JURNAL ILMIAH COMPUTER SCIENCE (JICS)
E-ISSN 3026-7145 P-ISSN 3030-9840
Volume 3, Nomor 2, January 2025, Page 111-119
DOI: https://doi.org/10.58602/jics.v3i2.50

Implementation of the Geometric Mean Multi-Attribute Utility Theory (G-MAUT) in Determining the Best Honorary Employees

Setiawansyah[1*], Yuri Rahmanto[2], Faruk Ulum[3], Dedi Triyanto[4]
[1]Informatics, Universitas Teknokrat Indonesia, Indonesia
[2]Computer Engineering, Universitas Teknokrat Indonesia, Indonesia
[3]Information System, Universitas Teknokrat Indonesia, Indonesia
[4]Information System, Universitas Bina Sarana Informatika, Indonesia
[1*]setiawansyah@teknokrat.ac.id, [2]yurirahmanto@teknokrat.ac.id, [3]farukulum@teknokrat.ac.id, [4]dedi@bsi.ac.id

Keywords:
Employee;
Evaluation;
Decision;
G-MAUT;
Performance;

Abstract

Determining the best honorary employees is a strategic step to appreciate performance, increase motivation, and encourage productivity in the work environment. This process is carried out by evaluating employees based on certain criteria. The main problem in determining the best honorary employees is the lack of objectivity and transparency in the assessment process, which often leads to dissatisfaction among employees. Judgments that rely solely on subjective perceptions without considering measurable quantitative data can result in unfair decisions. The purpose of applying the Geometric Mean Multi-Attribute Utility Theory (G-MAUT) method in determining the best honorary employees is to provide a more objective, transparent, and accurate evaluation framework in decision-making. This method not only supports a fairer selection process, but also encourages increased motivation and performance among honorary employees. The results of the calculation of the final utility value carried out using the G-MAUT method, the results of the evaluation of eight honorary employees showed their performance ratings comprehensively. Honorary Employee F has the highest utility value of 0.6399, making it the best honorarium employee among all available alternatives. Followed by Honorary Employee A who was ranked second with a utility value of 0.4685, and Honorary Employee D in third place with a value of 0.3947. These results provide a clear picture of the order of employees based on their performance in various criteria that have been assessed.

1.INTRODUCING

Determining the best honorary employees is a strategic step to appreciate performance, increase motivation, and encourage productivity in the work environment[1], [2]. This process is carried out by evaluating employees based on certain criteria. The main problem in determining the best honorary employees is the lack of objectivity and transparency in the assessment process, which often leads to dissatisfaction among employees. Judgments that rely solely on subjective perceptions without considering measurable quantitative data can result in unfair decisions. The main problem in

Setiawansyah: *Corresponding Author

determining the best honorary employees is the lack of objectivity and transparency in the assessment process, which often leads to dissatisfaction among employees. Judgments that rely solely on subjective perceptions without considering measurable quantitative data can result in unfair decisions. In addition, unclear or non-standardized assessment criteria are often an obstacle, making it difficult to compare employee performance as a whole. In some cases, the limitations of the tools or methods used to evaluate performance also hinder the accurate decision-making process. As a result, employee motivation can decrease, and trust in the assessment system decreases. To overcome this problem, an approach based on a decision support system is used in determining the best honorary employees.

A Decision Support System (DSS) is a computer-based system designed to assist in the decision-making process by providing data analysis, modeling, and alternative solutions to complex and unstructured problems[3]–[5]. DSS integrates data, analysis methods, and decision models to provide recommendations or results that support decision-makers in making the best choices[6]–[8]. These systems are typically used to support decision-making in various fields, such as management, business, healthcare, and technology, with the goal of improving the accuracy, efficiency, and objectivity of decisions[9]–[11]. One of the methods in DSS is Geometric Mean Multi-Attribute Utility Theory (G-MAUT). G-MAUT is a method in decision theory that is used to evaluate and determine the best choice based on several attributes or criteria[12]. G-MAUT is a modification of the Multi-Attribute Utility Theory (MAUT) that uses geometric averages to combine various utility values from existing alternatives. This approach is more suitable for situations where the data used has an asymmetrical distribution or has a different range, so that it can reduce the influence of extreme values and provide more stable results. In G-MAUT, each alternative is evaluated based on several criteria relevant to the problem at hand, then the utility of each criterion is calculated. Instead of using arithmetic averages like in traditional MAUT periods, G-MAUT uses geometric averages to combine the utility values of each criterion, aiming to provide a fairer and more balanced approach to the incorporation of diverse criteria. The resulting final value gives an idea of which alternative provides the best utility value based on predefined attributes.

Research related to the selection of the best honorary employees was carried out by [13] the application of the VIKOR method in the best honorary employees to overcome the problems that occurred in the Cooperative Office in the selection of the best honorary employees. Research from the [2] ARAS method helps companies in determining outstanding employees so that the results of recommendations become considerations for leaders in determining outstanding employees. Research from the [14] MOORA method helps solve problems in the selection of honorary employees that must be solved based on the criteria that have been set, so as to produce decisions that are accurate, careful and of course beneficial for the person concerned. Based on previous research, this research gap aims to develop the G-MAUT method as a new approach in selecting the best honorary employees, by considering factors such as performance, discipline, creativity, and adaptability in the work environment, which are often affected by uncertainty and changes in organizational conditions.

The purpose of applying the G-MAUT method in determining the best honorary employees is to provide a more objective, transparent, and accurate evaluation framework in decision-making. This method not only supports a fairer selection process, but also encourages increased motivation and performance among honorary employees. The result of this process is not only rewarding the best individuals but also creating a competitive and high-quality work culture. The contribution of this research is to apply G-MAUT as a multi-attribute criterion-based approach obtained from objective evaluation, this study provides a more transparent, and fair framework in determining the best honorary employees. This process helps reduce subjective bias in decision-making.

2.RESEARCH METHOD

Stages in research refer to the systematic steps taken to achieve the research objectives[15], [16]. Each stage is interrelated and complementary to produce quality, useful, and relevant research, both for science and real-world practice[17]. The stages of the research carried out are shown in Figure 1.

Setiawansyah: *Corresponding Author

E-ISSN 3026-7145 P-ISSN 3030-9840
Volume 3, Nomor 2, January 2025, Page 111-119
DOI: https://doi.org/10.58602/jics.v3i2.50

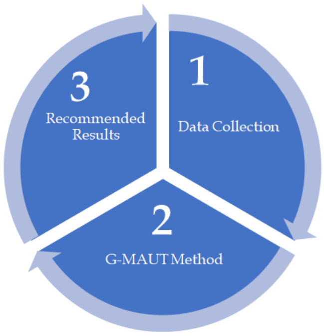

Figure 1. Research Stage

The research begins with data collection, which is the stage where information relevant to the research problem is collected systematically. Data can be obtained through a variety of methods, such as surveys, interviews, observations, or secondary sources, depending on the needs of the research. Furthermore, the collected data was analyzed using the G-MAUT method. This method is a multi-criteria decision-making approach that integrates utility value and criterion weights to objectively evaluate alternatives. Through this analysis, the best alternatives can be identified based on the goals and preferences that have been set. The final stage is to present the results of the recommendations, where the findings of the study are interpreted and delivered in the form of practical recommendations that can be used to support more effective decision-making. This result is expected to be the optimal solution to the problems faced.

G-MAUT Method

Geometric Mean Multi-Attribute Utility Theory (G-MAUT) is one of the methods in multi-criteria decision-making (MCDM) used to evaluate and select the best alternative based on a number of criteria. This method combines the principle of multi-attribute utility with a geometric mean approach to assign weight to each criterion.

The Initial Data Matrix is alternative performance data for each criterion arranged in the form of a matrix. Each row represents an alternative, while each column indicates a performance value on a specific criterion created with the following formula.

$$X = \begin{bmatrix} x_{11} & x_{21} & x_{n1} \\ x_{12} & x_{22} & x_{n2} \\ \vdots & \vdots & \vdots \\ x_{1m} & x_{2m} & x_{nm} \end{bmatrix} \quad (1)$$

The Geometric Mean value is the value of each alternative analyzed by calculating the geometric average of all performance values in the criteria. This value reflects the overall performance of the alternative by considering the contribution of all criteria calculated by the following formula.

$$G_i = \left(\prod_{i=1}^{j} x_{ij}\right)^{1/n} \quad (2)$$

Normalization of Criterion Values aims to convert the initial performance value into a comparable scale by dividing the performance value by the geometric mean value. The normalized results are used to evaluate the relative contribution of each criterion calculated by the following formula.

$$n_{ij} = \frac{x_{ij}}{G_i} \quad (3)$$

The Normalization Average Criterion is the average normalization value calculated for each alternative. This stage provides an overview of the overall performance of the alternative based on the normalized criteria calculated with the following formula.

$$N_i = \frac{1}{n}\sum_{j=1}^{n} n_{ij} \quad (4)$$

Criterion Weights show how much the relative contribution of each criterion to decision-making is calculated by the following formula.

$$w_i = \frac{N_i}{\sum_{i=1}^{n} N_i} \quad (5)$$

Setiawansyah: *Corresponding Author

JURNAL ILMIAH COMPUTER SCIENCE (JICS)
E-ISSN 3026-7145 P-ISSN 3030-9840
Volume 3, Nomor 2, January 2025, Page 111-119
DOI: https://doi.org/10.58602/jics.v3i2.50

Normalization Matrix is the value in the initial matrix normalized so that all criteria are on the same scale. This process uses one of the normalization methods, such as linear scaling or transformation to a scale between 0 and 1 calculated with the following formula.

$$r_{ij}^{*} = 1 + \frac{\min x_{ij} - x_{ij}}{\max x_{ij} - \min x_{ij}} \quad (6)$$

$$r_{ij}^{*} = \frac{x_{ij} - \min x_{ij}}{\max x_{ij} - \min x_{ij}} \quad (7)$$

The Utility Value is calculated for each criterion of the alternative using a special formula that takes into account the normalization value. The utility depicts the level of fulfillment of the criteria by the alternative calculated by the following formula.

$$u_{ij} = \frac{e\left(\left(r_{ij}^{*}\right)^{2}\right) - 1}{1.71} \quad (8)$$

The Utility Final Score of all the criteria for each alternative is combined taking into account the weight of the criteria. This result provides the final value of the utility for each alternative, which is then used to determine the ranking calculated with the following formula.

$$u_{(x)} = \sum_{j=1}^{n} u_{ij} * w_j \quad (9)$$

The stages in G-MAUT are implemented sequentially to ensure results that are objective, measurable, and in accordance with the preferences of decision-makers.

3.RESULTS AND DISCUSSION

The implementation of the G-MAUT method in determining the best honorarium employees involves several steps to ensure objective and fair decisions. This method helps decision-makers choose the best candidates by considering various aspects systematically and weighted. By using the G-MAUT method, the selection process for honorary employees becomes more transparent and data-based, where each relevant criterion is weighted according to its level of importance. Normalization of performance values on each criterion ensures that comparisons between candidates are carried out objectively, without being affected by different scales or units. This process also reduces the likelihood of bias that can arise if relying solely on subjective judgment. In addition, by combining the utility values of all criteria using predefined weights, the G-MAUT method provides a more accurate picture of the candidate's overall performance. The end result is a fairer assessment, allowing decision-makers to select the best honorarium employees who not only meet the existing criteria, but also excel in various aspects relevant to their duties and responsibilities.

Data Collection

Data collection is a very important first step in the implementation of decision-making methods, this process involves collecting relevant information for each alternative based on predetermined criteria. Table 1 is the result of the assessment data on alternatives.

Table 1. The Result of the Assessment Data on Alternatives

Name Employee	Work Performance	Discipline	Cooperative Ability	Initiatives & Problem Solving	Communication Skills
Honorary Employee A	85	9	4	3	5
Honorary Employee B	92	8	4	4	3
Honorary Employee C	75	7	5	4	4
Honorary Employee D	88	8	4	5	4
Honorary Employee E	95	6	3	3	4
Honorary Employee F	78	9	5	4	5
Honorary Employee G	82	7	4	5	3
Honorary Employee H	90	9	3	4	4

This assessment data will be used using the G-MAUT method, which is then used to determine the best honorarium employees based on their performance in various criteria.

Setiawansyah: *Corresponding Author

JURNAL ILMIAH COMPUTER SCIENCE (JICS)
E-ISSN 3026-7145 P-ISSN 3030-9840
Volume 3, Nomor 2, January 2025, Page 111-119
DOI: https://doi.org/10.58602/jics.v3i2.50

Implementation of G-MAUT Method

The G-MAUT method is a multi-criteria decision-making method used to evaluate and select the best alternative based on a number of relevant criteria. This method combines the utility values of each criterion with their weights through a geometric mean approach, resulting in balanced and proportional results. The implementation of this method involves several main stages, from the preparation of the initial data to the calculation of the final utility value to determine the alternative ranking.

The Initial Data Matrix is alternative performance data for each criterion arranged in the form of a matrix. Each row represents an alternative, while each column indicates a performance value on a specific criterion created with the using equation (1).

$$X = \begin{bmatrix} 85 & 9 & 4 & 3 & 5 \\ 92 & 8 & 4 & 4 & 3 \\ 75 & 7 & 5 & 4 & 4 \\ 88 & 8 & 4 & 5 & 4 \\ 95 & 6 & 3 & 3 & 4 \\ 78 & 9 & 5 & 4 & 5 \\ 82 & 7 & 4 & 5 & 3 \\ 90 & 9 & 3 & 4 & 4 \end{bmatrix}$$

The Geometric Mean value is the value of each alternative analyzed by calculating the geometric average of all performance values in the criteria. This value reflects the overall performance of the alternative by considering the contribution of all criteria calculated by the using equation (2).

$$G_1 = \left(\prod_{i=1}^{j} x_{11,18}\right)^{1/8} = (85 * 92 * 75 * 88 * 95 * 78 * 82 * 90)^{1/8} = 85.734$$

$$G_2 = \left(\prod_{i=1}^{j} x_{21,28}\right)^{1/8} = (9 * 8 * 7 * 8 * 6 * 9 * 7 * 9)^{1/8} = 7.801$$

$$G_3 = \left(\prod_{i=1}^{j} x_{31,38}\right)^{1/8} = (4 * 4 * 5 * 4 * 3 * 5 * 4 * 3)^{1/8} = 3.936$$

$$G_4 = \left(\prod_{i=1}^{j} x_{41,48}\right)^{1/8} = (3 * 4 * 4 * 5 * 3 * 4 * 5 * 4)^{1/8} = 3.936$$

$$G_5 = \left(\prod_{i=1}^{j} x_{51,58}\right)^{1/8} = (5 * 3 * 4 * 4 * 4 * 5 * 3 * 4)^{1/8} = 3.936$$

Normalization of Criterion Values aims to convert the initial performance value into a comparable scale by dividing the performance value by the geometric mean value. The normalized results are used to evaluate the relative contribution of each criterion calculated by the using equation (3).

$$n_{11} = \frac{x_{11}}{G_1} = \frac{85}{85.734} = 0.9956$$

The overall results of the normalization of criterion values are shown in table 2.

Table 2. The Result of the Normalization of Criterion Values

Name Employee	Work Performance	Discipline	Cooperative Ability	Initiatives & Problem Solving	Communication Skills
Honorary Employee A	0.9956	1.1537	1.0163	0.7622	1.2703
Honorary Employee B	1.0776	1.0255	1.0163	1.0163	0.7622
Honorary Employee C	0.8785	0.8973	1.2703	1.0163	1.0163
Honorary Employee D	1.0308	1.0255	1.0163	1.2703	1.0163

Setiawansyah: *Corresponding Author

E-ISSN 3026-7145 P-ISSN 3030-9840
Volume 3, Nomor 2, January 2025, Page 111-119
DOI: https://doi.org/10.58602/jics.v3i2.50

Honorary Employee E	1.1127	0.7691	0.7622	0.7622	1.0163
Honorary Employee F	0.9136	1.1537	1.2703	1.0163	1.2703
Honorary Employee G	0.9605	0.8973	1.0163	1.2703	0.7622
Honorary Employee H	1.0542	1.1537	0.7622	1.0163	1.0163

The Normalization Average Criterion is the average normalization value calculated for each alternative. This stage provides an overview of the overall performance of the alternative based on the normalized criteria calculated with the using equation (4).

$$N_1 = \frac{1}{8}\sum\nolimits_{j=1}^{n} n_{11,18} = \frac{1}{8} * 8.0235 = 1.0029$$

$$N_2 = \frac{1}{8}\sum\nolimits_{j=1}^{n} n_{21,28} = \frac{1}{8} * 8.0758 = 1.0095$$

$$N_3 = \frac{1}{8}\sum\nolimits_{j=1}^{n} n_{31,38} = \frac{1}{8} * 8.1301 = 1.0163$$

$$N_4 = \frac{1}{8}\sum\nolimits_{j=1}^{n} n_{41,48} = \frac{1}{8} * 8.1301 = 1.0163$$

$$N_5 = \frac{1}{8}\sum\nolimits_{j=1}^{n} n_{51,58} = \frac{1}{8} * 8.1301 = 1.0163$$

Criterion Weights show how much the relative contribution of each criterion to decision-making is calculated by the using equation (5).

$$w_1 = \frac{N_1}{\sum_{i=1}^{n} N_{1,5}} = \frac{1.0029}{1.0029 + 1.0095 + 1.0163 + 1.0163 + 1.0163} = \frac{1.0029}{5.0612} = 0.1982$$

$$w_2 = \frac{N_2}{\sum_{i=1}^{n} N_{1,5}} = \frac{1.0095}{1.0029 + 1.0095 + 1.0163 + 1.0163 + 1.0163} = \frac{1.0095}{5.0612} = 0.1995$$

$$w_3 = \frac{N_3}{\sum_{i=1}^{n} N_{1,5}} = \frac{1.0163}{1.0029 + 1.0095 + 1.0163 + 1.0163 + 1.0163} = \frac{1.0163}{5.0612} = 0.2008$$

$$w_4 = \frac{N_4}{\sum_{i=1}^{n} N_{1,5}} = \frac{1.0163}{1.0029 + 1.0095 + 1.0163 + 1.0163 + 1.0163} = \frac{1.0163}{5.0612} = 0.2008$$

$$w_5 = \frac{N_5}{\sum_{i=1}^{n} N_{1,5}} = \frac{1.0163}{1.0029 + 1.0095 + 1.0163 + 1.0163 + 1.0163} = \frac{1.0163}{5.0612} = 0.2008$$

Normalization Matrix is the value in the initial matrix normalized so that all criteria are on the same scale. This process uses one of the normalization methods, such as linear scaling or transformation to a scale between 0 and 1 calculated with the using equation (7), because all criteria are benefits.

$$r_{11}^* = \frac{x_{11} - \min x_{11,18}}{\max x_{11,18} - \min x_{11,18}} = \frac{85 - 75}{95 - 75} = \frac{10}{20} = 0.5$$

The overall results of the normalization matrix values are shown in table 3.

Table 3. The Result of the Normalization Matrix Values

Name Employee	Work Performance	Discipline	Cooperative Ability	Initiatives & Problem Solving	Communication Skills
Honorary Employee A	0.500	1.000	0.500	0.000	1.000
Honorary Employee B	0.850	0.667	0.500	0.500	0.000
Honorary Employee C	0.000	0.333	1.000	0.500	0.500
Honorary Employee D	0.650	0.667	0.500	1.000	0.500
Honorary Employee E	1.000	0.000	0.000	0.000	0.500
Honorary Employee F	0.150	1.000	1.000	0.500	1.000
Honorary Employee G	0.350	0.333	0.500	1.000	0.000
Honorary Employee H	0.750	1.000	0.000	0.500	0.500

Setiawansyah: *Corresponding Author

JURNAL ILMIAH COMPUTER SCIENCE (JICS)
E-ISSN 3026-7145 P-ISSN 3030-9840
Volume 3, Nomor 2, January 2025, Page 111-119
DOI: https://doi.org/10.58602/jics.v3i2.50

The Utility Value is calculated for each criterion of the alternative using a special formula that takes into account the normalization value. The utility depicts the level of fulfillment of the criteria by the alternative calculated by the using equation (8).

$$u_{11} = \frac{e((r_{11}^*)^2) - 1}{1.71} = \frac{e((0.500)^2) - 1}{1.71} = \frac{1.2840}{1.71} = 0.1661$$

The overall results of the utility values are shown in table 4.

Table 4. The Result of the Utility Values

Name Employee	Work Performance	Discipline	Cooperative Ability	Initiatives & Problem Solving	Communication Skills
Honorary Employee A	0.1661	1.0048	0.1661	0.0000	1.0048
Honorary Employee B	0.6196	0.3273	0.1661	0.1661	0.0000
Honorary Employee C	0.0000	0.0687	1.0048	0.1661	0.1661
Honorary Employee D	0.3075	0.3273	0.1661	1.0048	0.1661
Honorary Employee E	1.0048	0.0000	0.0000	0.0000	0.1661
Honorary Employee F	0.0133	1.0048	1.0048	0.1661	1.0048
Honorary Employee G	0.0762	0.0687	0.1661	1.0048	0.0000
Honorary Employee H	0.4416	1.0048	0.0000	0.1661	0.1661

The Utility Final Score of all the criteria for each alternative is combined taking into account the weight of the criteria. This result provides the final value of the utility for each alternative, which is then used to determine the ranking calculated with the using equation (9).

$$u_{(1)} = \sum_{j=1}^{n} u_{11,51} * w_{1,5}$$

$$u_{(1)} = (0.1661 * 0.1982) + (1.0048 * 0.1995) + (0.1661 * 0.2008) + (0 * 0.2008) + (1.0048 * 0.2008)$$

$$u_{(1)} = (0.0329) + (0.2004) + (0.0334) + (0) + (0.2018)$$

$$u_{(1)} = 0.4685$$

The overall results of the final utility values are shown in table 5.

Table 5. The Result of the Final Utility Values

Name Employee	Final Utility Value
Honorary Employee A	0.4685
Honorary Employee B	0.2548
Honorary Employee C	0.2822
Honorary Employee D	0.3947
Honorary Employee E	0.2325
Honorary Employee F	0.6399
Honorary Employee G	0.2639
Honorary Employee H	0.3546

The final result of the implementation of the G-MAUT method in the selection of the best honorarium employee is the final utility value which describes the comparison between alternatives (employees) based on predetermined criteria, taking into account the weight of the criteria and the normalization of the value. This utility value provides a comprehensive picture of each employee's performance objectively, which is used to determine the best employees.

Recommended Result

The recommendation of the results given based on the G-MAUT method aims to provide objective and measurable decisions in selecting the best honorarium employees. By combining various assessment criteria, such as work performance, discipline, cooperation ability, initiative, and communication skills, this method calculates the utility value of each employee as a whole. The results

Setiawansyah: *Corresponding Author

of this calculation result in the employee with the highest utility value as the main recommendation, as well as alternatives that can be considered if needed. This process makes it possible to select employees who not only excel in one aspect, but have balanced and optimal performance across all relevant criteria. Table 6 is the result of the recommendations from the application of the G-MAUT method.

Table 6. The Result of the Final Utility Values

Name Employee	Final Utility Value	Ranking
Honorary Employee F	0.6399	1
Honorary Employee A	0.4685	2
Honorary Employee D	0.3947	3
Honorary Employee H	0.3546	4
Honorary Employee C	0.2822	5
Honorary Employee G	0.2639	6
Honorary Employee B	0.2548	7
Honorary Employee E	0.2325	8

The results of the calculation of the final utility value carried out using the G-MAUT method, the results of the evaluation of eight honorary employees showed their performance ratings comprehensively. Honorary Employee F has the highest utility value of 0.6399, making it the best honorarium employee among all available alternatives. Followed by Honorary Employee A who was ranked second with a utility value of 0.4685, and Honorary Employee D in third place with a value of 0.3947. Meanwhile, other employees, such as Honorary Employee H, Honorary Employee C, and Honorary Employee G, are ranked lower with declining utility values. Honorary Employee B and Honorary Employee E occupy the last position with utility values of 0.2548 and 0.2325 respectively, showing a relatively lower performance than their peers. These results provide a clear picture of the order of employees based on their performance in various criteria that have been assessed.

4.CONCLUSION

The implementation of the G-MAUT method in determining the best honorarium employees involves several steps to ensure objective and fair decisions. This method helps decision-makers choose the best candidates by considering various aspects systematically and weighted. By using the G-MAUT method, the selection process for honorary employees becomes more transparent and data-based, where each relevant criterion is weighted according to its level of importance. Normalization of performance values on each criterion ensures that comparisons between candidates are carried out objectively, without being affected by different scales or units. This process also reduces the likelihood of bias that can arise if relying solely on subjective judgment. In addition, by combining the utility values of all criteria using predefined weights, the G-MAUT method provides a more accurate picture of the candidate's overall performance. The end result is a fairer assessment, allowing decision-makers to select the best honorarium employees who not only meet the existing criteria, but also excel in various aspects relevant to their duties and responsibilities. The results of the calculation of the final utility value carried out using the G-MAUT method, the results of the evaluation of eight honorary employees showed their performance ratings comprehensively. Honorary Employee F has the highest utility value of 0.6399, making it the best honorarium employee among all available alternatives. Followed by Honorary Employee A who was ranked second with a utility value of 0.4685, and Honorary Employee D in third place with a value of 0.3947. These results provide a clear picture of the order of employees based on their performance in various criteria that have been assessed. The implications in the implementation of G-MAUT provide a new, more structured and accurate approach for human resource management (HR) in evaluating the performance of honorary employees. With this method, organizations can make more objective decisions, thereby increasing employee confidence in the evaluation and reward process given.

Setiawansyah: *Corresponding Author

JURNAL ILMIAH COMPUTER SCIENCE (JICS)
E-ISSN 3026-7145 P-ISSN 3030-9840
Volume 3, Nomor 2, January 2025, Page 111-119
DOI: https://doi.org/10.58602/jics.v3i2.50

5.REFERENCES

[1] K. Munthe, T. R. A. Syahputra, A. A. Pasuli, and M. A. Hasibuan, "Sistem Pendukung Keputusan Pemilihan Pegawai Honorer Kelurahan Medan Sinembah Menerapkan Metode ROC dan MOORA," *Bull. Informatics Data Sci.*, vol. 1, no. 1, pp. 20–29, 2022.

[2] S. B. Atim and R. Arundaa, "Metode A New Additive Ratio Assessment (ARAS) Dalam Penentuan Pegawai Honor Berprestasi," *J. Inf. Technol. Softw. Eng. Comput. Sci.*, vol. 2, no. 1, pp. 40–48, 2024, doi: 10.58602/itsecs.v2i1.96.

[3] P. Palupiningsih and S. Setiawansyah, "Best Sales Selection Using a Combination of Reciprocal Rank Weighting Method and Multi-Attribute Utility Theory," *J. Comput. Informatics Res.*, vol. 3, no. 3, pp. 242–250, Jul. 2024, doi: 10.47065/comforch.v3i3.1496.

[4] A. Choicharoon, R. Hodgett, B. Summers, and S. Siraj, "Hit or miss: A decision support system framework for signing new musical talent," *Eur. J. Oper. Res.*, vol. 312, no. 1, pp. 324–337, Jan. 2024, doi: 10.1016/j.ejor.2023.06.014.

[5] S. Arena, E. Florian, I. Zennaro, P. F. Orrù, and F. Sgarbossa, "A novel decision support system for managing predictive maintenance strategies based on machine learning approaches," *Saf. Sci.*, vol. 146, p. 105529, Feb. 2022, doi: 10.1016/j.ssci.2021.105529.

[6] N. A. Sinaga *et al.*, "Decision support system with MOORA method in selection of the best teachers," in *AIP Conference Proceedings*, 2022, vol. 2453, no. 1, p. 030020. doi: 10.1063/5.0094437.

[7] I. M. Hezam, A. R. Mishra, P. Rani, A. Saha, F. Smarandache, and D. Pamucar, "An integrated decision support framework using single-valued neutrosophic-MASWIP-COPRAS for sustainability assessment of bioenergy production technologies," *Expert Syst. Appl.*, vol. 211, p. 118674, Jan. 2023, doi: 10.1016/j.eswa.2022.118674.

[8] S. Kucuksari, D. Pamucar, M. Deveci, N. Erdogan, and D. Delen, "A new rough ordinal priority-based decision support system for purchasing electric vehicles," *Inf. Sci. (Ny).*, vol. 647, p. 119443, 2023.

[9] J. Wang, A. R. Isnain, R. R. Suryono, Y. Rahmanto, M. Mesran, and S. Setiawansyah, "Decision Support System for Platform Selection in E-Commerce Using the OWH-TOPSIS Method," *J. Comput. Syst. Informatics*, vol. 6, no. 1, pp. 172–181, 2024, doi: 10.47065/josyc.v6i1.5990.

[10] J. Wang, D. Darwis, S. Setiawansyah, and Y. Rahmanto, "Implementation of MABAC Method and Entropy Weighting in Determining the Best E-Commerce Platform for Online Business," *JiTEKH*, vol. 12, no. 2, pp. 58–68, 2024, doi: 10.35447/jitekh.v12i2.1000.

[11] J. Wang, S. Setiawansyah, and Y. Rahmanto, "Decision Support System for Choosing the Best Shipping Service for E-Commerce Using the SAW and CRITIC Methods," *J. Ilm. Inform. dan Ilmu Komput.*, vol. 3, no. 2, pp. 101–109, 2024, doi: 10.58602/jima-ilkom.v3i2.32.

[12] M. W. Arshad, S. Setiawansyah, Y. Rahmanto, P. Palupiningsih, and S. Maryana, "Modification of Multi-Attribute Utility Theory in Determining Scholarship Recipient Students," *BEES Bull. Electr. Electron. Eng.*, vol. 5, no. 1, pp. 10–19, 2024, doi: 10.47065/bees.v5i1.5523.

[13] F. S. Mawinar, R. D. Gunawan, and A. T. Priandika, "Sistem Pendukung Keputusan Pemilihan Pegawai Honorer Terbaik Menggunakan Metode Visekriterijumsko Kompromisno Rangiranje," *J. Data Sci. Inf. Syst.*, vol. 1, no. 4, pp. 182–191, 2023, doi: 10.58602/dimis.v1i4.81.

[14] N. P. Siburian and L. Sahriani, "Sistem Pendukung Keputusan Pemilihan Pegawai Honorer Kelurahan Menerapkan Metode MOORA," *TIN Terap. Inform. Nusant.*, vol. 3, no. 10, pp. 395–404, Mar. 2023, doi: 10.47065/tin.v3i10.4148.

[15] A. A. Izka and H. Sulistiani, "Sistem Pendukung Keputusan Pemilihan Supplier Toserba Terbaik Menggunakan Metode Objective Weighting-TOPSIS (OWH-TOPSIS)," *J. Inf. Syst. Res.*, vol. 6, no. 1, pp. 145–155, 2024, doi: 10.47065/josh.v6i1.5889.

[16] M. W. Arshad, S. Setiawansyah, R. R. Suryono, and Y. Rahmanto, "Combination of CRITIC Weighting Method and Multi-Atributive Ideal-Real Comparative Analysis in Staff Admissions," *Explorer (Hayward).*, vol. 4, no. 2, pp. 77–86, 2024, doi: 10.47065/explorer.v4i2.1428.

[17] J. S. Putri, A. T. Priandika, and Y. Rahmanto, "Sistem Informasi Administrasi Surat Menyurat Pada Kantor Balai Desa Jatimulyo," *Chain J. Comput. Technol. Comput. Eng. Informatics*, vol. 1, no. 1 SE-Articles, pp. 1–6, Jan. 2023, doi: 10.58602/chain.v1i1.1.

Setiawansyah: *Corresponding Author