IMPLEMENTATION OF PROFILE MATCHING AND LINEAR INTERPOLATION METHODS FOR WEB-BASED EMPLOYEE SELECTION SYSTEM OF PT BERDIKARI MEUBEL NUSANTARA

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Abstrak

Effective employee recruitment is paramount for a company's optimal functioning, highlighting its prowess in talent acquisition. PT BERDIKARI MEUBEL NUSANTARA historically employed manual recruitment processes, resulting in subjective decision-making for candidates with similar abilities. This research introduces a Decision Support System (DSS) to aid Human Resource professionals (HRD) in aligning their selection with the company's specific needs. Leveraging the Profile Matching and Linear Interpolation method, the DSS requires defined criteria to generate tailored recommendations, ensuring precision in candidate selection. Results reveal that the Profile Matching method with Linear Interpolation facilitates accurate recommendations based on core and secondary factors. Overall accuracy is significantly influenced by both factor categories, with candidates sorted by total scores, highlighting those with the highest cumulative scores.User Acceptance Testing demonstrated an impressive 99.33% effectiveness for the application, affirming its utility in employee selection. This decision support system emerges as a valuable tool, aligning employee choices with organizational needs and addressing the limitations of manual selection. Numerical analysis underscores the impact of core and secondary factors on decision accuracy, providing insights for future implementations.In conclusion, the Decision Support System enhances the recruitment process, delivering recommendations aligned with company expectations. The high acceptance rate positions this system as a valuable asset for streamlining employee selection. Looking forward, the research anticipates future advancements and refinements in decision support systems, contributing to ongoing improvements in employee recruitment methodologies.

Keyword : selection, employee, profile matching , linear interpolation

1. Pendahuluan

In the industrial era 4.0 like this, technological developments are increasing rapidly with the use of computers as a means of obtaining information and solving problems, the role of technology such as information systems is very important where information systems have become a friend in everyday life(Piron et al., 2024). To obtain maximum quality in a company must adopt information system technology in operational activities, especially to improve performance both in quantity and quality of human resources (Nicolas et al., 2021). In a company, ability is also a benchmark or consideration so that the company is run according to procedures or according to plans. A company of any kind is founded with the hope that one day it will become a large and rapidly growing agency. This hope is usually used as one of the visions for the future by considering many factors, both internal and external. The fact is that to develop according to what is desired, there are many obstacles that get in the way (Pebriana & Sihotang, 2023). According to Nurhuda et al in the Business Administration Journal, recruitment is a two-way communication. Applicants want accurate information about what it's like to work in an organization (Arfyantii et al., n.d.). Meanwhile, organizations really want accurate information about these applicants if they become employees in the future. Recruiting good employees is an opportunity to demonstrate the expertise of the company to get competent candidates (Purwantih et al., n.d.). Process of recruiting new employees at PT Berdikari Meubel Nusantara is carried out manually, taking an average of 6 to 8 weeks per position. This often results in subjective decisions, especially when prospective employees have relatively similar abilities. In an internal survey, around 70% of managers involved in this process stated that their decisions were influenced more by personal aspects or subjective preferences.

Conditions like this can be a source of potential problems for the company in the future. Employee satisfaction surveys show that 45% of employees recruited through manual processes experience a mismatch with their job expectations, which in turn can affect employee productivity and retention. However, by introducing qualitative elements into the hiring process, such as in-depth interviews, project evaluations, and personality

assessments, companies can gain deeper insight into each prospective employee's unique abilities and characteristics. This approach can help overcome inequities and subjectivity, ensuring that hiring decisions are based on more holistic and objective assessments. This combination of quantitative and qualitative methods is expected to reduce the error rate in recruitment and increase the match between the employees recruited and the company's needs(Puspitasari et al., n.d.).

Decision support system is a technological product that consists of a combination of individual intelligence sources with component capabilities to improve the quality of decisions. Decision support systems are also computer-based information systems for decision-making management that deal with semi-structural (Angeline & Astuti, n.d.). Besides that, according to (Kelen) decision support system is a decision-making process by using some data and certain models to solve some semi-structured problems. One method that can be used in making a decision-making system for hiring new employees is to use the Profile Matching method to provide recommendations in the form of new employees based on rank. By using the Profile matching method, it is possible to select new employees through predetermined criteria, by selecting the best alternative from several alternatives, then a ranking process is carried out to get the best alternative, namely new employees (Santika et al., n.d.). Profile matching is a method used in the comparison process between individual competitions and position competitions so that the differences can be identified. Apart from that according to (Nisa et al., 2021), Profile matching is a very important process in human resource management (HR) where competencies (capabilities) required by a position are determined first. In this case, profile matching will be used in determining new employee candidates. In the profile matching process, broadly speaking, it is a process of comparing individual competitions to position competitions so that the differences can be identified. In addition, the Linear Interpolation method is also used which is a method for determining values between the ranges of values generated based on the function of the equation. By combining 2 points, then the point between the 2 points that has been determined will be a straight-line approach and later a calculation can be carried out. Based on this explanation, the Linear Interpolation method will be used to calculate the weight value for each employee.

Based on the problems described above, the author proposes research with the title name "Implementation of Profile Matching and Linear Interpolation Methods for Web-Based Employee Selection System of PT. Berdikari Meubel Nusantara". In the research that will be carried out using a decision support system to make it easier for users to determine the best prospective employees according to company needs. Alternative decisions made will be very effective and accurate if using a decision support system application by determining several criteria such as age, gender, and others. The difference between the author and previous research is that there is an additional method in the form of linear interpolation which will support the profile matching method in making an objective and suitable decision according to needs.

2. Literature Review

2.1 Preview Research

Table 1 shows the previous research that is related to this research.

Table 1. Table Preview Research

No	Research Name	Research Object	Result
1	(Nicolas et al., 2021)	Employee PT. XYZ	Employee with the code A099, identified as Dadap Hardiansyah, achieved the highest score of 3,875. Consequently, Dadap Hardiansyah is eligible to receive the Best Employee Award at PT. XYZ, reflecting accurate research results based on the employee's capacity and quality.
2	(Kelen et al., 2022)	Prospective employees at PT.NSS Kefamenanu	After the calculations, five prospective employees were accepted at the company. Maria Magdalena Kima secured the highest points at 3,665, followed by Ansedelita, Elisabeth Sayo, Adelia, and Elestina with their respective points.
3	(Sulistiyono & Bernadhed, 2018)	Prospective employees	Ranking results indicate that the top position is held by the value 4.78, which is the highest. The consecutive second, third, and fourth positions have scores of 4.65, 4.63, and 4.60, respectively. These values are obtained from the simulation of the final result, which will be utilized in the decision support system.

2.2 Comparison between Previous Research

Prevoius research using the Profile Matching Method and Interpolation laid a solid foundation for enhancing employee selection processes. Building upon their work, this research aims to introduce advancements by incorporating more sophisticated

calculations, specifically by incorporating a multi-step approach to calculate weights for attributes.

While the author primarily utilized the Profile Matching and Interpolation methods, this research proposes an extension by introducing an additional step to calculate attribute weights before employing the interpolation method. The rationale behind this enhancement is to provide a more nuanced and accurate evaluation of employee attributes.

In contrast to the previous research, this study suggests incorporating a weighted profile matching approach. This involves assigning weights to each attribute based on their relative importance in the decision-making process. The assignment of weights can be achieved through expert opinions, surveys, or statistical analyses. Once attribute weights are determined, the Profile Matching Method is applied, considering the weighted values of each attribute.

Unlike previous research, which didn't incorporate Euclidean distance testing, this study proposes its inclusion to objectively measure the accuracy of the decision support system (Moslem & Pilla, 2023). Euclidean distance offers a quantitative evaluation, assessing how closely selected candidates align with the ideal employee profile. This addition enhances the reliability and accountability of the employee selection process, providing decision-makers with a more rigorous and objective tool for selecting the best candidates.

2.3 Decision Support System

Decision Support Systems, or in English better known as Decision Support Systems are usually built to support a solution to a problem or to an opportunity (Renfrew et al., 2024). Basically, the decision support system is a further development of a computerized management information system that is designed in such a way that it is interactive with the user. This interactive nature is intended to facilitate integration between various components in the decision-making process, such as procedures, policies, analytical techniques, experience and managerial insights to form a flexible and accurate decision framework (Niis Molo et al., n.d.)**.**

2.4 Profile Matching

Profile matching is a critical process in human resource management (HR) where the competencies required for a specific position or department are initially identified. In this case, let's consider a scenario in which a growing tech company is in the process of hiring new employees for a software development team. The HR department utilizes profile matching to align the skill sets and capabilities of potential candidates with the specific requirements of the job. The profile matching process involves a comprehensive comparison of individual competencies to the competencies deemed ideal for the position, allowing the identification of any gaps (Laurent et al., 2022). The Profile Matching (PM) method, as outlined by Tri Susilo in 2018, serves as a systematic approach for assessing individual competencies against the desired job competencies (Farzin et al., 2020). In this case, a smaller value of the gap signifies a closer alignment, resulting in a higher weight value. Essentially, the greater the weight value, the higher the likelihood that an individual will be considered for and succeed in securing the position. To put it into perspective, consider two candidates with similar educational backgrounds applying for a software developer role. Through profile matching, the HR team can analyze their specific programming languages, problem-solving abilities, and teamwork skills, ensuring a precise fit for the unique requirements of the software development position.

There are several stages of completion in the Profile Matching method, namely:

1. Determine aspects (criteria) and ideal value of each criterion.
2. GAP calculation (The difference between the profiles of each alternative and the standard profile or criterion value minus the ideal value

$$Gap = Criteria\ Value - Ideal\ Value \quad (1)$$

3. Mapping GAP value and will be shown in Table 2.

Table 2. Mapping Gap Value

GAP	Weight Value	Description
0	5	Competence as needed
1	4,5	Excess competence 1 level / level
-1	4	Competence lacks 1 level/level
2	3,5	Excess competence 2 level / level
-2	3	Competency lacks 2 level/level
3	2,5	Excess competence 3 level / level
-3	2	Competency lacks 3 level/levels
4	1,5	Excess competence 4 level / level
-4	1	Competency lacks 4 level/levels

4. Core Factor (CF) and Secondary Factor (SF) grouping in this profile matching method.

$$NCF = \frac{\sum NC}{\sum N} \quad (2)$$

Description:
NCF : Core factor average value
NC : Total value of the core factor
C : Total of core factor items

While the secondary factor aspect is an aspect other than the primary factor. Calculation is as follows

$$NSF = \frac{\sum NS}{\sum N} \quad (3)$$

Description:
NCF : Secondary factor average value
NC : Total value of the second factor
C : Total of secondary factor items

5. Calculation of Total Value (NT) value is obtained from the percentage of Core Factor (CF) and Secondary Factor (SF)

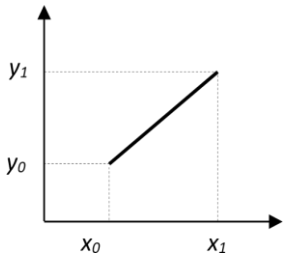
$$Nt = X\%\ NCF + X\%\ NSF \quad (4)$$

Description:
Nt : Total value
NCF: Core factor average value
NSF: Secondary factor average value
X%: Input percentage value

Ranking is done after the total aspect value is known, then the final stage is ranking. Ranking is obtained by sorting the highest total value to the lowest. Rank 1 object with the highest total value means that the object has the best performance and is entitled to receive the best object award.

2.5 Linear Interpolation

Interpolation, a method for determining values between two known data points using equation functions, stands as one of the most accessible and widely employed techniques for resolving various challenges(Ganguly et al., 2023). From ancient astronomy to the contemporary realm of digital image processing, interpolation has been proven instrumental. Linear interpolation, a specific form that relies on linear equations, plays a crucial role in this domain (Gede et al., 2021). Imagine a scenario where a meteorologist needs to estimate the temperature at a specific time between two recorded data points. Linear interpolation becomes a valuable tool, utilizing the known temperatures and corresponding times to predict the temperature at the desired moment. The linear equation, resembling a straight line on a graph, facilitates this calculation, showcasing the practicality of interpolation in real-world applications(Farzin et al., 2020). Linear interpolation is based on comparison theory and will be shown in Picture 1.



Picture 1. Linear Interpolation

6. Weight value is the number assigned to each criterion whose value is determined based on the results of linear interpolation.

$$W(x) = \frac{x-x1}{x0-x1}(max - min) + min \quad (5)$$

Description:
W(x) : Weight value for the input value x
x : Parameter values (values before interpolation) are derived from values.
$x0$: Smallest value range of parameter values
$x1$: Largest value range of parameter values
Max : Highest rating value of the assessment parameters for each criterion
Min : The lowest rating value of the assessment parameters for each criterion.

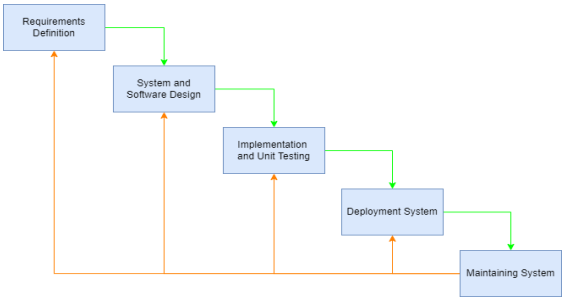
3. Research Methods

3.1 Resources Data

At the data collection stage used in this development, namely the face-to-face process directly to the working staff, the head of HRD PT Berdikari Meubel Nusantara. The data to be retrieved is data related to feature requirements that will be implemented in a web-based decision support system for selecting prospective employees. The data requirements to be retrieved are data related to features in the PT Berdikari Meubel Nusantara web-based decision support system such as access rights, determining criteria, core data and configuration factors.

3.2 Development Method

The software development method used in this research is the SDLC (Software Development Life Cycle) method with a prototyping model approach(Pinciroli et al., 2022). Scenario will be shown in Picture 2.



Picture 2. System Development Scenario

4. Result and Discussion

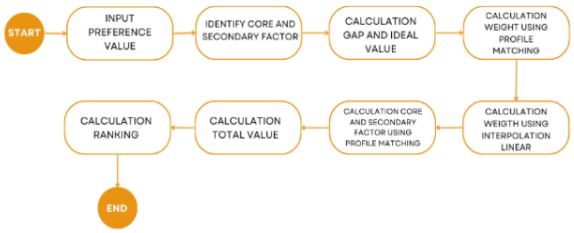
4.1 Data

At the data collection stage used in this development, namely the face-to-face process directly to the working staff, the head of HRD PT Berdikari Meubel Nusantara. The data to be retrieved is data related to feature requirements that will be implemented in a web-based decision support system for selecting prospective employees. The data requirements to be retrieved are data related to features in the PT Berdikari Meubel Nusantara web-based decision support system such as access rights, determining criteria, core data and configuration factors.

4.2 Data Processing Techniques

Data processing is carried out when the manual preference value and the actual choice preference value are inputted, then the system can perform data processing until the results of the recommendation for the selection of prospective employees come out through the results of the ranking of prospective employees recommended by the system (Ariyanto et al., n.d.). Input data from the user to the system will be processed using the profile matching method with linear interpolation with the scenario shown in Picture 3 below.

Picture 3. Data Processing Techniques



1. Starting with inputting the criteria according to the preferences of the user / HRD in the selection of prospective employees. The data that is entered is the actual data of the prospective employees where the actual data means the real data that exists.
2. Calculation of the gap value with an analysis of the actual value of the input and the ideal value. In this study, they are using 12 criteria along with their ideal values, as follows. In this research, there are 12 criteria for prospective employees and their ideal values and will be displayed in Table 3 as follows.

Table 3. Ideal Score Table

Criteria	Ideal Score
Education	4
Age	3
Gender	3
Experience As	3
Apply Job as Position	3
Apply For Division	3
How Long is the Linear Experience with That Field	4
Certification	3
Additional Experience	3
Confidence and Communication	3
Leadership, Directing, and Developing Others	4
Integrity and Commitment	3

3. Identification is related to input and is grouped based on core and secondary factors as in Table 4 below.

Table 4. Core and Secondary Factor

Core	Secondary
Experience	How Long is the Linear Experience with That Field
Apply Job as Position	Gender
Age	Certification
Apply For Division	Additional Skills
Confidence and Communication	Leadership and directing others
Education	Integrity and commitment

Then the magnitude of each core factor and secondary factor must also be determined. Here's they will be shown in Table 5.

Table 5. Factor Magnitude Table

Factor	Percentages (%)
Core Factor	75
Secondary Factor	25

Below is the actual value of each prospective employee that will be selected by the company. The range of scores that will be given is between 1 to 5, where each criterion is experience as, how long has the experience been, linear experience with the job candidate how long, age, education, gender, certification, additional skills, confidence and communication, leadership and directing others, integrity and commitment, as well as motivation and achievement. These values will be used as samples to determine gaps in the profile matching method and will be shown in Table 6 below.

Table 6. Actual value of prospective employee

Actual Criteria's Value S1 - S12												
Code	**S1**	**S2**	**S3**	**S4**	**S5**	**S6**	**S7**	**S8**	**S9**	**S10**	**S11**	**S12**
A001	3	4	2	5	3	3	3	3	1	4	5	5
A002	3	4	5	1	2	3	4	4	1	1	4	4
A003	5	3	4	3	2	5	5	3	1	4	1	3
A004	3	4	1	2	2	1	1	5	5	1	4	1
A005	3	4	1	5	4	4	3	4	3	5	2	3
A006	3	5	5	2	2	3	5	5	2	3	5	4
A007	5	2	3	4	1	2	2	1	3	4	3	1
A008	4	3	3	1	1	1	1	3	3	4	3	3
A009	1	5	2	2	2	4	1	4	3	3	2	2
A010	2	2	2	1	4	5	5	5	4	2	4	5
A012	4	2	4	4	1	1	2	1	2	3	1	1

4. GAP calculation and mapping

After getting the GAP value, the next step is to give a score to each gap value criterion as in Table 7 below.

Table 7. GAP calculation and mapping table

Criteria Gap Value S1 - S12												
Code	**S1**	**S2**	**S3**	**S4**	**S5**	**S6**	**S7**	**S8**	**S9**	**S10**	**S11**	**S12**
A001	-1	1	-1	2	0	0	-1	0	-2	1	1	2
A002	-1	1	2	-2	-1	0	0	1	-2	-2	0	1
A003	1	0	1	0	-1	2	1	0	-2	1	-3	0

A004	-1	1	-2	-1	-1	-2	-3	2	2	-2	0	-2
A005	-1	1	-2	2	1	1	-1	1	0	2	-2	0
A006	-1	2	2	-1	-1	0	1	2	-1	0	1	1
A007	1	-1	0	1	-2	-1	-2	-2	0	1	-1	-2
A008	0	0	0	-2	-2	-2	-3	0	0	1	-1	0
A009	-3	2	-1	-1	-1	1	-3	1	0	0	-2	-1
A010	-2	-1	-1	-2	1	2	1	2	1	-1	0	2
A012	0	-1	1	1	-2	-2	-2	-2	-1	0	-3	-2

5. Convert the Profile Matching weight value.

Table 8.Weight Criteria Table

Criteria Weight Value S1 - S12												
Code	**S1**	**S2**	**S3**	**S4**	**S5**	**S6**	**S7**	**S8**	**S9**	**S10**	**S11**	**S12**
A001	4	4,5	4	3,5	5	5	4	5	3	4,5	4,5	3,5
A002	4	4,5	3,5	3	4	5	5	4,5	3	3	5	4,5
A003	4,5	5	4,5	5	4	3,5	4,5	5	3	4,5	2	5
A004	4	4,5	3	4	4	3	2	3,5	3,5	3	5	3
A005	4	4,5	3	3,5	4,5	4,5	4	4,5	5	3,5	3	5
A006	4	3,5	3,5	4	4	5	4,5	3,5	4	5	4,5	4,5
A007	4,5	4	5	4,5	3	4	3	3	5	4,5	4	3
A008	5	5	5	3	3	3	2	5	5	4,5	4	5
A009	2	3,5	4	4	4	4,5	2	4,5	5	5	3	4
A010	3	4	4	3	4,5	3,5	4,5	3,5	4,5	4	5	3,5
A012	5	4	4,5	4,5	3	3	3	3	4	5	2	3

6. Calculation of weight values using the linear interpolation method

Then the weight data using the profile matching method will be processed again for a more accurate and appropriate weight determination using the linear interpolation method.With the sample example on employee code A001. Then the result is in Table 9 below.

Table 9.Interpolation weight value of prospective employees

Criteria	Weight Value	Linear Interpolation Calculations
Experience	4	y = (4-5)/(1-5) (5-3)+3=3,5
Apply Job as Position	4,5	y = (4,5-5)/(1-5) (5-3)+3=3,25
Linear experience with job candidates how long	4	y = (4-5)/ (1-5) (5-3) +3=3,5
Age	3,5	y = (3,5-5)/ (1-5) (5-3) +3=3,75
Education	5	y = (5-5)/ (1-5) (5-3) +3=3
Gender	5	y = (4-5)/ (1-5) (5-3) +3=3,5
Certification	4	y = (4-5)/ (1-5) (5-3) +3=3,5
Apply Job as Position	5	y = (5-5)/ (1-5) (5-3) +3=3
Additional Skills	3	y = (3-5)/ (1-5) (5-3) +3=4
Confidence and Communication	4,5	y = (4,5-5)/ (1-5) (5-3) +3=3,25
Leadership and directing others	4,5	y = (4,5-5)/ (1-5) (5-3) +3=3,25
Integrity and commitment	3,5	y = (3,5-5)/ (1-5) (5-3) +3=3,75

By using the calculation process in Table 10 above, the following results are obtained:

Table 10. Criteria interpolation weight table

Interpolation Weight Value S1 - S12												
Code	**S1**	**S2**	**S3**	**S4**	**S5**	**S6**	**S7**	**S8**	**S9**	**S 10**	**S 11**	**S 12**
A001	3,5	3,3	3,5	3,8	3	3	3,5	3	4	3,3	3,3	3,8
A002	3,5	3,3	3,8	4	3,5	3	3	3,3	4	4	3	3,3
A003	2,4	2	2,4	2	2,7	3,1	2,4	2	3,5	2,4	4,3	2
A004	2,7	2,4	3,5	2,8	2,7	3,5	4,3	3,1	3,1	3,5	2	3,5
A005	3,5	3,3	4	3,8	3,3	3,3	3,5	3,3	3	3,8	4	3
A006	3,9	4,1	4,1	3,9	3,9	3,5	3,7	4,1	3,9	3,5	3,7	3,7
A007	3,3	3,5	3	3,3	4	3,5	4	4	3	3,3	3,5	4
A008	2	2	2	3,5	3,5	3,5	4,3	2	2	2,4	2,8	2
A009	4,3	3,1	2,8	2,8	2,7	2,4	4,3	2,4	2	2	3,5	2,8
A010	4	3,5	3,5	4	3,3	3,8	3,3	3,8	3,3	3,5	3	3,8
A012	2	2,8	2,4	2,4	3,5	3,5	3,5	3,5	2,8	2	4,3	3,5

7. Calculation of Core Factor and Secondary Factor values for each prospective employee

The next stage is to find the value of the core factor and secondary factor. An example of how to calculate it using prospective employee A001 as an example is Table 11 follows.

Table 11. Core Factor dan Secondary Factor prospective Employee A001

Core factor	Interpolation Weight Value	Secondary factor	Interpolation Weight Value
Education (S1)	3,5	Gender (S3)	3,25
Age (S2)	3,5	How Long is the Linear Experience with That Field (S7)	3
Experience As(S4)	3,75	Certification (S8)	3,5
Apply Job as Position (S5)	3	Additional Skills	3
Apply For Division (S6)	4	Leadership, Directing, and Developing Others (S11)	3,25
Confidence and Communication	3,25	Integrity and Commitment (S12)	3,75

Based on the grouping of core factors and secondary factors in the table of core factors and secondary factors for prospective employee A001, the core factor (NCF) for prospective employee A001 is as follows :

$$NCF = \frac{3.5 + 3.5 + 3.75 + 3 + 4 + 3.25}{6} = 3.5$$

Meanwhile, the secondary factor (NSF) value for prospective A001 employees is as follows:

$$NSF = \frac{3.25 + 3 + 3.5 + 3 + 3.25 + 3.75}{7} = 3.291$$

Meanwhile, the secondary factor (NSF) value for prospective A001 employees is Table 12 as follows:

Table 12.Core Factor and Secondary Factor score

Code	NCF	NSF	Nt
A001	3,5	3,291667	3,447917
A002	3,791667	3,125	3,625
A003	2,5625	2,625	2,578125
A004	3,0625	3,125	3,078125
A005	3,541667	3,375	3,5
A006	3,84375	3,78125	3,828125
A007	3,291667	3,75	3,40625
A008	2,5625	2,75	2,609375
A009	2,75	3,0625	2,828125
A010	3,583333	3,5	3,5625
A012	2,5	3,5	2,75

8. Calculation of the total value of each prospective employee

After the NCF and NSF of each employee candidate is known, the next step is to find the total value of NCF and NSF using employee candidate A001 as an example of calculation, as follows.

$$Nt = 0.75 * NCF + 0.25 * NSF$$
$$Nt = (0.75 * 3.5) + (0.25 * 3{,}29167)$$
$$Nt = 3{,}447$$

75% for the Core Factor and 25% for the Secondary Factor comes from the input value from the researcher

By using the calculation method above, the NCF and NSF of each ka candidate are Table 13 as follows:

Table 13. Total value of each prospective employee

Code	NCF	NSF
A001	3,5	3,291667
A002	3,791667	3,125
A003	2,5625	2,625
A004	3,0625	3,125
A005	3,541667	3,375
A006	3,84375	3,78125
A007	3,291667	3,75
A008	2,5625	2,75
A009	2,75	3,0625
A010	3,583333	3,5
A012	2,5	3,5

9. Determining the ranking of the best prospective employees After knowing the total value of each prospective employee, the final stage is to rank by sorting the highest total value to the smallest total value. Prospective employees with the largest total value are prospective employees who have the potential to be recruited by students. The following is the ranking table like Table 14 below:

Table 14. Prospective Employee Ranking

Code	NCF	NSF	Nt	Ranking
A001	3,5	3,291667	3,447917	5
A002	3,791667	3,125	3,625	2
A003	2,5625	2,625	2,578125	11
A004	3,0625	3,125	3,078125	7
A005	3,541667	3,375	3,5	4
A006	3,84375	3,78125	3,828125	1
A007	3,291667	3,75	3,40625	6
A008	2,5625	2,75	2,609375	10
A009	2,75	3,0625	2,828125	8
A010	3,583333	3,5	3,5625	3
A012	2,5	3,5	2,75	9

4.3 Testing

a. System Functional Testing Recommendation

Table 15. Functional Testing Recommendations

No.	Features	Expected Result	Result Obtained	Result
1	Fill in the manual preference form	At the time of clicking the dropdown in each criteria match	Successfully dropdown on each suitable criteria	Passed
2	Button use preset	Switches to the preset page when the button is pressed	Successfully switches to the preset page when the button is pressed	Passed
3	Recommendation button	Switch to the recommendation page when the button is pressed a list of recommendation results appears	Successfully switch to the recommendation page when the button is pressed a list of recommendations results appears	Passed
4	View actual data button	Switches to the actual score page when the button is pressed	Successfully switches to the actual score page when the button is pressed	Passed

b. Change Password

Table 16. Change Password Functional Testing

No.	Features	Expected Result	Result Obtained	Result
1	Form My profile, change password	Fill in my profile and change password	Successfully fill in my profile and change password	Passed
2	Button Save my profile and change password	Can save my profile and change password	Successfully able to save Myprofile data and Change Password when the button is pressed	Passed

c. User Acceptance Testing

Table 17. System assessment questionnaire table

Question	*score*				
	1	2	3	4	5
Is the view Easy to use website interface?	☐	☐	☐	☐	☐
Are all the features on the website easy to operate?	☐	☐	☐	☐	☐
Is information or how-to for easy recommendations understood?	☐	☐	☐	☐	☐
Are the calculation results are as expected by entering the appropriate criteria	☐	☐	☐	☐	☐
Is the recommendation feature function easy to use?	☐	☐	☐	☐	☐
Are the business process or program flow is as expected by the partner (PT Berdikari Meubel Nusantara)	☐	☐	☐	☐	☐

Result every question :

- Is the website interface easy to use??
  The sentence presents a calculation method for a score based on an average. It involves multiplying numbers 1 through 5 by specific factors. In this case, factors for numbers 1 to 4 are 0, and for 5, it's 3. The sum of these products is 15. To find the average, this sum is divided by the count of non-zero factors, which is 1 (only for 5). Consequently, the final calculated average is 15. In essence, the calculation combines multiplication with a subsequent averaging step to arrive at a score of 15.
- Are all the features on the website easy to operate?
  The sentence outlines a scoring calculation based on an average, employing a specific formula: (1x0) + (2x0) + (3x0) + (4x1) + (5x2) divided by 3, resulting in an average score of 4.6. In this detailed analysis, it's observed that the multiplication of numbers 1 to 3 yields 0, given the factors of 0. For the number 4, multiplied by 1, the result is 4, and for 5, multiplied by 2, the result is 10. The cumulative sum of these values is 14, which, when divided by the count of non-zero factors (3), yields an average score of approximately 4.6, rounded to one decimal place. Thus, the calculation method involves assigning specific factors to each number, culminating in an average score that reflects the weighted contribution of each element.
- Are the calculation results as expected by entering the appropriate critcriteria? The given sentence describes a score calculation based on an average, utilizing the formula (1x0) + (2x0) + (3x0) + (4x0) + (5x3) divided by 3, yielding a result of 5. In this analysis, it is observed that the factors for numbers 1 through 4 are 0, resulting in zero contributions to the sum. However, the factor for 5 is 3, leading to a significant contribution to the total score. The sum of these products is 15, and when divided by the count of non-zero factors (3), the average score is calculated to be 5. This implies that the score is primarily influenced by the multiplier assigned to the number 5, resulting in a final average score of 5. The calculation underscores the weighted impact of individual factors on the overall score.
- Is the recommendation feature function easy to use? The provided sentence describes a score calculation through averaging, utilizing the formula (1x0) + (2x0) + (3x0) + (4x0) + (5x3) divided by 3, resulting in a calculated average score of 5. In this analysis, it is notable that the factors for numbers 1 through 4 are all 0, indicating no contribution to the overall sum from these values. However, the factor for the number 5 is 3, resulting in a substantial impact on the total score. The sum of these products is 15, and when divided by the count of non-zero factors (3), the average score is precisely 5. This calculation highlights the significance of the multiplier assigned to the number 5 in determining the overall average score.
- Are the business process or program flow as expected by the partner (PT Berdikari Meubel Nusantara)? The given statement describes a score calculation based on an average, using the formula (1x0) + (2x0) + (3x0) + (4x0) + (5x3) divided by 3, resulting in a computed average score of 5. In this analysis, it is evident that the factors for numbers 1 through 4 are all 0, signifying no contribution to the overall sum from these values. However, the factor for the number 5 is 3, exerting a substantial impact on the total score. The sum of these products equals 15, and when divided by the count of non-zero factors (3), the average score is precisely 5. This calculation underscores the noteworthy influence of the multiplier assigned to the number 5 in determining the final average score.

5. Conclusion

In conclusion, the quantitative analysis of the research results reveals a remarkable level of success in the development and implementation of the recommendation support system for selecting prospective employees using the Profile Matching method with Linear Interpolation. The assessment, based on the percentage of each aspect from the feedback of the three respondents, resulted in an average value of 99.33% (Masudin et al., 2023). This falls within the 80% - 100% value interval category, indicating that the application is exceptionally well-received by users (Indy, 2015).

The research findings demonstrate that the decision support system effectively addresses the challenges faced by PT Berdikari Meubel Nusantara in the manual selection process. The system aims to

provide accurate recommendations for prospective employees, especially in cases where their abilities are closely matched, reducing the subjectivity of decisions. The proposed decision support systems successfully generate recommendation ratings for prospective employees that align with the company's needs.

Furthermore, the research highlights that the user interface of the decision support system meets user expectations, as evidenced by the test results. The potential for future development lies in adapting the system into a mobile application, offering enhanced flexibility for users. The integration of the system with PT Berdikari Meubel Nusantara's parent application is also anticipated in the future.

Despite the success achieved, some shortcomings were identified in the recommendation system. To address these, future development should focus on creating additional features for selected candidates to easily access sorted and selected data. Moreover, the system can be further improved by separating employees based on their respective divisions, enhancing the overall functionality and user experience of the application.

References :

Angeline, M., & Astuti, F. (n.d.). Sistem Pendukung Keputusan Pemilihan Karyawan Terbaik Menggunakan Metode Profile Matching. http://stmb-multismart.ac.id/ejournal

Arfyantii, I., Nurhuda, A., Utama, P., Suwatno, Y., Informasi, S., Cipta, W., Samarinda, D., & Yamin, J. M. (n.d.). Pemilihan Distributor dengan Metode Analytical Hierarchy Process Studi Kasus: Toko Al-Baik Collection.

Farzin, S., Chianeh, F. N., Anaraki, M. V., & Mahmoudian, F. (2020). Introducing a framework for modeling of drug electrochemical removal from wastewater based on data mining algorithms, scatter interpolation method, and multi criteria decision analysis (DID). Journal of Cleaner Production, 266. https://doi.org/10.1016/j.jclepro.2020.122075

Ganguly, S., Doshi, M. K., Chatterjee, D., & Banavar, R. (2023). An illustration of a quasi-interpolation driven technique for feedback synthesis. IFAC-PapersOnLine, 56(2), 7498–7502. https://doi.org/10.1016/j.ifacol.2023.10.643

Gede, I., Sudipa, I., Komang, I., Ganda Wiguna, A., Tri, N., Putra, A., & Hardiatama, K. (2021). Implementasi Metode Analytical Hierarchy Process Dan Interpolasi Linier Dalam Penentuan Lokasi Wisata Di Kabupaten Karangasem. In Jurnal Sains Komputer & Informatika (J-SAKTI (Vol. 5, Issue 2).

Kelen, Y. P. K., & Manek, S. S. (2019). Sistem Pendukung Keputusan Pemberian Kredit Sepeda Motor Menggunakan Metode Simple Additive Weighting (SAW) Pada PT. NSS Cabang Kefamenanu. 5(2). http://ejournal.fikom-unasman.ac.id

Laurent, F. X., Fischer, A., Oldt, R. F., Kanthaswamy, S., Buckleton, J. S., & Hitchin, S. (2022). Streamlining the decision-making process for international DNA kinship matching using Worldwide allele frequencies and tailored cutoff log10LR thresholds. Forensic Science International: Genetics, 57. https://doi.org/10.1016/j.fsigen.2021.102634

Masudin, I., Restuputri, D. P., & Syahputra, D. B. (2023). Analysis of Financial Technology User Acceptance Using the Unified Theory of Acceptance and Use of Technology Method. Procedia Computer Science, 227, 563–572. https://doi.org/10.1016/j.procs.2023.10.559

Moslem, S., & Pilla, F. (2023). Addressing last-mile delivery challenges by using euclidean distance-based aggregation within spherical Fuzzy group decision-making. Transportation Engineering, 14. https://doi.org/10.1016/j.treng.2023.100212

Nicolas, P. P., Soetanto, H., Wahyudi, W., & Rossi, A. (2021). Sistem Pendukung Keputusan Pemilihan Karyawan Terbaik pada PT. XYZ dengan Metode Profile Matching dan Interpolasi. *Jurnal Sistem Dan Teknologi Informasi (Justin)*, *9*(2), 121. https://doi.org/10.26418/justin.v9i2.44159 >

Niis Molo, Y., Kelen, Y. P., & Rema, Y. O. (n.d.). Sistem Pendukung Keputusan Penerimaan Karyawan Baru Dengan Metode Profile Matching Berbasis Website Studi Kasus: PT.NSS Kefamenanu. *16*(1).

Nisa, K., TPY, T. P. Y., & Natasha Putri, D. (2021). Penerapan Metode Profile Matching Dalam Sistem Pendukung Keputusan Pemilihan Karyawan Terbaik Pada CV. Karya Alam. Jurnal Ilmu Komputer, 10(2), 73–77. https://doi.org/10.33060/jik/2021/vol10.iss2.215

Pebriana, K., & Sihotang, F. P. (2023). Sistem Pendukung Keputusan Penentuan Agent Terbaik Menggunakan Metode Topsis Decision Support System for Determining the Best Agent Using the Topsis Method. In JTSI (Vol. 4, Issue 1).

Pinciroli, F., Barros Justo, J. L., & Forradellas, R. (2022). Systematic mapping study: On the coverage of aspect-oriented methodologies for the early phases of the software development life cycle. In Journal of King Saud University - Computer and Information Sciences (Vol. 34, Issue 6, pp. 2883–2896).

King Saud bin Abdulaziz University. https://doi.org/10.1016/j.jksuci.2020.10.029

Sulistiyono, M. (2018). Implementasi Sistem Pendukung Keputusan Seleksi Penerimaan Karyawan Baru Dengan Metode Profile Matching. Jurnal Teknologi Informasi, 3.

Piron, M., Wu, J., Fedele, A., & Manzardo, A. (2024). Industry 4.0 and life cycle assessment: Evaluation of the technology applications as an asset for the life cycle inventory. Science of The Total Environment, 916, 170263. https://doi.org/10.1016/j.scitotenv.2024.170263

Purwantih, H., Fuji Rahayu, Z., Amelia, W., Dwi, R., & Hilshie Maulida Bilqis, dan. (n.d.). Rancang Bangun Sistem Seleksi Rekrutmen Karyawan dan Guru Berbasis Website Pada Sekolah Citra Bangsa Tangerang.

Puspitasari, D., Yuli Ananta, A., Wicahya, E. V., Informasi, T., Informatika, T., & Malang, P. N. (n.d.). *JIP (Jurnal Informatika Polinema)* Sistem Pendukung Keputusan Pemilihan Dosen Berprestasi Jurusan Teknologi Informasi di Politeknik Negeri Malang.

Renfrew, D., Vasilaki, V., & Katsou, E. (2024). Indicator based multi-criteria decision support systems for wastewater treatment plants. In Science of the Total Environment (Vol. 915). Elsevier B.V. https://doi.org/10.1016/j.scitotenv.2024.169903

Santika, R. R., Kamila, A., Abdillah, M. I., & Hansen, S. (n.d.). Penerapan Metode Profile Matching Dalam Sistem Penunjang Keputusan Pemilihan Karyawan Terbaik Pada Lembaga Penyiaran Publik Televisi Republik Indonesia. *5*(1), 2020.