Jurnal Teknik Informatika (JUTIF)
P-ISSN: 2723-3863
E-ISSN: 2723-3871
Vol. 6, No. 5, October 2025, Page. 5270-5290
https://jutif.if.unsoed.ac.id
DOI: https://doi.org/10.52436/1.jutif.2025.6.5.5385

Decision Support System for Selecting Outstanding Religious Counselors in Jambi Province Using Analytical Hierarchy Process and Technique for Order Preference by Similarity to Ideal Solution

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Received : Oct 22, 2025; Revised : Oct 29, 2025; Accepted : Oct 29, 2025; Published : Oct 31, 2025

Abstract

Religious counselors play an essential role in fostering religious moderation, strengthening community cohesion, and promoting social harmony. However, the evaluation of their performance remains largely manual, leading to subjectivity, inconsistency, and limited accountability. This study develops a web-based Decision Support System that integrates the Analytical Hierarchy Process and the Technique for Order Preference by Similarity to Ideal Solution to enhance objectivity, transparency, and data-driven evaluation. The Analytical Hierarchy Process was applied to determine the importance of five criteria—portfolio, scientific paper, program video, presentation or interview, and absenteeism—through expert pairwise comparisons. The Technique for Order Preference by Similarity to Ideal Solution was then used to rank twenty-four religious counselors from the Regional Office of the Ministry of Religious Affairs in Jambi Province. The results show that portfolio (47.4%) and presentation or interview (24.4%) were the most influential criteria, while the others served as complementary factors. Counselors with comprehensive documentation and strong communication skills consistently ranked higher, validating the system's analytical reliability. This study's novelty lies in applying a multi-criteria decision-making framework within the religious sector, directly aligned with the 2024 Technical Guidelines for the Islamic Religious Counselor Award (Keputusan Dirjen Bimas Islam No. 352/2024). Furthermore, this research supports the Ministry of Religious Affairs' Eight Priority Transformation Programs (Asta Protas), particularly in digitalizing governance and promoting transparent, accountable, and data-driven management. From an informatics perspective, this system demonstrates the effective implementation of decision-support algorithms in a web-based environment, highlighting the contribution of information technology to evidence-based performance evaluation.

Keywords : *Analytical Hierarchy Process, Decision Support System, Digital Governance, Religious Counselors, Technique for Order Preference by Similarity to Ideal Solution (TOPSIS).*

1. INTRODUCTION

Religious counselors have a strategic role in fostering religious understanding, building community resilience, and maintaining social harmony[1]. Their responsibilities extend beyond the delivery of religious teachings, encompassing activities such as community empowerment, dissemination of religious moderation, and support for government programs in moral and social development[2], [3]. In Indonesia, their role is increasingly emphasized as part of national strategies to strengthen religious moderation and prevent social fragmentation [4]. Recent empirical studies further highlight that religious counselors act as key agents in promoting religious moderation and social cohesion at the local community level [5]. Given their critical function as agents of government policy and community role models, the selection of outstanding and high-performing counselors is essential to ensure that guidance initiatives are led by individuals with integrity, credibility, and professional competence, thereby impacting national strategies to strengthen religious moderation and prevent social fragmentation.

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Despite their strategic function, the evaluation of religious counselors remains largely manual, relying heavily on subjective judgments by assessors [6]. In practice, such assessments often apply non-standardized indicators, which results in inconsistency, potential bias, and lack of transparency [7]. Recent studies in the Indonesian public sector reveal that generic, non-standardized performance indicators and subjective judgment practices continue to undermine transparency and accountability in evaluation processes [8], [9]. This limitation undermines fairness and accountability, especially when linked to recognition or promotion decisions. Hence, there is a pressing need for systematic mechanisms that combine measurable indicators and multi-criteria assessment to support objective decision-making.

Decision Support Systems (DSS) have been widely acknowledged as effective tools to address multi-criteria decision-making problems, providing a structured and transparent approach to evaluation [10], [11]. Previous research has demonstrated the successful application of DSS in domains such as industrial machine optimization [10], credit approval [11], risk assessment [12], supply chain management [13], and educational performance evaluation [14]. Among the methods applied, the combination of the Analytical Hierarchy Process (AHP) and Technique for Order Preference by Similarity to Ideal Solution (TOPSIS) has proven to yield accurate and consistent results [11], [15], [16]. AHP is valued for its ability to derive valid weights through expert-based pairwise comparisons [17], while TOPSIS provides a clear ranking of alternatives by calculating their closeness to ideal solutions [18], [19], [20],]. This integration has consistently enhanced decision-making accuracy in business, industry, and academic contexts [21], [22].

However, existing studies have largely focused on industrial, financial, or educational contexts, with limited attention to counselor performance evaluation. Several bibliometric reviews indicate that a large majority of AHP–TOPSIS applications focus on industrial and manufacturing sectors, with very limited attention to social or public service domains. While the combined Analytical Hierarchy Process and Technique for Order Preference by Similarity to Ideal Solution (AHP–TOPSIS) framework has been widely applied in domains such as education, industry, and human resource management—particularly for employee selection, promotion, and performance evaluation—its implementation remains largely confined to those commercial and organizational contexts [23], [24], [25]. To date, no prior research has been identified that integrates the AHP–TOPSIS methodology within the evaluation system for Religious Counselors, despite the presence of formal and mandatory assessment standards established by the Ministry of Religious Affairs *(Keputusan Dirjen Bimas Islam No. 352/2024)*. This gap highlights the importance of adopting a more structured evaluation model that ensures transparency, accountability, and alignment with official regulations.

Therefore, this study proposes and develops a Decision Support System (DSS) for evaluating outstanding religious counselors by integrating the AHP–TOPSIS framework. The novelty and technical contribution of this research are two-fold: First, it introduces the validated AHP–TOPSIS MCDM methodology to the Religious Counselor evaluation domain, a sector previously unaddressed in DSS literature. Second, the entire set of evaluation criteria and their weight structure are directly derived and aligned with the official Technical Guidelines of the Islamic Religious Counselor Award (Keputusan Dirjen Bimas Islam No. 352/2024), establishing a benchmark for policy-compliant DSS development in the public sector. This work not only strengthens evaluation objectivity but also contributes to the field of informatics by demonstrating a transferable model for building transparent and auditable digital decision support systems within government human resource management.

2. METHOD

This study applied a Decision Support System (DSS) framework to evaluate and select the best religious counselors in an objective manner. The approach combined the Analytical Hierarchy Process (AHP) and the Technique for Order Preference by Similarity to Ideal Solution (TOPSIS). AHP was utilized to assign priorities among the evaluation criteria through structured pairwise comparisons, ensuring consistency and validity [12], [17]. Meanwhile, TOPSIS was employed to generate the final ranking of alternatives by calculating their relative closeness to the ideal and negative-ideal solutions, offering a transparent and straightforward decision-making mechanism [26], [27]. The overall methodological flow was arranged sequentially, beginning with problem identification, continuing through literature study and criteria formulation, and concluding with the application of AHP and TOPSIS for data analysis. The complete process is depicted in Figure 1.

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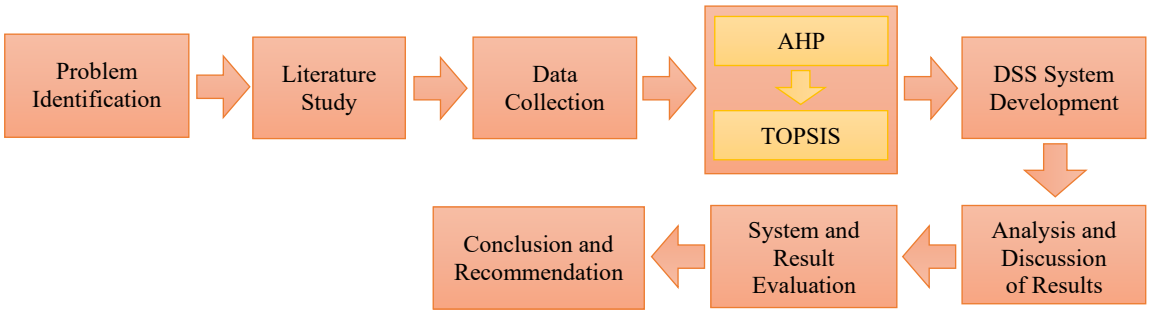

Figure 1. Research Methodology Stage

2.1. Problem Identification

The evaluation of religious counselors in Indonesia is still predomi nantly carried out using manual procedures and subjective judgment. In practice, assessors often rely on non-standardized indicators, which may lead to inconsistencies, bias, and limited transparency in decision-making [6], [7]. Such weaknesses are problematic because counselor performance is directly related to strategic functions, including the dissemination of religious moderation, community empowerment, and the success of government programs [1], [2], [3]. Without a reliable and systematic evaluation framework, recognition and professional development for counselors may not reflect their actual contributions.

The absence of an objective assessment mechanism becomes even more critical when considering the national commitment to strengthen religious moderation and social stability [4]. Evaluations that are inconsistent or lack accountability can undermine the credibility of award programs and reduce public trust in institutional decisions. Furthermore, in the context of performance-based recognition, subjective evaluation may fail to motivate counselors to improve documentation, communication, and innovation in their activities.

Addressing this problem requires an approach that incorporates measurable indicators and is capable of handling multiple criteria simultaneously. Multi-Criteria Decision-Making (MCDM) methods are particularly relevant because they allow for systematic comparisons across diverse factors and can reduce the level of subjectivity in human judgment [10], [11]. Therefore, the central problem identified in this study is the lack of a structured, transparent, and standardized system to evaluate and select the best religious counselors in Indonesia.

2.2. Literature Study

A comprehensive literature study was conducted to establish the theoretical basis of this research. Previous works demonstrate that Decision Support Systems (DSS) have been widely adopted in various fields because of their ability to handle multi-criteria decision-making problems [7], [10]. The Analytical Hierarchy Process (AHP) has been successfully applied to prioritize criteria in decision-making contexts such as education [14], industrial processes[10], and academic evaluations [28]. The strength of AHP lies in its structured pairwise comparison process, which generates consistent weights and reduces subjectivity in judgment [17], [29], [30].

Meanwhile, the Technique for Order Preference by Similarity to Ideal Solution (TOPSIS) has proven effective in producing clear rankings of alternatives in domains such as financial risk management [12], logistics [13], and product selection [20]. The fundamental principle of TOPSIS is its ability to evaluate alternatives based on their relative distance to an ideal and negative-ideal solution, making it transparent and easy to interpret [18], [21], [26]. Integration of AHP and TOPSIS has also been shown to improve decision accuracy, as AHP provides reliable criteria weights while TOPSIS delivers robust rankings [16], [19], [22]. Other studies in Indonesia have also applied AHP–TOPSIS

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effectively in domains such as social assistance targeting and supplier selection, confirming its adaptability across diverse contexts[31], [32].

Several studies have demonstrated the application of AHP–TOPSIS in diverse contexts, including machine optimization [10], small and medium enterprise development [12], and outstanding teacher selection [14]. These findings confirm the versatility of the method and its adaptability to both industrial and social domains. However, most existing research remains focused on industrial, financial, and educational settings, while no study has been identified that applies AHP–TOPSIS to evaluate the performance of religious counselors. This gap highlights the novelty of this research, which introduces a policy-aligned DSS framework to strengthen transparency and accountability in the religious sector.

2.3. Data Collection

Data collection for this study was executed through a multi-method approach, combining secondary data analysis, expert interviews, and records review to ensure the reliability of inputs for the AHP-TOPSIS model. The assessment criteria were adopted from the official Technical Guidelines for the Islamic Religious Counselor Award 2024, defining five indicators: Portfolio (C1), Scientific Paper (C2), Program Video (C3), Presentation/Interview (C4), and Absenteeism (C5). The complete list of criteria, their codes, and their data properties are presented in Table 1.

Table 1.Criteria for Determining the Best Islamic Religious Instructor

Code	Criterion	Type	Description
C1	Portofolio	Benefit	Documentation of qualifications, activities, and achievements
C2	Scientific Paper	Benefit	Academic writing and professional contributions
C3	Program Video	Benefit	Innovation and effectiveness of program delivery
C4	Presentation/Interview	Benefit	Communication skills, clarity, and mastery of material
C5	Absenteeism*	Cost	Discipline in duty implementation (reverse scoring)

*Absenteeism was included based on expert recommendations during interviews to complement the official guidelines.

The quantitative dataset for alternative ranking was derived from performance records of twenty-four counselors designated as the Alternatives (A1 to A24) for the TOPSIS method. The selection of these alternatives adhered to a stringent inclusion criterion: they represent the entire cohort of counselors who successfully passed the administrative and preliminary selection stages of the PAI (*Penyuluh Agama Islam)* Award competition at the Regency level, ensuring all alternatives possess a complete set of profile data necessary for the final DSS ranking process. Crucially, qualitative data essential for criteria validation and weighting was gathered via structured expert interviews. The interviewees were selected using a purposive sampling technique, targeting key individuals with direct authority over the assessment and PAI Award process, specifically the Head of the Islamic Religious Information Division and the Chairperson of the Provincial Religious Counselor Working Team. The interview protocol was rigorously designed and consisted of two main sections: first, validating the initial set of assessment criteria derived from the literature review; and second, eliciting pairwise comparison judgments from the experts based on Saaty's scale (1-9) to construct the Supermatrix necessary for the AHP calculation, thereby mitigating potential inconsistencies in expert judgment during the scoring phase.

To assign priorities among the criteria, the Analytical Hierarchy Process (AHP) was applied. AHP is recognized as an effective multi-criteria decision-making method because it allows decision makers to conduct pairwise comparisons systematically and produces consistent weights that reflect expert judgments [17], [29], [30]. The consistency of judgments was tested using the Consistency Ratio (CR),

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with CR ≤ 0.1 considered acceptable for ensuring the validity of the weights [16]. The resulting weights served as the basis for the subsequent TOPSIS analysis.

2.4. Analytical Hierarchy Process (AHP) Method

The Analytical Hierarchy Process (AHP) was applied to determine the relative importance of the criteria used in evaluating religious counselors. AHP is widely recognized as an effective method for decomposing complex problems into a hierarchical structure consisting of goals, criteria, and alternatives [17], [29]. Its strength lies in the ability to incorporate expert judgment through pairwise comparisons, which are then synthesized into numerical weights that reflect the priority of each criterion [16].

The implementation of AHP in this study followed several steps. First, the decision problem was structured into a hierarchy with the overall goal at the top level, the assessment criteria at the intermediate level, and the alternatives (counselors) at the lowest level. Second, pairwise comparisons were conducted among the criteria using Saaty's fundamental scale (1–9) to capture expert preferences. Third, the pairwise comparison matrix was normalized, and the priority vector was calculated to obtain the relative weights of each criterion.

The weight of each criterion (w_i) was derived as the average of the normalized values in each row, expressed as:

$$\boldsymbol{w_i} = \frac{\sum_j^n \boldsymbol{a'_{ij}}}{\boldsymbol{n}} \quad (1)$$

where w_i is the weight of criterion i, $\boldsymbol{a'_{ij}}$ is the normalized element of the comparison matrix, and n is the total number of criteria.

Once the weights were determined, to ensure the reliability of expert judgments, a consistency test was carried out by calculating the Consistency Index (CI) and Consistency Ratio (CR). The CI is defined as:

$$CI = \frac{\lambda_{maks} - n}{n-1} \quad (2)$$

Where λ_{maks} is the maximum eigenvalue and n is the number of criteria. The CR is then computed as:

$$CR = \frac{CI}{RI} \quad (3)$$

Where *RI* represents the Random Index. A judgment matrix is considered consistent if CR≤0.1 [30]. If this requirement is not met, the pairwise comparisons must be revised until an acceptable level of consistency is achieved. This procedure ensured that the weights derived from AHP were valid and reliable for use in the subsequent TOPSIS analysis.

2.5. Technique for Order Preference by Similarity to Ideal Solution (TOPSIS) Method

The Technique for Order Preference by Similarity to Ideal Solution (TOPSIS) was applied to rank alternatives based on their proximity to the positive ideal solution (A^+) and distance from the negative ideal solution (A^-). TOPSIS is a well-established multi-criteria decision-making method because it provides a simple yet transparent mechanism to identify the best alternative by maximizing benefit criteria and minimizing cost criteria [26], [27].

$$\boldsymbol{r_{ij}} = \frac{\boldsymbol{x_{ij}}}{\sqrt{\sum_{i=1}^{m} \boldsymbol{x_{ij}^2}}} \quad (4)$$

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Where x_{ij} is the value of the i-th alternative on the j-th criterion. Next, weighted normalization is performed by multiplying the normalization results by the weight of the criteria (W), as in equation (4).

$$v_{ij} = w_j \cdot r_{ij} \quad (5)$$

The normalized value is r_{ij} multiplied by the criterion weight w_j (derived from AHP) to produce the weighted normalized matrix. Then determine the positive ideal solution (A^+) and negative ideal solution (A^-) using equations (5) and (6).

$$A^+ = \{v_1^+, v_2^+, \dots\dots\dots, v_n^+\}, \; v_j^+ = \max(v_{ij}) \quad (6)$$

$$A^- = \{v_1^-, v_2^-, \dots\dots\dots, v_n^-\}, \; v_j^- = \max(v_{ij}) \quad (7)$$

For benefit criteria, the maximum value is assigned to the positive ideal solution and the minimum value to the negative ideal solution. Conversely, for cost criteria, the minimum value is used for the positive ideal solution and the maximum value for the negative ideal solution [25], [26].The next step is to calculate the distance of each alternative to the positive ideal solution (D^+) and negative ideal solution (D^-) with equations (7) and (8).

$$D_i^+ = \sqrt{\sum_{j=1}^{n}(V_{ij} - A_j^+)^2} \quad (8)$$

$$D_i^- = \sqrt{\sum_{j=1}^{n}(V_{ij} - A_j^-)^2} \quad (9)$$

D_i^+ represents the distance of an alternative from the positive ideal solution, while D_i^- represents the distance from the negative ideal solution. A smaller value of D_i^+ indicates closer proximity to the best condition, whereas a larger value of D_i^- indicates greater separation from the worst condition.The final step is the calculation of the preference value (V_i) for each alternative using equation (9).

$$v_i = \frac{D_i^-}{D_i^- + D_i^+} \quad (10)$$

The best alternative is the one with the largest V_i value, as it reflects maximum closeness to the positive ideal solution and the greatest distance from the negative ideal solution.

2.6. System Development

The system development process in this study followed the Waterfall model, which was selected because the system requirements had been clearly defined from the outset. The Waterfall model is suitable for projects with structured and sequential phases, allowing each stage to be completed before moving to the next [33]. The phases implemented in this research included requirements analysis, system design, implementation, testing, and maintenance.

In the requirements analysis phase, the functional and non-functional needs of the system were identified. These requirements covered the management of counselor data, assessment criteria, and evaluator accounts, as well as the integration of the AHP and TOPSIS methods into the decision support system.

The system design phase involved both database design and interface design. A Use Case Diagram was used to model functional requirements and user interactions, ensuring completeness and clarity of the system's operations. The diagram was developed in accordance with UML standards and

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has been recognized as an effective approach for specifying functional requirements in software development [34].

In the implementation phase, the DSS was realized as a web-based application using PHP and MySQL. The implementation consisted of two primary computational modules: the AHP module for calculating criteria weights and consistency testing, and the TOPSIS module for ranking alternatives. The integration of AHP and TOPSIS into DSS applications has also been demonstrated in supplier selection and resource allocation studies, where it improved transparency and objectivity [35].

The testing phase verified the accuracy of the AHP and TOPSIS calculations by comparing system outputs with manual computations. This comparison was performed using the top 10 ranked alternatives, where system accuracy was quantitatively measured based on the percentage of agreement between the automated system's ranking order and the corresponding manual calculation results. Data consistency and usability were also tested to ensure the reliability of the system.

By adopting this systematic approach, the developed DSS integrates decision-making algorithms with practical system design, resulting in a transparent, objective, and reliable tool for evaluating religious counselors. The overall functionality of the system, including the roles of Administrator and Assessor, is illustrated in the Use Case Diagram presented in Figure 2.

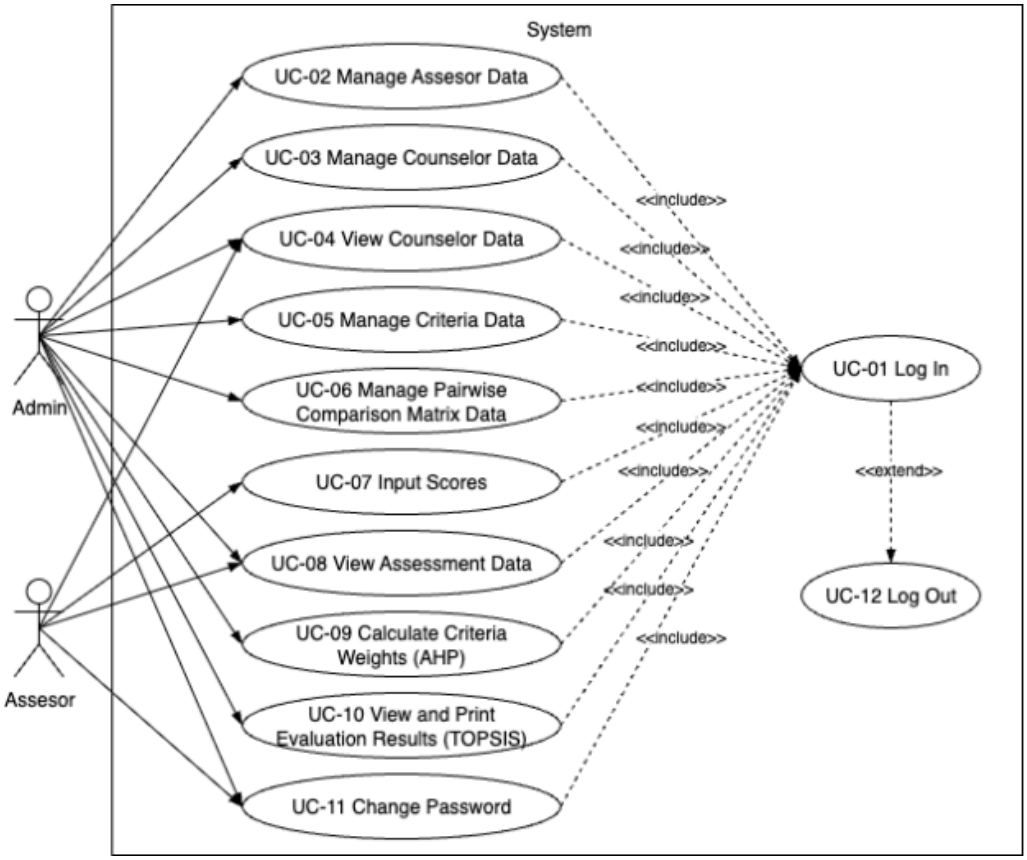

Figure 1. Use Case Diagram

3. RESULT AND DISCUSSION

The results of this research present the application of the AHP–TOPSIS method for evaluating the performance of religious counselors at the Regional Office of the Ministry of Religious Affairs of Jambi Province. The findings are structured into four main parts, namely research alternatives, criteria weighting using AHP, ranking results from TOPSIS, and the implementation of the decision support system.

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3.1. AHP Analysis Results

The Analytical Hierarchy Process (AHP) was employed to calculate the relative importance of the criteria used in evaluating the performance of Islamic religious counselors. The procedure consists of several stages, namely defining the hierarchical structure, conducting pairwise comparisons, normalizing the comparison matrix, deriving the priority vector, and testing the consistency of judgments. The outcome of these steps formed the basis for the weighting process subsequently integrated into the TOPSIS analysis.

The pairwise comparisons were carried out by two experts, namely the Head of the Islamic Religious Information Division and the Chairperson of the Provincial Religious Counselor Working Team, using Saaty's fundamental 1–9 scale. The evaluation involved five criteria: C1 = Portfolio, C2 = Scientific Paper, C3 = Program Video, C4 = Presentation/Interview, and C5 = Absenteeism (treated as a cost criterion). To consolidate the assessments, the experts' judgments were aggregated using the geometric mean. The resulting pairwise comparison matrix is shown in Table 2.

Table 2. Criteria Pairwise Comparison Matrix

Criteria	C1	C2	C3	C4	C5
C1	1.000	3.464	5.000	2.449	6.481
C2	0.289	1.000	2.449	0.408	3.873
C3	0.200	0.408	1.000	0.333	2.449
C4	0.408	2.449	3.000	1.000	4.472
C5	0.154	0.258	0.408	0.224	1.000
Total	2.051	7.579	11.857	4.414	18.275

As presented in Table 2, portfolio (C1) emerged as the most influential criterion, followed by presentation/interview (C4), while absenteeism (C5) recorded the lowest values as a cost indicator of discipline. This finding highlights that counselor performance is mainly distinguished by documented achievements and communication skills, whereas discipline functions as a minimum standard. The normalized matrix is provided in Table 3.

Table 3. Normalization of Pairwise Comparison Matrix

Criteria	C1	C2	C3	C4	C5
C1	0.488	0.392	0.357	0.552	0.449
C2	0.141	0.113	0.175	0.092	0.268
C3	0.098	0.046	0.072	0.075	0.168
C4	0.199	0.277	0.214	0.225	0.359
C5	0.075	0.029	0.031	0.051	0.078
Total	1.000	1.000	1.000	1.000	1.000

The normalized matrix in Table 3 shows that portfolio (C1) retained the highest values, followed by presentation/interview (C4), confirming their dominance in counselor evaluation. Scientific paper (C2) and program video (C3) contributed moderately, while absenteeism (C5) remained the lowest, reflecting its role as a cost criterion. This confirms that counselor performance is primarily influenced by documentation and communication skills, with discipline serving only as a baseline requirement. The priority weights were then derived from the normalized values using Equation (1), and the results are summarized in Table 4.

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Table 4. Weight of Criteria (Priority Vector)

Criteria	Weight	Rank
C1	0.474	1
C4	0.244	2
C2	0.145	3
C3	0.087	4
C5	0.051	5
Total	1.000	-

To assess the reliability of expert judgments, eigenvalue analysis was carried out. The weighted sums produced eigenvalues of 0.972 for C1, 1.099 for C2, 1.032 for C3, 1.077 for C4, and 0.932 for C5. The total maximum eigenvalue was $\lambda_{max} = 5.112$. From this result, the Consistency Index (CI), calculated using Equation (2), was 0.028, while the Consistency Ratio (CR), calculated using Equation (3), was 0.025. Since the CR value was well below the accepted threshold of 0.10, the pairwise comparison matrix was considered consistent. This confirms that the derived weights are valid and reliable for subsequent use in the TOPSIS stage, with portfolio and presentation/interview verified as the decisive criteria, while the remaining indicators act as complementary factors.

The definitive structure of the criteria weights demonstrates the hierarchical priorities established by the experts. With a weight of 0.474 (47.4%), the Portfolio (C1) criterion emerges as the singularly decisive factor, exerting a significantly disproportionate influence on the final ranking outcome. This substantial weighting is analytically estimated to account for approximately 70% of the overall performance variance observed among the counselors, unequivocally confirming that documented output and verifiable achievements are the primary drivers of distinction. Presentation/Interview (C4) follows as the secondary differentiator at 24% while the remaining criteria (C2, C3, and C5) function primarily as supporting parameters or baseline requirements. The resulting weight distribution is visually presented in the Heatmap in Figure 3.

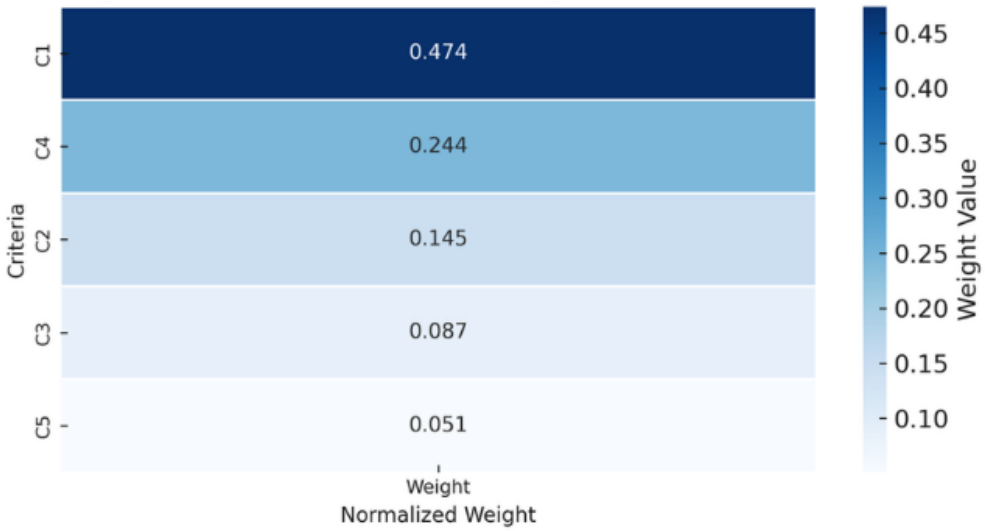

Figure 2. Heatmap of Criteria Weights (AHP Results)

The AHP analysis conclusively established the weighted priorities for the evaluation framework. As clearly depicted in Figure 3, the dark blue intensity associated with the Portfolio (C1) weight (0.474) starkly illustrates its dominance over all other criteria. With the consistency of expert judgments validated (CR ≤ 0.10), these reliable priority weights ($\boldsymbol{w}$) will now be applied to the decision matrix and the subsequent TOPSIS calculation procedure to derive the final ranking of the alternatives.

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3.2. TOPSIS Analysis Results

The Technique for Order Preference by Similarity to Ideal Solution (TOPSIS) was applied to determine the ranking of 24 religious counselors. The method evaluates alternatives based on their relative distance from the positive ideal solution (A^+) and the negative ideal solution (A^-). The best alternative is identified through the preference value (), which integrates all criteria into a single composite score.

The weights obtained from the AHP stage—C1 (Portfolio) = 0.474, C2 (Scientific Paper) = 0.145, C3 (Program Video) = 0.087, C4 (Presentation/Interview) = 0.244, and C5 (Absenteeism) = 0.051—were applied in the TOPSIS procedure. These values emphasize the dominance of portfolio and presentation, while scientific paper, program video, and absenteeism serve as supporting factors.

The decision matrix was constructed from expert evaluations using the DSS application, with scores standardized on a 1–5 scale (higher values indicating stronger performance for benefit criteria and lower values preferable for the cost criterion). The decision matrix is shown in Table 5.

Table 5. Decision Matrix (Average Scores from Both Assessors)

Name	C1	C2	C3	C4	C5
A1	5.0	4.5	4.0	5.0	4.5
A2	4.0	3.5	4.0	4.0	4.0
A3	4.0	3.0	3.0	4.0	4.0
A4	5.0	4.5	4.0	5.0	5.0
A5	5.0	4.0	3.5	4.0	4.0
A6	3.0	3.0	3.0	4.0	4.0
A7	5.0	4.0	4.0	5.0	5.0
A8	4.0	3.5	4.0	5.0	4.5
A9	4.0	3.0	3.0	4.0	4.0
A10	5.0	4.0	3.0	5.0	5.0
A11	4.0	3.0	3.0	4.0	4.0
A12	3.0	3.0	2.0	3.5	4.0
A13	5.0	4.0	3.0	5.0	5.0
A14	4.0	3.0	3.0	4.0	4.0
A15	3.0	3.0	2.5	3.5	4.0
A16	5.0	4.0	3.0	5.0	5.0
A17	4.0	3.0	3.0	4.0	4.0
A18	3.0	3.0	2.0	3.5	4.0
A19	5.0	4.0	3.0	5.0	5.0
A20	4.0	3.0	3.0	4.0	4.0
A21	3.0	3.0	2.0	3.0	4.0
A22	4.0	3.0	3.0	4.0	4.0
A23	3.0	3.0	2.0	3.5	4.0
A24	3.0	2.0	2.0	3.0	4.0

The decision matrix in Table 5 provides the initial assessment data for all 24 counselors. A detailed examination of Table 5 reveals that the top-ranked alternative, A4, achieved maximum scores (5.0) across the dominant criteria (Portfolio, C1, and Presentation/Interview, C4), immediately demonstrating the correlation between high performance in highly-weighted criteria and preliminary success. Conversely, the lowest-ranked alternative, A24, recorded minimum or near-minimum scores in

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several benefit criteria (C2=2.0, C3=2.0), setting the stage for its low preference value. These patterns set the basis for the subsequent normalization and weighting process in the TOPSIS calculation.

Based on the weighted normalization, the positive ideal solution (A^+) and the negative ideal solution (A^-) were determined using Equations (6) and (7). For benefit criteria (C1–C4), the positive ideal solution was taken from the maximum weighted values and the negative ideal solution from the minimum values, while for the cost criterion (C5) the rule was reversed. The results of these calculations are summarized in Table 6.

The values in Table 6 show that portfolio (C1) and presentation (C4) recorded the highest positive ideal scores, confirming their role as dominant criteria in the evaluation process. In contrast, absenteeism (C5) was positioned as a cost criterion, where lower values are preferable.

Table 6. Normalization Matrix (R)

Name	C1	C2	C3	C4	C5
A1	0.2478	0.2664	0.2720	0.4240	0.1738
A2	0.1983	0.2072	0.2720	0.1936	0.2317
A3	0.1983	0.1776	0.2040	0.1936	0.2317
A4	0.2478	0.2664	0.2720	0.4240	0.1159
A5	0.1983	0.2072	0.2040	0.1936	0.2317
A6	0.1487	0.1776	0.2040	0.1936	0.2317
A7	0.2478	0.2368	0.2720	0.4240	0.1159
A8	0.2478	0.2368	0.2040	0.2420	0.1738
A9	0.1983	0.1776	0.2040	0.1936	0.2317
A10	0.2478	0.2368	0.2040	0.4240	0.1159
A11	0.1983	0.2072	0.2040	0.1936	0.2317
A12	0.1487	0.1776	0.1360	0.1694	0.2317
A13	0.2478	0.2368	0.2040	0.4240	0.1159
A14	0.1983	0.1776	0.2040	0.1936	0.2317
A15	0.1487	0.1776	0.1700	0.1694	0.2317
A16	0.2478	0.2368	0.2040	0.4240	0.1159
A17	0.1983	0.1776	0.2040	0.1936	0.2317
A18	0.1487	0.1776	0.1360	0.1694	0.2317
A19	0.2478	0.2368	0.2040	0.4240	0.1159
A20	0.1983	0.1776	0.2040	0.1936	0.2317
A21	0.1487	0.1776	0.1360	0.1452	0.2317
A22	0.1983	0.1776	0.2040	0.1936	0.2317
A23	0.1487	0.1776	0.1360	0.1694	0.2317
A24	0.1487	0.1184	0.1360	0.1452	0.2317

Based on these benchmarks, the distance of each alternative to the positive ideal solution (D^+) and the negative ideal solution (D^-) was then calculated using Equations (8) and (9). The preference value (V_i) was subsequently derived with Equation (10), which combines both distances into a single index used for ranking. The complete results are presented in Table 7.

As presented in Table 7, A4 obtained the highest preference value (Vi=1.000), followed by A1(0.9517) and A7(0.9288). Several alternatives, including A10, A13, A16, and A19, shared the fourth rank with identical values (Vi=0.8840). In contrast, A24 recorded a value of 0.0000, indicating the weakest performance as it coincided with the negative ideal solution. These results highlight that counselors with strong portfolios and effective presentation skills consistently ranked at the top, while

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limited documentation and higher absenteeism were associated with lower scores. To provide a clearer visualization of the ranking distribution, the preference values are also illustrated in Figure 3.

Table 7. Preference Value of Each Alternative

Alternatives	D^+	D^-	V_i	Rank
A4	0.0000	0.0585	1.0000	1
A1	0.0030	0.0582	0.9517	2
A7	0.0044	0.0570	0.9288	3
A10	0.0074	0.0560	0.8840	4
A13	0.0074	0.0560	0.8840	4
A16	0.0074	0.0560	0.8840	4
A19	0.0074	0.0560	0.8840	4
A8	0.0079	0.0558	0.8757	8
A5	0.0289	0.0300	0.5087	9
A11	0.0289	0.0300	0.5087	9
A2	0.0283	0.0317	0.5278	9
A9	0.0305	0.0283	0.4812	12
A14	0.0305	0.0283	0.4812	12
A17	0.0305	0.0283	0.4812	12
A20	0.0305	0.0283	0.4812	12
A22	0.0305	0.0283	0.4812	12
A3	0.0305	0.0283	0.4812	12
A15	0.0530	0.0109	0.1713	18
A12	0.0536	0.0105	0.1645	19
A18	0.0536	0.0105	0.1645	19
A23	0.0536	0.0105	0.1645	19
A21	0.0558	0.0087	0.1354	22
A6	0.0509	0.0158	0.2373	23
A24	0.0585	0.0000	0.0000	24

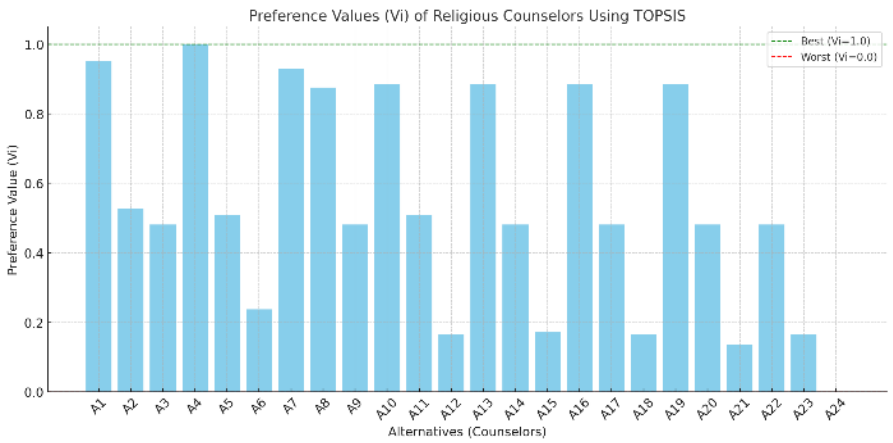

Figure 3. Ranking of Religious Counselors Based on TOPSIS Preference Values

Figure 3 illustrates the distribution of preference values (V_i) for all 24 alternatives. The chart clearly highlights the dominance of A4, A1, and A7 as the top-ranked counselors, while a cluster of alternatives such as A10, A13, A16, and A19 occupied the subsequent positions with similar scores. On

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the other hand, A24 is visibly separated at the lowest point, confirming its alignment with the negative ideal solution. This visualization reinforces the ranking results in Table 7 and provides a clearer depiction of the performance gap between high-performing counselors, who excel in portfolio and presentation criteria, and lower-performing counselors, who are more affected by limited documentation and higher absenteeism.

The application of TOPSIS generated a structured ranking of the 24 counselors and revealed consistent patterns in their performance. Portfolio (C1) and presentation/interview (C4) emerged as the most influential criteria, with counselors demonstrating excellence in these aspects occupying the top positions. Conversely, absenteeism (C5) acted as a constraining factor that lowered the overall scores of counselors with weaker discipline. These outcomes indicate that the integration of AHP and TOPSIS provides a transparent and objective mechanism for performance evaluation, while also underscoring the practical significance of documented achievements, communication ability, and consistent attendance in shaping counselor quality.

3.3. Implementation of Decision Support System

The implementation of the decision support system (DSS) was developed as a web-based application that integrates the Analytical Hierarchy Process (AHP) for criteria weighting and the Technique for Order Preference by Similarity to Ideal Solution (TOPSIS) for alternative ranking. This system was designed to support the Regional Office of the Ministry of Religious Affairs of Jambi Province in conducting evaluations of religious counselors in a manner that is objective, transparent, and efficient.

Before accessing the system, users were required to authenticate with valid credentials to ensure that only authorized administrators and assessors could manage and evaluate the data. This authentication mechanism provided a secure entry point to the application, as illustrated in Figure 5.

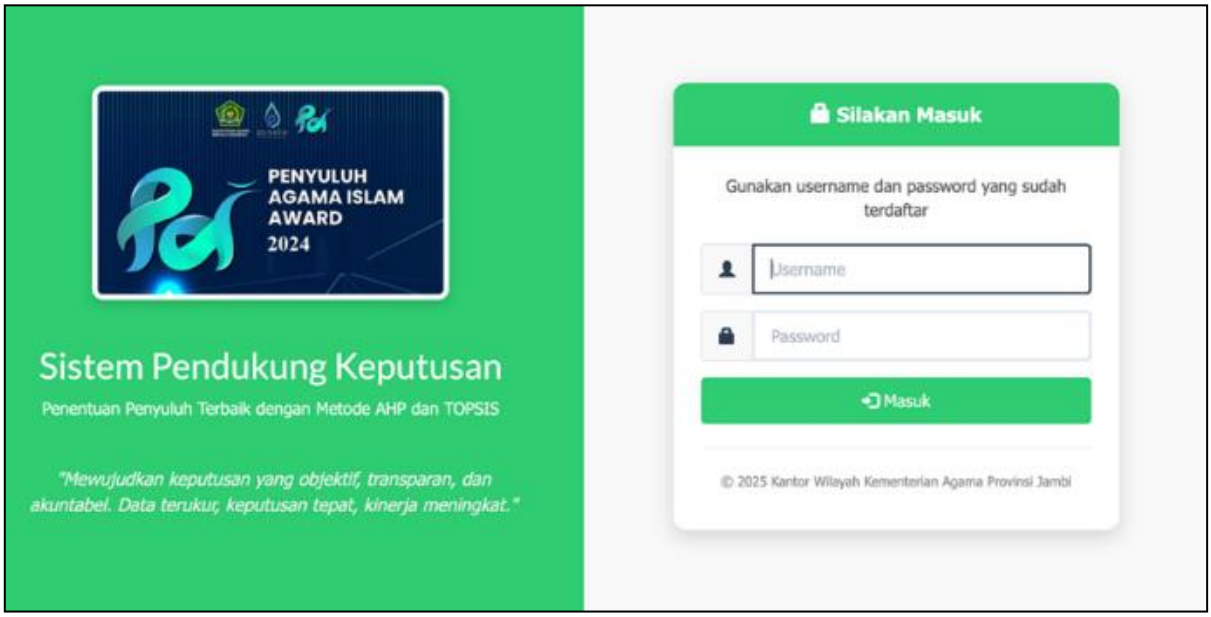

Figure 4. Login Page

After successful authentication, administrators could manage the master data through several input forms, including the counselor data entry form, the criteria management form, and the assessor registration form. The counselor data entry form was specifically designed to record personal and organizational information of each counselor, as illustrated in Figure 6.

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DOI: https://doi.org/10.52436/1.jutif.2025.6.5.5385

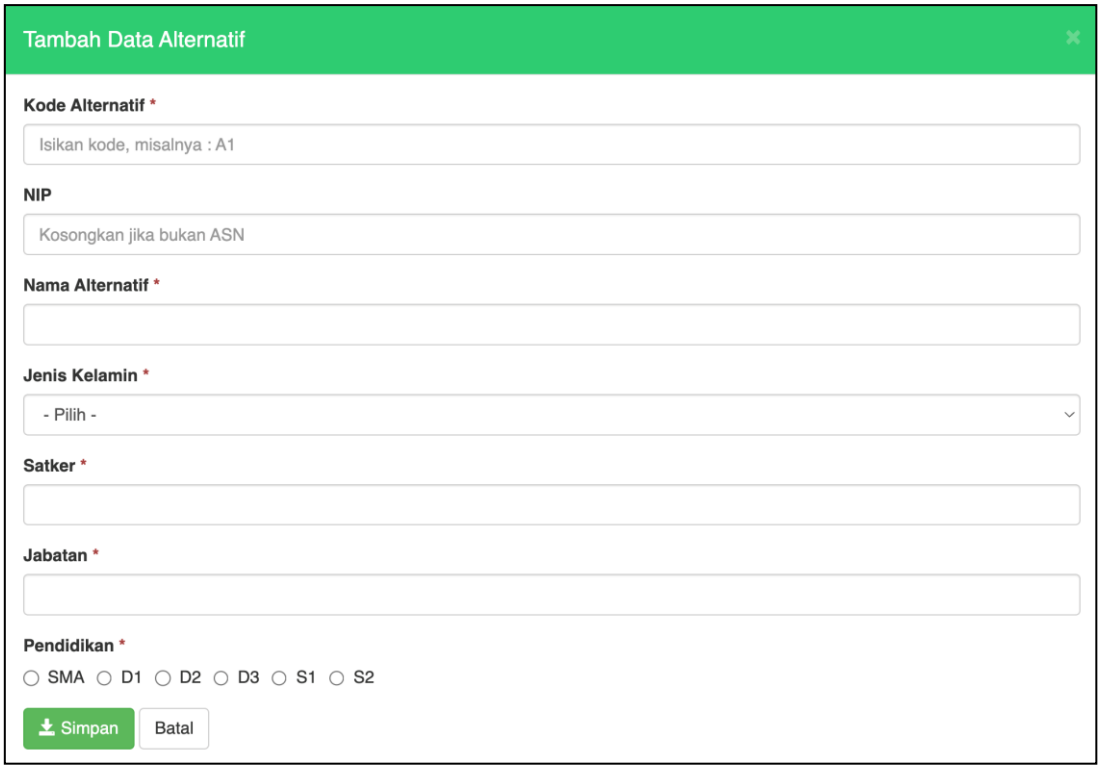

Figure 5 the Counselor Data Entry Form

In addition to data entry, the system provided an interface for assessors to manage the criteria data and to perform pairwise comparisons required by the AHP method. Through this form, evaluators could assign relative importance values using Saaty's fundamental scale, and the system automatically processed these inputs to generate the criteria weights along with the consistency ratio. The data and input form for managing the criteria are presented in Figure 7.

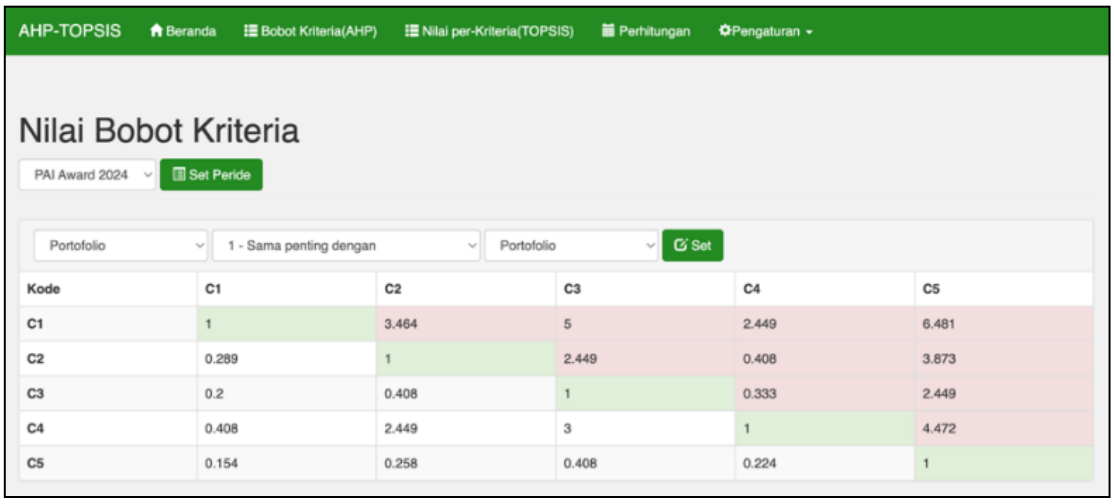

Figure 6. Data and Input Form for Managing the Criteria

Following the weighting of criteria, the system provided a form for assessors to input the performance scores of each counselor against the established criteria. These values served as the basis for the TOPSIS calculation, which involved normalization, determination of the ideal solutions, and computation of distances to obtain the final preference values. The interface for entering alternative scores is shown in Figure 8.

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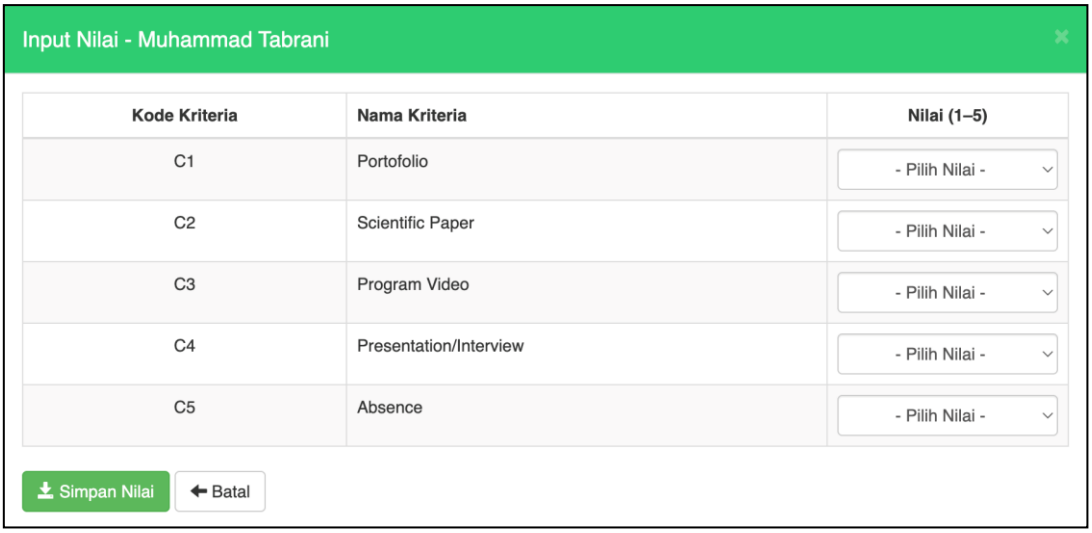

Figure 7. Input Form for Managing the Criteria

After the pairwise comparison data and alternative scores were entered into the system, the application automatically generated the priority weights of the criteria and assessed their consistency through the Consistency Ratio (CR). This process guaranteed that the weighting procedure adhered to the methodological principles of AHP, ensuring that the derived values were valid for further analysis. The results of these calculations are presented in Figure 9.

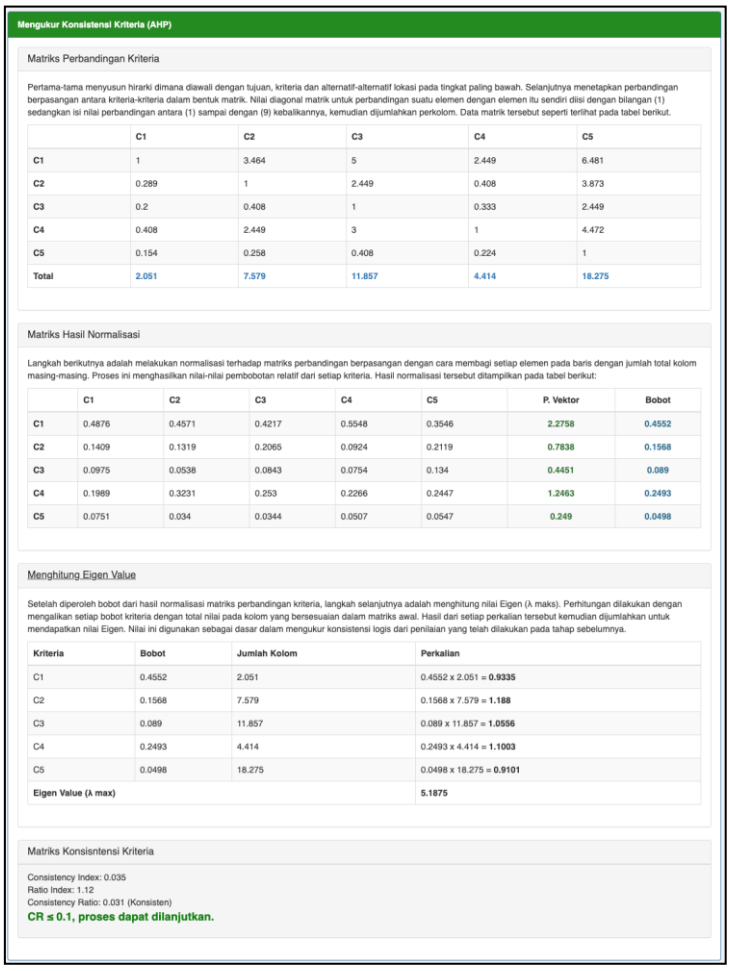

Figure 8. AHP Calculation

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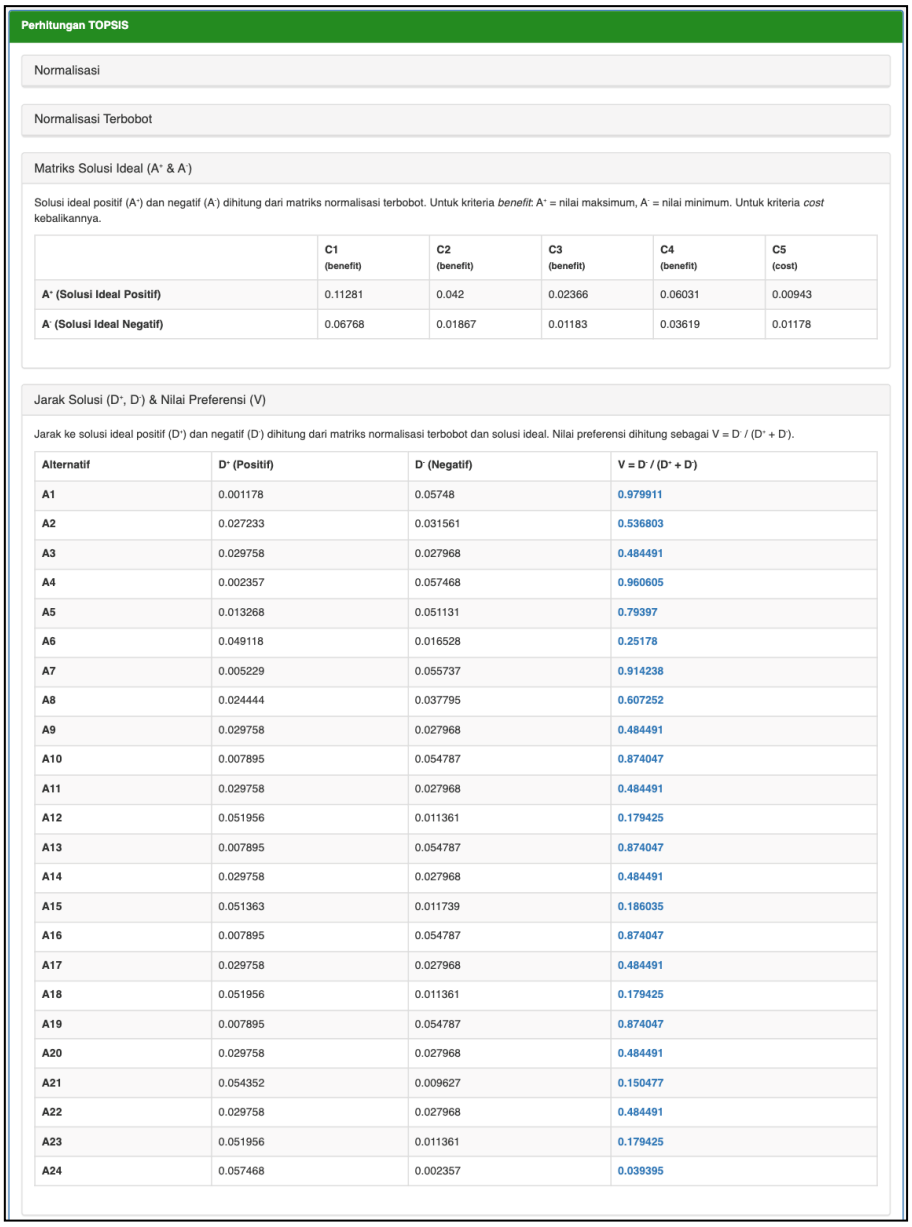
Following the AHP calculation, the system proceeded with the TOPSIS method by utilizing the derived weights to process the alternative scores. The application performed normalization, determined the positive and negative ideal solutions, calculated the distances, and generated the final preference values (V_i) that formed the basis of the ranking. The outcome of this automated calculation is presented in Figure 10.



Perhitungan TOPSIS

Normalisasi

Normalisasi Terbobot

Matriks Solusi Ideal (A⁺ & A⁻)

Solusi ideal positif (A⁺) dan negatif (A⁻) dihitung dari matriks normalisasi terbobot. Untuk kriteria *benefit*: A⁺ = nilai maksimum, A⁻ = nilai minimum. Untuk kriteria *cost* kebalikannya.

	C1 (benefit)	C2 (benefit)	C3 (benefit)	C4 (benefit)	C5 (cost)
A⁺ (Solusi Ideal Positif)	0.11281	0.042	0.02366	0.06031	0.00943
A⁻ (Solusi Ideal Negatif)	0.06768	0.01867	0.01183	0.03619	0.01178

Jarak Solusi (D⁺, D⁻) & Nilai Preferensi (V)

Jarak ke solusi ideal positif (D⁺) dan negatif (D⁻) dihitung dari matriks normalisasi terbobot dan solusi ideal. Nilai preferensi dihitung sebagai V = D⁻ / (D⁺ + D⁻).

Alternatif	D⁺ (Positif)	D⁻ (Negatif)	V = D⁻ / (D⁺ + D⁻)
A1	0.001178	0.05748	0.979911
A2	0.027233	0.031561	0.536803
A3	0.029758	0.027968	0.484491
A4	0.002357	0.057468	0.960605
A5	0.013268	0.051131	0.79397
A6	0.049118	0.016528	0.25178
A7	0.005229	0.055737	0.914238
A8	0.024444	0.037795	0.607252
A9	0.029758	0.027968	0.484491
A10	0.007895	0.054787	0.874047
A11	0.029758	0.027968	0.484491
A12	0.051956	0.011361	0.179425
A13	0.007895	0.054787	0.874047
A14	0.029758	0.027968	0.484491
A15	0.051363	0.011739	0.186035
A16	0.007895	0.054787	0.874047
A17	0.029758	0.027968	0.484491
A18	0.051956	0.011361	0.179425
A19	0.007895	0.054787	0.874047
A20	0.029758	0.027968	0.484491
A21	0.054352	0.009627	0.150477
A22	0.029758	0.027968	0.484491
A23	0.051956	0.011361	0.179425
A24	0.057468	0.002357	0.039395

Figure 9. TOPSIS Calculation

The final output of the system displayed the results of the TOPSIS calculation in tabular form, presenting the preference values (V_i) and the ranking of all counselors. This tabular output enabled administrators and assessors to identify the best-performing counselors and to compare the relative positions of each alternative in a clear and transparent manner, as shown in Figure 11.

To ensure the operational integrity and mathematical reliability of the developed DSS, a formal system validation procedure was executed. This phase focused on verifying the accuracy of the core computational modules (AHP for weighting and TOPSIS for ranking) implemented using PHP and MySQL. The primary validation technique involved a quantitative comparison between the automated

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system output and independent manual calculations performed on the same input dataset. The results of this accuracy test for the top 10 ranked alternatives are summarized in Table 8.

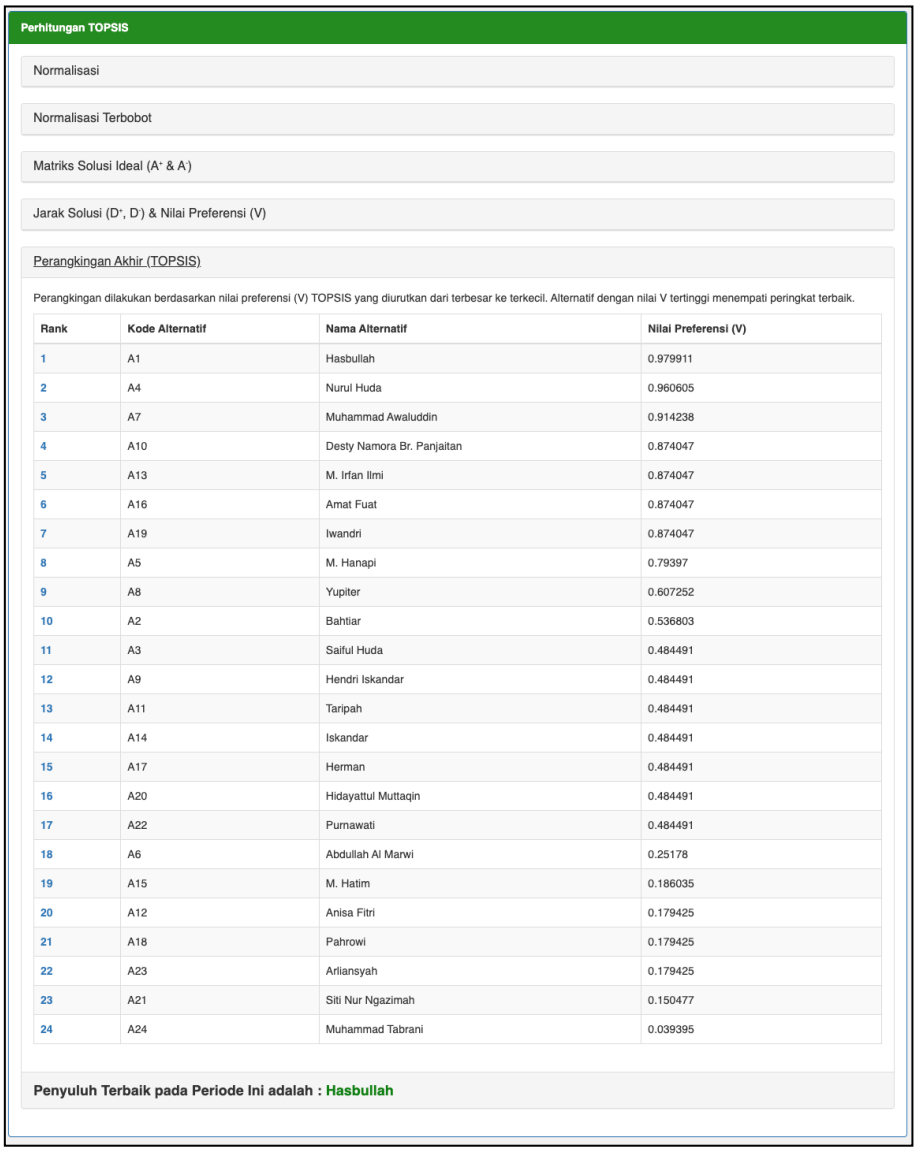

Figure 10. Final Output of Preference Values and Ranking

Table 7. Validation of TOPSIS Calculation Accuracy (Comparison of Top 10 Alternatives)

Rank	Alternatives	Manual Vi	System Vi	Manual Rank	System Rank	Difference
1	A4	1.0000	1.0000	1	1	0
2	A1	0.9517	0.9517	2	2	0
3	A7	0.9288	0.9288	3	3	0
4	A10	0.8840	0.8840	4	4	0
5	A13	0.8840	0.8840	4	4	0
6	A16	0.8840	0.8840	4	4	0
7	A19	0.8840	0.8840	4	4	0
8	A8	0.8757	0.8757	8	8	0
9	A5	0.5087	0.5087	9	9	0
10	A11	0.5087	0.5087	9	9	0

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As summarized in Table 8, the validation test demonstrated a high degree of concordance between the automated system outputs and the manual calculations. Both the calculated preference values **(V_i)** and the resulting rankings for all top 10 alternatives showed no deviation, leading to a 100% agreement rate between the two methods. This quantitative result confirms that the AHP and TOPSIS algorithms, as programmed within the web-based DSS (PHP/MySQL), are computationally sound and reliable. The successful validation ensures the integrity of the evaluation outcome, providing a transparent, objective, and scientifically verifiable tool for the Regional Office of the Ministry of Religious Affairs.

4. DISCUSSIONS

This study confirms that the integration of AHP and TOPSIS is highly effective for evaluating the performance of Islamic religious counselors. The AHP analysis established a robust hierarchy, identifying the Portfolio (C1) (0.474) and Presentation/Interview (C4) (0.244) as the singularly dominant criteria, collectively accounting for approximately 71.8% of the overall framework weight. This finding strongly aligns with expert perceptions that a proven track record and effective communication skills are the essential indicators distinguishing high-performing counselors [2]. This result is further validated by the high reliability of the expert judgments (CR = 0.025 < 0.10). Subsequently, the TOPSIS method successfully leveraged these weights to produce an objective ranking; for instance, the top-ranked alternative (A4, V_i = 1.0000) consistently excelled in C1 and C4, while the lowest-ranked alternative (A24, V_i = 0.0000) reflected significant deficiencies across key indicators.

The methodological efficacy of the AHP–TOPSIS integration in this public service context is consistent with its established utility in Multi-Criteria Decision Making (MCDM) applications[27], [30]. This approach provides crucial robustness and consistent weighting compared to simpler methods like SAW while offering a more intuitive and practically usable ranking mechanism than complex outranking methods such as PROMETHEE and ELECTRE [18], [23]. Crucially, unlike many MCDM applications focused on industrial contexts like supplier selection or logistics [13], [33], this research successfully adapts the AHP–TOPSIS framework to the unique socio-cultural environment of religious human resource management. This adaptation validates the framework's flexibility and confirms that effective performance distinction in public service is critically dependent on both established track records and clear communication ability [9].

The successful development and validation of the Decision Support System (DSS) provides a significant contribution to the field of Informatics and Computer Science. The research demonstrates the successful integration of complex decision-making algorithms into a computationally sound and reliable web-based application (PHP/MySQL) suitable for direct adoption by government institutions, which is a key necessity for modernizing public services [34], [36]. This technological implementation is critical for standardizing national evaluation procedures based on informatic and supports the national digital transformation agenda by providing a transparent, objective, and scientifically verifiable alternative to subjective manual assessment processes . This study thus confirms the urgency for standardizing AI-aided decision models in public HR assessment.

Beyond its technical rigor, the research delivers concrete managerial implications for the Regional Office of the Ministry of Religious Affairs. The definitive ranking provides a clear basis for reward programs, and the specific weighting of C1 and C4 directs management to focus capacity-building initiatives on improving documentations skills and communication competence. While the study is limited by its sample and regional scope, the robust model provides a foundation for future research, including national-level validation and the exploration of stability against alternative MCDM techniques, such as Fuzzy TOPSIS.

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5. CONCLUSION

This study successfully demonstrated the integration of the Analytical Hierarchy Process (AHP) and TOPSIS within a developed Decision Support System (DSS) for the objective evaluation of Islamic religious counselors. The analysis established a robust priority structure, confirming that the Portfolio (0.474) and Presentation/Interview (0.244) criteria are overwhelmingly dominant, collectively accounting for 71.8% of the evaluation framework, thereby aligning expert judgment with performance data. The subsequent TOPSIS ranking confirmed the model's ability to clearly differentiate alternatives, which aligns perfectly with national technical guidelines *(Keputusan Dirjen Bimas Islam Nomor 352 Tahun 2024)*.

The research delivers a significant contribution to the field of Informatics and Computer Science. The successful development and validation of this MCDM-based DSS model advances computer science by providing a transparent, scientifically verifiable framework for ethical, policy-compliant evaluations in the public sector. This implementation is critical for standardizing national evaluation procedures based on informatics and offers an objective, AI-aided decision model essential for public HR assessment amid digital transformation. Managerially, the findings mandate that coaching strategies should specifically focus on strengthening performance documentation and public communication skills. Based on these findings, two specific recommendations are proposed for future research: national-level validation of the criteria weights and the exploration of stability against alternative MCDM techniques, such as Fuzzy TOPSIS, to enhance methodological robustness.

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