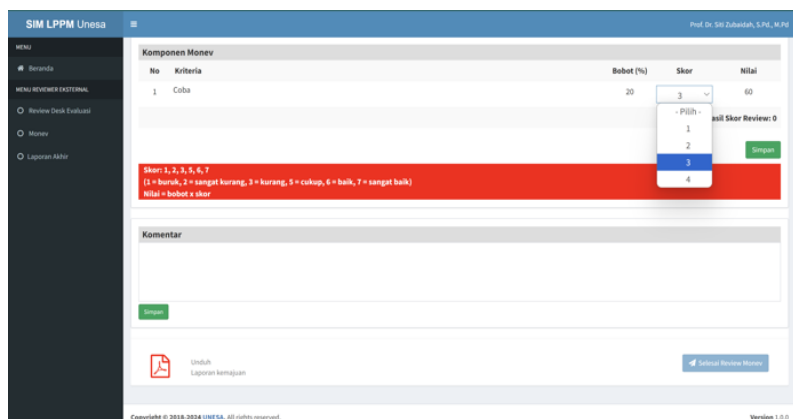


Figure 18 Assessment Process for Each Criterion

After assigning value points to each criterion, to save the value that has been given can be done by pressing the Save button. After pressing the Save button, the total value for the proposal will appear. This is as shown by the following Figure 19.

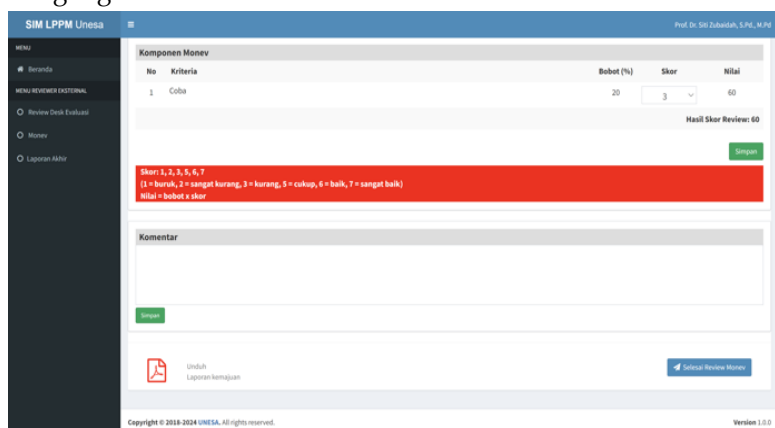


Figure 19 Value Storage Process

Furthermore, reviewers can provide comments on the columns that have been provided. To save a given comment, you can press the Save button, as shown in Figure 20.

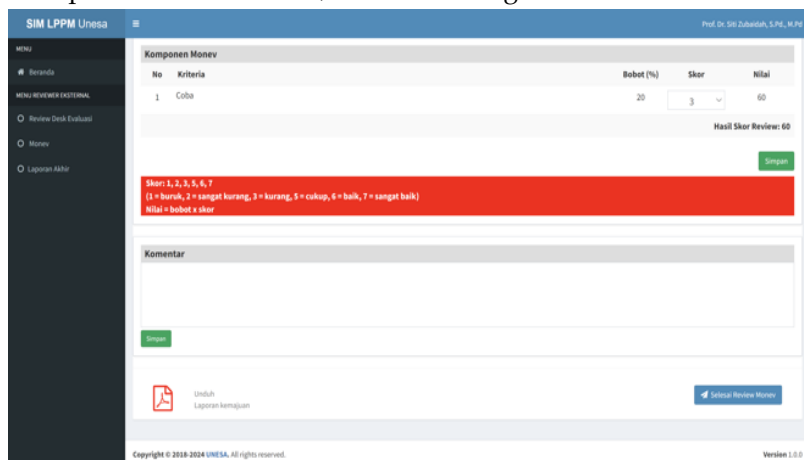


Figure 20 Value Storage Process

After providing assessments and comments, reviewers can complete the review process on the proposal by pressing the Finish button. This can be seen in Figure 20.

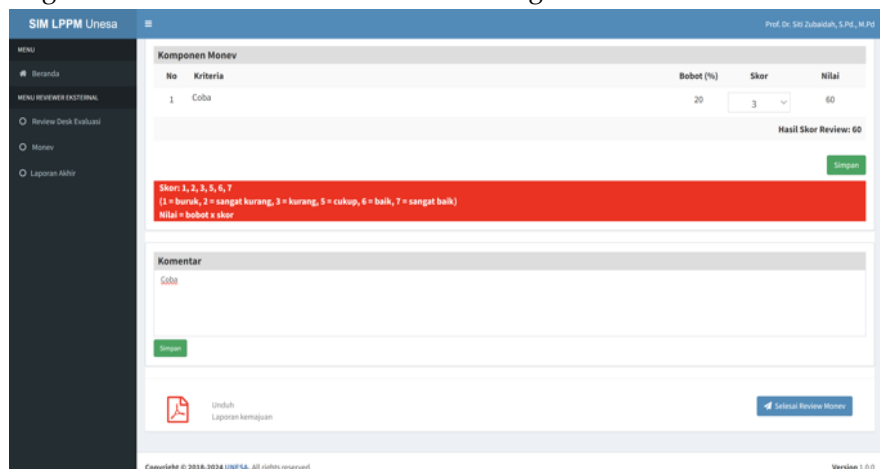


Figure 21 Value Storage Process

When the reviewer has pressed the Finish button, the reviewer will return to the main page of the Review Money feature. The review status will change to Rated. In addition, the Review Process button will also change color, as shown in Figure 22.

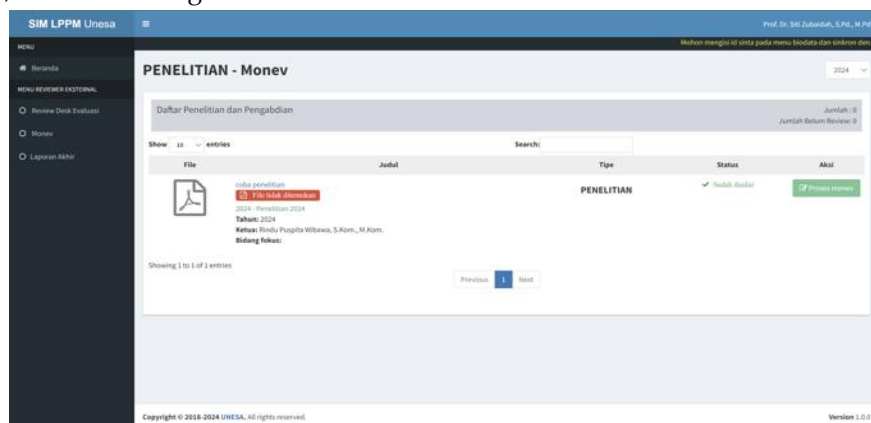


Figure 22 Results of the Review Process

d. Final Report

Final Report Review is a feature that can be used to review each proposal at the Final Report stage. At this stage, all the proposals received and funded will appear, as shown in Figure 23.

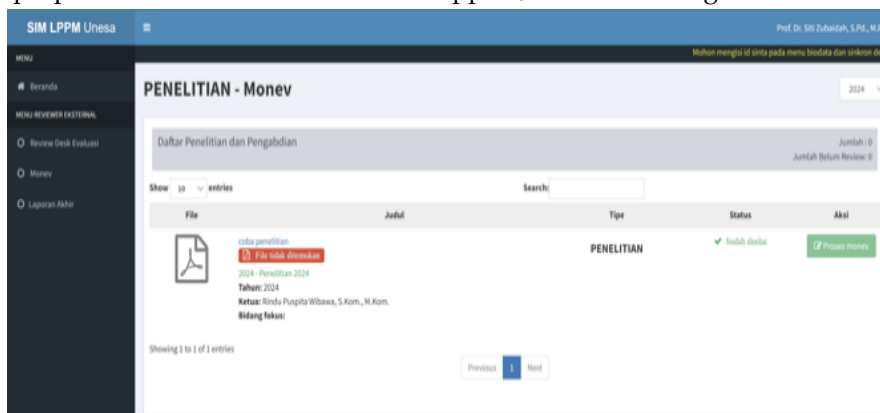


Figure 23 Money Review Page

Just like on the Review Desk Evaluation and Monitoring and Evaluating page, on the Review Final Report page, several pieces of information will also appear, including the review result file, proposal title, proposal proposal file, proposal type, status, and action button. To conduct a review, the reviewer can select and press the Review Process button located in the action button column, as shown in Figure 24.

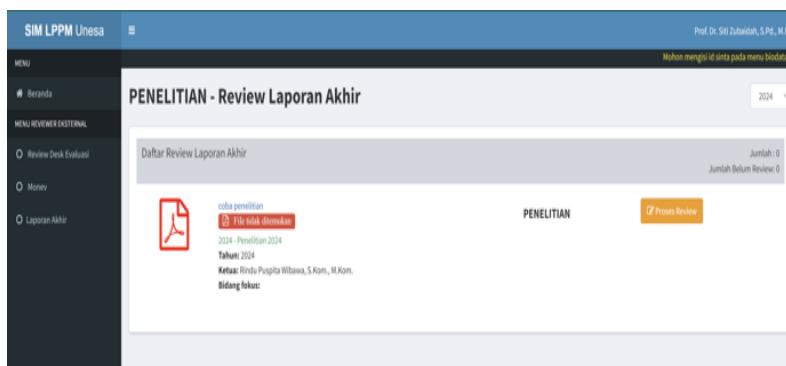


Figure 24 Review Process Menu

After the reviewer selects and presses the Review Process button, a page will appear that can be used to conduct a review. The page contains several information, including the identity of the proposer, proposal documents, outputs, and RAB, shows in figure 25.

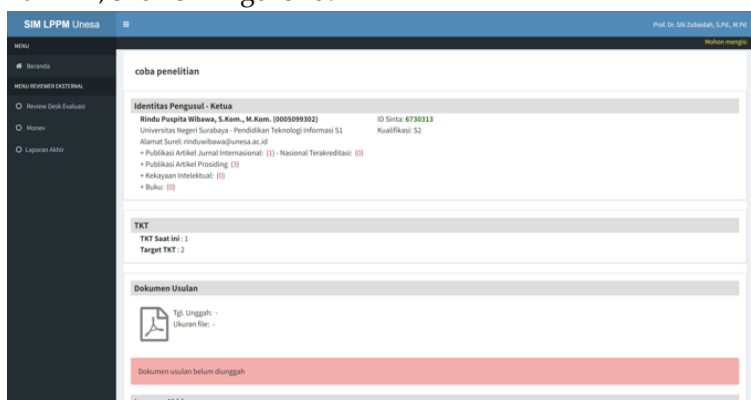


Figure 25 Review Page

In the review process, the reviewer can assess and comment on the proposal. in the column containing the assessment criteria, as shown in Figure 26.

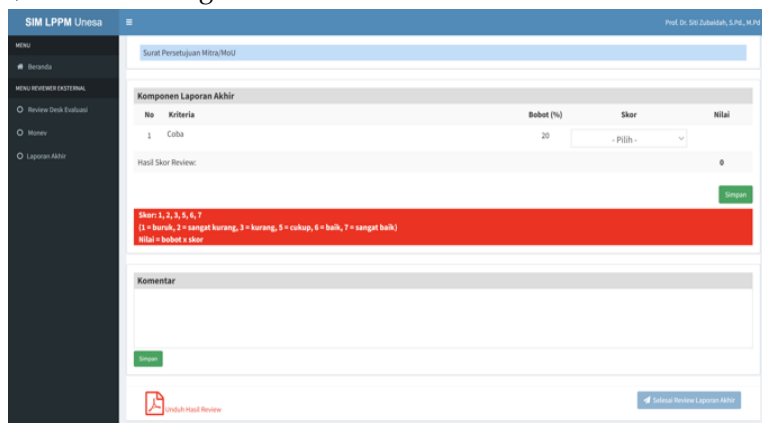


Figure 26 Review Page Rating Column

In the assessment column, reviewers can give an assessment of each criterion, by selecting the appropriate points in the score column. This can be seen in Figure 27. When the points have been selected, the Value will appear on each criterion.

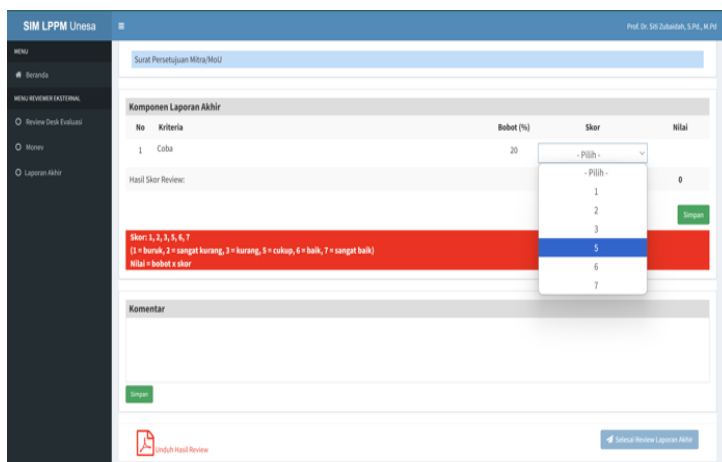


Figure 27 Assessment Process for Each Criterion

After assigning the score points to each criterion, please press the Save button. then the total value for the proposal will appear as shown in figure 28.

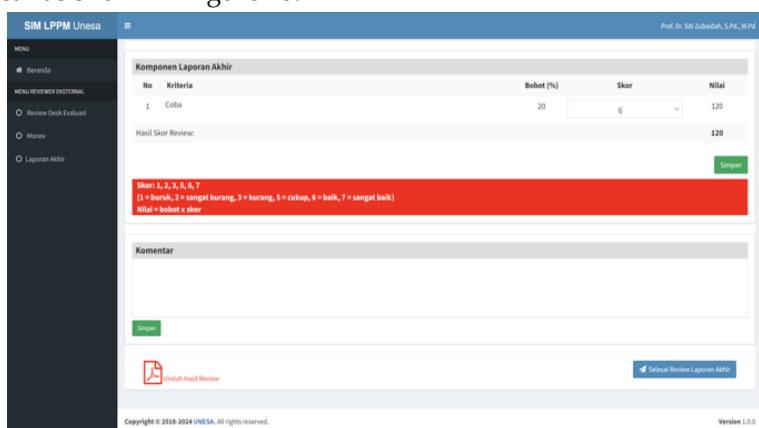


Figure 28 Value Storage Process

Furthermore, reviewers can provide comments on the columns that have been provided. To save a given comment, you can press the Save button, as shown in Figure 29.

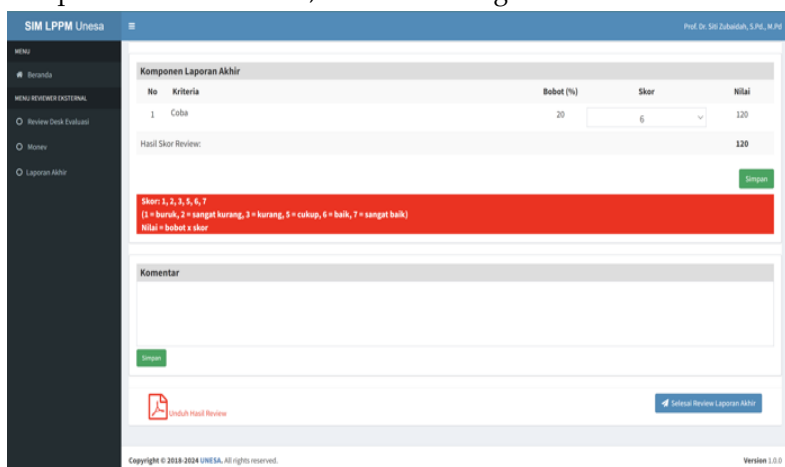


Figure 29 Comment Storage

After providing assessments and comments, reviewers can complete the review process on the proposal by pressing the Finish Review Final Report button. This can be seen in Figure 30.

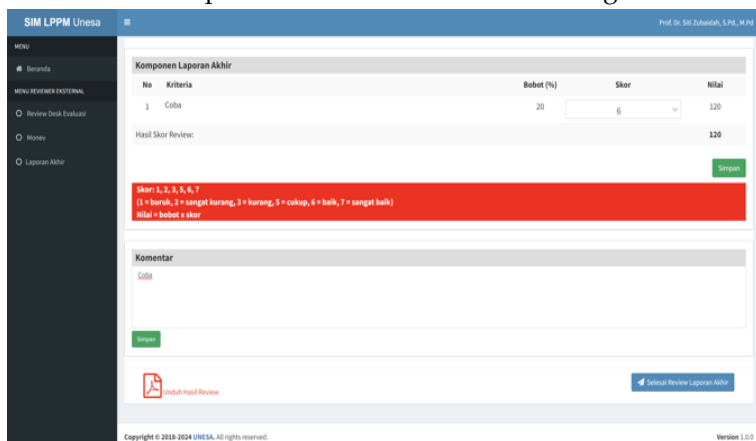


Figure 30 Value Storage Process

When the reviewer has pressed the Finish Review Final Report button, the reviewer will return to the main page of the Final Report Review feature. The Review Process button will change color, as shown in Figure 31.

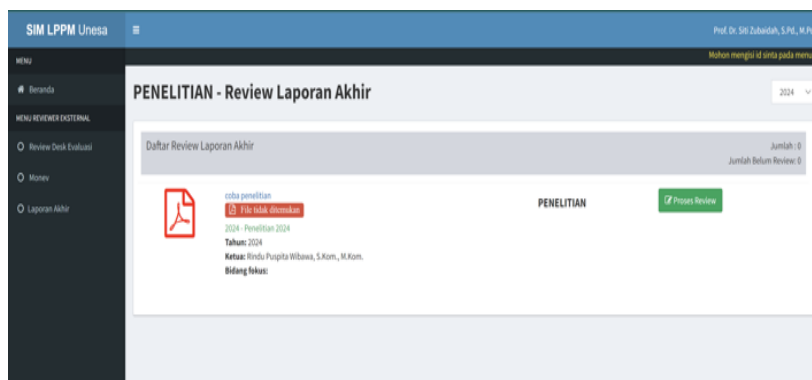


Figure 31 Results of the Review Process

C. Testing

From the tests that have been carried out, namely in the form of black box testing, the development of the external reviewer feature on the Information System of the Institute for Research and Community Service was stated to be very good and in accordance with the expected objectives in displaying research data of the State University of Surabaya.

D. Maintenance

In terms of updating data, maintenance is carried out regularly and updated. Research and community service data will be updated every academic period. In terms of infrastructure, maintenance is carried out periodically every month. More instincts are being made to ensure the availability of database space at the time of updating data.

Conclusion

The Development of External Reviewer Features for Research and Community Service at the Information System of the Institute for Research and Community Service State University of Surabaya has been successfully designed and implemented with the hope of increasing efficiency and transparency in the process of appointing and managing external reviewers. This feature allows the integration of reviewers from outside the university to participate in the review process, which has the potential to expand the scope of

evaluation and improve the quality of research results and community service carried out by the academic community. The main benefits obtained from the development of this feature are:

1. **Process Automation:** Appointment of reviewers, distribution of research documents, and management of review results become more structured and efficient.
2. **Transparency and Accountability:** This feature helps in clearly recording each stage of the review process so that it is easier to track and account.
3. **Improving Review Quality:** By involving external reviewers, it is hoped that research and community service will get a more diverse and quality evaluation.
4. **User-Friendly:** The system is developed web-based and equipped with an easy-to-use interface so that both reviewers and Research and Community Service Institute admins can carry out their tasks more effectively.

Thus, the development of this feature makes a significant contribution to supporting research management and community service at the State University of Surabaya, as well as providing recommendations for continuous improvement and improvement of the system in accordance with technological developments and user needs.

Acknowledgments

The development of this external reviewer feature is expected to increase transparency, accountability, and accuracy in the assessment of research projects and community service. By engaging external reviewers, Universitas Negeri Surabaya is able to maintain high standards of academic integrity and social relevance so that it will encourage greater trust and cooperation in the academic community and the general public.

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