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Decision-Making Model for the Selection of Industrial Sector Workers

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Abstract – **Recruitment of workers must be done selectively to match the industry's needs for skills and competencies. How ever in Karawang area with the existing capacity performance capacity of the workforce; only 2.5 percent of total job seekers were successfully placed. The study aims to determine the selection criteria for industrial sector workers and to provide recommendations for decision-making models for the selection process. To determine the priority criteria, the AHP method was used, followed by the TOPSIS method to calculate preferences. 3 respondents from the Employers' Association of Indonesia (APINDO), HRD-GA Association, and Dinas Tenaga Kerja & Transmigrasi Karawang were requested to act as the experts on employment matters for this study. It was found from this study that Educational, discipline, and skills are three of the fifteen priority criteria with the highest scores in succession. Individual Factors are also being recommended as a priority factor in selecting workers for the industrial sector.**

Keywords *– AHP, TOPSIS, MCDM, Industrial Sector, Workforce Selection.*

INTRODUCTION

According to BPS (2017) industrial statistics, the average industrial growth from 2013 to 2017 was 6.53 percent. Manufacturing is a major financial driver. The number of workers based on BPS (2017) data in August 2019 was 197.92 million people, an increase of 3.14 million people compared to the previous year of 194.78 million people, [1]. Karawang New Industry City (2019) stated that Karawang became one of Indonesia's cities with the most significant industrial area. According to data records compiled, Karawang has a total workforce of 1,128,724 people, of which job seekers placed based on documents from the Karawang Manpower and Transmigration Office only accounted for 2.5 percent, or approximately 31,125 people, [2]. This demonstrates that the competitiveness of the workforce in the Karawang Regency remains low.

Human resources are a strategy and set of actions designed to meet a company's workforce needs, with the ultimate goal of running a high-quality, productive business. This strategy and set of actions are realized through the efforts of employees, [3]. Odunlamy and Matthew, [4] described how workers are an integral aspect of HRM in their analysis of manufacturing worker productivity. This statement is reinforced by Nwosu et al. [5]. Those researching employee performance in the industrial sector should emphasize the importance of workers in the recruitment process. Albayrak and Erensal, [6] explained that there is an increasing awareness that the skills of the workforce or employees are tools to achieve the company's business goals. Gungor, Serhadlioglu, and Kesen [7] also considered factors and criteria in personnel selection and showed a systematic approach proposed. The goal of their research was to determine the most qualified person by breaking the criteria into three main goals, namely "complementary factors related to work (complementary work factors), individual factors, and general factors related to work (general factors work)". Human resource management, according to Rozario et al. [8], is incomplete without the recruitment and selection process. The selection committee should have sufficient information to make an educated decision about the best candidate, [8].

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There would be no economy if the production process did not exist, and labor plays a critical role in this system. This is because labor is an economic actor distinct from other passive factors of production such as capital, raw materials, machinery, and land. The workforce can take an active role, in controlling and influencing other aspects of production, [9].

The breadth and depth of an organization's frontline workers' skill sets are directly proportional to their efficiency and effectiveness in various business contexts, [10]. Education, experience, and training all contribute to technical skills. Employees who have the skills to support their work activities will be able to produce the best results. Pawirosumarto, [11] also emphasized that performance evaluations are based on an understanding of the information, skills, expertise, and behaviors required to perform competently, as well as a broader examination of individual traits and behavior.

Draganidis and Mentzas, [12] proved that an employee's competencies are skills, knowledge, and attitudes that allow them to do a job well. According to Albayrak and Erensal [6], it is becoming increasingly clear that the skills of the workforce or employees are a tool to achieve the company's business goals. He stated that, in addition to the physical condition of the workplace and the organizational culture of the company, there are individual factors (human performance capability), which are the ability of human performance with sub-criteria such as skill, knowledge, independence in work, and analytics. Furthermore, the attitude factor in human performance must recognize that attitudes, communication skills, work motivation, and achievement all play an important role in all human performance abilities. According to his findings, the individual criteria and capability sub-criteria have a higher alternative ranking value of 0.291 than the organizational culture sub-criteria value of 0.147.

The purpose of this study is to identify and determine the top priorities for industrial sector workers criteria that are industrial needs in Karawang Regency then create selection models for these individuals and make recommendations based on those models. The study used a quantitative approach and an exploratory descriptive research design to conduct a direct study on decision support on the recommendation of industrial sector workers.

Because of the problem's multi-criteria nature, Multi-Factor Decision Making (MCDM) approaches a potential solution because they take into account multiple criteria simultaneously, with varying thresholds and weights, and have the potential to produce a very satisfactory result, [13]. The step-by-step procedure of MCDM allows a group of decision-makers to reach a consensus. According to Chourabi et al. [13], decision science studies how people find and weigh options based on their personal preferences and goals.

The AHP approach was used in this study to determine the relative importance of the factors used to select the workforce. Where decisions are made by comparing alternatives in pairs using a paired comparison questionnaire with expert respondents who are familiar with the job. The selection of expert respondents is made on purpose and directly based on their interests and knowledge. Furthermore, the order preference by similarity to the ideal solution technique will be used to rank the possibilities based on how closely they resemble the ideal solution (TOPSIS). Decision-makers consult the ranking alternatives to determine the best option, [14]. The TOPSIS method was used in this study to make decisions on the selection of industrial sector workers in the Karawang Regency area

METHODS

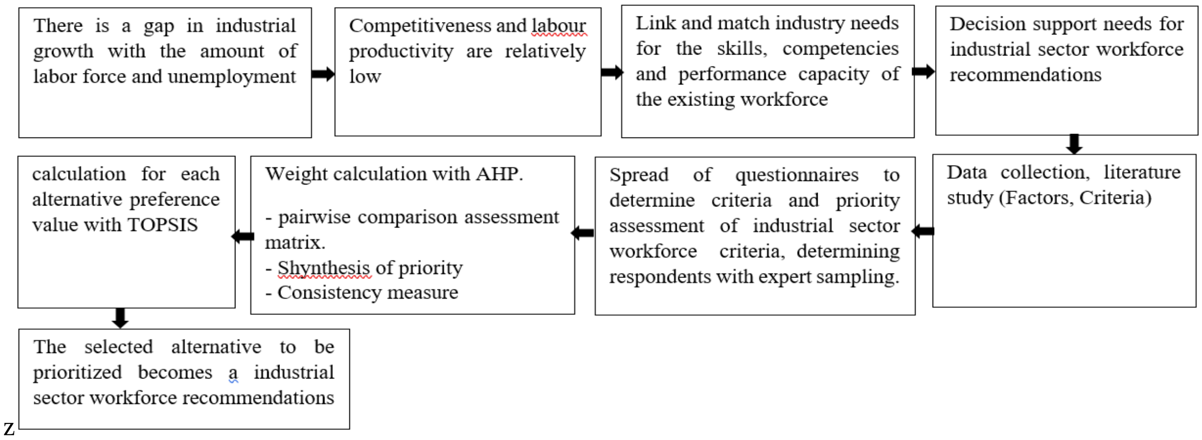

Figure 1. Research Framework

Research Framework

This research thinking concept was created based on the background and problems of the research. Based on the results of research observations, there is a number of labor forces that cannot be absorbed in the conditions of increasing industrial growth, so there is a need for decision support for the selection of industrial sector workers. So that the output research in this study determines the selected alternatives to be prioritized as recommendations for industrial sector workers.

Research Flowchart

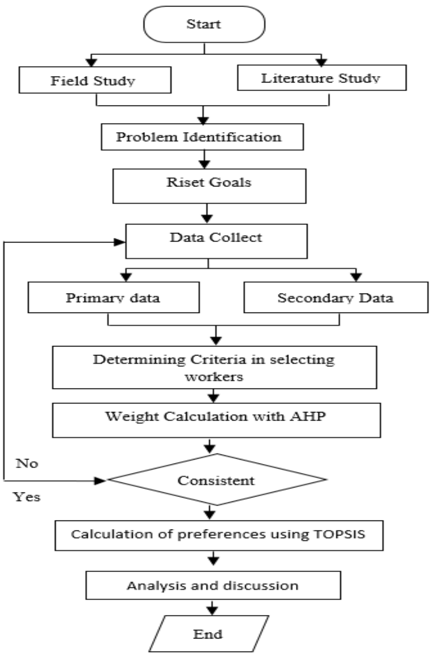

Figure 2. Research Flowchart

Determining Criteria in Selection Workers

Ngurah et al. [15] used four criteria in their research to select the best employees: discipline, responsibility, skills, and cooperation. With a consistency value of 0.42 for discipline, 0.27 for responsibility, 0.19 for skill, and 0.12 for cooperation. Gungor et al. [7] used a factor approach and criteria that included individual factors, personality factors related to work, and general factors related to work, with the following more detailed description.

Common factors related to work (GFW) primarily include "individual skills, abilities, and knowledge base in the organization" [7]. Management understands that skilled employees who are committed to achieving business goals are the organization's most valuable asset. As a result, there are six sub-criteria: "A1: work experience, A2: level of foreign language, A3: bachelor's degree, A4: master's degree, A5: analytical thinking, A6: basic computer skills" [7].

Furthermore, complementary factors (CF) such as attitude, self-esteem, self-achievement, self-motivation, ability to work with other employees, organizational ability, teamwork, and flexibility play an important role in all human performance abilities [7]. As a result, the second criterion has six categories: B1: decision-making, B2: teamwork ability, B3: time management, B4: goal respect, B5: participation in new technology, and B6: willingness to work in the organization.

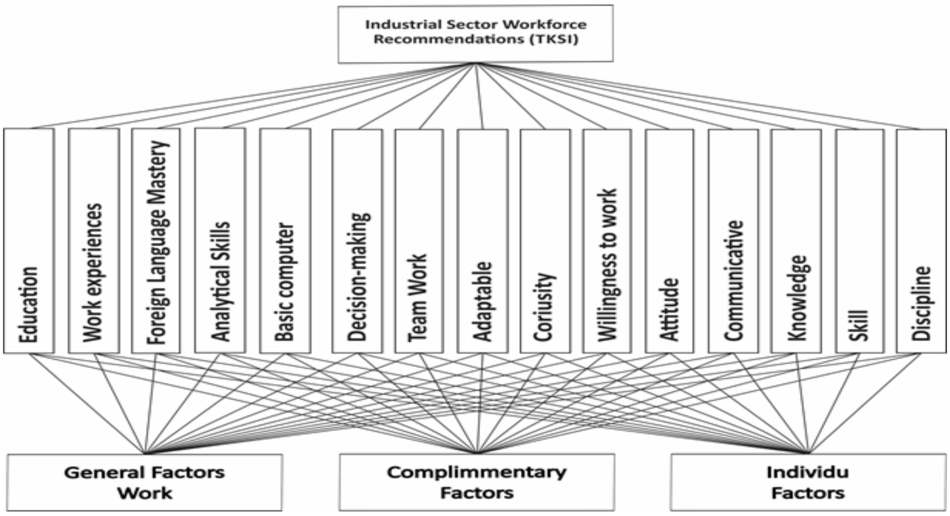

Figure 3. Criteria Hierarchy Structure

Individual performance (IF) abilities include communication; analytical capacity includes cultural values, core abilities, self-esteem, and appearance and appearance is a component of individual performance (IF) [7]. As a result, the third criterion has five categories. "C1: analytical capacity (core abilities), C2: appearance including knowledge and skills (appearance), C3: experience to adopt new techniques and modern equipment (age), C4: employee work culture (culture), C5: written and oral communication skills."

In the meantime, both primary and secondary data are being used in this investigation. According to Cresswell, primary data is information gathered by researchers directly from a source, [16]. The primary data used in this study were obtained from the results of the distribution of a questionnaire to the head and staff of the Human Resource Development (HRD) Association, Dinas Ketenagakerjaan, and the Employers' Association of Indonesia Karawang on employment, which in this part of the tripartite cooperation and communication forum, Consultation and deliberation on all employment issues. Primary data includes a brief history of company criteria, an assessment of priority criteria labor, classifications, and human resource policy requirements, as well as handling company recruitment labor in the company.

While secondary data is information gathered by researchers from existing sources (researchers as second hand), secondary data used in this study includes book library materials, associated research, reports from related institutions, the National Agency Center for Statistics (BPS), the data and information center of Kementrian Perindustrian (Kemenperin), and corporate literature.

A questionnaire was used to collect the necessary data in this study. The development of the questionnaire in this study refers to several previous studies as references, namely [17], [18].

The Employers' Association of Indonesia (APINDO), HRD-GA Association, and Dinas Tenaga Kerja & Transmigrasi Karawang were used to select three respondents who are considered employment experts for this study.

Based on previous research [6], [7], this study collects data through three factors and fifteen criteria. General work factor (GFW), complementary factor (CF), and individual factor (IF) are the relationships between the three factors, with fifteen criteria described in the hierarchical structure in Figure 3. Data has been gathered, both primary and secondary, for further examination. The following methods are used to analyze data:

Analytical Hierarchy Process (AHP)

The Analytical Hierarchy Process (AHP) is a decision-support model developed by Thomas L. Saaty, [19]. AHP works on a combination of decision-makers based on some information related to decision support elements to determine a series of priority measurements in decision-making. One of the most well-known and widely-used approaches to MCDM is AHP, a nonlinear framework that discourages deduction and induction estimates [20]. One of the distinguishing features of a decision support system is the AHP approach. This is because the priority-based formula at the heart of this strategy is used to assign relative weights to each criterion (level of importance) derived from the current Saaty table, [19]. As a decision-making supporter, AHP plays an important role in assisting businesses in maintaining and improving the best workforce selection decision skills.

This study used the AHP method to determine the weight of the criteria in determining the workforce. Decision-making through comparisons between criteria and alternatives in a pairwise comparison questionnaire involving experts who understand employment.

Determination of expert respondents (expert) based on their interests and knowledge. Saaty [19] in various problems or cases, suggested to use a pairwise scale of 1 to 9, for expressing opinions. Table 1 shows the pairwise comparison scale.

Table 1. The Pairwise Comparison Scale.

Explanation	Intensity of Interest
1	Both criteria have the same level of importance
3	Criteria that are slightly more important than other criteria
5	Criteria that are more important than other criteria
7	Criteria that are very more important than other criteria
9	Criteria have more important than other criteria
2,4,6,8	A nearby value between two criteria

*) Source: [19], [21]

It is critical to know how good the consistency is when making decisions on AHP so that users accept decisions based on consideration. Using Eq. (1) and (2), compute the consistency index (CI):

$$CI = (\lambda maximum - n) / (n-1) \quad (1)$$

Where n is the number of elements, λmax is the average value of maximum consistency.

$$CI = \frac{(\lambda_{maximum} - n)}{(n-1)} \quad (2)$$

Calculating consistency ratio (CR) by dividing the generated consistency index by the random consistency index (IR) value with Eq. (3):

$$CR = CI/IR \quad (3)$$

Technique for Order Preference by Similarity to Ideal Solution (TOPSIS)

Yoong & Hwang, [22] first introduced TOPSIS, as a multi-criteria decision-making method. TOPSIS considers the option that lies halfway between the positive and negative ideal solutions to be the best. Among the several criteria-based decision-making techniques, the TOPSIS method was chosen because it is simple to apply and interpret, and it produces consistent results, [23]. The ranking of alternatives serves as a resource for decision-makers in selecting the best solution. Furthermore, the TOPSIS approach users found the optimal solution by determining the proximity of the positive ideal solution. TOPSIS uses the priority of an alternative's proximity to the positive ideal solution to rank alternatives. TOPSIS's fundamental premise is that the best choice is the one that is both closest to and farthest from the best positive solution, [24].

Furthermore, the ranking of alternatives guides decision-makers in selecting the preferred solution. When solving problems, the TOPSIS method refers to several procedures, which are as follows Creating a normalized decision matrix, Element of rij is the decision matrix R using the Euclidean length of a vector method, as shown in Eq. (4),

$$r_{ij} = \frac{x_{ij}}{\sqrt{\sum_{i=1}^{m} x_{ij}2}} \quad (4)$$

Which i = 1, 2, …, m; and j= 1, 2, …, n

Which:
rij= Normalized matrix [i] [j]
xij= Decision matrix [i] [j]

Build a weighted normalized decision matrix, Eq. (5),
Yij= wirij; with i= 1, 2, …, m; and j= 1, 2, …, n (5)

Determine the positive and negative ideal solutions according to Eq. (6) (7),

A+ = (y1+, y2+, …, yn+); (6)
A- = (y1-, y2- , …, yn-); (7)

Calculate The Alternative

The distinction between alternatives and positive ideal solutions is computed, as is the difference between a negative ideal solution and a positive one, as shown in Eq (8) and (9).

$$D_i+ = \sqrt{\sum_{i=1}^{n} (y_i + - y_{ij})^2} \quad (8)$$

$$D_i- = \sqrt{\sum_{j=1}^{n} (y_{ij} - y_i -)^2} \quad (9)$$

Calculating the relative closeness to the ideal solution with Eq. (10),

$$V_i = \frac{D_i}{D_i + D_i^{+}} \quad (10)$$

The alternative with the largest Vi value is the best solution.

RESULT AND DISCUSSION

Result

To obtain the vector priority of weight value, the users entered and processed each data by filling out the questionnaire related to the criteria. Next, determine the value of the consistent ratio (CR) by first calculating the max and then determining the value of the consistency index (CI). Calculations using Microsoft Excel and the help of Expert Choice 11 software. The calculation of this AHP refers to Nasution et al. [25] and Rianto et al. [26], and Gungor et al. [7]. The priority vector values for each criterion along with the index consistency values are in Table 2. After the users obtained the assessments of the three respondents, then they averaged the results using the geometric mean formula with the following Eq. (11),

$$GM_y = \sqrt[n]{y_1 \; y_2 \; y_3 \ldots\ldots y_n} \quad (11)$$

It is because AHP only requires one answer for the comparison matrix. Average calculation using tools through Expert Choice 11 software and Microsoft Excel. The calculation results are in Figure 4.

Table 2. Priority Vector Value and Value Matrix Data Consistency between Criteria

Criteria	Respondent 1 (APINDO)		Respondent 2 (Ass. HRD-GA)		Respondent 3 (Disnakertrans)	
	Priority	Matrix x Priority	Priority	Matrix x Priority	Priority	Matrix x Priority
Education	0.20	17.69	0.09	17.81	0.10	17.45
Work experiences	0.11	18.03	0.08	16.61	0.07	16.65
Foreign Language Mastery	0.15	18.35	0.06	16.58	0.06	16.66
Analytical	0.05	17.00	0.06	16.51	0.04	16.70
Skills	0.07	17.08	0.05	16.40	0.11	16.99
Basic computer						
Decision-making	0.03	16.52	0.06	17.52	0.05	16.45
Team Work	0.03	16.59	0.05	16.05	0.04	18.30
Adaptable	0.02	16.29	0.06	17.15	0.03	17.10
Curiosity	0.03	16.82	0.05	16.38	0.03	16.61
Willingness to work	0.01	16.77	0.06	16.53	0.04	16.45
Attitude	0.06	16.88	0.05	16.15	0.07	17.48
Communicative	0.03	16.53	0.06	17.43	0.07	17.62
Knowledge	0.03	16.32	0.06	17.47	0.05	16.53
Skill	0.09	17.50	0.07	16.83	0.14	17.45
Discipline	0.09	18.34	0.12	17.45	0.12	17.69
λ_{max}	17.11		16.86		17.08	
Consistency Index (CI)	0.15		0.13		0.15	
CI = (λ max- n) / (n-1)						
Index Random (IR)	1.59		1.59		1.59	
Consistency Ratio (CR)	0.09		0.08		0.09	
CR = CI/IR						
Description	Consistent		Consistent		Consistent	

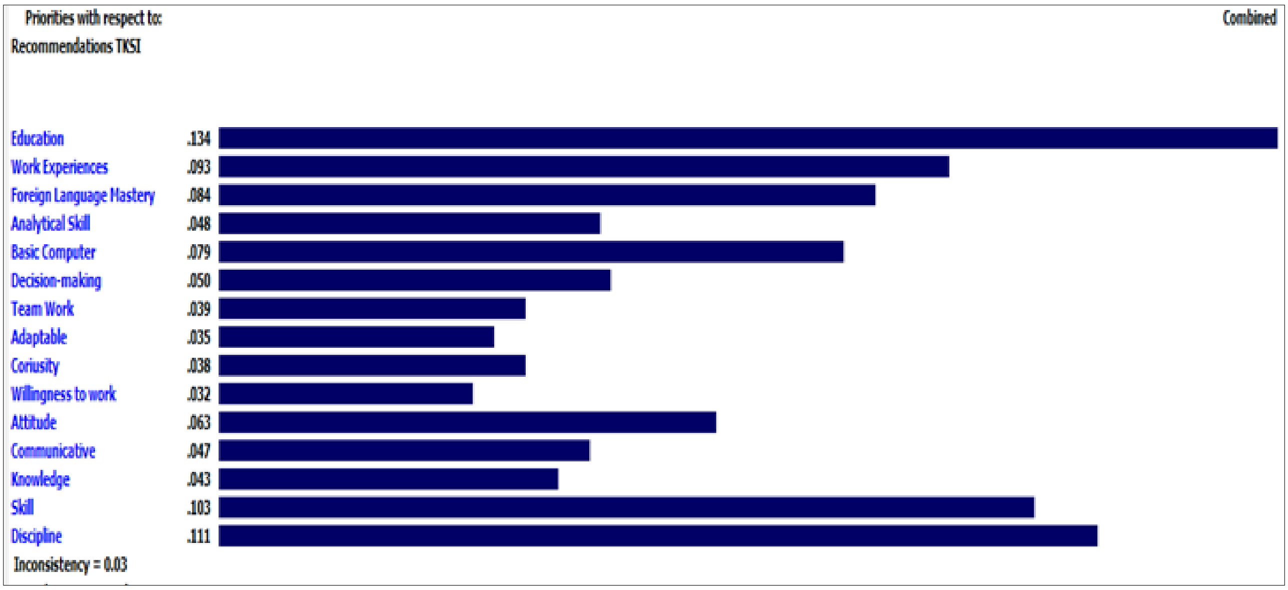

Figure 4. Calculation of Multi participant Expert Choice 11

According to the comparison generated on the Expert Choice 11 tool by using priorities derived from pairwise comparison, the priority recommendation is the industrial sector workforce gets the highest score, namely the education criteria with a weight of 0.13 and in the following order, based on the calculation of multi participants or three respondents. Based on 0.11 disciplinary criteria and a CR value of 0.03 or CR0.100, and declared consistent. Furthermore, the AHP method was used to test the criteria weights between alternatives, and the results are shown in Figure 5.

Testing With TOPSIS Method

The initial input for the TOPSIS calculation is the decision matrix generated in the previous method or AHP. The first step is to convert alternative AHP matrix data with criteria and then calculate the normalized matrix (R) with Eq. (4).

Table 4 shows the weighted normalized matrix (Y) by using Eq. (5) for the calculation of the weighted normalized matrix (Y), based on the relative importance assigned to each factor by the prior AHP technique

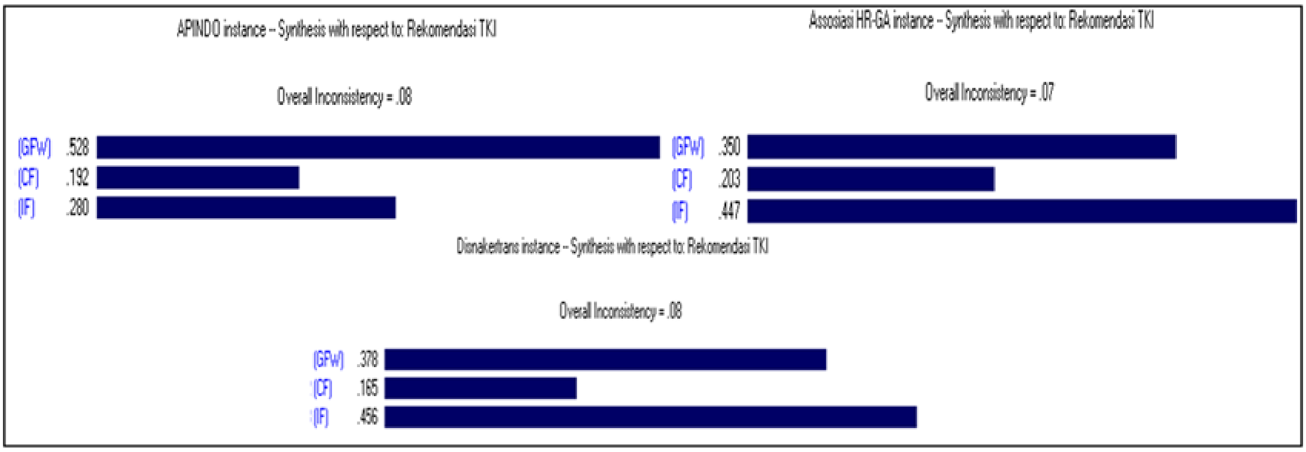

Figure 5. Synthesis Results of Industrial Sector Workforce Recommendation (TKSI) Recommendations for Industrial Sector with Criteria

Table 3. Normalized Matrix (R).

Y_i		Ideal Solution		Max	Min
Y_1	0.097	0.052	0.076	0.097	0.052
Y_2	0.076	0.019	0.050	0.076	0.019
Y_3	0.063	0.018	0.053	0.063	0.018
Y_4	0.039	0.022	0.018	0.039	0.018

Y_i		Ideal Solution		Max	Min
Y_5	0.071	0.016	0.031	0.071	0.016
Y_6	0.039	0.009	0.029	0.039	0.009
Y_7	0.032	0.012	0.018	0.032	0.012
Y_8	0.012	0.017	0.028	0.028	0.012
Y_9	0.014	0.026	0.023	0.026	0.014
Y_{10}	0.023	0.008	0.021	0.023	0.008
Y_{11}	0.053	0.017	0.030	0.053	0.017
Y_{12}	0.038	0.016	0.024	0.038	0.016
Y_{13}	0.023	0.008	0.035	0.035	0.008
Y_{14}	0.030	0.024	0.095	0.095	0.024
Y_{15}	0.037	0.044	0.095	0.095	0.037

*) General Factor Work (GFW), Complimentary Factor (CF), Individual Factor (IF)

Table 4. Weighted Normalized Matrix (Y).

	C_1	C_2	C_3	C_4	C_5	C_6	C_7	C_8	C_9	C_{10}	C_{11}	C_{12}	C_{13}	C_{14}	C_{15}
GFW	0.72	0.81	0.74	0.80	0.89	0.78	0.83	0.32	0.37	0.71	0.83	0.79	0.53	0.29	0.33
CF	0.38	0.20	0.21	0.45	0.20	0.18	0.32	0.48	0.69	0.25	0.27	0.33	0.17	0.23	0.40
IF	0.56	0.53	0.63	0.37	0.39	0.58	0.45	0.81	0.61	0.65	0.47	0.50	0.82	0.92	0.85

*) General Factor Work (GFW), Complimentary Factor (CF), Individual Factor (IF)

Table 5. Determination of Positive Ideal and Negative Ideal Points against Weight Normalized Matrix (Y).

	C_1	C_2	C_3	C_4	C_5	C_6	C_7	C_8	C_9	C_{10}	C_{11}	C_{12}	C_{13}	C_{14}	C_{15}
GFW	0.09	0.07	0.06	0.03	0.07	0.03	0.03	0.01	0.01	0.02	0.05	0.03	0.02	0.03	0.03
CF	0.05	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.02	0.04
IF	0.07	0.05	0.05	0.01	0.03	0.02	0.01	0.02	0.02	0.02	0.03	0.02	0.03	0.09	0.09

The positive ideal solution (A+) and the negative ideal matrix (A-) are determined through Eq. (6) (7) with the results as shown in Table 5. Therefore, the positive ideal solution (A+) and the negative ideal matrix (A-) are shown in Table 6.

The distance between the positive ideal solution (D+) and the negative ideal solution (D-) is calculated through Eq. (8) (9) so that the distance between the positive and negative ideal solution obtained produces values as presented in Table 7.

The final step is determining the preference value for each alternative using Eq. (10) with the following results:

$$V_1 = \frac{0.1192}{0.1192 + 0.0911} = 0.567$$

$$V_2 = \frac{0.0159}{0.0159 + 0.1493} = 0.096$$

$$V_3 = \frac{0.1158}{0.1158 + 0.0651} = 0.640$$

Table 6. Positive Ideal Solution and Negative Ideal Solution

A+	0.097	0.076	0.063	0.039	0.071	0.039	0.032	0.028	0.026	0.023	0.053	0.038	0.035	0.095	0.095
A-	0.052	0.019	0.018	0.018	0.016	0.009	0.012	0.012	0.014	0.008	0.017	0.016	0.008	0.024	0.037

Table 7. Distance Results of Each Alternative

		Alternative		
D1+	0.091	GFW	D1-	0.119
D2+	0.149	CF	D2-	0.016
D3+	0.065	IF	D3-	0.116

Table 8. Preference Rating and Ranking of Each Alternative

Ideal Distance	Recommended TKSI	Result		*Rank*	Ideal Distance	Recommended TKSI	Result
V1	GFW	0.567		1	V3	IF	0.640
V2	CF	0.096		2	V1	GFW	0.567
V3	IF	0.640		3	V2	CF	0.096

The results of the weighting of the criteria and the integration of AHP-TOPSIS show that the tendency has the highest weight on the general factor work (GFW) alternative, which is education when compared to other criteria in the GFW alternative. The next dominant value is on the individual factor (IF) alternative on the discipline criteria with a value of 0.111, and the second on the skill criteria with a value of 0.103.

Thus, the priority criteria for selecting industrial sector workers are the education criteria, as well as the two dominant criteria that there is an alternative to IF, namely the criteria for discipline and skills.

Discussion

Table 9 shows the results of the calculations and the integration of AHP and TOPSIS. It shows that IF is the recommended factor for the selection of workers in the industrial sector. Figure 6 shows the flowchart for the decision-making model for the Industrial Sector Workforce (TKSI) recommendation as a result of this research.

Table 9. The Integration of AHP-TOPSIS (Matrix)

Criteria	**Priority Vector (Weight)**	**Alternative**	**Preference Value**
Education	**0.134**	General Factor Work	0.567
Work Experiences	0.093		
Foreign Language Mastery	0.084		
Analytical Skill	0.048		
Basic Computer	0.079		
Decision-making	0.050	Complementary Factor	0.096
Team Work	0.039		
Adaptable	0.035		
Curiously	0.038		
Willingness to work	0.032		
Attitude	0.063	Individual Factor	**0.64**
Communicative	0.047		
Knowledge	0.043		
Skill	**0.103**		
Discipline	**0.111**		

AHP		TOPSIS	
Criteria Priority Industrial Sector workforce	**Education** **Discipline** **Skill**	Industrial Sector Workforce Recommendation	**Individual Factor**

Source: AHP-TOPSIS Calculation Results

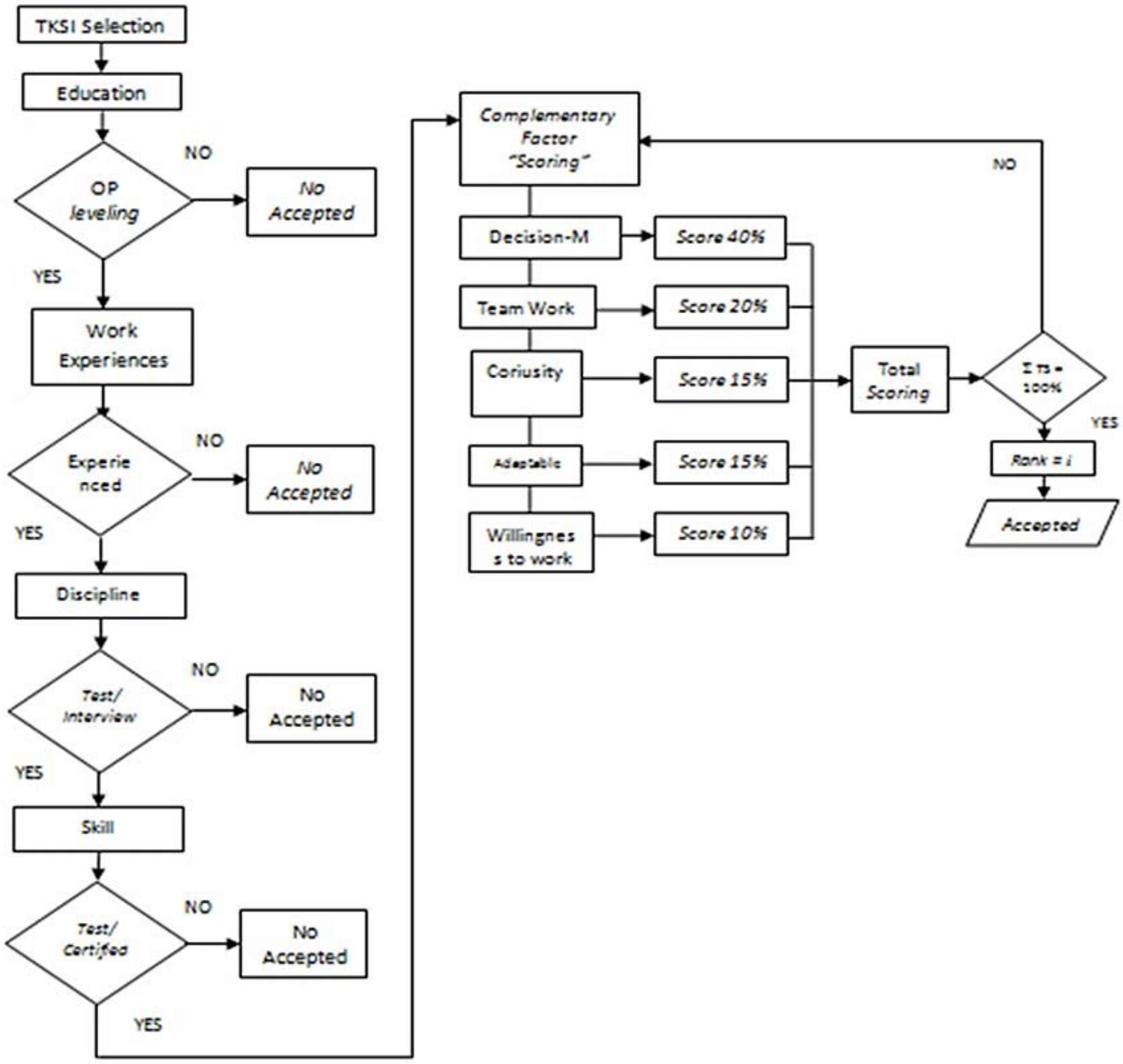

Figure 6. Visual Model of Industrial Sector Workforce Recommendation (TKSI)

Comparison of Previous Research Studies

This study differs from other industrial research in that it is multi-criteria decision support that employs a combination of two methods, namely AHP and TOPSIS. Combining AHP and TOPSIS can maximize the weighting of criteria values that influence objective alternative ranking outcomes.

When gathering references, it is summarized from personnel determination, selection of outstanding employees, and workforce assessment evaluation. The calculation had only reached the weighting and ranking via the AHP method and had not yet

Reached a further calculation via a combination of AHP and TOPSIS, as in the study conducted by Albayrak et al. [6], namely decision-making related to improving human performance via the AHP method.

The research was carried out in three basic steps using AHP: the design of the decision hierarchy to create a decision hierarchy structure, the prioritization procedure for determining weights or priorities, and the calculation of results by ranking results on alternatives in the final result of the process rather than determining the best distance or solution. Each alternative's concept. As a result, it is determined that the alternative determination in this study is more comprehensive.

Furthermore, the researchers compared the research findings to the international standards accreditation body from the United States, Accreditation Board for Engineering and Technology (ABET), which is the official standard in engineering science and technology, to review the findings. In engineering programs in the world according to the ABET standards in

The Criteria for Accrediting ABET engineering Programs [27], Student Outcomes must prepare graduates to achieve the educational goals of the program, including knowledge of science, mathematics, and engineering, capability to design experiments, as well as analyze and interpret data, system design ability, have a function in a team, problem identification and solving skills, responsible, professional, and ethical, communication skills, extensive education, engage in learning all the time, knowledge of contemporary issues, technical abilities and skills in modern engineering equipment required for engineering training.

In this study, there is an alignment between the selected alternative Individual Factors and the priority criteria of education, discipline, and skills based on several of these items. However, in the future, similar research can be conducted using a variety of criteria, including those owned by ABET, to ensure that the results of industrial sector worker selection are more in line with labor market conditions and industry needs.

CONCLUSION

Educational criteria, disciplinary criteria, and skills criteria, are three most important factors in the selection of industrial sector workers from 15 (fifteen) criteria considered in this study. Concerns about the decision-making model in this study are expressed through the chosen alternative, namely the Individual Factor, which is used to determine the selection of industrial sector workers. This is due to the preference value assigned to the Individual Factors alternative, which has the highest preference value. When compared to other alternative values, individual factors have the most optimal weight value. As a result, it prioritizes the recommendations by concluding the recommendations of the selected Individual Factors industrial sector workforce.

In this study, there is a visualization of the Industrial Sector Worker (TKSI) selection decision-making model illustrated through the flow chart, which can aid in future research. Further research on data using the Fuzzy Logic function on AHP, and then integrating the weighting using TOPSIS or developing other multi-criteria decision support methods to obtain a comprehensive comparison, is required.

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