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# PIKSEL

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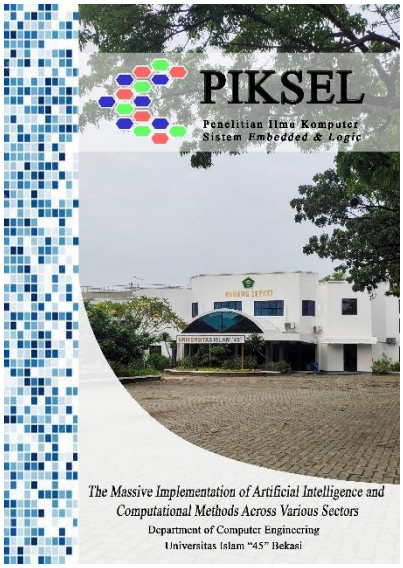


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.

Best wishes to all the members of Editorial Board, Reviewers Panel, Authors and Readers of PIKSEL for a very happy, and stay healthy.

To meet the demands in the implementation of AI in various aspects of life, most research provides examples of how AI and other computer science methods are implemented in various fields, ranging from education, computer security, business, to information technology infrastructure.

Undoubtedly, Artificial Intelligence (AI) has permeated every facet of life. Every scientific field has acquired AI as part of its scientific aspect. The role of computer science becomes increasingly important in enhancing the performance of AI models implemented in these fields. Therefore, this edition of PIKSEL focuses on implementations in areas such as computer science, embedded systems, and logic, which are the focus of this journal.

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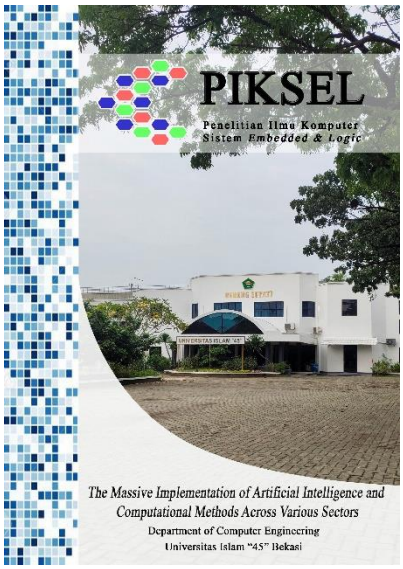


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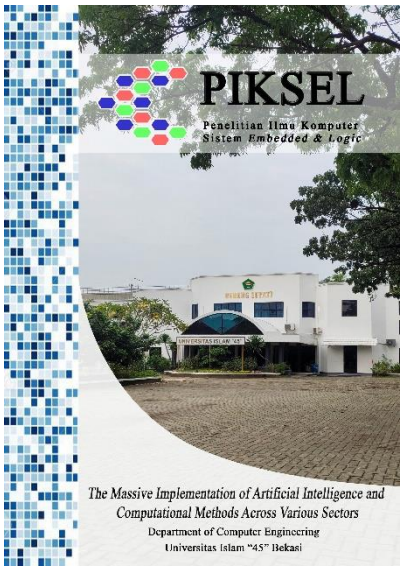


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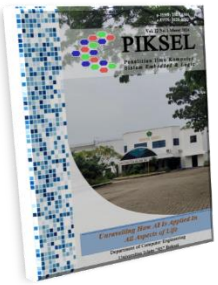


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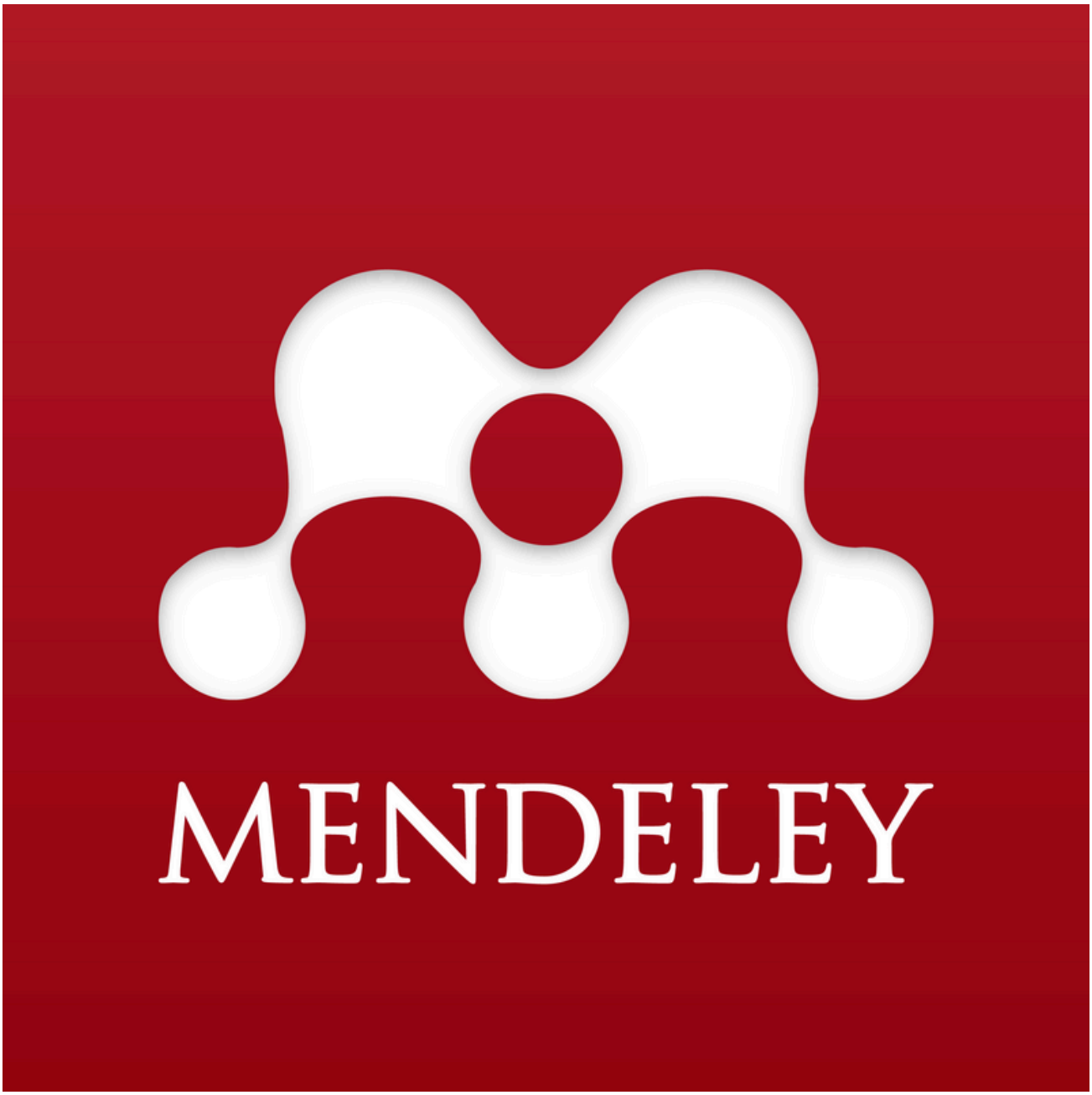


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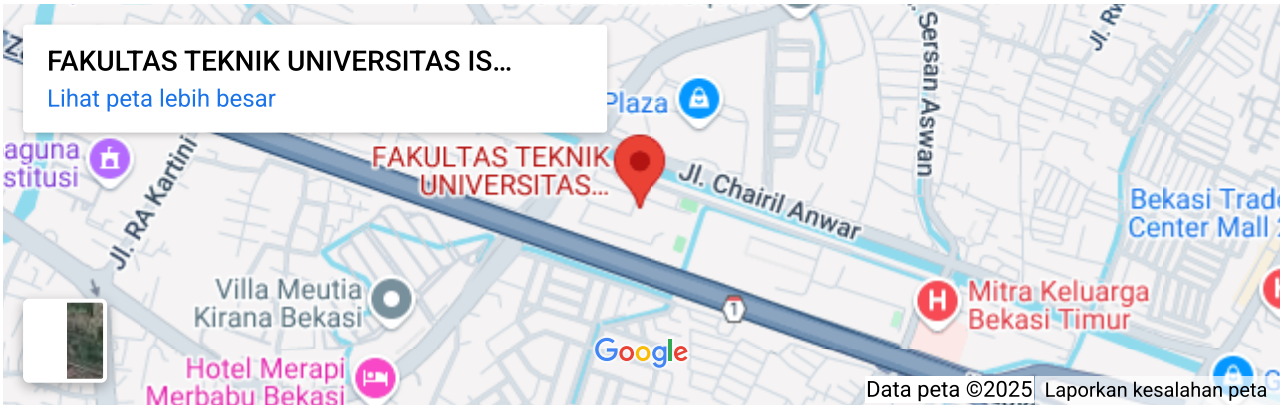

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# Exemplary Teacher Selection Using a VIKOR-Based Decision Support System

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**Abstract**

Yadika 13 Tambun Vocational School has criteria where the school does not yet have a system that can support a decision. The decision support system (DSS) for selecting exemplary teachers in appreciating teacher performance presentations that have been made while being teaching staff is expected to increase motivation so that they can improve their performance. Many DSS methods are used to find a decision in this study. The method to be used is VIseKriterijumska Optimizacija I Kompromisno Resenje, (VIKOR) which can produce the best alternative in the form of ranking of an existing sample by looking at the utility values and weights of each sample. This study describes the design of a decision support system for conducting assessments in selecting exemplary teachers at SMK Yadika 13 Tambun. System design using UML (Unified Modeling Language). The decision support system (DSS) is very helpful for those who will carry out the assessment process, before there was a decision support system the school always found it difficult to make an assessment because it took quite a long time, the assessment was still done manually, it was difficult to calculate the assessment, sometimes there is an error in the assessment results. Therefore, with this decision support system it can help the school and minimize these problems.

**Keywords**: DSS, Exemplary Teacher Selection, UML, VIKOR, MCDM

## 1. Introduction

Information technology in today's era is rapidly evolving, where distance and time are no longer barriers in communication. Particularly in Indonesia, advancements in technology have impacted various aspects, permeating into fields such as healthcare, transportation, courier services, business, and banking. The learning innovation undertaken in the development of digital information technology utilizes the rapidly advancing information technology infrastructure in this era of the Fourth Industrial Revolution to enhance the quality of education. (Afrizal Purba & Defriyando, 2020)

Before the advent of computerization, all human tasks were performed manually. With computer-based technology, data processing becomes faster and more accurate, easing human efforts. Computers enable us to innovate and create systems to support various decision-making processes, allowing all units of work to make decisions

quickly, easily, and accurately. The presence of this new technology makes it easier for all workers and students, facilitating their work and schooling. (Anggardi et al., 2022)

An Indonesian private school, SMK Yadika 13 Tambun, was chosen as a study case, where the school does not yet have a system to support decision-making. A decision support system is an integrated set of elements that work together to generate decisions in achieving a common goal. (Waluyo & Fais Irfandi, 2019) SMK Yadika 13 Tambun has its own criteria for selecting exemplary teachers. With the aid of technology, the selection of exemplary teachers can be done quickly and easily, thus creating a decision support system for selecting exemplary teachers to appreciate the performance of teachers during their tenure as educators, and it is hoped that this will increase motivation to improve their performance.

In addition to imparting academic knowledge, teachers also guide students to have good character and morals, distinguishing between right and wrong, appropriate and inappropriate, lawful and unlawful. In carrying out their duties, a teacher is not only required to lead through words but also through behavior, actions, and real-life examples, thus motivating their students and providing good role models. Teachers, as educators, are also pivotal factors in the success of every educational endeavor. (Hazmi, 2019) This is crucial because, according to educational experts' experiences, the attitude and behavior of a teacher are far more effective than mere words, especially those not backed by tangible actions. (Prayitno & Hiswara, 2021)

The selection of exemplary teachers has positive impacts on teachers, as it can motivate all teachers to enhance the quality of their work in the teaching and learning process. It can also serve as a benchmark for teachers who are not selected as exemplary teachers to identify areas for improvement in their teaching quality and mastery of the learning materials. Therefore, SMK Yadika 13 Tambun requires a system that can support decision-making to determine exemplary teachers with the aim of facilitating the selection and assessment of exemplary teachers based on specific criteria. The selection of exemplary teachers utilizes the VIKOR method.

The VIKOR method is a technique that can produce the best alternative in the form of ranking from existing samples by considering the utility values and weights of each sample. The VIKOR method is a multi-criteria decision-making (MDCM) approach that determines a solution approaching the ideal compromise. VIKOR method is a mathematical approach used to solve multi-criteria decision-making problems (Astuti et al., 2021); (Najib et al., 2023). It is hoped that it will run effectively in the process of selecting exemplary teachers.

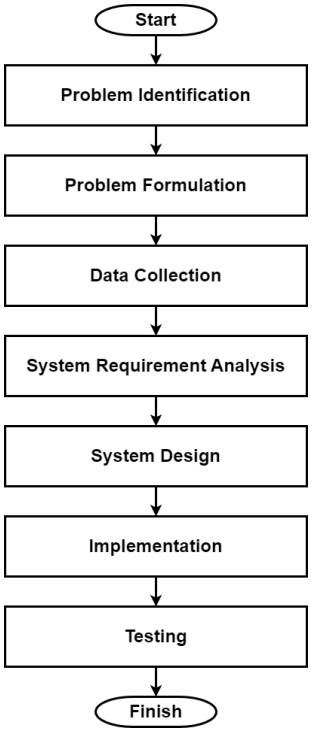
## 2. Research Method

### 2.1. System Development Methodology

In this study we employ the Waterfall method. This development approach encompasses several essential stages. Firstly, we initiate the software requirements gathering process, aiming to comprehensively understand user needs. Subsequently, the software design phase involves crafting the data structures and interface. During this stage, the software requirements, previously analyzed, are transformed into a design that will be implemented into the program. Following that, the program is developed using the HTML programming language with integration of the MySQL database. Finally, the program undergoes a thorough testing phase to ensure its proper operation and alignment with the predetermined system development objectives.

### 2.2. Framework

Figure 1 show the framework used in the VIKOR method for selecting exemplary teachers at SMK Yadika 13 Tambun is as follows.




Source: Research Result (2023)

Figure 1 Framework

## 2.3. Visekriterijumsko Kompromisno Rangiranje (VIKOR) Algorithm

Decision support system using the VIKOR method (Visekriterijumsko Kompromisno Rangiranje). The Vikor method aims to determine the best recommendation for cases involving multiple criteria to establish the priority sequence of existing alternatives. (Rahman, 2023) for selecting exemplary teachers at SMK Yadika 13 Tambun, involves criteria established by the school for assessing exemplary teachers. In this selection process, there are 4 (four) criteria: pedagogical, personality, social, and professional.

As an example of implementing the VIKOR method in selecting exemplary teachers, below are the criteria used in the assessment:

**1)** Determining the alternative values for each criterion. There are alternatives from the assessed teacher data, labeled A1 to A15 as an example of implementing the VIKOR method in selecting exemplary teachers. Below are the criteria used in the assessment.

A. Pedagogical Competence (C1)
   Mastery of student characteristics. A teacher with strong pedagogical competence will be able to conduct a learning process that is enjoyable for their students. (Rani et al., 2020)
B. Personality (C2)
   Demonstrating mature and exemplary personality traits, having a strong work ethic, high sense of responsibility, and pride in being a teacher. The quality of education is greatly determined by various factors, but the most primary and dominant factor is the quality of a teacher's personality. (Husin, 2021)
C. Social (C3)
   Communication with fellow teachers, staff, parents, students, and the community. The social competence of a teacher lies in their ability to communicate and socialize effectively, especially with students. (Silalahi & Naibaho, 2023)

D. Professional (C4)

The quality of a professional teacher aims to cultivate excellent students and improve the quality of education. (Eliza et al., 2022)

Below is the alternative table, criteria values C1, C2, C3, C4. The criteria values below are obtained based on recommendations from SMK Yadika 13 Tambun Selatan school authorities.

Table 1 Alternative Values

| Code | Alternative | C1 | C2 | C3 | C4 |
|---|---|---|---|---|---|
| A1 | Rohnenny Saurma Tampubolon, S.Pd | 30 | 15 | 10 | 9 |
| A2 | Jajat Ahmad Munajat, S.Pd | 29 | 15 | 10 | 8 |
| A3 | Rizki rahmat, S.Pd | 25 | 15 | 8 | 8 |
| A4 | Juli Dwi Susanti, S.Pd | 30 | 15 | 10 | 8 |
| A5 | Dhani Setiawan, S.Hi., M.H | 27 | 12 | 9 | 8 |
| A6 | Dewi Anggraini, SP | 26 | 14 | 10 | 9 |
| A7 | Ahmad Pudoli, S.Kom | 25 | 14 | 8 | 7 |
| A8 | Mangonggor L.Gaol, S.Pd | 30 | 11 | 10 | 8 |
| A9 | Dewi Yuliandari, S.Pd | 21 | 13 | 8 | 6 |
| A10 | Widi Gunarti, S.Si | 30 | 15 | 10 | 7 |
| A11 | Rusdi,S. Pd.I | 26 | 15 | 7 | 7 |
| A12 | Rini Subekti, S.Pd | 27 | 14 | 9 | 9 |
| A13 | Evi Melawati Silaban, S.Pd | 30 | 13 | 8 | 7 |
| A14 | Sri Lestari Ningsih, S.Pd | 20 | 12 | 8 | 5 |
| A15 | Aprilis Diana Sari,S.Pd | 22 | 14 | 8 | 7 |
| | **Maximum** | **30** | **15** | **10** | **9** |
| | **Minimum** | **20** | **11** | **7** | **5** |

Source: Research Result (2023)

**2) Establishing criteria as the basis for evaluating the decision-making process in the selection of exemplary teachers.**

Table 2 Criteria Weights

| Code | *Range* Of Values | Alternative |
|---|---|---|
| C1 | 0-30 | Pedagogical Competence |
| C2 | 0-15 | Personality |
| C3 | 0-10 | Social |
| C4 | 0-10 | Professional |

Source: Research Result (2023)

Table 2 shows the criteria weight, show the normalization table of the weight for each criterion, where all criteria must be normalized by dividing each weight value by the total sum of weights. Based on the importance weight, the criteria can be divided as follows on table 3:

Table 3 Criteria Importance Weights

| Description | Weight |
|---|---|
| Poor | 1 |
| Fair | 2 |
| Good | 3 |
| Excellent | 4 |

Source: Research Result (2023)

### 3) Determining normalization

To determine the normalization values based on the decision matrix of each alternative obtained from suitability ratings. The value X of each alternative (Ai) on the predetermined criteria ($C_i$) is given. Normalization calculations are performed using the decision matrix based on the criterion points ($r_{ij}$) of each alternative Ai on criterion $C_j$. The following formula is used to calculate normalization.

$$r_{ij} = \frac{x_j^+ - x_{ij}}{x_j^+ - x_j^-} \quad (1)$$

$$X = \begin{pmatrix} 30 & 15 & 10 & 9 \\ 29 & 15 & 10 & 8 \\ 25 & 15 & 8 & 8 \\ 30 & 15 & 10 & 8 \\ 27 & 12 & 9 & 8 \\ 26 & 14 & 10 & 9 \\ 25 & 14 & 8 & 7 \\ 30 & 11 & 10 & 8 \\ 21 & 13 & 8 & 6 \\ 30 & 15 & 10 & 7 \\ 26 & 15 & 7 & 7 \\ 27 & 14 & 9 & 9 \\ 30 & 13 & 8 & 7 \\ 20 & 12 & 8 & 5 \\ 22 & 14 & 8 & 7 \end{pmatrix}$$

from the above calculations, we can obtain the normalized matrix as follows:

$$Rij = \begin{pmatrix} 0 & 0 & 0 & 0 \\ 0.1 & 0 & 0 & 0.25 \\ 0.5 & 0 & 0.67 & 0.25 \\ 0 & 0 & 0 & 0.25 \\ 0.3 & 0.75 & 0.33 & 0.25 \\ 0.4 & 0.25 & 0 & 0 \\ 0.5 & 0.25 & 0.67 & 0.5 \\ 0 & 1 & 0 & 0.25 \\ 0.9 & 0.5 & 0.67 & 0.75 \\ 0 & 0 & 0 & 0.5 \\ 0.4 & 0 & 1 & 0.5 \\ 0.3 & 0.25 & 0.3 & 0 \\ 0 & 0.5 & 0.67 & 0.5 \\ 1 & 0.75 & 0.67 & 1 \\ 0.8 & 0,25 & 0.67 & 0.5 \end{pmatrix}$$

### 4) Calculating the values of S and R

Here are the formulas used to find the values of S and R as follows:
R as follows:

$$s_i = \sum_{j=1}^{n} w_j \left( \frac{x_j^+ - x_{ij}}{x_j^+ - x_j^-} \right) \quad (2)$$

S as follows:

$$\begin{pmatrix} 0 & 0 & 0 & 0 \\ 0.325 & 0 & 0 & 1.625 \\ 1.625 & 0 & 2.8889 & 1.625 \\ 0 & 0 & 0 & 1.625 \\ 0.975 & 3.25 & 1.4444 & 1.625 \\ 1.3 & 1.0833 & 0 & 0 \\ 1.625 & 1.0833 & 2.8889 & 3.25 \\ 0 & 4.3333 & 0 & 1.625 \\ 2.925 & 2.1667 & 2.8889 & 4.875 \\ 0 & 0 & 0 & 3.25 \\ 1.3 & 0 & 4.3333 & 3.25 \\ 0.975 & 1.0833 & 0.0833 & 0 \\ 0 & 2.1667 & 2.8889 & 3.25 \\ 3.25 & 3.25 & 2.8889 & 6.5 \\ 2.6 & 1.0833 & 2.8889 & 3.25 \end{pmatrix}$$

The result of the normalized values multiplied by the weights (3.25), (4.33), (4.33), (6.5). After obtaining the results of these multiplications, the next step is to sum up all the calculated results sequentially.

$$R_i = Max\, j \left[ w_{\ j} \left( \frac{x_j^+ - x_{ij}}{x_j^+ - x_j^-} \right) \right] \quad (3)$$

Table 4 The values of S and R

| Code | S Value | R Value |
|---|---|---|
| A1 | 0 | 0 |
| A2 | 1.95 | 1.625 |
| A3 | 6.1389 | 2.8889 |
| A4 | 1.625 | 1.625 |
| A5 | 7.2944 | 3.25 |
| A6 | 2.383333 | 1.3 |
| A7 | 8.8472 | 3.2500 |
| A8 | 5.958333 | 4.333333 |
| A9 | 12.8556 | 4.875 |
| A10 | 3.25 | 3.25 |
| A11 | 8.883333 | 4.333333 |
| A12 | 3.5028 | 1.4444 |
| A13 | 8.3056 | 3.2500 |
| A14 | 15.8889 | 6.5 |
| A15 | 9.8222 | 3.25 |
| **MIN** | **0** | **0** |
| **MAX** | **15.88889** | **6.5** |

Source: Research Result (2023)

**5) Determining the ranking index.**
With the following formula:

$$Q_i = \left[ \frac{s_i - s^-}{s^+ - s^-} \right] V + \left[ \frac{R_i - R^-}{R^+ - R^-} \right] (1 - v) \quad (4)$$

Table 5 Indeks Value

| Alternative | (Q) Indeks Value | RANK |
|---|---|---|
| A1 | 0 | 1 |
| A2 | 0.1864 | 4 |
| A3 | 0.4154 | 7 |
| A4 | 0.1761 | 3 |
| A5 | 0.4795 | 8 |
| A6 | 0.1750 | 2 |
| A7 | 0.5284 | 11 |
| A8 | 0.5208 | 10 |
| A9 | 0.7795 | 14 |
| A10 | 0.3523 | 6 |
| A11 | 0.6129 | 13 |
| A12 | 0.2213 | 5 |
| A13 | 0.5114 | 9 |
| A14 | 1.0000 | 15 |
| A15 | 0.5591 | 12 |

Source: Research Result (2023)

From table 5 show that the final result of selecting exemplary teachers using the VIKOR method yields alternatives A1, A6, and A4 as alternatives with the minimum Q value, which are ranked the best.

**6) Determining the compromise solution value.**

To determine the compromise solution, the following formula is used:

$$Q\ (A(2)) - Q\ (Q(1)) \geq DQ \qquad (5)$$

$$DQ = \frac{1}{(m-1)}$$

Where m represents the total number of alternatives. In this compromise solution, the alternatives used to indicate the first and second ranks are alternatives $A_1$ and $A_2$ from the ranking.

$$DQ = \frac{1}{(15-1)} = \frac{1}{14} = 0.0714$$

$$Q(A2) - Q(A1) = 0.1864 - 0 = 0.1864$$

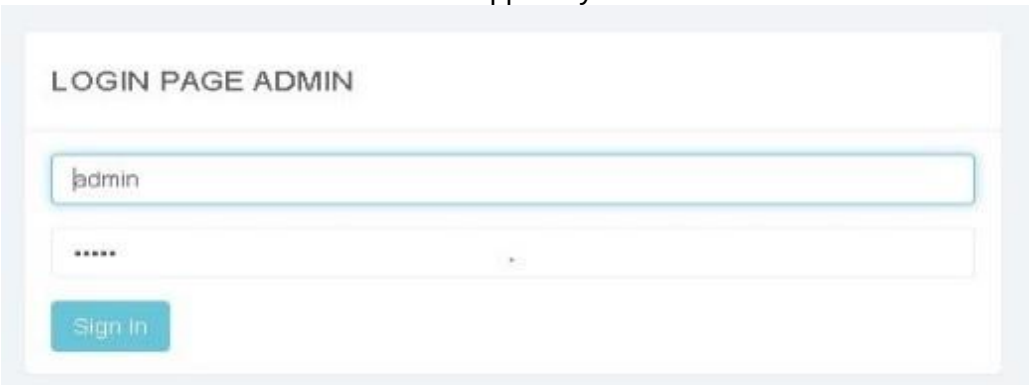
Based on the calculations above, the result obtained is 0.1864 ≤ 0.0714. Considering the difference value between alternative $A_2$ and $A_1$ which yields a larger value than the DQ value, the condition of acceptable advantage is fulfilled.

## 3. Results and Analysis

### 3.1. System Implementation

#### 1) Login Page

On the admin and user login pages, one must input the username and password first to access the decision support system.




Source: Research Result (2023)

Figure 2 Admin Login Page


Source: Research Result (2023)

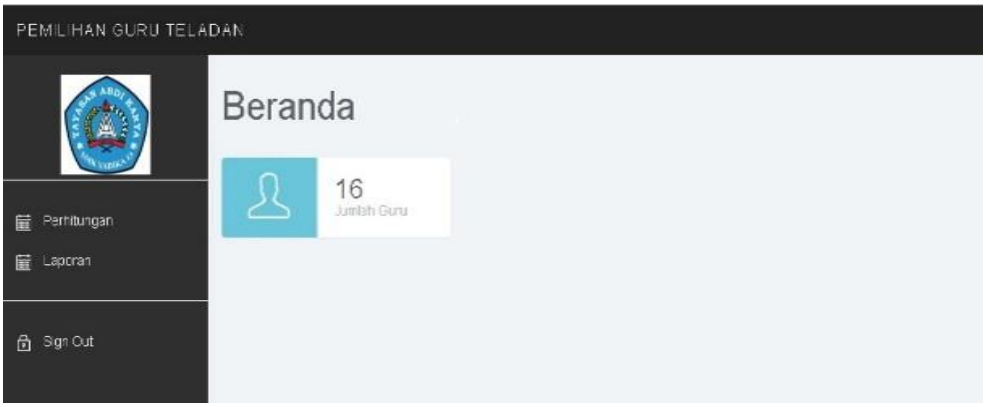
Figure 3 Student Login Page

#### 2) Dashboard Page

After logging in as admin or user, the system will automatically display the dashboard page containing teacher data, criteria data, calculations, and reports.


Source: Research Result (2023)

Figure 4 admin Dashboard Page




Source: Research Result (2023)

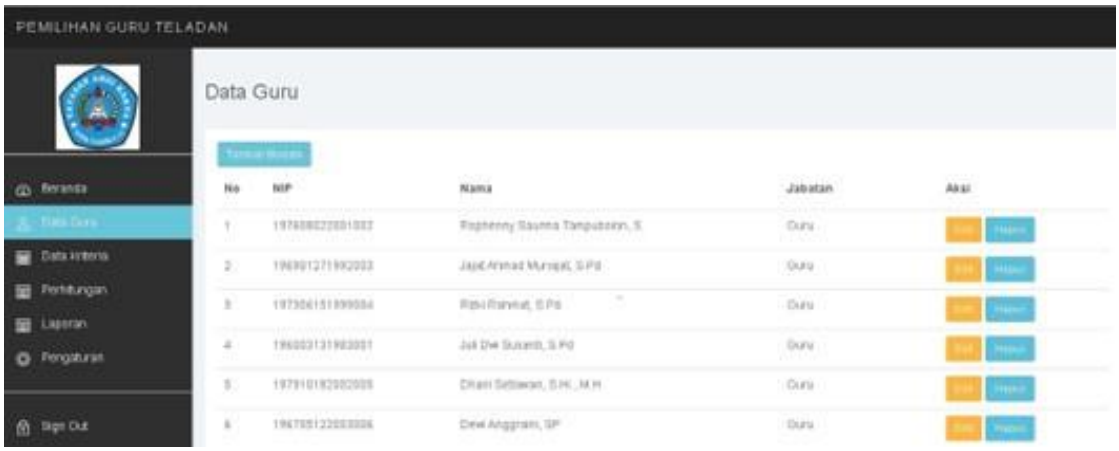
Figure 5 Principal's Dashboard Page


Source: Research Result (2023)

Figure 6 Teacher Evaluation Interface

**3) Teacher Data Page**

Upon displaying the dashboard page, the admin can choose the 'teacher data' menu, which contains teacher information. The admin can add, delete, and modify teacher data as follows:

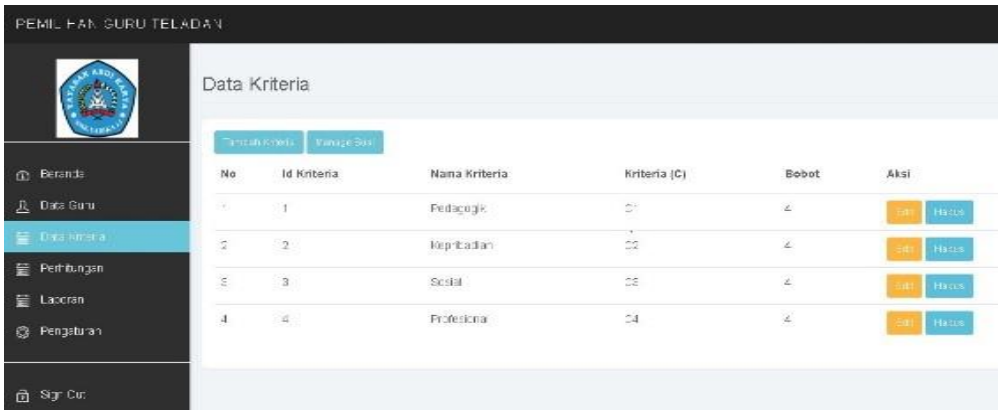



Source: Research Result (2023)

Figure 7 Teacher Data Page

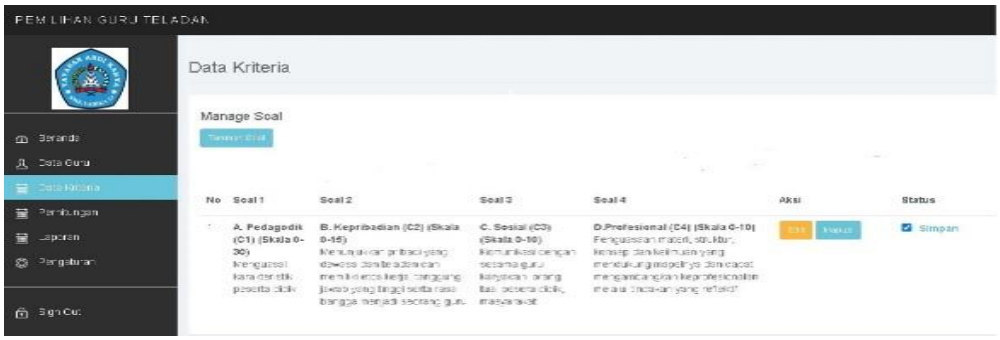
**4) Criteria Data Page**

After entering teacher data, the admin can also access the 'criteria data' menu. On this page, there are criteria used as parameters for assessing exemplary teachers. The admin can add, delete, and modify criteria data. Besides criteria data, this page also includes a 'manage questions' menu, which contains questionnaires used for assessing exemplary teachers, to be filled out by students as follows:




Source: Research Result (2023)

Figure 8 Criteria Data Page




Source: Research Result (2023)

Figure 9 The Assessment Question Page

**5) Calculation Page**

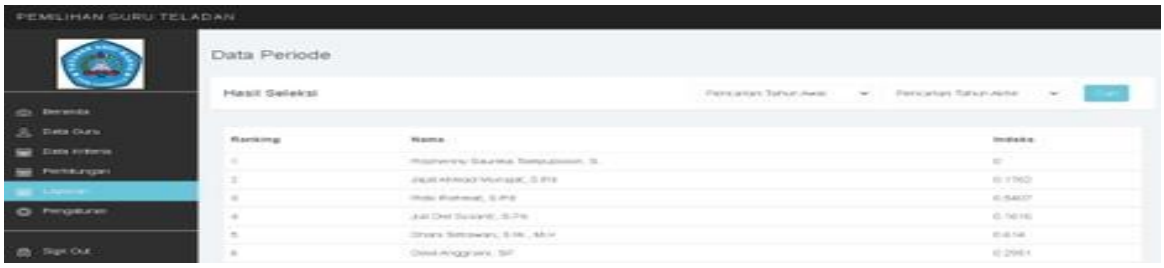
Once teacher and criteria data are entered, the admin can access the 'calculations' menu, which contains scores representing the assessment points given by students to the subject teachers they choose. After that, the admin can calculate all these points to determine the exemplary teachers as follows:


Source: Research Result (2023)

Figure 10 Calculation Result Page

**6) Report Page**

On the report page, there is an assessment result containing Evaluations. The admin can search for assessment results based on a period and can print out these assessment results.




Source: Research Result (2023)

Figure 11 Assessment Report Page

**7) Teacher Assessment Page**

The teacher assessment page contains evaluations to be filled out by students for the selected teachers


Source: Research Result (2023)

Figure 12 Teacher Assessment Page

## 4. Conclusion

The study on the decision support system for selecting exemplary teachers through the VIKOR method at SMK Yadika 13 Tambun lead to several key conclusions. Firstly, the presence of a decision support system significantly aids and streamlines the exemplary teacher selection process. Secondly, the introduction of this system brings about computerization in the assessment of exemplary teachers. Lastly, the decision support system proves effective in minimizing challenges encountered during the selection process of exemplary teachers. Overall, these findings underscore the positive impact of the decision support system in enhancing efficiency and mitigating issues in the selection of exemplary teachers at SMK Yadika 13 Tambun.

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## Author Contributions

Dwipa Handayani, Gabriella Putri Larasati proposed the topic; Dwipa Handayani, Gabriella Putri Larasati proposed the research framework; Dwipa Handayani, Ozzi Ardhiyanto, Gabriella Putri Larasati Compiling a Research Journal.

## Conflicts of Interest

The author declare no conflict of interest.

## References

Afrizal Purba, M., & Defriyando, A. (2020). Pemanfaatan Teknologi Informasi dalam Pendidikan dan Pembelajaran di Era Revolusi Industri 4.0. *Prosiding Seminar Nasional Ilmu Sosial Dan Teknologi (SNISTEK)*, *September*, 96–101.

Anggardi, H. T., Seto, A. B., Prayoga, A. A., & Ihsan, F. Al. (2022). Peran Teknologi Informasi dalam Pendidikan di SMP Negeri 5 Tangerang Selatan. *Jurnal Pengabdian Masyarakat*, *1*(11), 1321–1324.

Astuti, W., Wati, M., & Kamila, V. Z. (2021). Sistem Pendukung Keputusan Pemilihan Taman Kanak-Kanak di Wilayah Kabupaten Kutai Kartanegara Menggunakan Metode AHP-VIKOR. *Jurnal Rekayasa Teknologi Informasi (JURTI)*, *5*(1), 83. https://doi.org/10.30872/jurti.v5i1.5771

Eliza, D., Sriandila, R., Fitri, D. A. N., & Yenti, S. (2022). Membangun Guru yang Profesional melalui Pengembangan Profesionalisme Guru dalam Penerapan Profesinya. *Jurnal Basicedu*, *6*(3), 5362–5369. https://doi.org/10.31004/basicedu.v6i3.2878

Hazmi, N. (2019). Tugas Guru dalam Proses Pembelajaran. *Journal of Education and Instruction (JOEAI)*, *2*(1), 56–65. https://doi.org/10.31539/joeai.v2i1.734

Husin, A. (2021). Guru Sebagai Profesi Kependidikan. *Seri Publikasi Pembelajaran*, *1*(2), 1–4.

Najib, M., Satria, D., & Korespondensi, P. (2023). Penerapan Metode Visekriterijumsko Kompromisno Rangiranje (VIKOR) Dalam Seleksi Kepala Gudang. *JURNAL MEDIA BORNEO*, *1*(2), 47–54. https://doi.org/10.58602/mediaborneo.v1i2.30

Prayitno, M. H., & Hiswara, A. (2021). Penerapan Višekriterijumsko Kompromisno Rangiranje (Vikor) Dalam Seleksi Penerimaan Beasiswa. *Explore:Jurnal Sistem Informasi Dan Telematika*, *12*(2), 232. https://doi.org/10.36448/jsit.v12i2.2198

Rahman, M. (2023). Menentukan Bantuan Warga Miskin Dengan Perbandingan Metode VIKOR dan TOPSIS. *Agustus*, *8*(1), 29–41. https://www.doi.org/10.22303/infosys.1.1.2021.01-10

Rani, P., Chakraborty, M. K., Sah, R. P. R. P. R. P., Subhashi, A., Disna, R., UIP, P., Chaudhary, D. P., Kumar, A. A. A. A. A., Kumar, R. R., Singode, A., Mukri, G., Sah, R. P. R. P. R. P., Tiwana, U. S., Kumar, B., Madhav, P., Manigopa, C., Z, A. H., Anita, P., Rameshwar, P. S., … Kumar, A. A. A. A. A. (2020). Dampak Sertifikasi Terhadap Kompetensi Pedagodik Guru (Studi Pemetaan PK) GPAI On-Line Tingkat SMA/SMK Provinsi Sumatera Selatan. *Range Management and Agroforestry*, *6*(2), 141–158. https://doi.org/10.1016/j.fcr.2017.06.020

Silalahi, L., & Naibaho, D. (2023). Pentingnya Kompetensi Sosial Guru Dalam Proses Pembelajaran. *Jurnal Ilmiah Multidisiplin*, *1*(1), 151–158. https://doi.org/10.62017/merdeka

Waluyo, A., & Fais Irfandi, N. (2019). Perancangan Sistem Pendukung Keputusan Pemilihan Pegawai Teladan Menggunakan Metode Saw (Simple Additive Weighting) Berbasis Web Di Dinas Penanaman Modal Dan Pelayanan Terpadu Satu Pintu Kabupaten Kebumen. *Jurnal E-Komtek (Elektro-Komputer-Teknik)*, *3*(2), 71–86. https://doi.org/10.37339/e-komtek.v3i2.132

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2. Rencana Kerja dan Anggaran Pembelanjaan Universitas Bhayangkara Jakarta Raya Tahun 2024.

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