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Combination of TOPSIS Method and PIPRECIA Weighting for Best Hotel Selection

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Abstract−The main problem is the difference between the description and photos displayed on the booking site and the real condition of the hotel, inconsistent or even fake reviews can confuse potential guests in making a decision. To overcome the problem in hotel selection, a decision support system approach is needed. This study aims to apply the PIPRECIA method in determining the weight of each criterion that has been identified, so that each criterion has a weight that is in accordance with its level of importance. Meanwhile, the TOPSIS method to sort and select the best hotels based on the weight of the criteria that have been obtained from the PIPRECIA method, so that it can make a significant contribution in the field of hotel management and multi-criteria decision-making. The results of the best hotel ranking by applying the PIPRECIA and TOPSIS weighting methods obtained the first highest ranking result with a final preference score of 0.64247 obtained by Hotel The 101, the second highest ranking with a final preference score of 0.57032 obtained by Hotel Harper, the third highest ranking with a final preference score of 0.53261 obtained by Hotel Novotel, the fourth highest ranking with a final preference score of 0.36972 obtained by Hotel Santika, and the last ranking with a final preference score of 0.21038 was obtained by The Zuri Hotel.

Keywords: Best Hotel; Multi-Criteria Decision-Making; PIPRECIA; Ranking; TOPSIS

1. INTRODUCTION

A hotel is an inn that provides various facilities and services for its guests. With a wide range of room types, from standard to luxury suites, the hotel provides accommodation options that can be tailored to the needs and budgets of guests. In addition to comfortable rooms, hotels usually also offer additional facilities such as restaurants, swimming pools, fitness centers, spas, meeting rooms, and room service. Friendly and professional service is one of the main attractions that make guests feel valued and want to come back. Hotels are also often a top choice for tourists and business people who need a comfortable and safe place to rest during their trip. Choosing a hotel is an important step in planning a trip, whether for vacation or business purposes. Some key factors to consider include location, amenities, reviews from previous guests, and price. A strategic location close to tourist destinations or business centers can save time and transportation costs. Facilities such as free Wi-Fi, breakfast, swimming pool, and fitness center can add to your stay. Guest reviews provide a real picture of the hotel's stay experience, helping potential guests make more informed decisions. In addition, comparing prices and looking for special offers or discounts is also important in order to get the best value for the money spent. By considering all these factors, choosing a hotel can ensure a pleasant and satisfying stay. Problems in hotel selection often arise due to a lack of accurate and transparent information. The main problem is the difference between the description and photos displayed on the booking site and the real condition of the hotel, inconsistent or even fake reviews can confuse potential guests in making a decision. To overcome the problem in hotel selection, a decision support system approach is needed.

A Decision Support System (DSS) is a computer-based system that assists decision-making in an organization or company. DSS provides information, analysis, and models that enable decision-makers to better understand the situation, evaluate alternatives, and choose the optimal course of action. SPK can assist in solving complex problems by providing the necessary data and analysis. DSS offer various benefits to their users, namely providing relevant and accurate information and analysis, helping decision-makers better understand situations and make more informed decisions. DSS is a valuable tool that can help organizations and individuals make better decisions, improve efficiency, and achieve their goals. DSS helps organizations make faster and more informed decisions and improve their agility and competitiveness. One of the methods in DSS is Technique for Others Preference by Similarity to Ideal Solution.

The TOPSIS (Technique for Order of Preference by Similarity to Ideal Solution) method is a technique in a decision support system that is used to choose the best alternative among a number of options based on their proximity to the ideal solution[1]–[3]. The main principle of this method is that the best alternative is the one that has the closest distance to the positive ideal solution (best solution) and the furthest distance from the negative ideal solution (worst solution). The TOPSIS process involves several steps, including normalization of the decision matrix, weighting of criteria, determination of positive and negative ideal solutions, and calculation of the distance of each alternative from the ideal solution. In this way, the TOPSIS method ranks each alternative and helps decision-makers to choose the most optimal option based on various predetermined criteria[4]–[7]. The advantage of the TOPSIS method lies in its simplicity and efficiency in handling multi-criteria decisions. With an easy-to-

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understand process and systematic steps, TOPSIS allows users from various backgrounds to apply it easily. This method is efficient in calculations, able to handle large amounts of data quickly, and considers various criteria in alternative evaluations, thus providing a comprehensive assessment. By measuring the proximity to positive and negative ideal solutions, TOPSIS provides objective and transparent results, reducing subjective bias and improving decision-making accuracy. One of the disadvantages of the TOPSIS method lies in the determination of the weighting of the criteria which is subjective and can significantly affect the final result. The weighting process often relies on individual or group judgment and preferences, which can result in bias and a lack of consistency. In addition, this method does not provide clear guidance on how to determine the most accurate weights, which can lead to uncertainty in decision-making. The reliance on subjective weights also means that small changes in weighting can result in different alternative ratings, reducing the stability and reliability of the results obtained from TOPSIS. To overcome the weight problem in TOPSIS, the pivot pairwise relative criteria importance assessment weighting method is used.

The Pivot Pairwise Relative Criteria Importance Assessment (PIPRECIA) weighting method is a technique used to determine the weighting of criteria in multi-criteria decision-making[8]–[10]. PIPRECIA involves a paired comparison of criteria using a pivot approach, where one criterion is chosen as a reference (pivot) and another criterion is compared to it. In this process, the decision-maker assesses the relative importance of each criterion compared to those pivots, which are then used to calculate the final weight of each criterion. This method aims to reduce subjectivity and improve consistency in weighting by providing a systematic and structured framework. PIPRECIA also allows for dynamic adjustments in assessments, so that it can provide more accurate and reflective weights to decision-maker preferences. The PIPRECIA weighting method offers several significant advantages in the context of multi-criteria decision-making. One of the advantages of the PIPRECIA method is its ability to reduce subjectivity in determining the weight of criteria by utilizing a pivot approach, where one criterion is used as a reference point to compare all other criteria[11], [12]. This approach helps in generating more objective and consistent weights, as each criterion is assessed relative to the same pivot criteria. In addition, PIPRECIA provides a systematic and structured framework, making it easier for decision-makers to conduct more focused and efficient evaluations. The ability to dynamically adjust assessments also makes the method more adaptive to changes in preferences and conditions that may arise in the decision-making process.

Research related to hotel selection conducted by Utami (2020) provides fundamental changes to the conventional SAW model so that it can be applied more to hotel selection[13]. The research was conducted by Wang (2021) fuzzy methods for determining the final priority and ranking for the selection of the best hotel[14]. Research conducted by Mahdi (2021) showed that hotel prices are the most influential criterion in hotel selection, while the cancellation-free criterion has the least influence using the FAHP method[15]. The research conducted by Liang (2023) selected hotels to be used to MOORA method[16]. The difference with the research conducted is in the criterion weighting method, in this study the criterion weight is determined by applying the PIPRECIA weighting method.

This study aims to apply the PIPRECIA method in determining the weight of each criterion that has been identified, so that each criterion has a weight that is in accordance with its level of importance. Meanwhile, the TOPSIS method to sort and select the best hotels based on the weight of the criteria that have been obtained from the PIPRECIA method, so that it can make a significant contribution in the field of hotel management and multi-criteria based decision-making.

2. RESEARCH METHODOLOGY

2.1 Research Stages

This research stage consists of several systematic stages to achieve the goals that have been set. The first stage is problem identification and data collection[17], [18]. The collected data is then analyzed using relevant statistical or qualitative analysis techniques. The final stage is the interpretation of the results, where the findings of the study are interpreted, concluded, and presented in a comprehensive form. All of these stages are carried out sequentially to ensure the validity and reliability of the research results. The stages of the research carried out are illustrated in Figure 1.

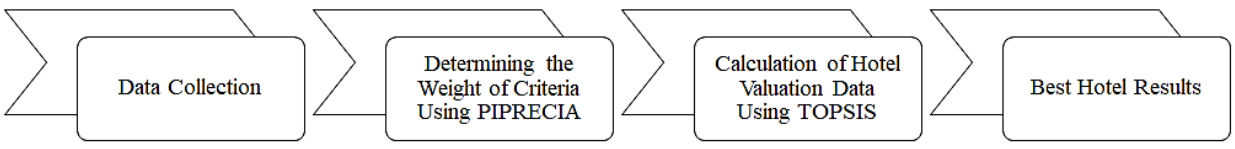

Figure 1. Research Stage

The research stages in figure 1 have four stages that are carried out starting from data collection, then determining the weight of the criteria using the PIPRECIA method, then calculating the data on hotel alternative

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assessments using the TOPSIS method, the final results of the calculation will provide the best hotel recommendations.

2.2 Data Collection

Data collection is a crucial stage in research and analysis that aims to obtain relevant and accurate information to support decision-making. Collecting data in selecting the best hotels using user ratings on the TripAdvisor website involves several important steps to ensure the accuracy and relevance of the information. First, the data is taken from user reviews that cover various aspects such as facilities, cleanliness, location, price, and service. Each review is evaluated to get an average score on each predetermined criteria. This data is then categorized and processed into a decision matrix that facilitates further analysis. In addition, data verification and validation are carried out to eliminate reviews that are irrelevant or have extreme biases. This structured and comprehensive data collection from TripAdvisor allows the application of methods in decision support systems to determine the best hotels based on real and diverse user preferences.

2.3 PIPRECIA Method

The PIPRECIA method also brings flexibility in the decision-making process by allowing decision-makers to tailor the evaluation of criteria according to their specific needs and preferences[19]. In addition, this method offers a more structured and measurable approach to evaluating complex criteria, helping to overcome the challenges of managing diverse information and the complexity of decisions. By understanding the basic concepts of PIPRECIA, decision-makers can leverage this method to improve the quality and accuracy of their decision-making processes, as well as increase transparency and more informed decision-making. The first stage in PIPRECIA is to determine the relative significance of each criterion, except for the first criterion using equation (1).

$$S_j = \begin{cases} 1 & if\ c_j > c_1 \\ 1 & if\ c_j = c_1 \\ 1 & if\ c_j < c_1 \end{cases} \quad (1)$$

The second stage in PIPRECIA is to calculate the coefficient value of each criterion using equation (2).

$$k_j = \begin{cases} 1\ if\ j = 1 \\ 2 - s_j\ if\ j > 1 \end{cases} \quad (2)$$

The third stage in PIPRECIA is to calculate the relative weight value of each criterion using equation (3).

$$q_j = \begin{cases} 1\ if\ j = 1 \\ \frac{1}{k_j}\ if\ j > 1 \end{cases} \quad (3)$$

The last stage in PIPRECIA is to calculate the final weight value of each criterion using equation (4).

$$w_j = \frac{q_j}{\sum_{\kappa=1}^{n} q_\kappa} \quad (4)$$

The PIPRECIA method provides a number of significant advantages in the context of multi-criteria decision-making, helping decision-makers to face challenges more effectively and make more informed and informed decisions.

2.4 TOPSIS Method

The TOPSIS method is one of the multi-criteria decision-making methods that is quite intuitive and easy to understand. This allows decision-makers to consider a number of criteria in a systematic and objective way[20]. The first stage in TOPSIS is to calculate the normalization of the matrix of each alternative on each normalized criterion using (5).

$$r_{ij} = \frac{x_{ij}}{\sqrt{\sum_{i=1}^{m} x_{ij}^2}} \quad (5)$$

The second stage in TOPSIS is to calculate the normalized weight multiplication of each alternative on using (6).

$$Y_{ij} = w_i * r_{ij} \quad (6)$$

The third stage in TOPSIS is to determine the positive ideal solution using (7) and the negative ideal solution for each criterion using (8).

$$y_j^+ = \begin{cases} max_i y_{ij}\ ;if\ j\ benefit\ attribute \\ min_i y_{ij}\ ;jif\ j\ cost\ attribute \end{cases} \quad (7)$$

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$$y_j^- = \begin{cases} max_i y_{ij} \; ; if \; j \; benefit \; attribute \\ min_i y_{ij} \; ; jif \; j \; cost \; attribute \end{cases} \quad (8)$$

The fourth stage in TOPSIS is to calculate the euclidean distance calculated between each alternative with a positive ideal solution using (9) and the euclidean distance calculated between each alternative with a negative ideal solution for each criterion using (10).

$$D_i^+ = \sqrt{\sum_{j=1}^{n} \left(y_i^+ - y_{ij}\right)^2} \quad (9)$$

$$D_i^- = \sqrt{\sum_{j=1}^{n} \left(y_{ij} - y_i^-\right)^2} \quad (10)$$

The last stage in TOPSIS is to calculate the value of alternative preferences using (11).

$$V_i = \frac{D_i^-}{D_i^- + D_i^+} \quad (11)$$

The TOPSIS method is a decision-making method used to select the best alternative from a number of available alternatives based on a number of predetermined criteria.

2.5 Best Hotel Result

The best hotel result is the result of recommendations from hotel search services that combine convenience and efficiency in finding the best accommodation according to customer needs. With its advanced search features, the platform offers personalized results based on preferences such as location, budget, amenities, and guest reviews. The best hotel result often offers exclusive promos and discounts, making it a top choice for those looking for comfort and value in every trip.

3. RESULT AND DISCUSSION

The combination of the TOPSIS method and PIPRECIA's weighting for the selection of the best hotel underscores the analytical advantages of these two approaches. The TOPSIS method is known to be effective in solving multi-criteria decision-making problems by identifying the option that is closest to the ideal solution. Meanwhile, the PIPRECIA method gives more accurate weight to the criteria based on relative assessments from experts. By combining these two methods, the hotel selection process becomes more comprehensive and objective. TOPSIS assesses and prioritizes hotels based on various criteria such as price, location, cleanliness, comfort, value, and the number of guest reviews on the website, while PIPRECIA ensures that the weight of these criteria is set appropriately. As a result, users can choose the best hotel that truly meets their needs and preferences.

3.1 Data Collection

Data collection is a crucial step in the research and analysis process that aims to obtain accurate and relevant information. The success of data collection depends heavily on careful planning, including the determination of data sources, appropriate collection techniques, and the tools and instruments used. The data collected must be valid and reliable to ensure that the results of the analysis are trustworthy and have added value for decision-making. In addition, ethics in data collection, such as maintaining confidentiality and participant consent, is also an important aspect that must be considered so that the integrity of the research is maintained. Hotel rating data is collected on the Tripadvisor website based on ratings made by guests, and shown in table 1.

Table 1. Hotel Rating Data

Hotel Name	Criteria Name					
	Price	Location	Cleanliness	Comfort	Rating	Number of Review
Harper	583773	4.9	4.7	4.9	4.9	1461
Santika	678125	4.8	4.8	4.9	4.9	1111
The 1O1	526011	4.9	4.9	4.9	4.9	1546
The Zuri	809772	4.9	4.9	4.8	4.9	976
Novotel	910331	4.6	4.3	4.5	4.6	2240

The hotel rating data in table 1 based on guest ratings on the TripAdvisor website is a popular and reliable method for evaluating the quality of accommodation. Guest ratings provide an honest and direct perspective of their experiences, thus helping other potential guests make more informed decisions. In addition, hotels can also take advantage of this feedback to improve their services and facilities. The combination of review quantity and consistency in high ratings in various aspects makes guest ratings on TripAdvisor an important indicator of a hotel's reputation and quality.

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3.2 Determining the Weight of Criteria Using PIPRECIA

Determining the weight of criteria using the PIPRECIA method is a systematic and efficient approach to assess the importance of each criterion in the multi-criteria decision-making process. This method involves assessing the relative between criteria by experts, which is then used to calculate the final weight of each criterion. The process begins by identifying relevant criteria and sorting them by level of importance. Furthermore, paired comparisons are carried out to assess how important each criterion is relative to the others. PIPRECIA integrates pivot points in the assessment, which helps reduce subjectivity and improve accuracy in weight determination. The results of the calculation of the weight of the criteria of this method are more accurate and reliable, which can be used in the selection of the best hotels. Table 2 is the result of the calculation of the PIPRECIA method using equations (1) to (4).

Table 2. Results of Criterion Weight Calculation Using the PIPRECIA Method

Criteria Name	S_j	K_j	Q_j	W_j
Price	1	1	1	0.1921
Location	1	1	1	0.1921
Cleanliness	0.8	1.2	0.8333	0.1601
Comfort	0.8	1.2	0.8333	0.1601
Rating	0.7	1.3	0.7692	0.1478
Number of Reviews	0.7	1.3	0.7692	0.1478

The results of the criteria weighting in table 1 using the PIPRECIA method were obtained for the price criterion with a weight of 0.1921, for the location criterion with a weight of 0.1921, for the cleanliness criterion with a weight of 0.1601, for the comfort criterion with a weight of 0.1601, and for the rating criterion with a weight of 0.1478, and for the number of review criterion with a weight of 0.1478.

3.3 Calculation of Hotel Valuation Data Using TOPSIS

The calculation of hotel assessment data using the TOPSIS method is an effective approach to determine hotel ratings based on various relevant criteria. This method starts with normalizing the data to eliminate different scales between criteria, followed by weighting according to the importance of each criterion. Furthermore, TOPSIS identifies positive ideal solutions (the best value for each criterion) and negative ideal solutions (the worst value for each criterion). The hotels were then evaluated based on their relative distance to the positive and negative ideal solutions. The hotel closest to the positive ideal solution and furthest from the negative ideal solution is considered the best. This approach allows for objective and measurable decision-making, helping users to choose the hotel that best suits their preferences and needs based on a comprehensive analysis of various important factors. The first stage in TOPSIS is to calculate the normalization of the matrix of each alternative on each normalized criterion using (5).

$$r_{11} = \frac{x_{11}}{\sqrt{\sum_{i=1}^{m} x_{11,15}^2}} = \frac{583773}{\sqrt{583773^2+678125^2+526011^2+809772^2+910331^2}} = \frac{583773}{1600551.538} = 0.3647$$

The overall result of the calculation of the normalized value of each alternative for all existing criteria will be shown in table 3.

Table 3. The Overall Result of the Calculation of Normalization Values

Hotel Name	Criteria Name					
	Price	Location	Cleanliness	Comfort	Rating	Number of Review
Harper	0.3647	0.4545	0.4448	0.4563	0.4526	0.4266
Santika	0.4237	0.4452	0.4543	0.4563	0.4526	0.3244
The 1O1	0.3286	0.4545	0.4638	0.4563	0.4526	0.4514
The Zuri	0.5059	0.4545	0.4638	0.4470	0.4526	0.2850
Novotel	0.5688	0.4267	0.4070	0.4190	0.4249	0.6541

The second stage in TOPSIS is to calculate the normalized weight multiplication of each alternative using equation (6), the result of the weight multiplication calculation is as follows.

$$Y_{11} = w_1 * r_{11} = 0.1921 * 0.3647 = 0.0701$$

The overall result of the calculation of the normalized weight multiplication of each alternative for all existing criteria will be shown in table 4.

Table 4. The Overall Result of the Calculation of Normalized Weight Multiplication of each Alternative Values

Hotel Name	Criteria Name					
	Price	Location	Cleanliness	Comfort	Rating	Number of Review
Harper	0.0701	0.0873	0.0712	0.0731	0.0669	0.0631

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Hotel Name	Criteria Name					
	Price	Location	Cleanliness	Comfort	Rating	Number of Review
Santika	0.0814	0.0855	0.0727	0.0731	0.0669	0.0479
The 1O1	0.0631	0.0873	0.0742	0.0731	0.0669	0.0667
The Zuri	0.0972	0.0873	0.0742	0.0716	0.0669	0.0421
Novotel	0.1093	0.0820	0.0652	0.0671	0.0628	0.0967

The third stage in TOPSIS is to determine the positive ideal solution using (7) and the negative ideal solution for each criterion using (8) is shown in table 5.

Table 5. The Overall Result of the Determine the Positive Ideal Solution and Negative Ideal Solution

	Criteria Name					
	Price	Location	Cleanliness	Comfort	Rating	Number of Review
Y^+	0.0631	0.0873	0.0742	0.0731	0.0669	0.0967
Y^-	0.1093	0.0820	0.0652	0.0671	0.0628	0.0421

The fourth stage in TOPSIS is to calculate the euclidean distance calculated between each alternative with a positive ideal solution using (9) and the euclidean distance calculated between each alternative with a negative ideal solution for each criterion using (10).

$$D_1^+ = \sqrt{(y_1^+ - y_{11})^2 + (y_2^+ - y_{21})^2 + (y_3^+ - y_{31})^2 + (y_4^+ - y_{41})^2 + (y_5^+ - y_{51})^2 + (y_6^+ - y_{61})^2}$$

$$D_1^+ = \sqrt{\begin{matrix}(0.0631 - 0.0701)^2 + (0.0873 - 0.0873)^2 + (0.0742 - 0.0712)^2 \\ +(0.0731 - 0.0731)^2 + (0.0669 - 0.0669)^2 + (0.0631 - 0.0631)^2\end{matrix}}$$

$$D_1^+ = \sqrt{0.00119} = 0.03446$$

$$D_1^- = \sqrt{\sum_{j=1}^{n}\left(y_{ij} - y_i^-\right)^2}$$

$$D_1^- = \sqrt{(y_{11} - y_1^-)^2 + (y_{21} - y_2^-)^2 + (y_{31} - y_3^-)^2 + (y_{41} - y_4^-)^2 + (y_{51} - y_5^-)^2 + (y_{61} - y_6^-)^2}$$

$$D_1^- = \sqrt{\begin{matrix}(0.3647 - 0.1093)^2 + (0.0873 - 0.0820)^2 + (0.0712 - 0.0652)^2 \\ +(0.0731 - 0.0671)^2 + (0.0628 - 0.0628)^2 + (0.0421 - 0.0421)^2\end{matrix}}$$

$$D_1^- = \sqrt{0.00209} = 0.04574$$

The overall result of the calculation the euclidean distance calculated between each alternative with a positive and negative is shown in table 6.

Table 6. The Overall Result of the Euclidean Distance

Hotel Name	D^+	D^-
Harper	0.03446	0.04574
Santika	0.05208	0.03055
The 1O1	0.02995	0.05382
The Zuri	0.06433	0.01714
Novotel	0.04787	0.05455

The last step in TOPSIS is to calculate the value of alternative preferences using (11), the results of calculating the value of each alternative's preference are as follows.

$$V_1 = \frac{D_1^-}{D_1^- + D_1^+} = \frac{0.04574}{0.04574 + 0.03446} = 0.57032$$

$$V_2 = \frac{D_2^-}{D_2^- + D_2^+} = \frac{0.03055}{0.03055 + 0.05208} = 0.36972$$

$$V_3 = \frac{D_3^-}{D_3^- + D_3^+} = \frac{0.05382}{0.05382 + 0.02995} = 0.64247$$

$$V_4 = \frac{D_4^-}{D_4^- + D_4^+} = \frac{0.01714}{0.01714 + 0.06433} = 0.21038$$

$$V_5 = \frac{D_4^-}{D_4^- + D_4^+} = \frac{0.05455}{0.05455 + 0.04787} = 0.53261$$

The result of the final value of preference for each alternative is the value of proximity relative to the positive ideal solution, where the alternative with the highest preference value is considered the best choice. The end result is

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a ranking of all alternatives based on the value of preferences that have been calculated, aiding in more objective and structured decision-making.

3.4 Best Hotel Result

The results of the study that combines the TOPSIS method and PIPRECIA weighting for the selection of the best hotel show an increase in accuracy and precision in decision-making. The PIPRECIA method is used to determine the weight of criteria based on expert judgment, providing a more accurate weight and reflecting the relative importance of each criterion. After that, the TOPSIS method is applied to analyze and rank hotels based on their proximity to positive ideal solutions. The results show that the combination of these two methods results in clearer and more structured hotel rankings. The results of this study show that the combination method of TOPSIS and PIPRECIA not only provides more accurate results but also offers clear and objective guidance for tourists in choosing the hotel that best suits their needs and preferences. The study also highlights the importance of using a multi-criteria approach in complex decision-making such as hotel selection. The combination of TOPSIS and PIPRECIA allows for the balanced integration of user perspectives and expert judgments, resulting in more reliable and comprehensive recommendations.

These findings can be applied in a variety of other contexts, such as product or service selection, where informative, data-driven decisions are needed. The implementation of this approach in hotel booking platforms or travel applications can improve user satisfaction by providing choices that are more in line with individual preferences. Overall, the study underlines that this combination method can be an effective tool in improving the quality of decisions and user experience in various sectors of the service industry. The results of the analysis using the PIPRECIA and TOPSIS weighting methods help to compile hotel rankings based on predetermined criteria, providing clear and objective guidance for prospective guests to choose the hotel that best suits their needs and preferences. The hotel ranking results are shown in Figure 2.

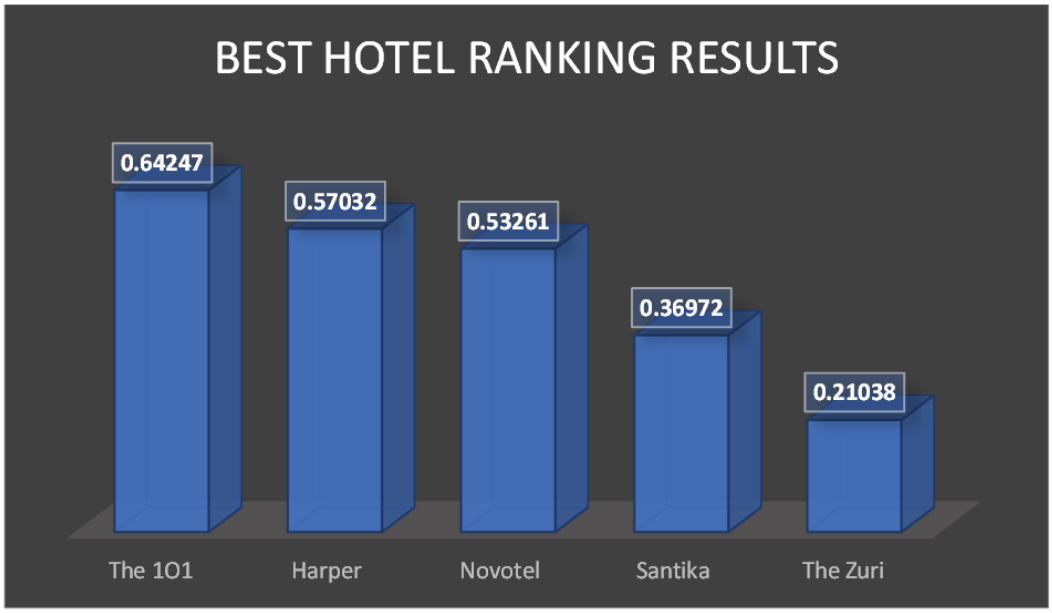

Figure 2. Best Hotel Ranking Results

The results of the best hotel ranking in figure 2 by applying the PIPRECIA and TOPSIS weighting methods obtained the first highest ranking result with a final preference value of 0.64247 obtained by Hotel The 101, the second highest ranking with a final preference value of 0.57032 obtained by Hotel Harper, the third highest ranking with a final preference value of 0.53261 obtained by Novotel Hotel, the fourth highest ranking with a final preference value of 0.36972 obtained by Hotel Santika, and the last ranking with a final preference score of 0.21038 was obtained by The Zuri Hotel.

4. CONCLUSION

This study aims to apply the PIPRECIA method in determining the weight of each criterion that has been identified, so that each criterion has a weight that is in accordance with its level of importance. Meanwhile, the TOPSIS method to sort and select the best hotels based on the weight of the criteria that have been obtained from the PIPRECIA method, so that it can make a significant contribution in the field of hotel management and multi-criteria based decision-making. The combination of the TOPSIS method and PIPRECIA's weighting for the selection of the best hotel underscores the analytical advantages of these two approaches. The TOPSIS method is known to be effective in solving multi-criteria decision-making problems by identifying the option that is closest to the ideal

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solution. Meanwhile, the PIPRECIA method gives more accurate weight to the criteria based on relative assessments from experts. By combining these two methods, the hotel selection process becomes more comprehensive and objective. TOPSIS assesses and prioritizes hotels based on various criteria such as price, location, cleanliness, comfort, value, and the number of guest reviews on the website, while PIPRECIA ensures that the weight of these criteria is set appropriately. As a result, users can choose the best hotel that truly meets their needs and preferences. The results of the best hotel ranking by applying the PIPRECIA and TOPSIS weighting methods obtained the first highest ranking result with a final preference score of 0.64247 obtained by Hotel The 101, the second highest ranking with a final preference score of 0.57032 obtained by Hotel Harper, the third highest ranking with a final preference score of 0.53261 obtained by Hotel Novotel, the fourth highest ranking with a final preference score of 0.36972 obtained by Hotel Santika, and the last ranking with a final preference score of 0.21038 was obtained by The Zuri Hotel.

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