IMPLEMENTATION OF MULTI-ATTRIBUTE UTILITY THEORY AND BORDA COUNT METHOD FOR SELECTING TAHFIDZUL QUR'AN ISLAMIC BOARDING SCHOOLS

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Abstract

This descriptive qualitative research aims to provide an overview of the implementation of the Multy Attribute Utility Theory and Borda Count Methods in compiling recommendations for selecting Tahfidzul Qur'an Islamic boarding schools that align with the expectations of prospective students. This research consists of five stages: compiling criteria and their measurement scale, determining the preference weight of each criterion for each decision maker, implementing the MAUT Method, implementing the Borda Count Method, and compiling recommendations. The research results show that both methods can support selecting the best Tahfidz Islamic boarding school, according to what the students expect. From the calculation results, the Tahfidzul Qur'an boarding school with code PPTQ03 is the boarding school that best fits the preference weight of the decision-makers.

Keyword:
Multi-Attribute Utility Theory, Borda Count Method, Selection, Tahfidzul Qur'an Islamic Boarding Schools

Introduction

Islamic boarding schools are educational institutions that teach, develop, and disseminate Islamic knowledge (Mu'id, 2019). As a product of the indigenous education system, Islamic Boarding Schools have historical, cultural, and social roots in Indonesia (Wicaksono et al., 2021). Islamic Boarding School, the oldest institution of Islamic education in the archipelago, is recognized as having a significant role in the history of the Indonesian nation's struggle. Aside from being educational institutions, Islamic Boarding Schools also act as scientific institutions, training institutions, religious guidance institutions, community development institutions, and cultural nodes (Aliyah, 2021; Hidayat et al., 2018).

Even though it is known as an environment with strict regulations, many students are more interested and choose to live in Islamic boarding schools. The religious environment in Islamic boarding schools is the main attraction for some students. Many factors cause Islamic boarding schools to become famous. Various motivations drive students' decision to live in Islamic boarding schools. These motivations include (1) the desire to deepen religious knowledge and be actively involved in self-development activities in Islamic boarding schools, (2) support from family, (3) support from friends and the surrounding environment, and (4) the cost of living in Islamic boarding schools which affordable (Abha et al., 2023).

Many Islamic boarding schools have emerged, offering advantages to attract prospective new students (Fatkhurrizqi & Hadikurniawati, 2021). One of the superior programs offered is the Qur'an memorization program. The increasing number of Tahfidzul Qur'an Islamic boarding schools often confuses prospective students and parents about choosing the most suitable one. Prospective students and parents need to consider many criteria objectively, such as the distance of the Islamic boarding school from campus, environmental safety, completeness of facilities, costs, and so on. Therefore, a decision-making scheme must accommodate every criterion that is a priority for prospective students and parents and can produce objective decisions.

The concept of assistive programs in decision-making is currently growing. Many methods can be used to assist in making decisions from several alternatives. Decision-makers must consider options that support the success of decision-making to produce optimal decisions (Kusumadewi & Guswaludin, 2005). Many studies discussed the selection of Islamic boarding schools as a place to live using methods in decision support systems. Several methods that previous researchers have used include the Analytical Hierarchy Process Method (AHP) (Fitriani & Tahyudin, 2015; Shuffy et al., 2022), Elimination and Choice Translating Reality (ELECTRE) Method (Fatkhurrizqi & Hadikurniawati, 2021), and Promethee Method (Prasetyo et al., 2021).

The Multi-Attribute Utility Theory (MAUT) method evaluates and chooses options with several attributes or criteria. In the MAUT Method, each choice is assessed based on several relevant attributes, and each attribute has a weight indicating the importance of these attributes in decision-making. In addition, each attribute is assigned a value scale to indicate the degree to which the choice satisfies that attribute. The MAUT method can assist in complex decision-making by considering many different factors and preferences.

The MAUT method has been widely implemented in supporting decisions in various fields. This method is applied in several ways, such as selecting the best broadcasting (Suhada et al., 2023), choosing digital services (Sanita et al., 2023), selecting the best graduate students (Setiawan & Budilaksono, 2022), evaluating teacher performance (Fikri et al., 2020), dormitory selection (Darmansyah, 2022), selection for appointment of permanent employees (Putra et al., 2022), recommendations for repairing uninhabitable houses (Cesmawati et al., 2022), granting job promotions (Hayati & Aliyah, 2020), employee performance appraisal (Khair et al., 2021), mapping the level of impact of the flood disaster (Abdurrahman et al., 2020), selection of goods distributors (Wahyuni et al., 2020), choice of credit recipients (Hadinata, 2018), selection of hair dyes (Amri et al., 2021), and so on.

This study aims to explain the implementation of the Multi-Attribute Utility Theory (MAUT) Method in choosing Tahfidzul Qur'an Islamic boarding schools that follow the preferences of prospective students. Because prospective students are not the only decision-makers in this matter, we will combine the MAUT Method with the Borda Count Method. The Borda Count method seeks to accommodate the different preference weights of several decision-makers. With the combination of these two methods, we hope prospective students will get a recommendation for the Tahfidzul Qur'an boarding school that meets their expectations.

Methods

This descriptive qualitative type research focuses on how the Multi-Attribute Utility Theory (MAUT) Method combined with the Borda Count Method provides recommendations for Tahfidzul Qur'an Islamic boarding schools that meet the expectations of prospective students and parents. 8 Tahfidzul Qur'an Islamic boarding schools around IAIN Kediri are candidates we recommend to prospective students. In the calculations later, we will code each Islamic Boarding School as PPTQ01 to PPTQ08.

The research procedure consists of several stages, namely compiling criteria and their measurement scale, determining the preference weight of each criterion for each decision maker, implementing the MAUT method, implementing the Borda Count Method, and compiling recommendations.

Five criteria for the Tahfidzul Qur'an Islamic boarding school attract our attention, namely (1) the obligation of *ziyadah* and *muroja'ah*, (2) the security of the Islamic Boarding School environment, (3) the Islamic boarding school facilities, (4) the cost of education, and (5) the distance between campus with boarding school. We explain the measurement scale for each criterion through the following description:

a) Obligation of *Ziyadah* and *Muroja'ah* (J1)

   The Tahfidzul Qur'an program requires students to recite their memorization to the teacher. Some Islamic boarding schools provide a target time for *ziyadah* and *muroja'ah*, but some do not. The rating scale for this criterion is as follows:

   Score 1 if, in one day, the Islamic boarding school does not provide a target time for *ziyadah* and *muroja'ah*.

   Score 2 if the Islamic boarding school requires students to *ziyadah* and *muroja'ah* once in one day.

   Score 3 if the Islamic boarding school requires students to *ziyadah* and *muroja'ah* more than once daily.

b) Islamic Boarding School Environmental Security (J2)

   The rating scale for this criterion is as follows:

   Score 1 if the security in the Islamic Boarding School environment is terrible.

   Score 2 if security in the Islamic Boarding School environment is good enough.

   Score 0 if security in the Islamic Boarding School environment is good.

c) Islamic Boarding School Facilities (J3)

   In this case, the Islamic Boarding School facilities include bathrooms, cupboards, wifi, food, drinks, sleeping equipment, etc. The rating scale for this criterion is as follows:

   Score 1 if the Islamic Boarding School facilities are not complete.

   Score 2 if the Islamic Boarding School facilities are incomplete.

   Score 3 if the Islamic Boarding School facilities are pretty complete.

   Score 4 if the Islamic Boarding School facilities are complete.

d) Tuition Fees (J4)

   Our tuition fees are stated in rupiah units. The rating scale for this criterion is as follows:

   Score 1 if the tuition fee is above 450,000.

   Score 2 if the tuition fee is between 350,000 and 450,000.

   Score 3 if the cost of education is between 250,000 and 350,000.

   Score 4 if the tuition fee is below 250,000.

e) Distance between Campus and Islamic Boarding School (J5)

   Regarding distance, we use Campus 1 of IAIN Kediri as a benchmark location. We explored the distance from Campus 1 to each Islamic boarding school using Google Maps. The rating scale for this criterion is as follows:

   Score 1 if the distance between campus and Islamic Boarding School is more than 8 km.

   Score 2 if the distance between the campus and the Islamic boarding school is 5-8 km.

Score 3 if the distance between the campus and the Islamic boarding school ranges from 2-5 km.

Score 4 if the distance between the campus and the Islamic boarding school is 1-2 km.

Score 5 if the distance between campus and Islamic Boarding School is less than 1 km.

We started the five criteria above as a questionnaire and distributed them through Google Forms. A total of 15 respondents filled out this questionnaire. They consisted of students from IAIN Kediri who lived in one of the 8 Tahfidzul Qur'an Islamic boarding schools. We state the average value data from the questionnaire results, as well as the maximum and minimum values of each criterion, in Table 1 and Table 2 as follows:

Table 1. Questionnaire Acquisition Data

Islamic Boarding School/Alternative Code	Criteria				
	J1	J2	J3	J4	J5
PPTQ01	2,5	3	2,5	1	4
PPTQ02	3	3	2	2	5
PPTQ03	3	3	3	3,5	5
PPTQ04	2,5	2,5	2	2	2
PPTQ05	2	3	3	2	5
PPTQ06	1	2,5	4	2	5
PPTQ07	2	3	2	4	3
PPTQ08	2	2	2	4	1

Source: Author Documentation

Table 2. Maximum and Minimum Value of Each Criterion

Value Type	Criteria				
	J1	J2	J3	J4	J5
Maximum	3	3	4	4	5
Minimum	1	2	2	1	1

Source: Author Documentation

This study assumes that three decision-makers have different preference weights for each criterion. In this case, decision-makers can be considered prospective students, parents, teachers, friends, etc. The preference weight of each decision maker is stated in Table 3 as follows:

Table 3. Preference Weight of Each Decision Maker

DecisionMaker	Criteria				
	J1	J2	J3	J4	J5
1	0.20	0.20	0.20	0.20	0.20
2	0.15	0.15	0.10	0.30	0.30
3	0.15	0.20	0.20	0.30	0.15

Source: Author Documentation

From Table 3, the preference weight matrix for each decision maker can be compiled as follows:

$$DM_1 = \begin{bmatrix} 0,20 \\ 0,20 \\ 0,20 \\ 0,20 \\ 0,20 \end{bmatrix}, DM_2 = \begin{bmatrix} 0,15 \\ 0,15 \\ 0,10 \\ 0,30 \\ 0,30 \end{bmatrix}, DM_3 = \begin{bmatrix} 0,15 \\ 0,20 \\ 0,20 \\ 0,30 \\ 0,15 \end{bmatrix}.$$

Multi-Attribute Utility Theory (MAUT) method is implemented through the following steps (Hadinata, 2018) :

a) Develop a decision matrix P with the following definitions:

$$P = \begin{bmatrix} p_{11} & p_{12} & \cdots & p_{1j} \\ p_{21} & p_{22} & \cdots & p_{2j} \\ \vdots & \vdots & \ddots & \vdots \\ p_{i1} & p_{i2} & \cdots & p_{ij} \end{bmatrix}$$

Where

$p_{ij} =$ the weight/average value of the alternative questionnaire results i to the third criterion$j$

b) Normalize the decision matrix P by calculating the utility value of each alternative in each criterion using the following formula:

$$u(p_{ij}) = \frac{p_{ij} - \min p_i}{\max p_i - \min p_i} \tag{1}$$

Where

$u(p_{ij}) =$ the utility value of the weight of the alternative i to the th criterion$j$

$\min p_i =$ minimum value of each criterion

$\max p_i =$ maximum value of each criterion

c) Compile a normalization matrix U with the following definition:

$$U = \begin{bmatrix} u(p_{11}) & u(p_{12}) & \cdots & u(p_{1j}) \\ u(p_{21}) & u(p_{22}) & \cdots & u(p_{2j}) \\ \vdots & \vdots & \ddots & \vdots \\ u(p_{i1}) & u(p_{i2}) & \cdots & u(p_{ij}) \end{bmatrix}$$

d) Multiplying the normalization matrix U by the preference weight matrix DM_i.

The Borda Count method is implemented through the following steps (Resti & Ilmiyah, 2022) :

a) Assigns a rank to each entry in the multiplication matrix U and DM_i.

b) Assign a value to each rating. Rank 1 will be given a value of 8; rank 2 will be given a value of 7, and so on.

c) Calculate the total value of each alternative.

The last stage in this research is to provide a rating of recommendations for each alternative. Each Tahfidzul Qur'an Islamic boarding school will be recommended in its respective order, starting from the Islamic Boarding School with the highest total score.

Results and Discussion
Implementation of the Multi-Attribute Utility Theory (MAUT) Method

a) Develop a decision matrix P

The entries in the decision matrix P represent the data in Table 1. The number of rows represents the number of alternatives, while the number of columns represents the number of criteria.

$$P = \begin{bmatrix} 2,5 & 3 & 2,5 & 1 & 4 \\ 3 & 3 & 2 & 2 & 5 \\ 3 & 3 & 3 & 3,5 & 5 \\ 2,5 & 2,5 & 2 & 2 & 2 \\ 2 & 3 & 3 & 2 & 5 \\ 1 & 2,5 & 4 & 2 & 5 \\ 2 & 3 & 2 & 4 & 3 \\ 2 & 2 & 2 & 4 & 1 \end{bmatrix}$$

b) Normalize the decision matrix P

Normalization of the decision matrix P is done by calculating the utility value of each entry in the matrix using equation (1). We state the results of these calculations in Table 4 as follows:

Table 4. Decision Matrix Normalization Results

Islamic Boarding School/Alternative Code	Criteria				
	J1	J2	J3	J4	J5
PPTQ01	0.75	1	0.25	0	0.75
PPTQ02	1	1	0	0.3333	1
PPTQ03	1	1	0.5	0.8333	1
PPTQ04	0.75	0.5	0	0.3333	0.25
PPTQ05	0.5	1	0.5	0.3333	1
PPTQ06	0	0.5	1	0.3333	1
PPTQ07	0.5	1	0	1	0.5
PPTQ08	0.5	0	0	1	0

Source: Author Documentation

c) Compile the normalization matrix U

The entries in the normalized matrix U represent the data in Table 4. The number of rows represents the number of alternatives, while the number of columns represents the number of criteria.

$$U = \begin{bmatrix} 0,75 & 1 & 0,25 & 0 & 0,75 \\ 1 & 1 & 0 & 0,3333 & 1 \\ 1 & 1 & 0,5 & 0,8333 & 1 \\ 0,75 & 0,5 & 0 & 0,3333 & 0,25 \\ 0,5 & 1 & 0,5 & 0,3333 & 1 \\ 0 & 0,5 & 1 & 0,3333 & 1 \\ 0,5 & 1 & 0 & 1 & 0,5 \\ 0,5 & 0 & 0 & 1 & 0 \end{bmatrix}$$

d) Multiplying the normalization matrix U by the preference weight matrix DM_i.

Multiplication of the normalized matrix U with the preference weight matrix DM_i produces a new matrix of 8×1 the following size:

$$UDM_1 = \begin{bmatrix} 0,55 \\ 0,6667 \\ 0,8667 \\ 0,3667 \\ 0,6667 \\ 0,5667 \\ 0,6 \\ 0,3 \end{bmatrix}, UDM_2 = \begin{bmatrix} 0,5125 \\ 0,7 \\ 0,9 \\ 0,3625 \\ 0,675 \\ 0,575 \\ 0,675 \\ 0,375 \end{bmatrix}, UDM_3 = \begin{bmatrix} 0,475 \\ 0,6 \\ 0,85 \\ 0,35 \\ 0,625 \\ 0,55 \\ 0,65 \\ 0,375 \end{bmatrix}$$

Implementation of the Borda Count Method

a) Assigns a rank to each entry in the multiplication matrix U and DM_i.

Table 5 below represents the entries in the matrices UDM_1, UDM_2, and UDM_3. Each entry in the matrix is ranked based on its value. The entry with the highest score will be ranked first, while the entry with the lowest score will be ranked eighth. Entries with the same rating will receive the same rank.

Table 5. Ranking of Entries in Each Decision-Maker

Islamic Boarding School/Alternative Code	Decision Maker 1		Decision Maker 2		Decision Maker 3	
	Entry	Rating	Entry	Rating	Entry	Rating
PPTQ01	0.55	6	0.5125	6	0.475	6
PPTQ02	0.6667	2	0.7	2	0.6	4
PPTQ03	0.8667	1	0.9	1	0.85	1
PPTQ04	0.3667	7	0.3625	8	0.35	8
PPTQ05	0.6667	2	0.675	3	0.625	3
PPTQ06	0.5667	5	0.575	5	0.55	5
PPTQ07	0.6	4	0.675	3	0.65	2
PPTQ08	0.3	8	0.375	7	0.375	7

Source: Author Documentation

b) Assign a value to each rating.

At this stage, the highest rank will be given the most immense value, the second highest rank will be given the second highest value, and so on. As an illustration, rank 1 will be given a value of 8, rank 2 will be given a value of 7, and so on. The results of this rating assessment are stated in Table 6 as follows:

Table 6. Rating Value

Islamic Boarding School/Alternative Code	Decision Maker 1		Decision Maker 2		Decision Maker 3	
	Rating	Mark	Rating	Mark	Rating	Mark
PPTQ01	6	3	6	3	6	3
PPTQ02	2	7	2	7	4	5
PPTQ03	1	8	1	8	1	8
PPTQ04	7	2	8	1	8	1
PPTQ05	2	7	3	6	3	6
PPTQ06	5	4	5	4	5	4
PPTQ07	4	5	3	6	2	7
PPTQ08	8	1	7	2	7	2

Source: Author Documentation

c) Calculate the total value of each alternative.

Table 7 below explains the total value for each alternative from the three decision-makers. Next, the total value is given a rating. The highest total score will be ranked 1; the second-highest total weight will be ranked 2, and so on. For the same total score, each will be assigned the same rank.

Table 7. Total Score and Final Rating

Islamic Boarding School/Alternative Code	Total value	Rating
PPTQ01	9	6
PPTQ02	19	2
PPTQ03	24	1
PPTQ04	4	8
PPTQ05	19	2
PPTQ06	12	5
PPTQ07	18	4
PPTQ08	5	7

Source: Author Documentation

The last stage in this research is to make recommendations. The rankings in Table 7 indicate the order of requests. It means that the Tahfidzul Qur'an Islamic boarding school with the first rank is more recommended to prospective students than the Islamic boarding school

with a lower grade. Based on the calculation results in Table 7, PPTQ03 is the Tahfidzul Qur'an boarding school with the highest total score. Therefore, PPTQ03 is considered the Tahfidzul Qur'an boarding school that best meets the expectations of the decision-makers.

The size of the preference weight given by the decision maker will affect the recommendation rating of each alternative. The results of the calculations in the case study above may change if the preference weight of each decision maker also varies.

In this study, we calculated the data manually using Microsoft Excel. Manual calculations like this are ineffective for processing extensive data. Therefore, we suggest that future researchers develop an application that can automatically and accurately process large amounts of data automatically and accurately.

Conclusion

Applying the MAUT and Borda Count Methods can provide recommendations for Tahfidzul Qur'an Islamic boarding schools that are under the expectations of prospective students and parents. Using the preference weight illustration in Table 3, we obtain the result that PPTQ03 is the Tahfidzul Qur'an Islamic boarding school that best meets the expectations of the decision-makers. These results may change if the decision-makers change their preference weights.

The criteria used in this study are limited to 5 aspects. However, many criteria should still be considered and given preference weight. Therefore, we recommend that future researchers add criteria to the system to obtain more valid recommendation results.

References

Abdurrahman, A. I., Yuwono, B., & Fauziah, Y. (2020). Penerapan Metode Multi Attribute Utility Theory (Maut) Dalam Pemetaan Tingkat Dampak Bencana Banjir Di Kabupaten Bantul. *Telematika*, *17*(1), 26–37. https://doi.org/10.31315/telematika.v17i1.3402

Abha, M. D., Maskuri, & Sudrajat, A. (2023). Motivasi Mahasiswa dalam Mengikuti Pendidikan Pesantren (Studi Kasus di Pesantren Mahasiswa Ar-Rahman Tlogomas, Lowokwaru, Malang). *Vicratina: Jurnal Pendidikan Islam*, *8*(2), 115–128.

Aliyah, A. H. (2021). Peran Pondok Pesantren dalam Pengembangan Pendidikan Islam. *Prosiding Nasional Pascasarjana IAIN Kediri*, *4*(November), 217–224. http://prosiding.iainkediri.ac.id/index.php/pascasarjana/article/view/73%0Ahttp://prosiding.iainkediri.ac.id/index.php/pascasarjana/article/download/73/62

Amri, M. A., Hafizan, H., Ramadhana, T. P., Winanjaya, R., & Hardinata, J. T. (2021). Penerapan Multi Attribute Utility Theory (MAUT) dalam Pemilihan Pewarna Rambut. *Seminar Nasional Sains Dan Teknologi Informasi (SENSASI) 2021*, 599–602. http://seminar-id.com/prosiding/index.php/sensasi/article/view/680%0Ahttp://seminar-id.com/prosiding/index.php/sensasi/article/download/680/646

Cesmawati, C., Rahmiati, R., & Fitri, T. A. (2022). Recommendations For Repairing Uninhabitable Homes Using the Multi-Attribute Utility Theory (MAUT) Method. *Jurnal Teknologi Dan Open Source*, *5*(1), 43–50. https://doi.org/10.36378/jtos.v5i1.2224

Darmansyah, S. (2022). Sistem Penentuan Rumah Kost Menggunakan Metode Multi Attribute Utility Theory. *Cyberarea*, *2*(7), 1–10.

Fatkhurrizqi, M., & Hadikurniawati, W. (2021). Implementasi Metode Electre Untuk Pemilhan Pondok Pesantren. *IJIS - Indonesian Journal On Information System*, *6*(1), 25–36. https://doi.org/10.36549/ijis.v6i1.131

Fikri, M. I., Haerani, E., Afrianty, I., & Ramadhani, S. (2022). Sistem Pendukung Keputusan

Penilaian Kinerja Guru Menggunakan Metode Multi Attribute Utility Theory (MAUT). *JURIKOM (Jurnal Riset Komputer)*, *9*(5), 1271–1280. https://doi.org/10.30865/jurikom.v9i5.4791

Fitriani, N. A., & Tahyudin, I. (2015). Sistem Pendukung Keputusan Pemilihan Pondok Pesantren di Purwokerto (Studi Kasus: Mahasiswa STAIN Purwokerto). *Seminar Nasional Informatika*, 509–513.

Hadinata, N. (2018). Implementasi Metode Multi Attribute Utility Theory (MAUT) Pada Sistem Pendukung Keputusan dalam Menentukan Penerima Kredit. *Jurnal Sisfokom (Sistem Informasi Dan Komputer)*, *7*(2), 87–92. https://doi.org/10.32736/sisfokom.v7i2.562

Hayati, R. S., & Aliyah, S. (2020). Sistem Pendukung Keputusan Promosi Jabatan Menggunakan Metode Multi Attribute Utility Theory. *It (Informatic Technique) Journal*, *8*(2), 103–111. https://doi.org/10.22303/it.8.2.2020.103-111

Hidayat, T., Rizal, A. S., & Fahrudin, F. (2018). Peran Pondok Pesantren Sebagai Lembaga Pendidikan Islam di Indonesia. *Ta'dib: Jurnal Pendidikan Islam*, *7*(2), 461–472. https://doi.org/10.29313/tjpi.v7i2.4117

Khair, F. El, Defit, S., & Yuhandri, Y. (2021). Sistem Keputusan dengan Metode Multi Attribute Utility Theory dalam Penilaian Kinerja Pegawai. *Jurnal Informasi Dan Teknologi*, *3*(4), 215–220. https://doi.org/10.37034/jidt.v3i4.155

Kusumadewi, S., & Guswaludin, I. (2005). Fuzzy Multi-Criteria Decision Making. *Media Informatika*, *3*(1), 25–38. https://doi.org/10.1016/B978-0-323-85851-9.00003-1

Mu'id, A. (2019). Peranan Pondok Pesantren Di Era Digital. *At-Tahdzib: Jurnal Studi Islam Dan Muamalah*, *7*(2), 62–79.

Prasetyo, E. T., Prastiningtyas, D. A., & Kartikasari, M. (2021). Sistem Pendukung Keputusan Pemilihan Pondok Pesantren Tahfizhul Qur'an Terbaik di Malang Menggunakan Metode Analitycal Hierarchy Process dan Promethee. *J-Intech: Journal of Information and Technology*, *9*(2), 47–54.

Putra, D. W. T., Oktavia, I. S., Swara, G. Y., & Yulianti, E. (2022). Perancangan Sistem Pendukung Keputusan Menggunakan Metode Multi-Attribute Utility Theory (MAUT) Dalam Seleksi Pengangkatan Karyawan Tetap pada Dinas Pekerjaan Umum Kota Sawahlunto. *Jurnal Ilmiah ILKOMINFO - Ilmu Komputer & Informatika*, *5*(2), 53–59. https://doi.org/10.47324/ilkominfo.v5i2.147

Resti, N. C., & Ilmiyah, N. F. (2022). Penerapan Metode Simple Additive Weighting (SAW) dan Metode Borda Count dalam Optimalisasi Pemilihan Kandidat Terbaik Penerima Beasiswa. *Jurnal Riset Dan Aplikasi Matematika*, *06*(02), 179–192.

Sanita, I. N., Defit, S., & Nurcahyo, G. W. (2023). Sistem Pendukung Keputusan Menggunakan Metode Multi Attribute Utility Theory Untuk Pemilihan Layanan Digital. *Jurnal CoSciTech (Computer Science and Information Technology)*, *4*(1), 216–225. https://doi.org/10.37859/coscitech.v4i1.4742

Setiawan, Y., & Budilaksono, S. (2022). Sistem Pendukung Keputusan Pemilihan Mahasiswa Lulusan Terbaik Dengan Menggunakan Metode Multi Attribute Utility Theory (Maut) DiStmik Antar Bangsa. *IKRAITH-INFORMATIKA*, *6*(2), 12–20. https://doi.org/10.37817/ikraith-informatika.v6i2.1566

Shuffy, M., Nuryana, I. K. D., & Sucipto, H. (2022). Rancang Bangun Sistem Pendukung Keputusan Pemilihan Pondok Pesantren Menggunakan Metode Analytical Hierarchy Process (AHP) Berbasis Web. *Inovate: Jurnal Ilmiah Inovasi Teknologi Informasi*, *6*(2), 1–11. http://ejournal.unhasy.ac.id/index.php/inovate/article/view/3171%0Ahttp://ejournal.unhasy.ac.id/index.php/inovate/article/download/3171/1660

Suhada, K., Saludin, Sadikin, A., Dewi, I. K., & Nugroho, F. (2023). Penerapan Metode Multi-Attribute Utility Theory (MAUT) pada Pemilihan Broadcasting Terbaik. *Jurnal Media Informatika Budidarma*, *7*(2), 641–649. https://doi.org/10.30865/mib.v7i2.5937

Wahyuni, R., Defit, S., & Nurcahyo, G. W. (2020). The Multi Attribute Utility Theory (Death) Method In The Decision Of The Distributor Distributor Selection (Metode Multi Attribute Utility Theory (Maut) Dalam Keputusan Pemilihan Distributor Barang). *Jurnal KomtekInfo*, *7*(2), 84–100. https://doi.org/10.35134/komtekinfo.v7i2.69

Wicaksono, D. S., Kasmantoni, & Walid, A. (2021). Peranan Pondok Pesantren Dalam Menghadapi Generasi Alfa dan Tantangan Dunia Pendidikan Era Society 5.0. *Jurnal Pendidikan Tematik*, *2*(2), 181–189.