

AHP-SWARA Implementation Method for Evaluation and Selection Employee Promotion

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Abstract: The evaluation process of employee selection is very important for organizations that want to carry out quality leadership, the purpose of this study is to objectively prove the results of the selection of job promotions that have been evaluated continuously every time leadership occurs. The evaluation results of the leadership selection process become routine, so that the results of leadership promotions can provide improvisation to organizations that are increasingly advancing towards future leadership targets. The proposed method for the evaluation and selection process uses the Analytic Hierarchy Process (AHP) and specifically Stepwise Weight Assessment Ratio Analysis (SWARA). Both of these methods utilize expert intervention in providing input in providing assessments of multi-criteria and alternatives. So that the priority of the criteria is carried out by an index process similar to that owned by the two methods, thus providing more optimal results for decision-making support. The assessment of the results requires seven criteria and twenty-four alternatives. The results obtained require two index processes for both criteria and alternatives. The first rank is determined based on the weighting of the results of the calculation of seven criteria and alternative assessments from experts based on the eigenvector value obtained. The first rank of twenty-six employees was given to K20 with a weight of 0.932 and followed by K2 with a weight of 0.08. Thus, job promotion can be developed with a double index that can provide optimal results in supporting job promotion decision making.

Keywords: AHP, Eigenvector, Index, Multi-criteria, SWARA

INTRODUCTION

Building an organization is very important and of course requires professional staff in its leadership (Vieira & Joia, 2024). To maintain the company's progress, a thorough selection process is required (Ma et al., 2024), (Tømte, 2024) and continuously, a good leadership evaluation process is determined by the track record of employees through assessments by previous leaders who already have a lot of experience in leading organizations, so that it can be used as an expert assessment of the evaluation and selection process in the job promotion process (Boira Lopez & Connelly, 2024). Expert assessments are the determining factor in providing assessments based on a number of multi-criteria as a barometer for measurement.

Evaluation and selection assessment of job promotions requires seven criteria which include planning (PL), solution capture (SC), knowledge of job (KJ), reaction behavior (RB), quantity of works (QW), failed jobs (FJ), and dependability (DB). These criteria have differences in terms of the influence of decision-making support (Taylor et al., 2024). There are two types of criteria, some that provide added value to decisions and some that provide reduction in decision support. For criteria that provide added value to decision support, there are five leading criteria and two other last criteria that can reduce decision support. Through these criteria, the assessment is based on the importance value of the criteria (Nosal & Solecka, 2014) according to Saaty's rules, which are the pioneers of the Analytic Hierarchy Process (AHP) method, which can be used to assess criteria that have the highest value based on the eigenvector obtained (Akmaludin et al., 2024).

The calculation process is based on the assessment of the leader who provides input as an expert in providing the assessment, so that the assessment results are more objective and are not influenced by anyone and each expert has complete knowledge of both the criteria and the alternatives that will be given an assessment (Akmaludin et al., 2024). The criteria assessment system uses a comparison of the importance values of the criteria that have been filled in by the experts. The seven criteria that are compared use certain rules where each criterion that is compared, the results of the expert's assessment will be converted into several stages of the process, the total value of each criterion that is compared will be converted using an arithmetic scale with a predetermined scale (Akmaludin et al., 2023). The results of the arithmetic scale accumulation will be converted into a geometric scale and the results of the geometric scale will be converted into the AHP scale and ready to be entered into pairwise matrices to be

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calculated by carrying out the iteration process of matrices multiplication (Ogita & Aishima, 2020),(Gesmundo, 2016). The eigenvector acquisition value which is a measure of the number of iteration processes is determined based on the reduction of the eigenvector acquisition value which does not experience a difference in value, If there is still a difference in the eigenvector value at the iteration stage, then the matrices multiplication stage must be recalculated.

After the optimal eigenvector value is found, the calculation process for the consistency value will be carried out (Becker & Becker, 2024), (Furtado & Johnson, 2024). The consistencies that occur include consistency vector, consistency index, and consistency ratio (Liu, 2022). Consistency ratio is used to determine the value of λ max which is the average of the consistency ratio as the longest vector stacking that is the reference for using λ max. Consistency index can be obtained by following the rules of the number of orders in matrices in pairwise matrices that are formed into a matrices element to reach the final stage of obtaining the consistency ratio. To find the consistency ratio, a random index table is needed that has been adjusted by AHP experts who at that time were pioneered by Saaty (Donegan & Dodd, 1991). This plays a very important role in determining decision support whose value must be less than or equal to 0.1 which provides an understanding that decision support is acceptable and can be continued to the next stage. This understanding will be utilized to collaborate with other methods, in this study is the Stepwise Weight Assessment Ratio Analysis (SWARA) method.

This SWARA method is a collaboration with the AHP method to create new findings by applying the double index method, where both methods provide priority indexes to support decision making. AHP is used to provide an index to multi-criteria, while SWARA will be used to carry out the index process on alternatives. In this case, the index process is carried out in two stages or called a double index. Some common stages that are often carried out with the SWARA method are finding linguistic evaluations in the form of matrices to compile expert assessments of alternatives that will be totaled from each alternative to all expert assessment criteria that will be sorted based on the average value in descending order as the acquisition of alternative index values as comparative comparison values. This calculation process is the first stage as the basic material for the calculation process with the SWARA method.

In the second stage, the SWARA method forms a coefficient value based on the average value of each criterion to be indexed as the average index value which is a measure of the assessment with the rule that the largest index value becomes a reference value of one to carry out the recalculation process for the coefficient value. The highest value from the recalculation of the coefficient value is carried out in the same way as obtaining the first coefficient which is given a value of one at the highest index value. Until finally finding the final weight as a reference for the ranking process for alternatives. This process does require long and accurate steps to get support for decision making.

The contribution that can be drawn from the explanation of the discussion above is 1) The evaluation and selection process for job promotion can be developed into a double index through collaboration of the AHP method and the SWARA method which can be carried out accurately on a fairly large number of indexes seen from the number of alternatives used to obtain optimal decision-making support. 2) The application of collaborative decision-making support is very important to be developed by synthesizing the two different methods as applied in this study, what needs to be considered in this stage is making the criteria and alternatives must achieve optimal values by carrying out the index process as a placement of each object to be calculated into the mathematical calculation process to obtain decision support that can be accepted.

LITERATURE REVIEW

Analytic Hierarchy Process (AHP)

The Analytic Hierarchy Process (AHP) method is widely used to give priority through the object comparison stage by using the help of a scale to give importance to the objects being compared through a method that is determined to produce objective and acceptable decisions. The scale usage chart can be shown in Fig. 1 which is applied by converting three scales, namely the arithmetic scale (Dutta et al., 2024), skala geometric (Franek & Kresta, 2014), and AHP scale (Franek & Kresta, 2014) to carry out the calculation process to obtain temporary decisions or final decisions that are objective.

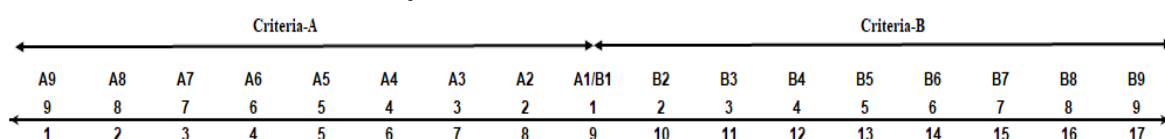


Fig 1. Conversion scale of AHP

By obtaining the comparative value, it will be arranged into a matrices as shown in (1) where the matrices elements are arranged according to the layout of each matrices element (Zhang et al., 2023). The correct

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compilation of element matrices will provide value to support decisions to be accurate and decisions to be objective.

$$M_{(r,s)} = \begin{bmatrix} a_{(1,1)} & a_{(1,2)} & a_{(1,3)} & \dots & a_{(1,s)} \\ a_{(2,1)} & a_{(2,2)} & a_{(2,3)} & \dots & a_{(2,s)} \\ a_{(3,1)} & a_{(3,2)} & a_{(3,4)} & \dots & a_{(3,s)} \\ \vdots & \vdots & \vdots & \ddots & \vdots \\ a_{(r,1)} & a_{(r,2)} & a_{(r,3)} & \dots & a_{(r,s)} \end{bmatrix} \tag{1}$$

To determine the number of comparisons produced in the formation of pairwise matrices, be it criteria, sub-criteria, and alternatives, it is necessary to know the formation of the number first by using (2) this ensures that the number of comparisons produced will be calculated by multiplying matrices with the same order, both rows and columns. The multiplication of matrices will measure the consistency value (vector, index, and ratio) where the consistency vector must go through the formation of the magnitude of the vector length value that is stacked into one to obtain the consistency index that can be searched through (3) and with the support of the number of matrices orders will provide the acquisition of consistency vectors that can be done using (4) but of course the consistency vector value requires a random index table listed in Table 1 which must be adjusted to the matrices elements with the number of orders, so it must be adjusted to the value of the number of matrices orders to be processed.

$$C = \frac{n*(n-1)}{2} \tag{2}$$

$$CI = \frac{(\lambda \max - n)}{(n-1)} \tag{3}$$

$$CR = \frac{CI}{RI} \tag{4}$$

The findings of this random index are adjusted to the number of respondents who act as experts who provide input on the assessment of the comparative value. Even many experts conduct tests on the determination of the random index that will be applied to the AHP method (Donegan & Dodd, 1991), The random index determination in Table 1 comes from the expert, namely Saaty, with the largest order value being ten, some even list up to an order of fifteen.

Table 1
Random Index

Ordo	1	2	3	4	5	6	7	8	9	10
RI	0.00	0.00	0.58	0.90	1.12	1.24	1.32	1.41	1.45	1.48

Obtaining the consistency ratio results from AHP can be done through two proof methods which state that the eigenvector value is said to be in an optimal position, namely:

The first approach uses the mathematical algebra matrices method (Orovitz et al., 2025) which is processed through the iteration stage of matrices multiplication until no difference in eigenvector values is found. The accuracy of this eigenvector value needs to be tested by subtracting the eigenvector value in the first iteration with the previous eigenvector and make sure there is no difference in value between them, if there is a difference then the multiplication must be repeated in the second iteration and then do the same thing, namely finding the difference in eigenvector value in the second iteration with the first iteration and make sure there is no difference in eigenvector value. If it is true that no difference in eigenvector value is found, then it can be stated that the eigenvector value has been obtained optimally.

The second approach uses assistance by using the expert choice application, where the data matrices elements are built like pairwise matrices entered in the expert choice application (Erdogan et al., 2017) with a shape like an upper triangular matrices (Matraś et al., 2024) and the expert choice application has done calculations like those in the mathematical algebra matrices method. The final result will show the eigenvector value that is included with the inconsistency value of the calculation process with the expert choice application. This is the real difference between the expert choice application (Yunus et al., 2013).

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Normalization of Dataset

At this stage, it is a general approach and is widely used by researchers to normalize datasets. This approach certainly takes into account the form of data to be normalized, the approach that can be used to carry out the normalization process can be done in several ways such as the utility approach in the MAUT method (Yunus et al., 2013), (Kang et al., 2022) and SMART (Akmaludin et al., 2022), approach by determining the max and min values as used with the TOPSIS method (Vern et al., 2024), and can also be done using the max and min approach by measuring data views that have opposite meanings as used in the VIKOR method (Yang & Chen, 2023), ELECTRE (Salvador et al., 2024), PROMETHEE (Alves et al., 2024) and other methods related to dataview normalization. In the discussion of this research, the second approach is used because many alternatives are used and are contradictory. The equations that can be done by paying attention to the nature of the criteria used which contain elements of benefit and cost. For criteria that have a benefit value, you can use (5) and for dataviews that are cost-based, you can use (6).

$$HB_{(i,j)} = \frac{(H_{(i,j)} - H'_{j'})}{(H^*_{j'} - H'_{j'})} \tag{5}$$

$$LB_{(i,j)} = \frac{(H_{(j)} - H^*_{(i,j)})}{(H^*_{j'} - H'_{j'})} \tag{6}$$

Stepwise Weight Assessment Ratio Analysis (SWARA)

The Stepwise Weight Assessment Ratio Analysis (SWARA) method is a method that is included in the knowledge-based model category (Deveci et al., 2023) with the index process arranged in descending order, namely the largest value will be positioned at the top. The SWARA method is discussed in this study regarding the ranking process with a fairly large number of indexes in its application (Akinlalu et al., 2024). Several stages that are the solution to the completion of the discussion that need to be known to understand the use of this method. Explanation of the stages of the SWARA method (Soltani & Mirzaei Aliabadi, 2023) adalah sebagai berikut:

The first step is to be able to compile a linguistic evaluation of the expert's assessment.

$$Q_k = \begin{bmatrix} 0 & Q_{12} & \dots & Q_{1n} \\ Q_{21} & 0 & \dots & Q_{2n} \\ \vdots & \vdots & \ddots & \vdots \\ Q_{n1} & Q_{n2} & \dots & 0 \end{bmatrix} \tag{7}$$

To find the initial criteria weight, add up each criterion based on each expert and divide the sum by the number of experts \bar{t}_j with the following equation.

$$\bar{t}_j = \frac{\sum_{k=1}^r t_{jk}}{r} \tag{8}$$

After that, sort the results from the largest to the lowest, then give a ranking for each criterion, with the highest score being ranked first. Looking for comparative interest values (S_j) starting from the second criterion, which divides the rank of that criterion by the average ranking. Then find the coefficient value k_j by adding 1 to each value S_j , so the first criterion is worth 1.

$$k_j = \begin{cases} 1, & j=1 \\ S_{j+1}, & j>1 \end{cases} \tag{9}$$

Recalculate the coefficient values Q_i on the criteria whose values

$k_j = 1$ will have Q_i is 1, while for the value

$k_j > 1$ namely by dividing the Q_i value in the previous criteria by the K_j value in the criteria being sought.

$$Q_i = \begin{cases} 1, & j = 1 \\ \frac{Q_{j-1}}{k_j}, & j > 1 \end{cases} \tag{10}$$

If $S_{j-1} = S_j, q_{j-1} = q_j$; If $S_j = 0, k_{j-1} = k_j$

Finding the final weight value W_{I_j} namely by dividing the value Q_j on the criteria sought with the total value Q_j

$$W_i = \frac{Q_j}{\sum_{j=1}^n Q_j} \tag{11}$$

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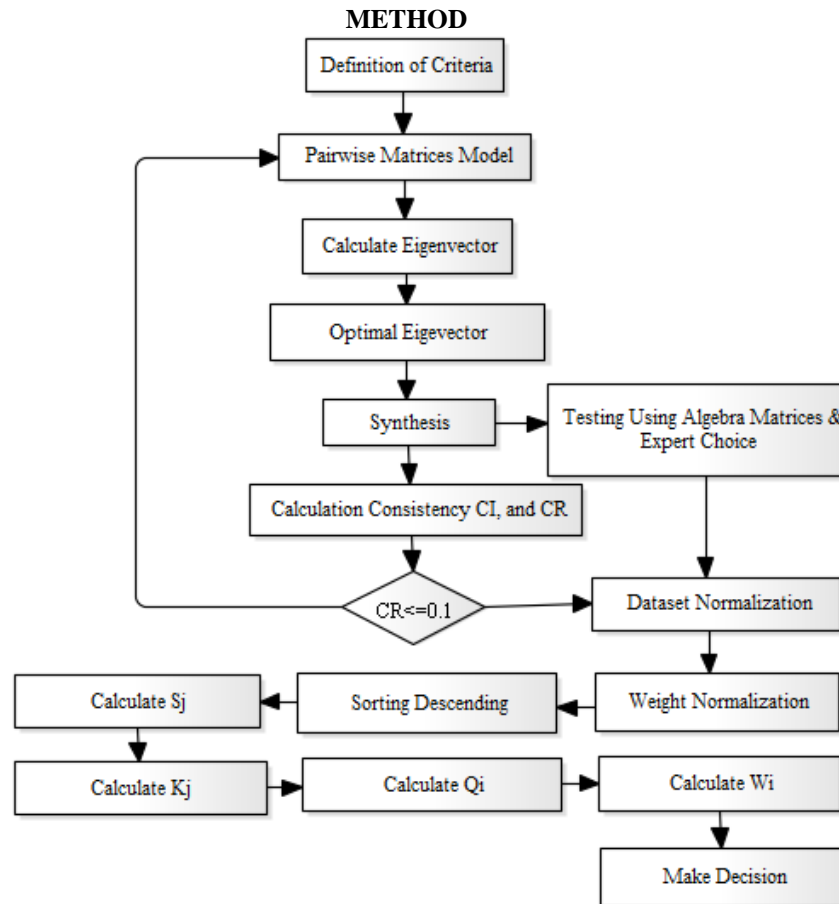


Fig. 2. AHP-SWARA Algorithm

RESULT

Preparations that must be made at the beginning of the process are determining a number of criteria that will be used as an evaluation process for selecting job promotions, there are seven criteria that are the measurement barometers as shown in Table 2. Divided into two criteria properties, some are benefit and cost. Benefit criteria will have an influence on increasing the value of the decision and cost criteria will certainly reduce the value of the decision. The calculation process of the nature of these criteria will have an influence when applied to the calculation process when collaborated with other methods, after obtaining the optimal eigenvector value using the AHP method. The application of the nature of the criteria will be shown when ranking based on the index with the SWARA method.

Table 2.
Criteria of Selection and Evaluation Employee Promotio

No.	Criteria	Acronime	Category
1.	Planning	PL	Benefit
2.	Solution Capture	SC	Benefit
3.	Knowledge of Jobs	KJ	Benefit
4.	Reaction Behavior	RB	Benefit
5.	Quantity of Works	QW	Benefit
6.	Failed Jobs	FJ	Cost
7.	Depandibility	DB	Cost

A number of inputs for the assessment of criteria from a number of company leaders who already have competence and experience in the company act as expert input. This assessment is a form of input to the evaluation and selection process for job promotions which are measured according to the scale rules listed in Fig. 1 while the layout of the data matrices elements can be done according to the rules listed in (1) and the number of comparisons of criteria that must be done using (2) with a total of twenty-one comparisons. The real application of the comparison of criteria can be seen in Table 3 which is used as the basis for determining the size of the criteria.

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This will be used as a percentage of the importance value of the criteria sorted based on the eigenvector value against a number of alternatives at the weight normalization process stage. The role of respondents in this study are leaders who have extraordinary experience in the company who act as input from experts totaling 40 personnel.

Table 3 Criteria comparison from pakar.

No.	Pairwise Comparison Key Criteria		Respondent								Converted Scale				
			(1)	(2)	(3)	(4)	(5)	.....	(37)	(38)	(39)	(40)	Math	Geomean	AHP
1	Planning	Solution Capture	A2	B3	B2	A1	B2	.....	A2	B1	A2	B3	9.328	9.328	1.328
			8	11	10	9	10	8	9	8	11				
2	Planning	Knowledge of Job	B4	B2	A2	B3	B2	.....	B3	B1	B3	A2	9.538	9.538	1.538
			12	10	8	11	10	11	9	11	8				
3	Planning	Reaction Behavior	B3	B1	B2	A2	A1	.....	A1	A2	B2	B4	9.571	9.571	1.571
			11	9	10	8	9	9	8	10	12				
4	Planning	Quantity of Work	B4	A1	B1	B3	A1	.....	B2	B1	A2	B2	9.405	9.405	1.405
			12	9	9	11	9	10	9	8	10				
5	Planning	Failed of Job	B2	B3	A2	B2	A1	.....	B4	A2	A4	B2	9.101	9.101	1.101
			10	11	8	10	9	12	8	6	10				
6	Planning	Depandibility	B4	A1	A2	B3	A1	.....	B2	B1	A2	A2	9.249	9.249	1.249
			12	9	8	11	9	10	9	8	8				
:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	
19	Quantity of Work	Failed of Job	A1	B1	B2	B2	B2	.....	A1	B1	A2	A2	9.025	9.025	1.025
			9	9	10	10	10	9	9	8	8				
20	Quantity of Work	Depandibility	B1	B2	A1	B2	B1	.....	A2	B2	B2	A2	9.044	9.044	1.044
			9	10	9	10	9	8	10	10	8				
21	Failed of Job	Depandibility	A1	B1	B2	B2	B2	.....	B3	B1	A2	B1	9.148	9.148	1.148
			9	9	10	10	10	11	9	8	9				

Looking at Table 3, it can be seen that the accumulation of these calculations has applied a scale conversion from the mathematically arithmetic scale to the geometric scale and to the AHP input scale to be formed into a matrices formation known as pairwise matrices. The pairwise matrices that have been formed will be the measure for giving eigenvector values for each criterion using (3) and (4) with the results shown in Table 4.

Table 4. Pairwise matrices and eigenvector of criteria

Main and Type of Criteria	PL	SC	KJ	RB	QW	FJ	DB	EV
	(Benefit)	(Benefit)	(Benefit)	(Benefit)	(Benefit)	(Cost)	(Cost)	
Planning (PL)	1.000	1.328	1.538	1.571	1.405	1.101	1.249	0.18
Solution Capture (SC)	0.753	1.000	1.157	1.025	1.145	1.397	1.146	0.15
Knowledge of Jobs (KJ)	0.650	0.864	1.000	1.199	1.016	1.003	1.531	0.14
Reaction Behavior (RB)	0.636	0.975	0.834	1.000	1.462	1.003	1.306	0.14
Quantity of Works (QW)	0.712	0.874	0.984	0.684	1.000	1.025	1.044	0.12
Failed Jobs (FJ)	0.908	0.716	0.997	0.997	0.976	1.000	1.148	0.13
Depandibility (DB)	0.801	0.873	0.653	0.766	0.958	0.871	1.000	0.11
$\lambda_{max} =$	8.477	Consistency Index (CI) =			0.010	Consistency Vector		0.70
		Consistency Ration (CI)			0.008			

By observing Table 3 that the calculation process using mathematically algebra matrices by going through an iteration process five times to prove the discovery of the optimal eigenvector value of the seven element criteria with a consistency vector weight of 0.702 which usually the eigenvector value has similarities in terms of obtaining the eigenvector with the order of the matrices to be calculated. The eigenvector value obtained for the seven criteria will be indexed descendingly, because it still describes a normal graph on the Failed Jobs (FJ) criteria so that it is necessary to re-index in order to create a normal bar graph. From the results obtained, it can be said to be acceptable and perfect, so the results can be used for collaboration with other methods.

The second way that can be done to prove the acquisition of eigenvector values is with the help of an application known as expert choice. The process of entering element matrices to build pairwise matrices is by inputting data elements only with upper triangular matrices and not entering them all, because the expert choice program application has been designed in such a way with the same calculations as those in mathematically algebraic matrices. Pay attention to Table 5 which contains the upper triangular matrices elements.

Table 5. Pairwise matrices using expert choice apps

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	Planning	Solution Capture	Knowledge	Reaction Behavior	Quantity Of Works	Failed Jobs	Depandibility
Planning		1.328	1.538	1.571	1.405	1.101	1.249
Solution Capture			1.157	1.025	1.145	1.397	1.146
Knowledge of Jobs				1.199	1.016	1.003	1.531
Reaction Behavior					1.462	1.003	1.306
Quantity Of Works						1.025	1.044
Failed Jobs							1.148
Depandibility	Incon: 0.01						

The results obtained with expert choice apps on the eigenvector values in Fig. 3 have identical values to those done through mathematical algebra matrices. The real difference shown is the inconsistency value with a magnitude of 0.01 which explains that the deviation that occurs does not provide a significant difference, meaning it is closer to perfection.

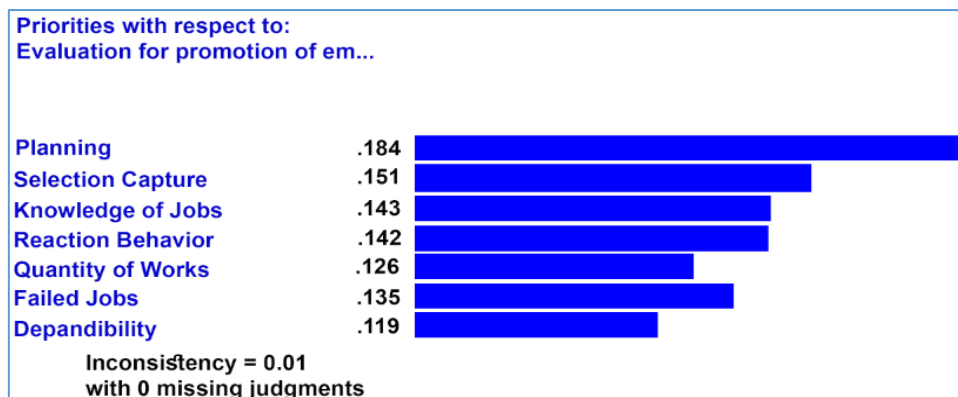


Fig. 3. Optimal eigenvector using Expert Choices Apps.

The stages of determining the eigenvector value until the process of finding the optimal eigenvector value has been completed from the AHP method, with the proof of both mathematically algebraic matrices approaches and the support of expert choice applications, identical results have been stated for the eigenvector value, which can be stated as ready to be implemented for decision-making support for alternatives, which can be stated as acceptable and can be collaborated with other ranking methods, in this case it will be applied to the SWARA method.

The implementation of the ranking system with the SWARA method can be done by forming alternatives that have been normalized against the dataset view formed using (5) and (6). The normalization process developed from the dataset view can be done by considering the nature of all criteria, both benefit and cost. It should be noted beforehand that this condition will provide changes to decision-making support. See Table 6.

Tabel 6. Normalized dataset

Employee	(B)	(B)	(B)	(B)	(B)	(C)	(C)
	PL	SC	KJ	RB	QW	FJ	DP
K1	72.04	14.15	35.66	73.28	38.04	72.52	65.91
K2	100.00	48.65	67.60	70.18	35.14	44.66	95.21
K3	54.96	80.95	100.00	0.00	0.00	83.21	76.30
K4	84.76	0.00	39.63	45.99	42.66	95.39	28.54
K5	0.00	56.30	0.00	22.06	51.04	36.66	49.91
K6	46.77	17.43	2.33	47.43	97.21	95.22	27.33
K7	43.83	23.35	8.97	56.46	44.18	81.59	33.46
K8	50.27	3.97	32.18	54.87	49.82	90.76	42.33
K9	31.62	24.58	18.03	53.15	42.25	83.13	100.00
K10	67.63	49.01	63.41	20.56	37.13	92.10	38.72
K11	56.38	64.99	14.87	47.43	69.53	0.00	65.96
K12	34.17	71.82	18.25	81.88	93.80	14.02	32.78
K13	47.12	52.65	15.89	73.43	90.45	44.77	3.00
K14	53.79	71.78	86.56	11.53	46.22	34.39	36.32
K15	5.25	41.43	62.07	43.23	48.10	37.35	22.02
K16	30.43	11.48	72.84	69.26	92.43	16.35	4.86

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K17	34.42	28.26	54.31	99.83	91.92	33.86	17.16
K18	56.55	25.33	41.00	9.72	50.08	93.55	98.64
K19	59.25	78.64	49.69	1.52	57.95	20.72	95.83
K20	91.41	100.00	43.54	0.20	100.00	98.33	76.78
K21	85.11	34.61	11.39	10.61	61.45	100.00	37.10
K22	54.49	68.57	30.14	100.00	66.73	60.77	0.00
K23	21.19	75.14	51.09	76.96	84.21	13.72	36.82
K24	33.23	61.10	7.70	55.97	82.43	16.94	19.77
K25	55.52	12.02	50.84	67.64	82.43	17.05	33.04
K26	75.52	28.11	38.27	75.21	39.66	28.02	4.77

By looking at Table 6, it can be stated that the normalization data provides a complete picture of all data elements that are in their respective positions correctly, so that this has become a reference that the data used is ready to be continued to the next stage of the process by placing the eigenvector value into the normalization dataset to become weight normalization by calculating directly the results obtained using the AHP method, see Table 7 which is the result of the weight normalization calculation.

Table 7. Weight Normalization

Employee	0.184	0.151	0.143	0.142	0.126	0.135	0.119	Average
	PL	SC	KJ	RB	QW	FJ	DP	
K1	13.26	2.14	5.10	10.41	4.79	9.79	7.84	7.62
K2	18.40	7.35	9.67	9.96	4.43	6.03	11.33	9.60
K3	10.11	12.22	14.30	0.00	0.00	11.23	9.08	8.14
K4	15.60	0.00	5.67	6.53	5.38	12.88	3.40	7.06
K5	0.00	8.50	0.00	3.13	6.43	4.95	5.94	4.14
K6	8.61	2.63	0.33	6.73	12.25	12.86	3.25	6.67
K7	8.06	3.53	1.28	8.02	5.57	11.02	3.98	5.92
K8	9.25	0.60	4.60	7.79	6.28	12.25	5.04	6.54
K9	5.82	3.71	2.58	7.55	5.32	11.22	11.90	6.87
K10	12.44	7.40	9.07	2.92	4.68	12.43	4.61	7.65
K11	10.37	9.81	2.13	6.73	8.76	0.00	7.85	6.52
K12	6.29	10.84	2.61	11.63	11.82	1.89	3.90	7.00
K13	8.67	7.95	2.27	10.43	11.40	6.04	0.36	6.73
K14	9.90	10.84	12.38	1.64	5.82	4.64	4.32	7.08
K15	0.97	6.26	8.88	6.14	6.06	5.04	2.62	5.14
K16	5.60	1.73	10.42	9.83	11.65	2.21	0.58	6.00
K17	6.33	4.27	7.77	14.18	11.58	4.57	2.04	7.25
K18	10.40	3.83	5.86	1.38	6.31	12.63	11.74	7.45
K19	10.90	11.87	7.11	0.22	7.30	2.80	11.40	7.37
K20	16.82	15.10	6.23	0.03	12.60	13.27	9.14	10.46
K21	15.66	5.23	1.63	1.51	7.74	13.50	4.42	7.10
K22	10.03	10.35	4.31	14.20	8.41	8.20	0.00	7.93
K23	3.90	11.35	7.31	10.93	10.61	1.85	4.38	7.19
K24	6.11	9.23	1.10	7.95	10.39	2.29	2.35	5.63
K25	10.22	1.81	7.27	9.61	10.39	2.30	3.93	6.50
K26	13.90	4.25	5.47	10.68	5.00	3.78	0.57	6.23

By observing Table 6, it is proven that the fragmentation of data that is ready to be processed into the SWARA method which begins with the addition by finding the average according to the number of criteria from each data. This can be done by using linguistic evaluation according to (7) and then determining the initial criteria weight by finding the average of the average column to be able to find the comparative importance value S_j and the coefficient value K_j using (9) and recalculating the Q_i coefficient using 10 and finally finding the alternative weight according to the index that has been sorted in descending order. The results of all this can be shown in Table 8.

Table 8. Final Weighting Results

Employee	Average	Ranking	S_j	K_j	Q_i	W_i	Bobot
K20	10.46	1	-	1	1	0.931671920	W1

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K2	9.60	2	0.073	13.77923	0.072573	0.067614219	W2
K3	8.14	3	0.145	94.9336	0.000764	0.000712226	W3
K22	7.93	4	0.218	436.0373	1.75E-06	1.63341E-06	W4
K10	7.65	5	0.306	1423.758	1.23E-09	1.14725E-09	W5
K1	7.62	6	0.363	3923.658	3.14E-13	2.92393E-13	W6
K18	7.45	8	0.435	9010.832	3.48E-17	3.24491E-17	W7
K19	7.37	9	0.572	15756.64	2.21E-21	2.05939E-21	W8
K17	7.25	10	0.652	24150.66	9.15E-26	8.52726E-26	W9
K23	7.19	10	0.709	34061.15	2.69E-30	2.50352E-30	W10
K21	7.10	11	0.750	45434.32	5.91E-35	5.51019E-35	W11
K14	7.08	12	0.806	56350.13	1.05E-39	9.77848E-40	W12
K4	7.06	13	0.903	62416.51	1.68E-44	1.56665E-44	W13
K12	7.00	14	0.943	66157.81	2.54E-49	2.36805E-49	W14
K9	6.87	15	1.032	64107.15	3.96E-54	3.69389E-54	W15
K13	6.73	16	1.089	58889.82	6.73E-59	6.27255E-59	W16
K6	6.67	17	1.185	49691.14	1.35E-63	1.26231E-63	W17
K8	6.54	18	1.234	40276.81	3.36E-68	3.13408E-68	W18
K11	6.52	19	1.306	30832.41	1.09E-72	1.01649E-72	W19
K25	6.50	21	1.387	22231.66	4.91E-77	4.57226E-77	W20
K26	6.23	22	1.491	14906.82	3.29E-81	3.06723E-81	W21
K16	6.00	23	1.572	9483.125	3.47E-85	3.2344E-85	W22
K7	5.92	23	1.645	5766.556	6.02E-89	5.6089E-89	W23
K24	5.63	24	1.669	3454.727	1.74E-92	1.62354E-92	W24
K15	5.14	26	1.774	1947.769	8.95E-96	8.3354E-96	W25
K5	4.14	26	1.854	1050.441	8.52E-99	7.9351E-99	W26

The final result of the employee promotion evaluation and selection process in an organization provides good and optimal results from 26 competing employees, based on the calculation results with the collaboration of the AHP and SWARA methods, it provides results that can be shown with a long calculation process and in-depth understanding to become a new finding that is superior through the employee promotion stage with the highest index at the top position W1 weight.

DISCUSSIONS

Continuous activities towards the employee promotion evaluation and selection process are crucial because to maintain the credibility of the organization, reliable human resources are needed in carrying out the leadership process. The survival of the company requires leaders who are ready and able to carry out integrated strategic maneuvers towards related components. Thus, an accurate and precise method is needed with a mastered concept, many organizations or companies are destroyed after leadership that is not sufficient with the preparation of its replacement, therefore in this study a method was built that can save the continuity of the organization or company that is sustainable with the help of experts who have experienced its leadership to find the right presidium as a replacement. Three important elements that are of special concern are experts, employees, and methods. Leaders are important in providing assessments to candidate leaders who provide opportunities for the successors of the company and organization's development. Internal employees become the selected objects in the selection process stages to find the right leader to be able to develop the company's wings. The method is the right way to carry out an objective evaluation and selection process without any influence from any party so that their leadership is supported by the competencies possessed by the prospective leader personnel. The proposed method in this study is the AHP and SWARA methods which are collaborated with the double index concept, to create measurable results according to the selection barometer value. The results will be processed flexibly both in single index and double index. This is strategized so that the results obtained can be optimal.

CONCLUSION

From the results that can go through several stages of the model that is collaborated between AHP and SWARA formed to work individually to be integrated between the two methods through a measurement barometer based on the value of interest and proven by testing the results of the eigenvector values produced optimally, this is so that the resulting decision will be acceptable from all parties with the help of instrumentation in the form of

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a questionnaire with respondents from experts to provide their assessments. For alternatives, configurations are carried out according to conducting linguistic evaluations in placing expert assessments to be ready for evaluation and selection. The results obtained for the promotion of the 26 employees provide optimally accurate results. Employees who are said to be superior are those who have the highest index value through a descending sorting process, from these alternatives, K20 is superior as the selected employee for the employee promotion evaluation and selection process in an organization that always hopes to always exist in any condition.

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