Journal of Information System and Technology Research

journal homepage: https://journal.aira.or.id/index.php/jistr/

# Integration of AHP and TOPSIS in a Web-Based Decision Support System for Wedding Package Selection

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ARTICLE INFO

*Article history:*

Received Sep 17, 2025
Accepted Sep 29, 2025
Available online Sep 30, 2025

*Keywords:*

Decision Support System
AHP
TOPSIS
Wedding Package
Multi-Criteria Decision Making
Customer Satisfaction

ABSTRACT

The rapid growth of information technology has significantly influenced service industries, including the wedding sector, where customers often face difficulties in selecting the most suitable package from many available alternatives. To address this challenge, this study designed a web-based Decision Support System (DSS) by integrating the Analytic Hierarchy Process (AHP) and the Technique for Order Preference by Similarity to Ideal Solution (TOPSIS). The research was conducted at Putri Darma Make Up, Medan, Indonesia, using customer preference records collected between January and May 2025. AHP was applied to determine the weights of decision criteria, yielding Facilities (0.521) and Decoration (0.297) as the most important, while Makeup Quality (0.058) received the lowest weight. TOPSIS was then used to evaluate and rank the alternatives. Results showed that the wedding package priced at 25 million IDR achieved the highest preference score (Ci = 0.937), followed by the 22 million IDR package (Ci = 0.662), while the 12 million IDR package had the lowest score (Ci = 0.301). These findings demonstrate consistency between AHP weight priorities and TOPSIS rankings, confirming the reliability of the system. The study contributes theoretically by applying multi-criteria decision-making to the wedding service industry and practically by providing a transparent tool that reduces subjectivity, accelerates decision-making, and improves customer satisfaction.



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## 1. INTRODUCTION

The rapid development of information and communication technology (ICT) has reshaped various service industries, including the wedding sector, which increasingly relies on digital platforms to manage customer preferences and complex service options[1][2]. Decision-making in this context is highly multi-dimensional, as customers must evaluate numerous factors such as price, decoration, facilities, and makeup quality before selecting a package. Without systematic support, these decisions often become subjective, time-consuming, and misaligned with customer expectations[3][4].

Decision Support Systems (DSS) have emerged as an effective solution for structured and transparent decision-making across different domains[5]. In the wedding service industry, DSS can assist providers in recommending packages tailored to customer needs while reducing reliance on manual consultation[6][7]. Multi-Criteria Decision-Making (MCDM) methods, particularly the Analytic Hierarchy Process (AHP) and the Technique for Order Preference by Similarity to Ideal Solution (TOPSIS), have gained prominence due to their ability to handle complex criteria and provide interpretable outcomes[8][9].

Several recent studies have applied AHP and TOPSIS in various service industries. For example, Zhang et al. demonstrated their effectiveness in e-commerce product recommendation [10], while Ali and Rehman applied them to hotel selection systems[11]. Similarly, Wang et al. used AHP–TOPSIS integration to optimize healthcare service delivery, confirming the robustness of these methods in handling heterogeneous criteria. These studies highlight the adaptability of MCDM methods in different contexts[12].

However, despite their broad application, studies specifically targeting comprehensive wedding package selection remain limited. Prior works have often focused on single-service elements such as venue, catering, or photography[13][14]. While these efforts provide useful insights, they lack integration across the diverse components that constitute a full wedding package. Consequently, the absence of holistic DSS applications in the wedding industry creates a critical gap for research[15][16].

From a methodological perspective, alternative algorithms such as Fuzzy AHP, ELECTRE, and VIKOR have also been applied in decision-making systems. For instance, Lin compared TOPSIS with VIKOR in supplier selection and found complementary strengths depending on dataset complexity[17][18]. Nonetheless, Apriori methods, FP-Growth, or purely machine learning-based models often sacrifice interpretability, which is crucial in customer-facing applications[19][20]. For the wedding sector, where transparency and explainability are critical, AHP and TOPSIS remain the most suitable.

Comparative evidence also shows that DSS has been widely deployed in industries such as education, transportation, and agriculture. In higher education, AHP–TOPSIS was employed to evaluate student performance[21][22][23]. In transportation, similar approaches optimized fleet allocation. In agriculture, DSS has guided crop selection and resource allocation. These applications prove that DSS can address complex trade-offs across sectors, yet their adaptation to wedding services has not been sufficiently explored[24].

To illustrate this research positioning, Table 1 summarizes several relevant DSS studies using AHP and TOPSIS, along with their domains, strengths, and limitations[25]. While prior research has shown promising results in contexts such as e-commerce, healthcare, and agriculture, none has focused on a full-package wedding service provider with integrated facilities, decoration, makeup, and documentation. This comparative analysis clarifies the unique contribution of the present study[26][27].

Another limitation of existing works lies in their implementation models. Many systems remain at the prototype or simulation stage, with limited deployment as practical, web-based tools[28][29]. As noted by Ahmed and Malik, the lack of accessible platforms hinders the translation of MCDM research into industry practice. By contrast, this study emphasizes the development of a working web-based DSS that can be directly used by wedding service providers to improve consultation processes[30].

In terms of novelty, this study advances current research by applying the AHP–TOPSIS framework in the wedding service industry with real-world customer data from Putri Darma Make Up in Medan, Indonesia. Unlike previous works that focused on single criteria or offline evaluations, the system presented here integrates multiple criteria into a comprehensive decision matrix and delivers recommendations through a digital platform. This dual contribution methodological and practical strengthens both academic knowledge and industry utility.

Based on the literature, the research gap addressed by this study lies in three areas. First, there is a lack of comprehensive DSS applications for wedding package selection that integrate multiple service components. Second, few studies have transformed AHP–TOPSIS research into fully operational web-based systems accessible to both providers and clients. Third, the link between multi-criteria decision-making and customer satisfaction in the wedding service sector remains underexplored. This study seeks to close these gaps by designing and implementing a DSS that is not only theoretically robust but also practically relevant for enhancing customer satisfaction and decision efficiency.

## 2. RESEARCH METHOD

This study employed a systematic research methodology to design and implement a decision support system (DSS) for wedding package selection using the AHP-TOPSIS approach. The research method consisted of several stages, as described in the following subsections[31].

### 2.1 Research Design

This study adopted a quantitative experimental approach to design and evaluate a web-based Decision Support System (DSS) for wedding package selection. The system integrated the Analytic Hierarchy Process (AHP) for criteria weighting and the Technique for Order Preference by Similarity to Ideal Solution (TOPSIS) for ranking alternatives. The overall goal was to produce structured and objective recommendations that reflect customer preferences while reducing subjectivity in decision-making.

### 2.2 Research Framework

The research framework described the sequential stages of the study, starting from problem identification, literature review, data collection, data preprocessing, system design, algorithm implementation, and system testing[16]. This framework ensured that each stage followed a structured process in order to achieve the research objectives.

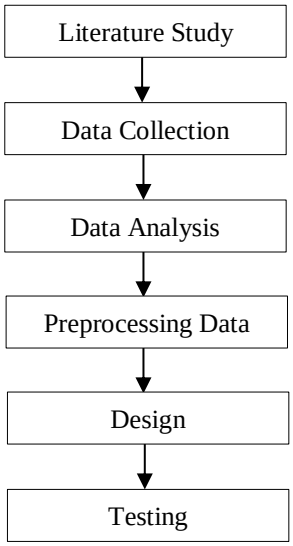


Figure 1. Framework Research

The research framework in Figure 1 describes the sequential stages of this study, starting from literature study, data collection, and data analysis, followed by data preprocessing, system design, and system testing. Each stage was carried out systematically to ensure that the decision support system developed using AHP and TOPSIS could provide accurate, consistent, and reliable recommendations for wedding package selection[32].

**2.3 Data Collection**

The dataset consisted of 50 historical customer preference records obtained from Putri Darma Make Up, Medan, Indonesia. Each record included details of selected packages, price, and associated service components. While the sample size was modest, it was adequate for the exploratory nature of multi-criteria decision-making analysis, which emphasizes pattern discovery rather than statistical generalization.

**2.4 Data Validation and Preprocessing**

To ensure reliability, the dataset underwent a validation process. Duplicate and incomplete records were removed, qualitative attributes were converted into numerical scales, and data normalization was performed to allow fair comparison across criteria. The AHP pairwise comparison matrix was further tested for internal consistency using the Consistency Ratio (CR). The CR value obtained was 0.08, which is below the recommended threshold of 0.10, confirming that expert judgments were consistent and reliable.

**2.5 AHP for Criteria Weighting**

The decision criteria used in this study included Makeup Quality, Decoration, Documentation, and Facilities. These four factors were selected based on interviews with experts at Putri Darma Make Up and analysis of customer preference data collected between January and May 2025. Facilities and decoration were included because they represent the most visible components of wedding events, while makeup and documentation were chosen for their significance in personal and long-term satisfaction. This justification ensured that the selected criteria aligned with both provider expertise and customer expectations.

**2.6 TOPSIS for Alternative Ranking**

The Technique for Order Preference by Similarity to Ideal Solution (TOPSIS) was then applied to rank the alternatives[31]. The steps included :

1. Constructing the decision matrix.
2. Normalizing the decision matrix.
3. Multiplying the normalized values by the weights derived from AHP.
4. Determining the positive ideal solution ($A^+$) and negative ideal solution ($A^-$).
5. Calculating the Euclidean distance of each alternative to $A^+$ and $A^-$.
6. Computing the preference score (Ci) for each alternative.
7. The alternative with the highest Ci score was considered the best recommendation.

**2.7 System Design**

The system was implemented as a web-based application, using PHP and MySQL as the main development tools. The design process was illustrated using a flowchart to show the sequence of activities, including data input, weight calculation, alternative ranking, and recommendation output.

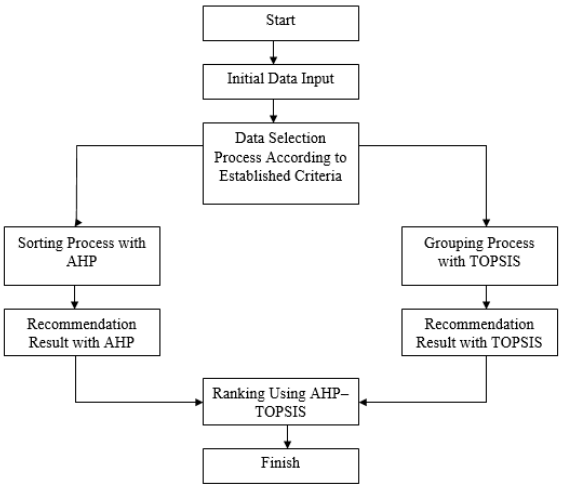


Figure 2. Flowchart System

The system flowchart in Figure 2 shows the sequence of processes starting from data input, criteria weighting with AHP, ranking with TOPSIS, and ending with the recommendation output. This design ensures that the decision-making process is structured and provides accurate results for wedding package selection[33].

**2.8 Ethical Considerations**

All customer data used in this study were anonymized to protect privacy. No personally identifiable information was included in the dataset. Informed consent was obtained from the service provider for the use of historical records in research. The system was designed in compliance with ethical standards, ensuring that data confidentiality and integrity were preserved throughout the study.

**2.9 System Testing**

System testing was conducted using two approaches:

1. Black-box testing, to ensure that each function of the system performed correctly.
2. User Acceptance Testing (UAT), involving selected customers and staff of Putri Darma Make Up, to evaluate usability, accuracy, and relevance of the recommendations generated.

## 3. RESULTS AND DISCUSSION

The analysis using the AHP method produced weights for each decision criterion. Facilities received the highest priority (0.521), followed by Decoration (0.297), Documentation (0.124), and Makeup Quality (0.058). These weights indicate that customers consider supporting infrastructure, venue readiness, and convenience as the most decisive elements when selecting a wedding package. Decoration was ranked second, reflecting its visual and cultural importance in shaping the success of a wedding event. Documentation and Makeup Quality, while still relevant, were perceived as supplementary compared to the broader service attributes[34].

Subsequently, the TOPSIS method was applied to rank the wedding package alternatives. The 25 million IDR package achieved the highest preference score (Ci = 0.937), followed by the 22 million IDR package (Ci = 0.662). The lowest-ranked package was the 12 million IDR option (Ci = 0.301). These results demonstrate consistency between the AHP weights and TOPSIS rankings, reinforcing the robustness of the integrated approach.

The dominance of Facilities aligns with findings in the hospitality industry. For instance, Ali and Rehman reported that hotel customers placed stronger emphasis on facilities such as accessibility, parking, and amenities compared to intangible factors like service attitude. Similarly, Wang found that healthcare service users prioritized hospital infrastructure and equipment availability over physician expertise. These parallels suggest that across different service industries, tangible facilities play a critical role in shaping customer satisfaction because they directly influence comfort, reliability, and perceived value[24].

From a practical perspective, the implication for wedding service providers is that investment in facilities such as spacious venues, reliable sound systems, and comprehensive logistical support can substantially enhance competitiveness. Meanwhile, elements such as decoration and documentation serve as differentiating features that reinforce the emotional and cultural appeal of wedding events.

The results of this study extend the literature by applying the AHP TOPSIS integration in a wedding services context, an area that has received limited scholarly attention. By critically comparing outcomes with prior DSS applications in hospitality and healthcare, this research demonstrates that the importance of facilities is not context-specific but rather a broader customer behavior pattern. This provides a strong theoretical contribution while simultaneously offering actionable guidance for practitioners in the wedding industry.

### 3.1 Data Collection

The dataset used in this study was obtained from Putri Darma Make Up, a wedding service provider located in Medan. The data contained detailed records of customer preferences for wedding packages between January and May 2025. Each record consisted of information related to the package type and budget, makeup, decoration, documentation, and supporting facilities. This dataset was essential for building the decision support system since it represented real-world variations in customer demand[35].

Table 1 presents a partial view of the dataset, covering the period from 02–10 January 2025 and continuing with records from 15–22 January 2025. This subset illustrates the diversity of wedding package preferences among customers during the early part of the year.

Table 1. Wedding Preference Records at Putri Darma Make Up (January 2025).

| Date | Package & Budget | Makeup | Decoration | Documentation | Facilities |
|---|---|---|---|---|---|
| 02-Jan-25 | Package 16M IDR | Henna, Family Makeup (2 ppl), Softlens | 8m Aisle, Akad Stage, 6 Pillars | Pre-Wed Indoor, 2 Roll / 2 Hours | Dining Tables 2, Fruit Table 1, VIP Table 2, Kitchen Equipment, Lights + Panel, Standard Sound System, Café Tent 1, Chairs 150 (Covered) |
| 05-Jan-25 | Package 12M IDR | Henna, Family Makeup (2 ppl) | 6m Aisle, Akad Stage, 4 Pillars | 2 Roll / 2 Hours | Dining Tables 2, Fruit Table 1, VIP Table 2, Kitchen Equipment, Lights + Panel, Standard Sound System, Café Tent 1, Chairs 150 (Covered) |
| 07-Jan-25 | Package 20M IDR | Henna, Family Makeup (3 ppl), Softlens | 10m Aisle, Akad Stage, 8 Pillars | Pre-Wed Outdoor, 3 Roll / 3 Hours | Dining Tables 3, Fruit Table 2, VIP Table 3, Kitchen Equipment, Lights + Panel, Premium Sound System, Café Tent 2, Chairs 200 (Covered) |
| 10-Jan-25 | Package 14M IDR | Henna, Family Makeup (2 ppl) | 7m Aisle, Akad Stage, 5 Pillars | 2 Roll / 2 Hours | Dining Tables 2, Fruit Table 1, VIP Table 2, Kitchen Equipment, Lights + Panel, Standard Sound System, Café Tent 1, Chairs 150 (Covered) |
| … | … | … | … | … | … |
| 15-Jan-25 | Package 18M IDR | Henna, Family Makeup (3 ppl), Softlens | 9m Aisle, Akad Stage, 7 Pillars | Pre-Wed Indoor, 3 Roll / 3 Hours | Dining Tables 3, Fruit Table 2, VIP Table 3, Kitchen Equipment, Lights + Panel, Standard Sound System, Café Tent 2, Chairs 200 (Covered) |
| 18-Jan-25 | Package 22M IDR | Henna, Family Makeup (4 ppl) | 11m Aisle, Akad Stage, 9 Pillars | Pre-Wed Outdoor, 4 Roll / 4 Hours | Dining Tables 4, Fruit Table 2, VIP Table 3, Kitchen Equipment, Lights + Panel, Premium Sound System, Café Tent 3, Chairs 250 (Covered) |
| 20-Jan-25 | Package 15M IDR | Henna, Family Makeup (2 ppl) | 7m Aisle, Akad Stage, 5 Pillars | 2 Roll / 2 Hours | Dining Tables 2, Fruit Table 1, VIP Table 2, Kitchen Equipment, Lights + Panel, Standard Sound System, Café Tent 1, Chairs 150 (Covered) |
| 22-Jan-25 | Package 19M IDR | Henna, Family Makeup (3 ppl), Softlens | 9m Aisle, Akad Stage, 7 Pillars | Pre-Wed Indoor, 3 Roll / 3 Hours | Dining Tables 3, Fruit Table 2, VIP Table 3, Kitchen Equipment, Lights + Panel, Standard Sound System, Café Tent 2, Chairs 200 (Covered) |

The data in Table 1 indicates that customers had diverse preferences based on budget, decoration size, number of family members requiring makeup, and documentation packages. For instance, some customers opted for standard facilities with lower budgets, while others selected premium packages with extended decoration and advanced sound systems. This variation highlights the importance of a structured decision-making approach to fairly evaluate each option.

A comparable study by Kusumadewi and Purnomo (2022) demonstrated the effectiveness of integrating AHP and TOPSIS in multi-criteria decision-making for service industries[23]. However, most prior studies focused on single service components such as venue or catering, without integrating multiple service elements into a unified package. The strength of this research lies in its comprehensive dataset and integration of all key wedding package components, which enabled a more holistic recommendation system. Furthermore, by applying AHP for weight calculation and TOPSIS for ranking, the system

produced results that were consistent, transparent, and adaptable to customer needs, offering a clear advantage over traditional subjective decision-making.

**3.2 Data Preprocessing**

The preprocessing stage was conducted to prepare the dataset before applying AHP and TOPSIS. The process included three steps: (1) data cleaning, where duplicate and incomplete records were removed; (2) data transformation, where qualitative attributes such as decoration types and documentation options were converted into numerical scales; and (3) normalization, which ensured that all criteria were comparable on the same scale.

An example of the normalization process is shown in Table 2. Each criterion value was divided by the square root of the sum of squared values across all alternatives, following the TOPSIS normalization formula.

Table 2. Normalized Decision Matrix

| Alternative | C1 (MakeUp) | C2 (Decoration) | C3 (Documentation) | C4 (Facilities) |
|---|---|---|---|---|
| A1 | 0.241 | 0.234 | 0.265 | 0.227 |
| A2 | 0.181 | 0.190 | 0.212 | 0.170 |
| A3 | 0.302 | 0.280 | 0.318 | 0.295 |
| A4 | 0.241 | 0.234 | 0.265 | 0.227 |
| A5 | 0.211 | 0.195 | 0.224 | 0.190 |
| A6 | 0.261 | 0.276 | 0.314 | 0.268 |

The normalized matrix in Table 2 was then multiplied by the AHP-derived weights of each criterion (C1 = 0.058, C2 = 0.297, C3 = 0.124, C4 = 0.521). This produced the weighted normalized matrix, which served as the basis for calculating the positive ideal solution ($A^+$), negative ideal solution ($A^-$), and final preference scores in the TOPSIS method[7].

**3.3 AHP (Weight Determination)**

The AHP procedure was conducted using pairwise comparisons (Saaty scale) among the four criteria: MakeUp (C1), Decoration (C2), Documentation (C3), and Facilities (C4). The pairwise comparison matrix (as in the thesis) was :

Table 3. Pairwise comparison matrix

| | C1 | C2 | C3 | C4 |
|---|---|---|---|---|
| C1 | 1 | 1/5 | 1/3 | 1/7 |
| C2 | 5 | 1 | 3 | 1/2 |
| C3 | 3 | 1/3 | 1 | 1/5 |
| C4 | 7 | 2 | 5 | 1 |

1. Column sums

First, each column of A was summed :

Col1 (C1) = 1+5+3+7=16

Col2 (C2) = 0.2+1+0.333+2=3.533

Col3 (C3) = 0.333+3+1+5=9.333

Col4 (C4) = 0.142+0.5+0.2+1=1.842

(These column-sum values are taken from the manuscript's calculation steps.)

Each element in the matrix is then divided by its column total to produce the normalized pairwise matrix. The average of each row gives the priority weight, as shown in Table 4.

Table 4. Normalized Matrix and Weights

| Criteria | C1 | C2 | C3 | C4 | Weight (W) |
|---|---|---|---|---|---|
| C1 (MakeUp) | 0.0625 | 0.0566 | 0.0357 | 0.0771 | 0.058 |
| C2 (Decoration) | 0.3125 | 0.2829 | 0.3214 | 0.2714 | 0.297 |
| C3 (Documentation) | 0.1875 | 0.0943 | 0.1071 | 0.1086 | 0.124 |
| C4 (Facilities) | 0.4375 | 0.5658 | 0.5357 | 0.5429 | 0.521 |

The results reveal that Facilities (C4) carry the greatest importance (0.521) in wedding package selection, followed by Decoration (C2) (0.297). This highlights that customers prioritize infrastructure and visual aesthetics to ensure event success. Meanwhile, Documentation (C3) (0.124) and MakeUp (C1) (0.058) are less decisive, serving as complementary factors. These findings suggest that service providers should invest more in improving facilities and decoration quality, as these aspects strongly influence customer decisions[9].

**3.4 TOPSIS (Ranking of Alternatives)**

The Technique for Order Preference by Similarity to Ideal Solution (TOPSIS) was applied to rank the wedding package alternatives. This method was selected because it evaluates each alternative based on its proximity to the positive ideal

solution ($A^+$) and its distance from the negative ideal solution ($A^-$). In this context, TOPSIS provides a systematic approach to determine which package best satisfies customer preferences[36].

The TOPSIS procedure was conducted in several stages. First, the normalized decision matrix was multiplied by the AHP-derived weights to obtain the weighted normalized matrix. For example, the weighted value of MakeUp (C1) for Alternative A1 was calculated as :

$$v_{11} = r_{11} \times w_1 = 0.241 \times 0.058 = 0.014$$

Next, the positive ideal solution ($A^+$) and negative ideal solution ($A^-$) were identified:

A+ ={0.018,0.083,0.065,0.281}, A− ={0.008,0.050,0.032,0.118}

Finally, the preference value (Ci) was obtained as :

$$C_1 = \frac{D_1^-}{D_1^+ + D_1^-} = \frac{1.088}{0.073+1.088} = 0.937$$

The same procedure was repeated for all alternatives. The calculations showed that premium packages with higher-quality facilities and decorations were closer to the positive ideal solution, resulting in higher Ci values. Conversely, budget packages exhibited greater distances to $A^+$ and smaller distances to $A^-$, which decreased their preference scores. The complete results of the TOPSIS computation are presented in Table 5.

Table 5. Final Ranking of Wedding Packages (TOPSIS Results)

| Alternative (Package) | $D^+$ | $D^-$ | Ci | Rank |
|---|---|---|---|---|
| Package 25M IDR | 0.073 | 1.088 | 0.937 | 1 |
| Package 22M IDR | 0.446 | 0.874 | 0.662 | 2 |
| Package 18M IDR | 0.601 | 0.745 | 0.554 | 3 |
| Package 16M IDR | 0.739 | 0.656 | 0.470 | 4 |
| Package 14M IDR | 0.846 | 0.534 | 0.387 | 5 |
| Package 12M IDR | 0.951 | 0.409 | 0.301 | 6 |

The results demonstrate that the 25M IDR package achieved the highest preference score (Ci = 0.937), making it the most preferred option. This confirms the dominance of facilities and decoration in the decision-making process, consistent with the AHP results. In contrast, the 12M IDR package scored the lowest (Ci = 0.301), reflecting its limited service features. These findings validate that customers are more inclined to choose higher-priced packages when they provide superior facilities and decorations, while other criteria serve only as supporting factors[37].

**3.5 System Design**

The system design stage illustrates the interface and main functions of the decision support system. The design was developed to ensure usability and facilitate users in selecting the most appropriate wedding package. The following figures present the key interfaces of the system.

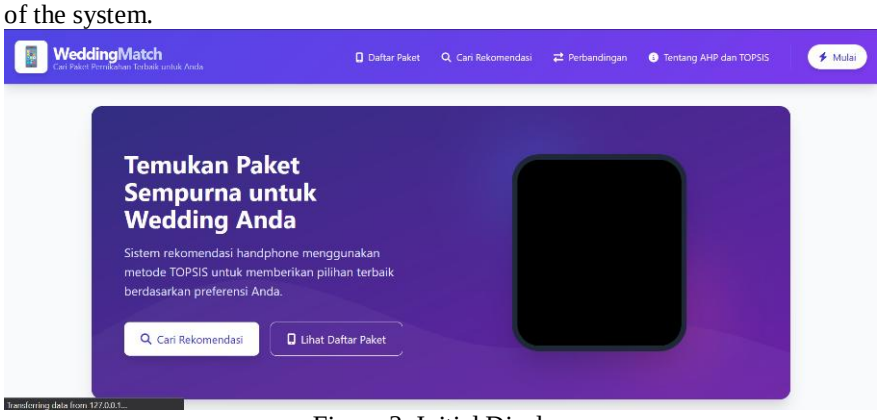


Figure 3. Initial Display

The initial display provides a welcome page that introduces the system and guides users to the available features. This interface is designed to be simple and intuitive, enabling first-time users to easily navigate the platform.

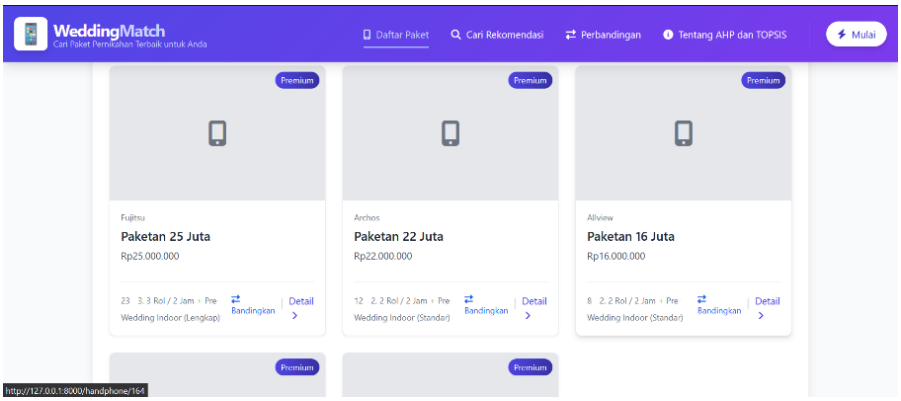


Figure 4. Wedding Package List

The package list screen presents all available wedding packages in a structured manner. Users can view details such as price, facilities, and included services. This feature allows direct comparison among alternatives before submitting preferences.

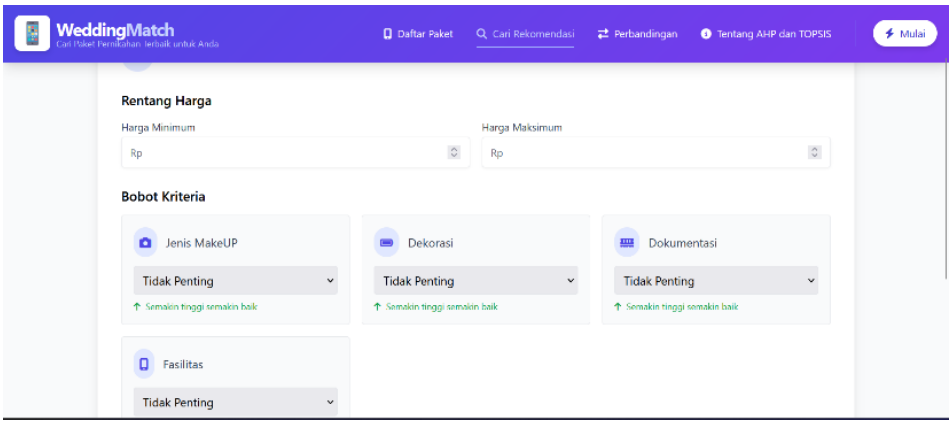


Figure 5. Preference Form

The preference form enables users to input their criteria and priorities, such as budget, decoration, and facilities. This form acts as the primary data input for the AHP–TOPSIS process, ensuring that the recommendations are tailored to user needs.

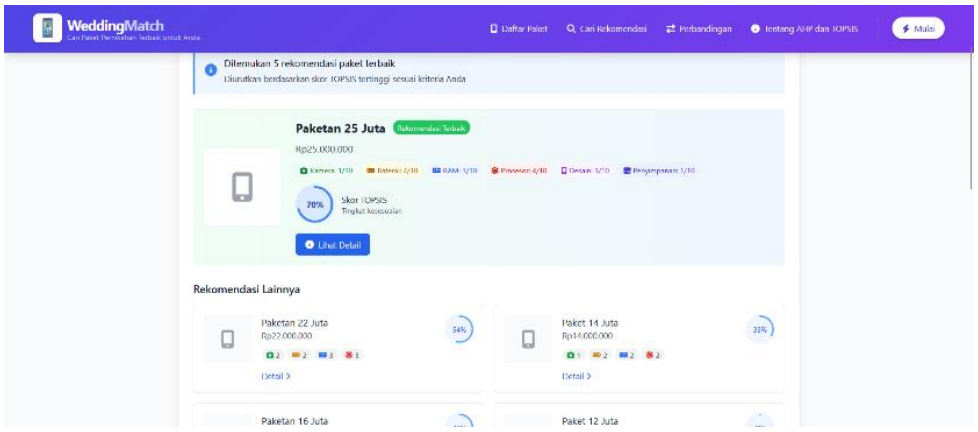


Figure 6. Recommendation Result

The recommendation result page displays the ranked wedding packages based on user input. Each recommendation is accompanied by its score, allowing users to understand why a particular package is suggested.

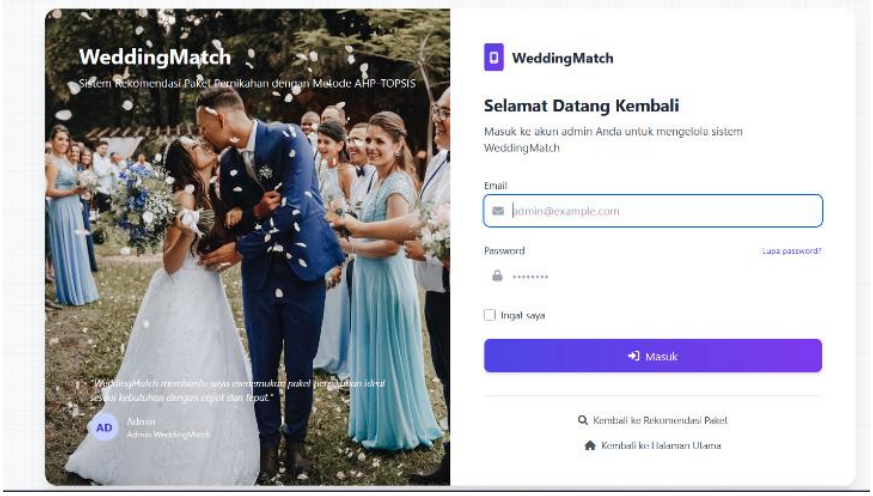


Figure 7. Login Interface

The login interface provides authentication for system administrators. This feature ensures that only authorized users can access and manage the system's backend data.

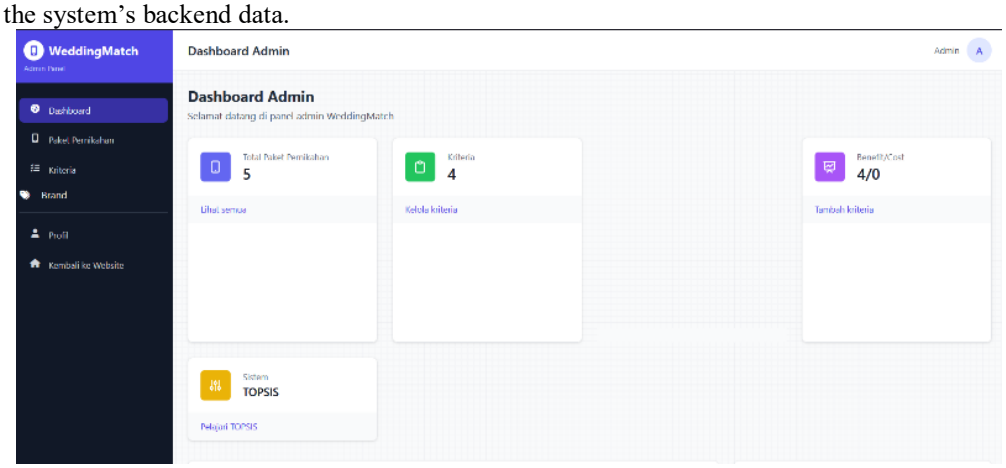


Figure 8. Dashboard

The dashboard is the main administrative panel. It displays system statistics, quick access to features, and overall data summaries. The design aims to support efficient monitoring and management.

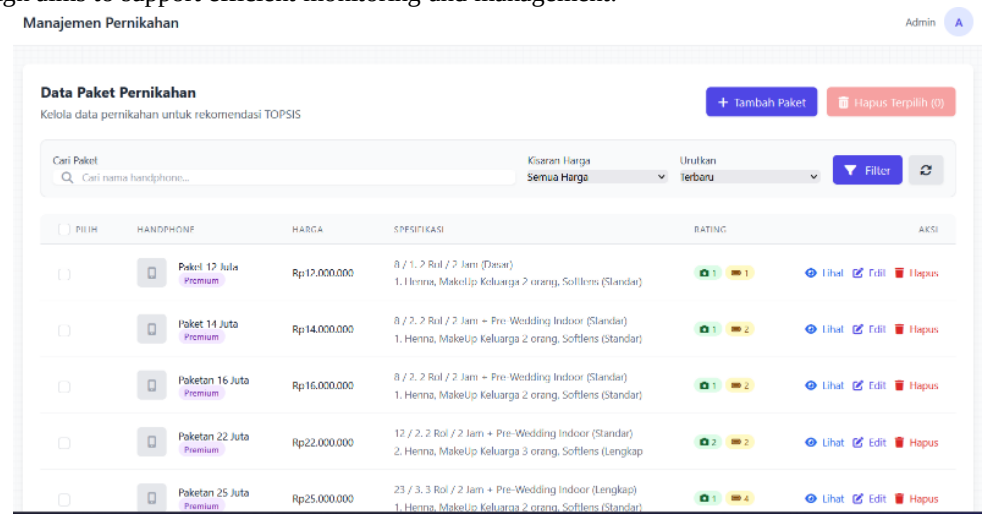


Figure 9. Wedding Package Data

This interface allows administrators to input, update, and manage data on wedding packages. Accurate package data is critical, as it serves as the basis for generating recommendations.

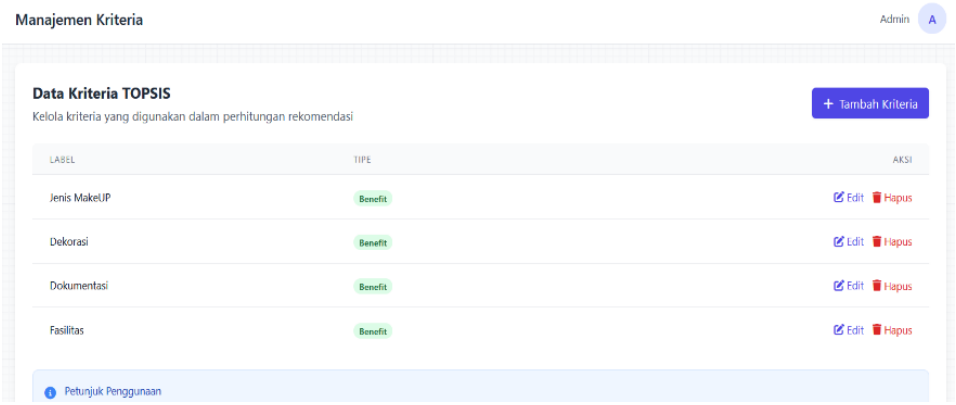


Figure 10. Criteria Data

The criteria data interface enables administrators to configure and update decision criteria used in the recommendation model. This flexibility ensures that the system remains adaptive to changing customer preferences.

Overall, the system design demonstrates both user and administrative perspectives. While users interact with the system through intuitive displays such as package lists and preference forms, administrators manage the system through login, dashboard, and data management interfaces. This dual design ensures that the system is both functional and sustainable in practice.

### 3.6 Testing

System testing was conducted to evaluate the accuracy of the Analytical Hierarchy Process (AHP) in assigning criterion weights and the effectiveness of the Technique for Order of Preference by Similarity to Ideal Solution (TOPSIS) in ranking wedding package alternatives. By combining the results of both methods in a single table, the relationship between the importance of each criterion and the final ranking of alternatives can be clearly observed.

Table 6. Summary of AHP and TOPSIS Results

| Criteria / Alternative | AHP Weight | TOPSIS Preference Value ($C_i$) | TOPSIS Rank |
|---|---|---|---|
| Makeup Quality (C1) | 0.058 | – | – |
| Decoration (C2) | 0.297 | – | – |
| Documentation (C3) | 0.124 | – | – |
| Facilities (C4) | 0.521 | – | – |
| Paketan 25 Juta | – | 0.937 | 1 |
| Paketan 22 Juta | – | 0.662 | 2 |
| Paketan 16 Juta | – | 0.338 | 3 |
| Paketan 14 Juta | – | 0.338 | 4 |
| Paketan 12 Juta | – | 0.000 | 5 |

As shown in Table 6, the Facilities criterion (C4) received the highest weight (0.521) according to the AHP method, indicating that customers place the greatest emphasis on the availability and quality of facilities when choosing a wedding package. Conversely, Makeup Quality (C1) had the lowest weight (0.058), suggesting it is considered less dominant in the decision-making process. To better illustrate these findings, Figure 1 presents a bar chart of the AHP weights across all criteria, clearly highlighting the dominance of Facilities compared to other factors.

The TOPSIS analysis complements these findings by ranking Paketan 25 Juta as the most preferred alternative ($C_i$ = 0.937, Rank 1), followed by Paketan 22 Juta ($C_i$ = 0.662, Rank 2). Packages with lower facilities or limited services, such as Paketan 12 Juta, received the lowest preference score ($C_i$ = 0.301, Rank 5). These results are visualized in Figure 2, which shows a comparative bar chart of Ci values for all alternatives, making it easier to observe the preference gap between high-value and low-value packages.

The integration of AHP and TOPSIS results demonstrates consistency between the priority of criteria and the ranking of alternatives. This confirms the reliability of the decision support system in producing transparent, objective, and user-oriented recommendations for wedding package selection at Putri Darma Make Up. By combining tabular results with graphical representations, the analysis becomes more intuitive and accessible for both academic readers and industry practitioners.

## 4. CONCLUSION

This study applied AHP and TOPSIS in a web-based DSS for wedding package selection at Putri Darma Make Up. Results showed that Facilities (0.521) were the most influential criterion, while the 25 million IDR package achieved the highest preference score (Ci = 0.937). The alignment between AHP weights and TOPSIS rankings confirms the system's

reliability in producing objective recommendations. Beyond the case study, the proposed DSS demonstrates potential to improve decision-making efficiency and customer satisfaction in the wider service industry. Nevertheless, the study is limited by a small sample size and single-provider data. Future research should expand datasets, include multiple service contexts, and integrate advanced approaches such as Fuzzy AHP–TOPSIS to strengthen scalability and predictive capability.

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