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Lecturer Performance Software Using the MOORA Method at IAIN Ash-Shiddiqiyah

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Abstract

The importance of having an effective decision support system to select and determine the best lecturers cannot be denied. This research aims to develop a decision support system for selecting the best lecturers at IAIN ASH-SHIDDIQIYAH. The method used is Multi-Objective Optimization on the basis of Ratio Analysis (MOORA), a multi-objective approach that allows optimization of two or more conflicting attributes simultaneously. The results of this study include the development of a decision support system that can provide useful guidance for decision-makers at IAIN ASH-SHIDDIQIYAH in the process of selecting and determining the best lecturers. Through MOORA analysis, the best lecturers can be selected by considering various aspects such as teaching quality, research ability, contribution to curriculum development, involvement in guidance and training activities, and contribution to the community. The results of this research are expected to improve the quality of education and the institution's contribution to society as a whole through the selection of high-quality and high-performing lecturers. This research demonstrates that the development of a decision support system using the MOORA method can be an effective tool for higher education institutions in selecting the best lecturers. By taking into account various relevant aspects, institutions can improve the effectiveness of the lecturer selection process and ensure that the selected lecturers have the optimal quality and performance to support the institution's educational mission and community service.

Keyword: Best, Effective, Lecturer, Moora, Performance

1. INTRODUCTION

Higher education serves as a cornerstone for nurturing high-quality human resources with competitive capabilities. Within this ecosystem, instructors play a central role as facilitators of learning, researchers, and contributors to community service. Their duties extend beyond merely delivering course content to encompass guidance, research, and institutional and societal development [1].

This research is conducted with a clear objective: to develop a robust decision support system for the selection of lecturers at IAIN ASH-SHIDDIQIYAH. The current state of the research may appear nascent and nebulous, but its purpose is well-defined. The aim is to create a structured and objective framework that streamlines the process of identifying top-performing lecturers based on specific criteria and requirements [2].

The primary objective of this research is to address the pressing need within IAIN ASH-SHIDDIQIYAH for a systematic approach to lecturer selection. By leveraging the Multi-Objective Optimization on the basis of Ratio Analysis (MOORA) methodology, the study seeks to establish a transparent and efficient system for evaluating candidates . This system will consider various attributes such as teaching quality, research capabilities, curriculum development contributions, involvement in guidance and training activities, and community service [3].

The ultimate goal of this research is twofold: first, to provide IAIN ASH-SHIDDIQIYAH with a practical and effective decision support system that enhances the quality and effectiveness of lecturer selection processes. Second, to contribute to the broader academic community by offering insights and methodologies that can be adapted and implemented in similar contexts. Through the development and implementation of this system, the institution anticipates elevating the caliber of its faculty members, thereby enhancing its educational offerings and societal impact [4].

In essence, this research aims to bridge the gap between the current state of lecturer selection and the desired objective of identifying the most qualified and capable candidates. By delineating clear objectives and methodologies, this study strives to bring clarity and direction to the research endeavor, ensuring that its outcomes are purposeful and impactful in addressing the identified need.

According to [5], in her research published in Journal of Informatics Management and Information Technology (JIMIT), she highlights the importance of decision support systems in selecting the best tutoring services using the MOORA method. Utilizing criteria such as price, installment, and discounts, the results indicate that Tutoring Institute A4 emerged as the top choice with a score of 11.7171. This underscores the significance of employing objective selection techniques to ensure optimal quality of tutoring services for students. According to [6] explains that in his research published in Bulletin of Information Technology (BIT), Moethar Situmeang has the highest alternative value of 0.39192. This indicates that Moethar Situmeang is considered the best employee based on the criteria and requirements established in the decision support system using the MOORA method. Therefore, Moethar Situmeang is deemed eligible to be the top employee at PT. Centrepark Citra Corpora.

According to [7] in his research published in JIKSI, PT. Trinity Teknologi Nusantara, an internet services company in Medan, faces challenges in efficiently selecting permanent employees due to manual administrative issues. To address this, the authors developed a decision support system to streamline the process. They found that the MOORA method is simple, stable, and effective, providing accurate results without requiring extensive mathematical expertise. Compared to other methods, MOORA is simpler and more targeted, making it an ideal choice for decision-making processes. According to [8] in his research published in the Journal of Computing And Informatics Research, Family Planning (KB) is crucial for determining the number of births within a family, but the lack of suitable contraception poses a significant challenge. To address this, a Decision Support System (DSS) using the MOORA method is needed. Criteria such as price, age, effectiveness, and others are considered in selecting contraceptives. The results indicate that the alternative pill (A5) is the most suitable for couples of childbearing age, with the highest Yi (Max) value being 0.2249.

The researcher examined the use of the MOORA method in selecting the best lecturers at IAIN ASH-SHIDDIQIYAH. The research findings indicate that the MOORA method can provide useful guidance for decision-makers in the process of selecting the best lecturers at the institution. Thus, this research not only contributes to the development of a more effective instructor performance evaluation system but also strengthens IAIN Ash-Shiddiqiyah's position in delivering high-quality and relevant higher education in line with contemporary demands [9].

2. MATERIALS AND METHOD

According to [10] explains that Multi-Objective Optimization on the basis of Ratio Analysis (MOORA) is a method in multi-criteria decision-making aimed at selecting the best alternative from a set of available options. This method allows for the optimization of two or more attributes that may conflict simultaneously. In MOORA, each alternative is evaluated based on several pre-defined criteria or attributes. These criteria are then normalized to ensure direct comparison of all data. After normalization, each criterion is assigned a weight reflecting its relative importance in decision-making. The next step involves calculating the relative preference value for each alternative, which is the result of weighting and normalizing each criterion. Subsequently, these relative preference values are used to calculate the final score or relative ranking of each alternative. MOORA utilizes these relative scores to obtain alternative rankings, with the highest-scoring alternative selected as the best choice according to the established criteria [11]. Thus, MOORA is an effective method for selecting the best alternative in situations where multiple criteria need to be considered in decision-making. This method provides flexibility in handling conflicting attributes and yields objective and accountable results.

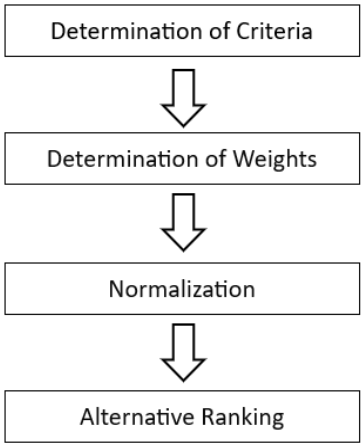

Figure 1. The algorithm process of MOORA

The algorithm process of MOORA in this study involves the following steps: Determination of Criteria: The researcher identifies relevant criteria in selecting the best lecturer, such as teaching quality, research

capability, curriculum development contributions, and others. Determination of Weights: After determining the criteria, the researcher assigns weights to each criterion based on its importance [12]. These weights reflect the relative importance of each criterion in decision-making. Normalization: Data regarding these criteria are normalized to ensure that all data are within the same range and can be directly compared [13]. Alternative Ranking: After normalization, the ranking of alternative lecturers is calculated using the MOORA formula and algorithm [14]. Lecturers with the best scores according to the established criteria will receive higher rankings. Thus, the MOORA method is utilized in this study to select the best lecturer based on several relevant criteria, and its algorithm process includes determining criteria, assigning weights, normalizing data, and ranking alternatives [15].

Quantitative research examines participant perspectives with interactive and flexible strategies. Qualitative research is aimed at understanding social phenomena from the participant's perspective. Thus, qualitative research is research that is used to examine the conditions of natural objects where the researcher is the key instrument [16].

Qualitative research is descriptive analytical in nature. The data obtained, such as observation results, interview results, photography results, document analysis, field notes, are compiled by researchers at the research location, not expressed in forms and numbers. Researchers immediately carry out data analysis by enriching information, looking for relationships, comparing, finding patterns on the basis of the original data (not transformed into numbers) [17]. The results of data analysis are in the form of an explanation of the situation studied which is presented in the form of a narrative description. The essence of data presentation generally answers questions about why and how a phenomenon occurs [18].

In the data collection process, three main techniques will be employed: interviews, observation, and documentation. Interviews, whether structured or unstructured, serve as a pivotal means of gathering information. Unstructured interviews aim to uncover underlying issues, aiding in the identification of variables for further investigation. Conversely, structured interviews are utilized when specific information is sought, with predetermined questions guiding the discussion [19]. In this study, structured interviews will be conducted with key stakeholders, including the chairman of IAIN Ash-Shiddiqiyah, five lecturers, and two education staff members. Observation, another essential method, involves firsthand scrutiny of ongoing phenomena. Researchers will directly observe the implementation of lecturer performance software using the SAW method. Lastly, documentation will complement these techniques by offering insights gleaned from existing records and materials, such as lecturer data and relevant research documentation. Together, these methods form a comprehensive approach to data collection, ensuring a well-rounded understanding of the subject matter [20].

3. RESULTS AND DISCUSSION

The result of the software development indicates that the MOORA Method can be effectively utilized in evaluating the performance of lecturers. The software is capable of providing accurate and reliable evaluation outcomes based on the predefined criteria.

The study on the Performance Evaluation Software for Lecturers Using the MOORA Method at IAIN ASH-SHIDDIQIYAH yielded significant findings. Through the MOORA algorithm process, several key outcomes were achieved: Determination of Criteria: The study identified essential criteria for evaluating lecturer performance, including teaching quality, research capability, curriculum development contributions, and others. These criteria provided a comprehensive framework for assessing lecturer effectiveness. Determination of Weights: After identifying the criteria, the study assigned weights to each criterion to reflect its relative importance in the evaluation process. This step ensured that the assessment considered the varying significance of different criteria accurately. Normalization: Data related to the identified criteria underwent normalization to standardize their comparison. Normalization ensured that all data were on the same scale, facilitating fair and unbiased evaluation across different attributes. Alternative Ranking: Using the MOORA formula and algorithm, the study calculated the rankings of alternative lecturers based on their performance against the established criteria. Lecturers with higher scores, indicating better alignment with the criteria, received higher rankings.

Overall, the study demonstrated the effectiveness of the MOORA method in selecting the best lecturer at IAIN ASH-SHIDDIQIYAH. By systematically evaluating lecturer performance based on relevant criteria, assigning appropriate weights, normalizing data, and ranking alternatives, the MOORA algorithm provided a structured and objective approach to improve lecturer selection processes.

3.1. Implications and Recommendations

The development of this software bears several significant implications, including: Enhanced Objectivity in Performance Evaluation: By utilizing this software, there is an improvement in the objectivity of performance evaluations for lecturers. This diminishes subjective biases that might influence the assessment process. Streamlined Evaluation Process: The software facilitates the expeditious evaluation of lecturer performance. Through automation and standardization, the time required for evaluation is significantly

reduced. Establishing a Strong Basis for Decision Making: The evaluation results generated by the software furnish a robust foundation for decision-making concerning promotions or recognitions for lecturers. These decisions are more informed and objective, grounded in quantitative analysis based on predefined criteria.

3.2. Recommendations for Future Research

A recommendation for subsequent research endeavors would be to conduct further testing of the software by involving data on lecturer performance from various study programs and educational institutions. This aims to validate its reliability more comprehensively and ensure its successful application across diverse educational contexts. Thus, the development of lecturer performance evaluation software utilizing the MOORA Method is anticipated to make a significant contribution towards enhancing the quality of education at IAIN Ash-Shiddiqiyah and potentially at other institutions of higher learning as well.

3.3. UI of a *System Lecturer Performance*

Based on the results that have been designed, there are several displays that can make it easier to carry out measurements of the performance of lecturers at IAIN ASH-SHIDDIQIYAH. This is explained in the following figure:

The State Islamic Institute (IAIN) Ash-Shiddiqiyah has introduced innovative software to improve the performance evaluation of their lecturers. By using the MOORA Method, this software is expected to provide a more objective and holistic approach in assessing lecturer achievements.

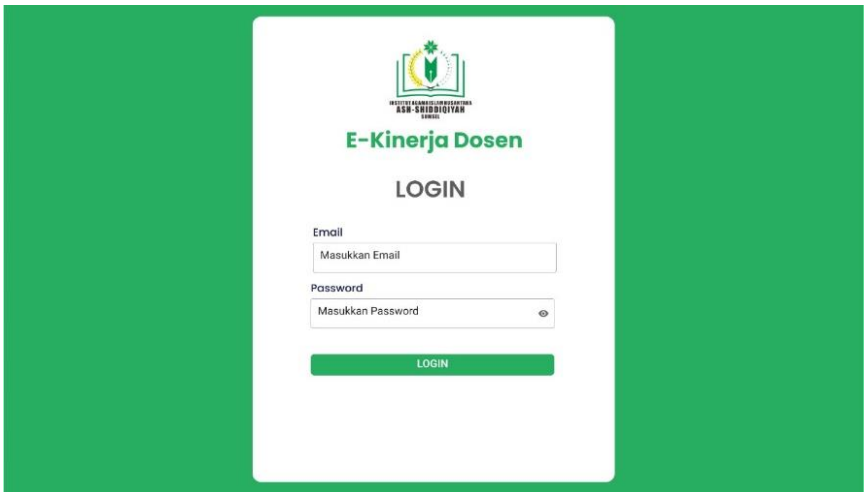

Figure 2. Login Page

The login page is the starting point for users to access this lecturer performance evaluation software. With a clean and intuitive appearance, the login page provides an easy and efficient experience for users. A well-designed login page not only provides secure access to faculty performance evaluation software, but also creates a positive user experience. With a clean appearance and clear functionality, this login page helps ensure that users can easily log in and use the software smoothly. The login page is the main gateway to access lecturer performance evaluation software using the MOORA Method at IAIN Ash-Shiddiqiyah. With an intuitive design and clear functionality, this login page provides an efficient and enjoyable experience for users, ensuring that lecturer performance evaluations can be carried out smoothly and effectively.

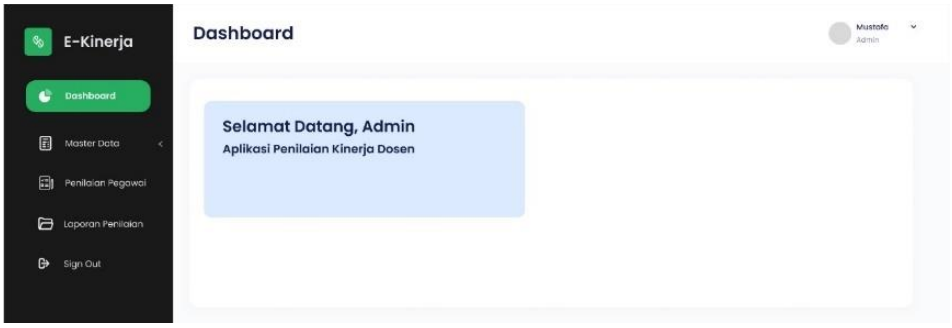

Figure 3. Dashboard Page

The dashboard page aims to provide a comprehensive and easy-to-understand overview of lecturer performance, making it easier for users to make informed decisions and identify areas that need further attention. With informative visualizations and quick access to important information, this dashboard page helps increase the effectiveness of lecturer performance evaluations at IAIN Ash-Shiddiqiyah. The dashboard page is a key component in lecturer performance evaluation software using the MOORA Method at IAIN Ash-Shiddiqiyah. By presenting lecturer performance information visually and informatively, this dashboard page is a very useful tool for users in managing and improving the quality of education at the institution.

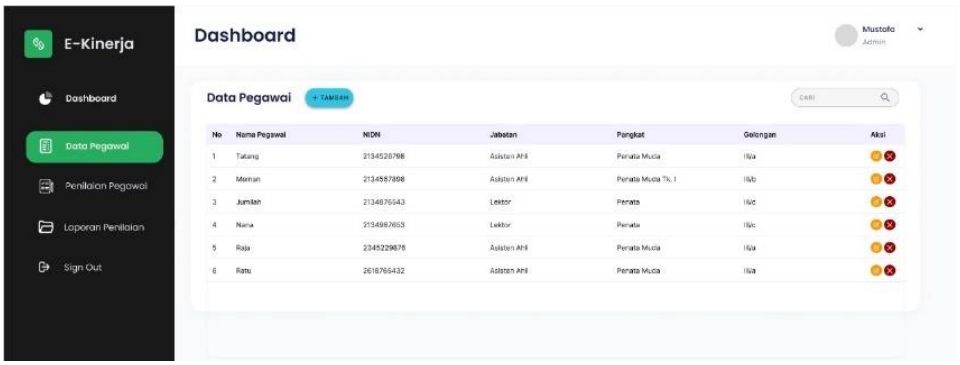

Figure 4. List of lecturers' names Page

The List of Lecturers' Names page serves as a centralized hub for accessing information about all lecturers enrolled in the system. By providing a comprehensive list of lecturers along with relevant actions and options, this page enables users to efficiently manage and evaluate lecturer performance, ultimately contributing to the enhancement of education quality at IAIN ASH-SHIDDIQIYAH. With its user-friendly interface and robust functionality, this page empowers users to navigate through lecturer profiles and performance evaluations effectively, facilitating informed decision-making and continuous improvement in lecturer performance evaluation processes.

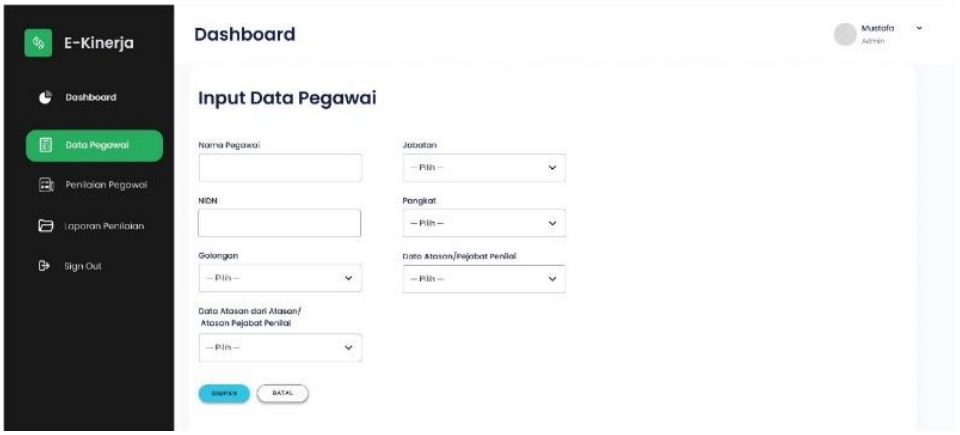

Figure 5. Input the lecturer's name Page

The Input Lecturer's Name page serves as a centralized platform for managing lecturer profiles and information within the Lecturer Performance Software. By providing users with a structured and user-friendly interface for inputting lecturer details, this page facilitates efficient data management and ensures the accuracy and integrity of information stored in the system. Enabling users to input and manage information about individual lecturers effectively. With its intuitive interface and robust functionality, this page plays a key role in supporting the institution's efforts to maintain accurate and comprehensive records of lecturer profiles and qualifications. This page serves as an essential tool for administrators and academic staff at IAIN ASH-SHIDDIQIYAH, providing them with the necessary means to input and manage lecturer information systematically and efficiently. Through streamlined data input processes, the software contributes to the institution's goal of maintaining accurate and up-to-date records of lecturer profiles and qualifications.

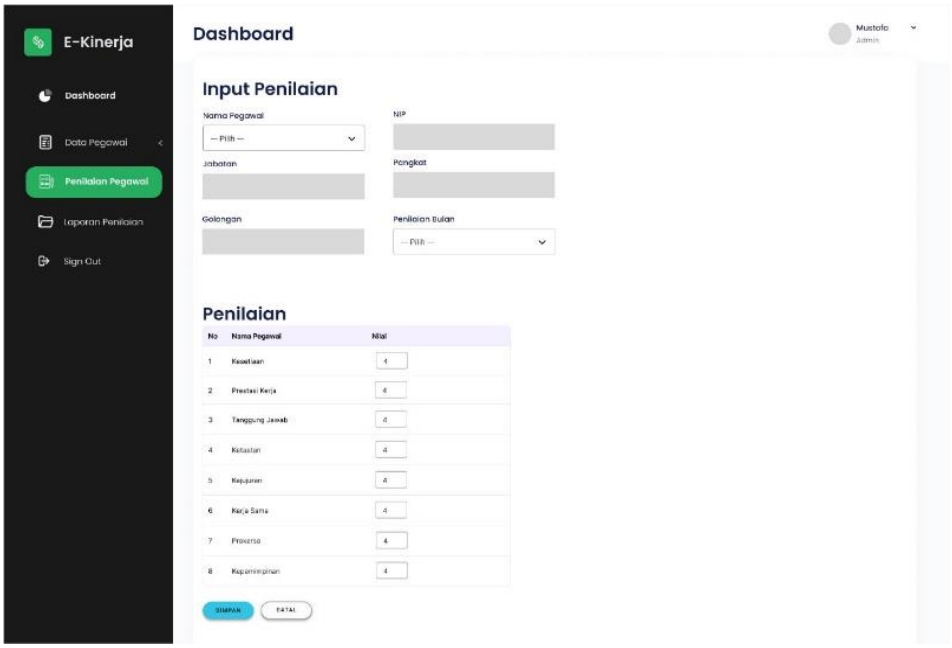

Figure 6. Input for lecturer performance assessments Page

The Input for Lecturer Performance Assessments page is a critical component of the Lecturer Performance Software at IAIN ASH-SHIDDIQIYAH, enabling administrators and evaluators to conduct and manage performance assessments effectively. With its comprehensive features and user-friendly interface, this page contributes to the institution's efforts to enhance lecturer performance and academic excellence. By providing users with a structured and user-friendly interface for inputting assessment data, this page facilitates objective evaluations and supports data-driven decision-making processes. The report of the application can view figure 6.

The Work Implementation Assessment List page is an essential component of the Lecturer Performance Software at IAIN ASH-SHIDDIQIYAH, enabling administrators and evaluators to assess the work implementation of lecturers effectively. With its structured checklist and user-friendly interface, this page contributes to the institution's efforts to enhance lecturer performance and academic excellence. By providing users with a structured and systematic approach to assessment, this page facilitates objective evaluations and supports data-driven decision-making processes. This page serves as a critical tool for administrators, evaluators, and academic staff at IAIN ASH-SHIDDIQIYAH, providing them with the necessary means to conduct objective assessments of work implementation for lecturers. Through standardized assessment processes and comprehensive data management capabilities, the software facilitates informed decision-making and contributes to the institution's mission of academic excellence.

The implementation of the Lecturer Performance Software utilizing the MOORA method at IAIN ASH-SHIDDIQIYAH represents a significant advancement in enhancing the institution's academic quality and lecturer performance assessment procedures. This software incorporates various features, with the Work Implementation Assessment List page standing out as a pivotal component. Through its structured checklist and intuitive interface, this page facilitates the comprehensive evaluation of lecturers' work implementation, thus contributing significantly to the institution's overarching goal of academic excellence.

One of the primary strengths of the Lecturer Performance Software is its ability to provide administrators and evaluators with a structured and systematic approach to assessment. By delineating specific criteria and providing a standardized framework for evaluation, the software ensures that assessments are conducted objectively and consistently. This structured approach not only enhances the reliability and validity of assessments but also supports data-driven decision-making processes within the institution.

Moreover, the Work Implementation Assessment List page serves as a critical tool for administrators, evaluators, and academic staff, offering them the necessary means to conduct objective assessments of lecturer performance. Through its user-friendly interface and comprehensive data management capabilities, the software streamlines the assessment process, enabling stakeholders to access, analyze, and utilize assessment data effectively. This empowers decision-makers to identify areas for improvement, implement targeted interventions, and monitor progress over time, thereby fostering a culture of continuous improvement within the institution.

Furthermore, by incorporating the MOORA method into the assessment process, the software enhances the objectivity and accuracy of decision-making. The MOORA method allows for the optimization of multiple criteria simultaneously, ensuring that lecturers are evaluated based on a comprehensive set of factors relevant

to their performance. This not only enables administrators to make more informed decisions regarding lecturer selection, promotion, and professional development but also ensures fairness and equity in the assessment process.

Overall, the implementation of the Lecturer Performance Software using the MOORA method represents a significant step forward for IAIN ASH-SHIDDIQIYAH in its pursuit of academic excellence. By providing a robust framework for assessing lecturer performance, the software empowers stakeholders to make data-driven decisions, thereby enhancing the quality of education and contributing to the institution's mission of academic excellence.

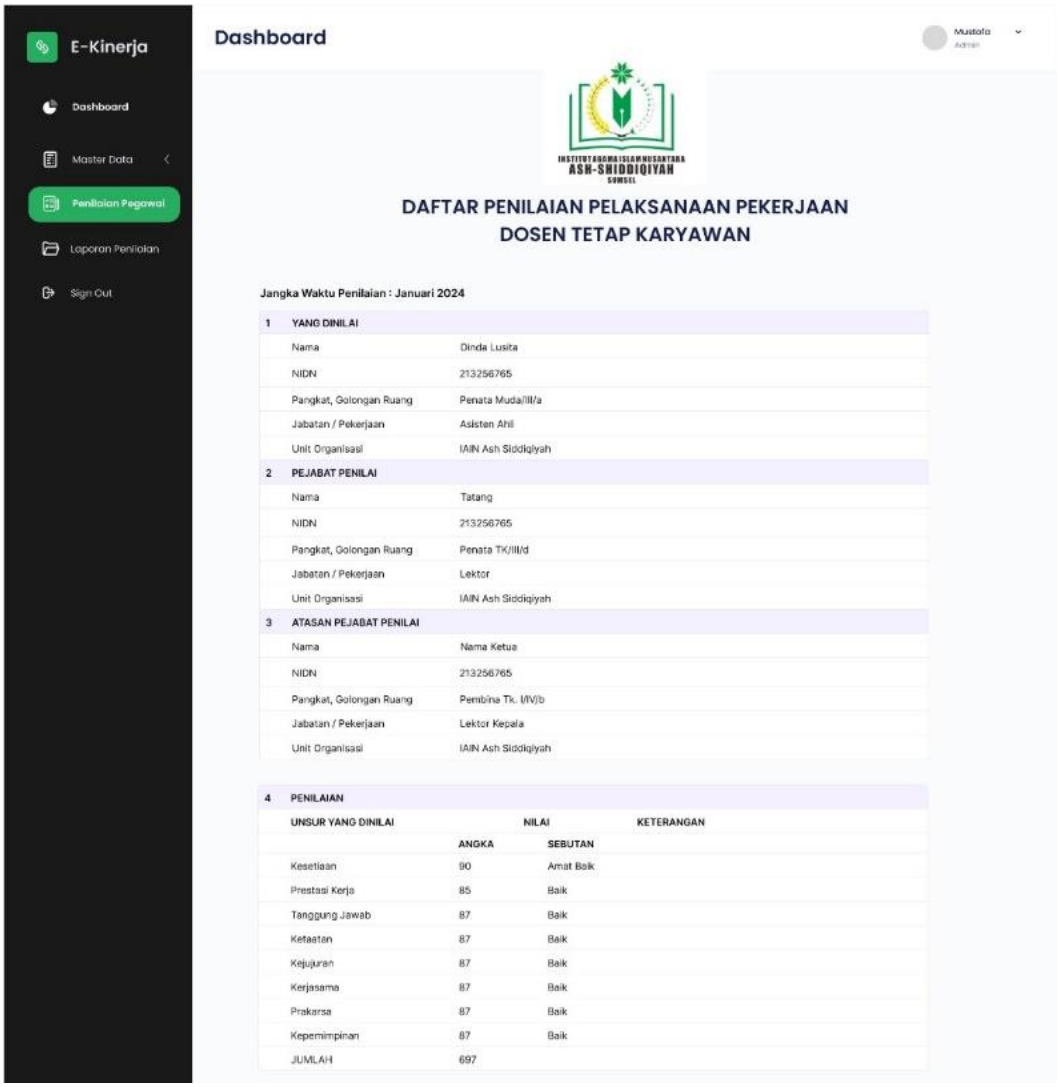

Figure 6. Work implementation assessment list Page

4. CONCLUSION

The implementation of the Lecturer Performance Software utilizing the MOORA Method at IAIN ASH-SHIDDIQIYAH represents a significant advancement in the evaluation and management of lecturer performance. Through the integration of innovative technology and rigorous evaluation methodologies, this software has provided a systematic and objective framework for assessing lecturer performance across various dimensions. The software has demonstrated its effectiveness in enhancing the objectivity, efficiency, and transparency of lecturer performance evaluations. By utilizing the MOORA Method, it has enabled administrators and evaluators to consider multiple criteria in their assessments, leading to more comprehensive and balanced evaluations. This approach has facilitated data-driven decision-making processes and has provided valuable insights for identifying areas of strength and areas for improvement among lecturers. Moreover, the software has contributed to the streamlining of administrative processes related to lecturer performance management. With features such as centralized data storage, standardized assessment criteria, and user-friendly interfaces, it has enabled administrators to manage lecturer profiles, conduct assessments, and

generate reports with greater ease and efficiency. The implementation of the Lecturer Performance Software has also fostered a culture of continuous improvement and accountability within the institution. By providing lecturers with clear performance expectations and regular feedback, it has encouraged professional development and excellence in teaching, research, and service. Looking ahead, the ongoing refinement and optimization of the software will be crucial to its continued success and effectiveness.

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