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Research Article

Application of the SAW Method in a Decision Support System for Determining Non-Academic Achievement Students at XYZ High School

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Abstract
The Simple Additive Weighting (SAW) method was applied in a Decision Support System (DSS) to identify non-academic high-achieving students at SMA XYZ, Central Lampung. The assessment includes four main criteria: competition achievements, organizational involvement, discipline and attendance and ethics and social behavior. This method used weighting, data normalization, and a final score calculation to rank the students objectively. The results showed that SAW effectively reduced subjectivity and produced fair and structured rankings. Among the ten students evaluated, Student 2 achieved the highest score of 9.4. The implementation of SAW in this DSS provided a more accountable basis for decision-making. It can serve as a data-driven evaluation model for non-academic performance in educational institutions.

Keywords: SAW Method; Student Achievement; Non-Academic; DSS.

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1. Introduction
Education in Indonesia today focuses not only on academic achievement but also on the development of non-academic skills and character, which are crucial for shaping well-rounded students. Non-academic aspects—such as competition achievements, organizational involvement, discipline, and social ethics—have become key indicators in assessing overall student development (Hernawati et al., 2025; Hidayat et al., 2025; Shaikh et al., 2023; Muharram et al., 2022). However, the evaluation of non-academic aspects is often conducted subjectively, which can lead to unfairness and a lack of transparency in selecting outstanding students. Therefore, a more objective and structured assessment system is required to provide clarity in the selection process.

Several previous studies have explored the use of the Simple Additive Weighting (SAW) method in educational assessment systems. Research by Aulawi et al. (2023) and Ramadhan et al. (2021), for instance, demonstrates that the SAW method is effective in resolving decision-making problems involving multiple criteria at both the university and secondary school levels. Additionally, research by Sheptian et al. (2025) and Aldisa et al. (2022) demonstrates that SAW can be used to evaluate performance in assessment systems involving multiple attributes. Nevertheless, the application of the SAW method for determining non-academic achievement among high school students remains very limited.

The SAW method works by normalizing the data, multiplying the criterion values by pre-determined weights, and summing the results to determine the best alternative. The use of SAW in a Decision Support System (DSS) to assess non-academic achievements at XYZ High School aims to integrate assessment criteria in a more objective,

structured manner. A key reference in this context is the study by Siregar & Siringo-Ringo (2023), which implemented SAW to determine scholarship recipients based on several relevant criteria. That study serves as a foundation for developing a similar system at XYZ High School, albeit with a specific focus on students' non-academic achievements (Hartatik et al., 2022; Irawan, 2020; Ginting & Sridewi, 2024).

XYZ High School faces challenges in objectively assessing students' non-academic achievement. Current assessments, which rely on teacher observation and judgment, can introduce bias; thus, a system is needed that systematically integrates multiple criteria to yield fairer results. Consequently, this study proposes applying SAW within a Decision Support System (DSS) to identify non-academic achievers at XYZ High School by combining criteria such as the number and level of competition awards, participation in school organizations, discipline, and social attitude.

This research aims to improve the existing assessment system using SAW, thereby facilitating decision-making based on more objective data. In contrast to previous studies that were largely applied to academic assessments or to the higher education level, this study focuses on the application of SAW at the high school level by considering a wider variety of criteria in non-academic achievement evaluation (Leipary et al., 2024; Amaliah et al., 2025; Rizka et al., 2024). Furthermore, this research is expected to offer a more applicable and relevant approach for secondary schools in assessing students holistically.

With the implementation of the SAW method, it is expected that XYZ High School will have a more structured and transparent assessment system. This system will not only assist the school in identifying outstanding students more objectively but also provide clarity and openness in a fairer assessment process. This research is expected to provide broader benefits—not only for XYZ High School but also as a model for other schools in adopting SAW-based non-academic assessment technology—thereby enhancing educational quality and more effective decision-making at the secondary level.

2. Methods

The research methodology is designed to develop and implement a Simple Additive Weighting (SAW)- based Decision Support System (DSS) to optimize the determination of non-academic achievement for students at XYZ High School. This system aims to improve the quality of the student assessment process in an objective, systematic, and measurable manner, based on relevant criteria such as competition achievements, organizational involvement, discipline, and students' social attitudes. By utilizing the SAW method, it is expected to reduce subjectivity in evaluation and provide clear rankings for each student based on their performance across various non-academic aspects. The block diagram of the research methodology is provided as follows:

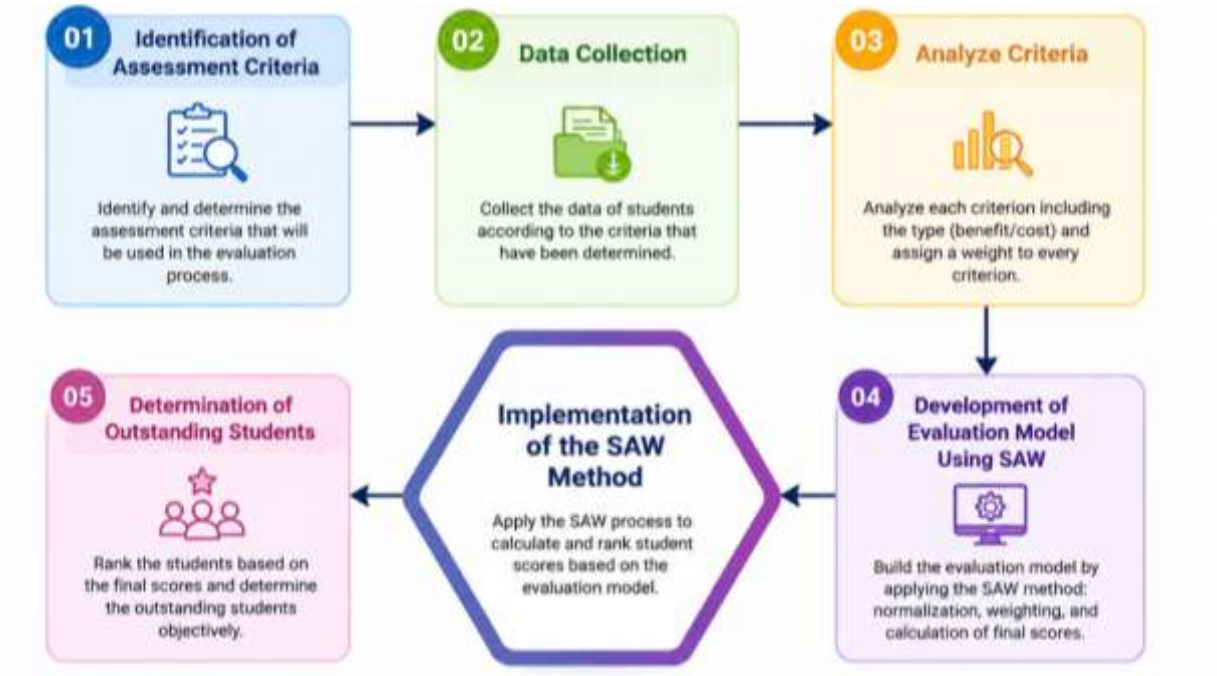

Figure 1. Research Methodology Block Diagram

Figure 1 presents the research methodology in six stages. First, assessment criteria (C1–C4) are identified. Second, student data is collected. Third, each criterion is analyzed and assigned a weight. Fourth, the SAW evaluation

model is developed through normalization, weighting, and the calculation of a final score. Fifth, the SAW method is implemented to process the data. Sixth, outstanding students are determined based on final rankings. These stages ensure an objective and systematic assessment process. Thus, the research methodology provides a clear and replicable framework for implementing SAW-based DSS in the context of non-academic student achievement assessment.

2.1. Decision Support Systems (DSS)

A Decision Support System (DSS) is a computer-based system that assists decision-makers in selecting the best alternative from several options based on various criteria. DSS is frequently employed in situations involving complex decisions where numerous factors must be considered. This system facilitates decision-making by integrating relevant data and information and presenting them in an easily understandable format, thereby enabling decision-makers to make more objective and precise choices (Sifuna, K., 2021; Megawaty & Ulfa, 2020). DSS is designed to handle decision-making problems involving multiple competing criteria or alternatives. In this study, DSS is used to assist in assessing students' non-academic achievement at XYZ High School. By utilizing a DSS based on the Simple Additive Weighting (SAW) method, the system can process student achievement data and generate rankings based on established criteria, such as competition awards, organizational involvement, discipline, and social attitude (Suryadi et al., 2025; Indarso et al., 2025). This DSS is expected to reduce subjectivity in assessment and provide a clear, objective basis for identifying outstanding non-academic students.

2.2. Simple Additive Weighting (SAW)

Simple Additive Weighting (SAW) is one of the simplest and most widely used multi-attribute decision-making methods for resolving problems involving multiple criteria. This method determines the best alternative by calculating a total score for each criterion based on each alternative's weight and value (Taherdoost, 2023). The SAW process begins with data normalization to ensure that each criterion value is on the same scale, making them comparable. Normalization is performed by dividing each value in a criterion by the maximum value present in that column. Following normalization, the next step is to assign weights to each criterion, reflecting their relative importance in the decision-making process. These weights can be determined using various methods, including the Analytic Hierarchy Process (AHP) (Saaty et al., 2022). Each normalized value is then multiplied by the assigned weight to produce a weighted value. This weighted value indicates each criterion's contribution to the assessment of the alternative. The primary function of SAW is to calculate the final score for each alternative by summing the weighted values across all criteria (Aulawi et al., 2023). The formula for calculating the final score for alternative i is as follows:

$$V_i = \sum(j = 1)^n w_j r_i j \quad (1)$$

where V_i is the total score for alternative i, w_j is the weight for criterion j, and r_{ij} is the normalization for alternative i on criterion j. The alternative with the highest score is considered the best choice, as it represents the optimal result across all considered criteria (Saaty et al., 2022; Aulawi et al., 2023). The SAW method is widely used across various fields, including performance appraisal, site selection, vendor selection, and more. The main advantage of SAW is its simple calculation and its ability to integrate multiple quantitative criteria, making it highly suitable for decision-making involving multiple factors.

3. Results and Discussion

Assessment of non-academic student achievement at the high school level is an essential part of a holistic education system, which evaluates not only academic aspects but also student character development and skills. This assessment process identifies outstanding students outside the classroom, recognizing them for their achievements in competitions, organizational involvement, discipline, and social attitudes. However, such assessments are often conducted subjectively, which can lead to unfairness and bias in determining those who deserve recognition.

In this study, to address these issues, the Simple Additive Weighting (SAW) method is implemented within a Decision Support System (DSS). The SAW method was selected for its ability to systematically and objectively integrate relevant criteria. This research aims to calculate a final score based on the assigned criteria weights for each student and to provide a student ranking based on their performance across several pre-determined non-academic aspects. The data used covers various aspects, including competition achievements, involvement in organizations, discipline, and social ethics.

Table 1 is the assessment evaluation for 10 students based on the established criteria as follows:

Table 1. Student Assessment Data

Student	Number and Level of Non-Academic Achievements	Participation in School Organizations	Discipline and Attendance	Ethics and Social Attitude
S1	4	3	5	4
S2	5	4	5	5
S3	3	2	3	3
S4	4	5	5	4
S5	2	4	2	3
S6	5	3	4	4
S7	3	5	5	5
S8	4	4	4	4
S9	3	2	3	2
S10	2	4	3	5

To provide an objective assessment of students, each criterion has been assigned a weight based on its importance. The criteria used in this study encompass various aspects of students' non-academic achievements that are relevant to their character and abilities. The following Table 2 explains the criteria used in this assessment:

Table 2. Assessment Criteria for Non-Academic Achievement Students

Kode	Kriteria	Jenis Data	Penjelasan
C1	Number and Level of Non-Academic Achievements	Combined Score (1–5)	Assesses the number of competitions participated in and the level of achievement (Regency, City, Provincial, National).
C2	Participation in School Organizations	Observation Score (1–5)	Measures students' participation and active roles in school organizations.
C3	Discipline and Attendance	Percentage / Scale	Measures student attendance and discipline based on attendance records.
C4	Ethics and Social Attitude	Counselor Teacher Assessment (1–5)	Assessment by the school counselor regarding social attitude, responsibility, and politeness.

Once these criteria are established, weights are assigned to each criterion based on its importance. These weights are determined using the Simple Additive Weighting (SAW) method, which objectively integrates various criteria. Each criterion is given a weight reflecting its influence on the final student assessment. In the weighting process, the number and level of non-academic achievements are assigned higher weights because they reflect tangible accomplishments in competitions. Meanwhile, involvement in school organizations and social ethics and attitudes are assigned lower weights, yet they remain significant in evaluating student character and involvement within the school environment.

First, percentage weights are assigned to each criterion based on its level of importance in the overall assessment. Competent parties, such as teachers and the assessment committee, determine these percentage weights. For instance, since the Number and Level of Non-Academic Achievements is considered highly important, this criterion may be assigned a weight of 40%. Other criteria, such as Involvement in School Organizations or Discipline and Attendance, may be given lower weights, such as 30% and 20%, with Social Ethics and Attitude receiving a weight of 10%.

After the percentage weights are determined, they must be converted to the scale used in the SAW method. Subsequently, the established percentage weights for each criterion are converted to the SAW scale (0-5), where 5 represents the highest value and 1 the lowest. This ensures that each criterion receives a weight appropriate to its level of importance. If the Number and Level of Non-Academic Achievements is assigned a weight of 40%, its corresponding SAW scale is 4.0. This conversion is carried out to ensure consistency between the percentage weights and the SAW scale used in the calculations. The calculations are provided as follows:

After the weights are assigned in the SAW format, the next step is the normalization of the values for each criterion, as previously explained, where the value of each criterion is divided by the maximum value in that column. Following normalization, the resulting values for each student are multiplied by the pre-determined SAW weights.

The decision matrix normalization process is a critical step in the Simple Additive Weighting (SAW) method because it transforms criterion values with different scales into a uniform scale, typically 0 to 1 (Saaty et al., 2022). Normalization is performed based on the following formula:

$$r_{ij} = \frac{x_{ij}}{Max(x_{ij})} \qquad (2)$$

where r_{ij} is the normalized value for alternative i on criterion j, x_{ij} is the value in the decision matrix for alternative i on criterion j, and $\max_i(x_{ij})$ is the maximum value in column j (criterion j) of the decision matrix. Illustrated for the calculation of (C1 - Number and Level of Non-Academic Achievement) r_{i1}, and successively through to (C4 - Ethics and Social Attitude) r_{i4}, the following results are produced:

Table 3. Normalized Student Assessment Data

Student	C1	C2	C3	C4
S1	0.8	0.6	1.0	0.8
S2	1.0	0.8	1.0	1.0
S3	0.6	0.4	0.6	0.6
S4	0.8	1.0	1.0	0.8
S5	0.4	0.8	0.4	0.6
S6	1.0	0.6	0.8	0.8
S7	0.6	1.0	1.0	1.0
S8	0.8	0.8	0.8	0.8
S9	0.6	0.4	0.6	0.4
S10	0.4	0.8	0.6	1.0

After the decision matrix is normalized, the next step is to multiply each normalized value by the pre-determined weight for each criterion. These weights represent the relative importance of each criterion in the final decision. Subsequently, the final score is calculated using the formula described in subsection 2.2 SAW. The calculation is illustrated as follows:

$$V_1 = (0.8 \times 4.0) + (0.6 \times 3.0) + (1.0 \times 2.0) + (0.8 \times 1.0) = 7.8$$

$$V_2 = (1.0 \times 4.0) + (0.8 \times 3.0) + (1.0 \times 2.0) + (1.0 \times 1.0) = 9.4$$

$$V_3 = (0.6 \times 4.0) + (0.4 \times 3.0) + (0.6 \times 2.0) + (0.6 \times 1.0) = 5.4$$

$$V_4 = (0.8 \times 4.0) + (1.0 \times 3.0) + (1.0 \times 2.0) + (0.8 \times 1.0) = 9.0$$

$$V_5 = (0.4 \times 4.0) + (0.8 \times 3.0) + (0.4 \times 2.0) + (0.6 \times 1.0) = 5.4$$

$$V_6 = (1.0 \times 4.0) + (0.6 \times 3.0) + (0.8 \times 2.0) + (0.8 \times 1.0) = 8.2$$

$$V_7 = (0.6 \times 4.0) + (1.0 \times 3.0) + (1.0 \times 2.0) + (1.0 \times 1.0) = 8.4$$

$$V_8 = (0.8 \times 4.0) + (0.8 \times 3.0) + (0.8 \times 2.0) + (0.8 \times 1.0) = 8.0$$

$$V_9 = (0.6 \times 4.0) + (0.4 \times 3.0) + (0.6 \times 2.0) + (0.6 \times 1.0) = 5.2$$

$$V_{10} = (0.4 \times 4.0) + (0.8 \times 3.0) + (0.6 \times 2.0) + (1.0 \times 1.0) = 6.2$$

After the weighted scores are calculated for all students, they will be sorted by final score. The student with the highest score will be ranked first, while the student with the lowest score will be ranked last. Furthermore, the ranking in Table 4 for non-academic achievement using the SAW method is presented below.

Table 4. Student Ranking Based on Final Scores

Student	Final Score	Rank
S2	9.4	1
S4	9.0	2
S7	8.4	3
S6	8.2	4
S8	8.0	5
S1	7.8	6
S10	6.2	7
S3	5.4	8
S5	5.4	8
S9	5.2	10

Based on calculations using the Simple Additive Weighting (SAW) method, the ranking results for 10 students were obtained for four non-academic criteria: competition achievement, involvement in school organizations, discipline and attendance, and ethics and social attitude. Student 2 ranks first with the highest score of 9.4. This indicates consistent excellence across all criteria, particularly in the number and level of competitive achievements, which significantly contributed to the final score. Their active participation in organizations, discipline, and positive social ethics further solidify their position as the top outstanding non-academic student. In second place is Student 4, with a score of 9.0, who excels in discipline and social ethics, alongside a strong record of competition achievement, though slightly behind in organizational involvement. Student 7 ranks third with a score of 8.4, demonstrating strong performance in organizational activity and social attitude. However, their achievement and discipline are slightly lower than those of the top two students.

Furthermore, Student 6 ranks fourth with a score of 8.2. They demonstrate stable and balanced performance across all criteria, though there is room for improvement in the organizational aspect. This is followed by Student 8 in fifth place with a score of 8.0, who, while not particularly prominent in any single aspect, shows consistency across all indicators. Student 1 is in sixth place with a score of 7.8, showing strength in discipline and competition achievement, but a relatively lower score in organizational involvement, which slightly lowered their ranking. Student 10 obtained a score of 6.2, ranking seventh; they excel in ethics and social attitude but lack competitive achievements, suggesting a need for encouragement to participate in competitive activities.

In the lower-ranking group, Students 3 and 5 both scored 5.4, placing them in the eighth position. Both show weaknesses in achievement and organization, although they maintain adequate scores in discipline. Finally, Student 9 is at the bottom of the ranking with a score of 5.2. Their values are low across almost all criteria, particularly in discipline and social attitude, requiring special attention and coaching to improve their non-academic quality. Overall, these results demonstrate that the SAW method is effective at producing objective rankings and can serve as a basis for decision-making regarding student development and awards in non-academic fields.

4. Conclusion

This research demonstrates that the Simple Additive Weighting (SAW) method is effectively applied within a Decision Support System (DSS) to determine outstanding non-academic students at XYZ High School. By considering four primary criteria—competition achievements, organizational involvement, discipline, and ethics/social attitude—the assessment becomes more objective, structured, and transparent. The evaluation results for 10 students show that Student 2, Student 4, and Student 7 achieved the highest rankings due to superior performance across multiple integrated aspects. Conversely, Students 9, 3, and 5 ranked lowest, indicating a need for improvement in discipline and organizational participation. Overall, the implementation of SAW within the DSS successfully reduced subjectivity in the assessment process and provided a fairer, more accountable basis for decision-making. This system can also serve as an adaptive non-academic assessment model for other schools seeking to develop data-driven evaluation processes.

Recommendation

Recommendations for the School

1. High-Ranking Students (Student 2, Student 4, Student 7)

   These three students demonstrate excellent performance across a range of non-academic criteria. Student 2, as the top-ranked student, demonstrates consistent excellence across all aspects, particularly in competition achievement and discipline, making them deserving of awards or further development opportunities, such as scholarships, leadership training, or school ambassadorship. Student 4, with strengths in discipline and a positive social attitude, also deserves appreciation and can serve as a role model for character development for other students. Student 7, with an advantage in organizational involvement and social ethics, can be directed to enhance their competitive achievements further to strengthen their overall profile.

2. Middle-Ranking Students (Student 6, Student 8, Student 1, Student 10)

   This group shows good potential and holds competitive scores. Student 6 and Student 8 exhibit consistency across various criteria but require improvement in organizational involvement or in achieving more prominent outcomes to move into the top tier. Student 1 has strengths in discipline and achievement, but their participation in organizational activities needs improvement. Student 10, despite having high social ethics scores, needs support to become active in achievement-oriented activities and competitions. Additional coaching in the form of motivation, training, or involvement in school projects would be highly beneficial for this group.

3. Low-Ranking Students (Student 3, Student 5, Student 9)

   These three students are in the bottom ranks and show weaknesses across several key areas. Student 3 and Student 5 have low scores in achievement and organization, although their discipline is relatively good. Development programs should be provided to increase interest in school activities and encourage active participation. Student 9, with the lowest score, requires special attention, especially in strengthening discipline and social character development. Personal guidance, involvement in constructive social activities, and strengthening internal motivation are essential to help them grow and gain experiences that shape positive character.

References

Amaliah, M. N., Firdaus, R., Riswandi, & Oktaria, S. D. (2025). Development of simple additive weighting (SAW) e-module learning media based on PJBL to improve learning outcomes. Edcomtech: Jurnal Kajian Teknologi Pendidikan, 10(2), 191–204. https://doi.org/10.17977/um039v10i22025p191-204

Aldisa, R., Nugroho, F., Mesran, M., Sinaga, S. A., & Sussolaikah, K. (2022). Sistem pendukung keputusan menentukan sales terbaik menerapkan metode Simple Additive Weighting (SAW). Jurnal Inf. Syst. Res., 3(4 SE-Articles). https://doi.org/10.47065/josh.v3i4.1955.

Aulawi, H., Nuraeni, F., Setiawan, R., Rianto, W. F., Surya Pratama, A., & Maulana, H. (2023). Simple Additive Weighting in the development of a decision support system for the selection of house construction project teams. In 2023 International Conference on Computer Science, Information Technology and Engineering (ICCoSITE), Jakarta, Indonesia (pp. 517–522). https://doi.org/10.1109/ICCoSITE57641.2023.10127813.

Ginting, S. H. N., & Sridewi, N. (2024). Implementation of a decision support system for new employee selection at PT Triotech Solution Indonesia using the SAW method. Jurnal Minfo Polgan, 13(1), 856–862.

Hartatik, N., Firdaus, R., Hartono, R., Riasti, B. K., Purbayu, A., & A'la, F. Y. (2022). Travel budget prediction for determining tourism objects using Simple Additive Weighting (SAW) algorithm. In 2022 Seventh International Conference on Informatics and Computing (ICIC), Denpasar, Bali, Indonesia (pp. 01–06). IEEE. https://doi.org/10.1109/ICIC56845.2022.10006982.

Hernawati, H., Supala, S., Ibrohim, I., & Mulyani, D. (2025). Cultivating character for Indonesia's golden generation: Strengthening student values for national progress. Al-Ishlah: Jurnal Pendidikan, 17(2), 3086–3101. https://doi.org/10.35445/alishlah.v17i2.6408.

Hidayat, M. T., Suryadi, S., Latifannisa, N., Sari, S. N., & Rino. (2025). Evolution of the education curriculum in Indonesia. Journal of Innovation in Educational and Cultural Research, 6(2), 381–395. https://doi.org/10.46843/jiecr.v6i2.1312.

Indarso, T. P., Taurusta, C., Suprianto, & Sumarno. (2025). Decision support system for superior and high-achieving students using the Analytical Hierarchy Process (Case study: Junior High School Taman Pendidikan Islam Porong). Journal of Informatics, Information System, Software Engineering and Applications (INISTA), 7(2), 213–222. https://doi.org/10.20895/INISTA.V7I2.1655.

Irawan, Y. (2020). Decision support system for employee bonus determination with a web-based simple additive weighting (SAW) method in PT. Mayatama Solusindo. Journal of Applied Engineering and Technological Science (JAETS), 2(1), 7–13. https://doi.org/10.37385/jaets.v2i1.162.

Leipary, H., Tuhuteru, H., & Patty, J. C. (2024). SAW method in decision making for scholarship recipients, Faculty of Computer Science, Indonesian Christian University Maluku. Jurnal Multidisiplin Madani, 4(1). https://doi.org/10.55927/mudima.v4i1.7673.

Megawaty, M. & Ulfa, M. (2020). 'Decision support system methods: A review', Journal of Information Systems and Informatics, 2(1), pp. 192–20. https://doi.org/10.33557/journalisi.v2i1.63.

Muharram, I. Y. A. T., Maulana, H., Marcheta, N., Matin, I. M. M., & Zhafarina, A. (2022). Decision support system for private teacher selection optimization using the Simple Additive Weighting algorithm. In 10th Int. Conf. Cyber IT Serv. Manag. (CITSM 2022) (pp. 1–4). IEEE. https://doi.org/10.1109/CITSM56380.2022.9935953.

Ramadhan, M. R., Nizam, M. K., & Mesran, M. (2021). Penerapan metode SAW (Simple Additive Weighting) dalam pemilihan siswa-siswi berprestasi pada sekolah SMK Swasta Mustafa. TIN Terap. Inform. Nusant., 1(9), 459–471.

Rizka, A., Sulistianingsih, I., Tasril, V., & Utari, C. T. (2024). Identification of student ability to select high-achieving students using the SAW method as a decision support system. In the 1st International Conference on Artificial Intelligence, Navigation, Engineering and Aviation Technology (ICANEAT), 1(1), 544–548.

Saaty, T. L., Vargas, L. G., & Cahyono, S. (2022). The analytic hierarchy process. Publisher: Springer, ISBN: 978-1-4614-3597-6.

Shaikh, M., Ghanawajeer, D., & Sawane, M. (2023). Design and development of an intelligent decision support system for HR recruitment. Asian Journal of Computer Science and Technology, 12(2), 24–30.

Sheptian, R., Ocy, D. R., Cahyaningsih, E., Syarifah, I., & Ridwan, A. (2025). Application of an AHP-SAW-based decision support system for objective and comprehensive junior high school student selection. Journal of International Multidisciplinary Research, 3(8), 81–89.

Siregar, V. M. M., & Siringo-Ringo, E. D. (2023). Decision support system to determine scholarship recipients using the Electre method. COSTA J. (Computer Sci. Technol. Appl. Journal), 1(2), 39–49.

Sifuna, K., Lwangale, D. W., Simotwo, P., Sifuna, K., Lwangale, D. W. & Simotwo, P. (2021). Influence of Leadership on Poverty Reduction in the Devolved Government in Trans-Nzoia County, Kenya. Himalayan Journal of Economics and Business Management, 2(1). https://doi.org/10.47310/hjebm.2022.v03i02.013.

Suryadi, A., Muiz, A., & Hidayat, A. (2025). Implementation of a Decision Support System for Selecting the Best Supplier Using the SAW Method.7(3). https://doi.org/10.32877/bt.v7i3.2255.

Taherdoost, H. Analysis of Simple Additive Weighting Method (SAW) as a multi-attribute decision-making technique: A step-by-step guide. J. Manag. Sci. Eng. Res. 2023, 6, 21–24. https://doi.org/10.30564/jmser.v6i1.5400.