ANALYSIS OF SELECTION OF JOINT TRAINING AREA'S TO INTEGRATE THE ABILITIES OF INDONESIAN SPECIAL FORCES

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ABSTRACT

The Indonesian National Armed Force has special forces that come from the three divisions, the Army, Navy, and Air Force. Even though they are both elite troops, the three dimensions have different combat specialties. A joint scale training is needed to integrate and increase the professionalism of these three special forces dimensions. Therefore, to optimize the ability of these special forces, a training area that is really suitable is needed so that this joint training can run well. This study aims to provide an analytical framework related to the selection of a joint training ground for the TNI special forces. The method used is the Simple Additive Weight (SAW) method. This method is known as the weighted addition method. The basic concept of the SAW method is to find the weighted sum of the performance ratings for each alternative on all attributes Based on this research, it is concluded that from the available alternatives, the best priority for training sites is Sangatta with a weight value of 0.781, then Natuna with a weight value of 0.768 then Saumlaki with a weight of 0.620.

Key Words : *Special Force, Joint Training, SAW*

1. INTRODUCTION

Along with the development of an increasingly dynamic world with various developments in technology and combat equipment, the need for military qualifications continues to increase. The need for high qualifications can be seen from the development of threats which are currently also growing and complex. If in the past, there were only a few terrorists or other crimes that had adequate combat capabilities. Thus, the combat capabilities of defense crews in each country also adjust to the existing threats. In Indonesia, the Indonesian National Army is a defense crew whose job is to deal with any existing threats.

Currently the Indonesian National Army, as the main component of defense, serves as the main and first fortress in anticipating threats. Based on this function, the TNI must always be ready and develop in accordance with the dynamics of threats and the strategic environment that exists around Indonesian territory. in the last decade, the biggest threats have been terror disturbances and armed militias.

Therefore, the TNI in this case has tactically formed and organized several special forces that are tasked with dispelling and being ready when a latent threat becomes manifest. One that is being developed by the TNI at this time is a special force which consists of three dimensions. Armed with very heavy special training, they are expected to be able to infiltrate enemy territory to prepare the way for regular troops. In addition, they can be deployed to free the victim from being held hostage. This means, each member who is part of the special forces has been prepared for unconventional warfare, which requires special tactics, reconnaissance, attacks on selected targets, to the destruction of high value facilities.

The three-dimensional special forces owned by the TNI are special forces that are formed and prepared separately according to the peculiarities of each dimension. In the Indonesian Army, we know RPKAD (Army Commando Regiment) which later changed its name to Kopassandha and finally Kopassus. Then, there was Kopasgat within the Indonesian Air Force which later changed its name to Korpaskhas. In addition, in the Indonesian Navy there is also Kopaska and Denjaka.

The existence of TNI's special forces which is currently growing, demands a collaboration and cooperation between the three dimensions. This form of collaboration was then developed in the Indonesian National Armed Forces Special Operations Command (Koopssus TNI), which is one of the elite TNI command units which is part of the Central Implementing Agency (Balakpus) which is structurally a direct command under the TNI Commander, so that the special forces of the three dimensions, namely the land dimension, the marine dimension, and the stand-by air dimension at the TNI Headquarters and at any time can be used by the TNI Commander on the orders of the President of the Republic of Indonesia. Meanwhile, the task of the Indonesian Armed Forces Coordinator is to overcome acts of terrorism, both domestic and foreign, that threaten the ideology of sovereignty, the integrity and safety of the entire Indonesian nation.

This paper aims to examine the appropriate place for joint and integrated training by special forces from the three dimensions. The need for an adequate training ground is an absolute must, because these three special combat forces are required to be able to work together and collaborate in each assigned operation. Therefore, with the specifics of each and the various combat abilities, it is necessary to further study the training ground that will be proposed.

The criteria for a special forces training ground should not be chosen randomly without calculation. Many factors must be considered, such as confidentiality, geographical conditions, and whether the place chosen will later be able to support the needs of the three special forces. Currently, there are many training places owned by the TNI, both those that are set as in nature, and in urban settings (Kurniadi, 2014). Therefore a special method is needed, so that the selection of this practice site does not result in an unsuitable choice. There are several ways that can be done, in this case the author will try to use one method, namely Simple Additive Weighting or better known as SAW.

The SAW method in determining decisions has been widely used, and has even become one of the main methods. According to Kaliszewski and Podkopaev (2016) the SAW method is a method of finding a decision on certain criteria. There have been several studies in various fields that have used this method. some of them are Chou, et al (2008) who try to find the location of certain facilities with SAW objective attributes. Likewise Anggraini and Sihotang (2019) who try to find the most appropriate guarding in certain classes. There are many more examples of the use of SAW in implementation which are also very diverse. So it can be stated that SAW is one of the best methods of determining decisions, one of which is in an effort to find the location of the training ground for TNI special forces.

2. SIMPLE ADDITIVE WEIGHTING (SAW) METHOD

The SAW method is often also known as the weighted addition method. The basic concept of the SAW method is to find the weighted sum of the performance ratings for each alternative on all attributes. The SAW method requires a decision matrix normalization process (x) to a scale that can be compared with all available alternative ratings. The final steps in using it are:

a. Determine the alternative, namely Ai.

b. Determine the criteria that will be used as a reference in making decisions, namely Cj.

c. Provide a rating of the suitability of each alternative on each criterion.

d. Determine the weight of preference or level of importance (W) of each criterion. W = [W1, W2, W3,…, WJ]

e. Creating a rating table of the suitability of each alternative on each criterion.

f. Creating a decision matrix (X) which is formed from the suitability rating table of each alternative on each criterion. The X value of each alternative (Ai) on each criterion (Cj) that has been determined, where, i = 1,2,… m and j = 1,2,… n.

$$X = \begin{bmatrix} x_{11} & x_{12} & \cdots & x_{1j} \\ \vdots & \cdots & \cdots & \vdots \\ x_{i1} & x_{i2} & \cdots & x_{ij} \end{bmatrix}$$

g. Normalizing the decision matrix by calculating the normalized performance rating (rij) value of the alternative Ai on the Cj criterion.

$$rij = \begin{cases} \dfrac{X_{ij}}{Max_i \quad X_{ij}} \\ \dfrac{Min_i \quad X_{ij}}{X_{ij}} \end{cases} \qquad (1)$$

If j is the profit attribute (Benefit)

If j is the cost attribute (Cost)

Atribute :

Rij = normalized performance rating value

Xi = attribute value that is owned by each criterion

Max xij = the greatest value of each criterion i

Min xij = the smallest value of each criterion i

Benefit = if the greatest value is best

Cost = if the smallest value is best

Where rij is the normalized performance rating of the alternative Ai on attribute Cj; i = 1,2, ..., m and j = 1,2, ..., n.

h. The results of the normalized performance rating (rij) form a normalized matrix (R)

$$R = \begin{bmatrix} R_{11} & R_{12} & \cdots & R_{1j} \\ \vdots & \cdots & \cdots & \vdots \\ R_{i1} & R_{i2} & \cdots & R_{ij} \end{bmatrix}$$

i. The final result of the preference value (Vi) is obtained from the sum of the normalized matrix row elements (R) with the preference weight (W) corresponding to the matrix column element (W).

$$V_i = \sum_{j=0}^{n} W_j R_{ij} \qquad (2)$$

Attributes :

Vi = ranking for each alternative

Wj = weight value of each criterion

Rij = normalized performance rating value

A larger Vi value indicates that the alternative Ai is preferred

3. DATA PROCESSING

3.1 Determining Alternatives

The alternative choices have been determined by the decision makers according to the table below:

Table 1. Alternative locations

Code	Place	Province
A1	Natuna	Riau Islands
A2	Sangatta	East Kalimantan
A3	Saumlaki	Maluku

3.2 Determining Criteria

The criteria or factors that are taken into consideration are in the table below:

Table 2. Criteria considered

Criteria	B/C	Atribute
Cost (C1)	Cost	How much it costs.
Distance (C2)	Cost	How far is the distance from the base on Java Island.
Facility (C3)	Benefit	How complete are the supporting facilities at the training location.
Geografic (C4)	Benefit	How high is the difficulty level of the training field.

3.3 Provide Rating

Provide a rating value of the suitability of each alternative on each criterion. At this weighting the experts take a range 1-5.

Alternative Rating to the value of the Cost criteria (C1) for the type of Cost criteria.

Table 3. Cost criteria value scale (C1).

No	Cost	Score
1	<= 0,5 M	1
2	0,5M – 1M	2
3	1M – 1,5 M	3
4	1,5M – 2M	4
5	>= 2M	5

After collecting alternative rating data on costs, the following results are obtained:

Table 4. Alternative C1 Value

No	Alternative	Cost	Score C1
1	A1	1 M- 1,5 M	3
2	A2	0,5 M - 1 M	2
3	A3	1,5 M – 2 M	4

b. Rating Alternative to the value criterion Distance (C2) type of Cost criteria

Table 5. Distance Criteria Value C1

No	Distance	Score
1	<= 100 NM	1
2	100 NM – 200 NM	2
3	200 NM – 300 NM	3
4	300 NM – 400 NM	4
5	>= 400 NM	5

After collecting alternative rating data on distance, the following results are obtained:

Table 6. Value of Alternative C2

No	Alternative	Distance	Score C2
1	A1	100 NM- 200 NM	2
2	A2	200 NM - 300 NM	3
3	A3	>= 400 NM	5

a. Alternative Rating on the value of the Facility criteria (C3) for the type of Benefit criteria

b.

Table 7. Facility criteria value scale (C3).

No	Fasility	Score
1	Incomplete	1
2	Less Complete	2
3	Complete	3
4	Quite Complete	4
5	Very Complete	5

After collecting alternative rating data for the facility, the following results are obtained:

Table 8. Alternative C3 Score

No	Alternative	Facility	Score C3
1	A1	Complete	3
2	A2	Complete	3
3	A3	Very Complete	5

c. Alternative Rating against the Geographical criteria value (C4) for the type of Benefit criteria

Table 9. Geographical criteria value scale(C4).

No	Geografis	Score
1	Not Dificult	1
2	Less Dificult	2
3	Dificult	3
4	Quite Dificult	4
5	Very Dificult	5

After collecting alternative rating data to Geographical, the following results are obtained:

Table 10. Value of Alternative C4

No	Alternative	Geographical	Score C4
1	A1	Quite Dificult	4
2	A2	Dificult	3
3	A3	Very Dificult	5

3.4 Determine the weight of preference

Determine the weight of preference or level of importance (W) of each criterion. W = [W1, W2, W3,…, WJ]. The weight of the criteria is determined by the decision maker or determined by himself. In this case study, it is Assumed that the weight value has been obtained from the paiwase comparation process. That is:

Table 11. Weights of each criterion.

No	Code	Weight	
1	C1	30	0,3
2	C2	30	0,3
3	C3	20	0,2
4	C4	20	0,2
	Total	**100**	**1**

a. Create a rating table of the suitability of each alternative on each criterion.

Table 12. Ratings of alternatives on criteria

No	Alternative	Criteria			
		C1	C2	C3	C4
1	A1	3	2	3	4
2	A2	2	3	3	3
3	A3	4	5	5	5

b. Make a decision matrix (X) which is formed from the suitability rating table of each alternative on each criterion.

$$X = \begin{bmatrix} 3 & 2 & 3 & 4 \\ 2 & 3 & 3 & 3 \\ 4 & 5 & 5 & 5 \end{bmatrix}$$

c. Normalizing the decision matrix by calculating the normalized performance rating (rij) value of the alternative Ai on the Cj criterion.

$$rij = \begin{cases} \dfrac{X_{ij}}{Max_i \quad X_{ij}} \\ \dfrac{Min_i \quad X_{ij}}{X_{ij}} \end{cases}$$

For columns 1 and 2 in the X matrix, because they are cost, they use the formula:

$$rij = \frac{Min_i \quad X_{ij}}{X_{ij}}$$

The solution is:

$$r_{11} = \frac{\min\{3,2,4\}}{3} = \frac{2}{3} = 0,67$$

$$r_{21} = \frac{\min\{3,2,4\}}{2} = \frac{2}{2} = 1$$

$$r_{31} = \frac{\min\{3,2,4\}}{4} = \frac{2}{4} = 0,5$$

$$r_{12} = \frac{\min\{2,4,5\}}{2} = \frac{2}{2} = 1$$

$$r_{22} = \frac{\min\{2,4,5\}}{3} = \frac{2}{3} = 0,67$$

$$r_{32} = \frac{\min\{2,4,5\}}{5} = \frac{2}{5} = 0,4$$

Furthermore, columns 3 and 4 which have Benefit properties, then use the formula:

$$rij = \frac{X_{ij}}{Max_i \quad X_{ij}}$$

The solution is :

$$r_{13} = \frac{3}{\max\{3,3,5\}} = \frac{3}{5} = 0,6$$

$$r_{23} = \frac{3}{\max\{3,3,5\}} = \frac{3}{5} = 0,6$$

$$r_{33} = \frac{5}{\max\{3,3,5\}} = \frac{5}{5} = 1$$

$$r_{14} = \frac{4}{\max\{4,3,5\}} = \frac{4}{5} = 0,8$$

$$r_{24} = \frac{3}{\max\{4,3,5\}} = \frac{3}{5} = 0,6$$

$$r_{34} = \frac{3}{\max\{4,3,5\}} = \frac{5}{5} = 1$$

d. The results of the normalized performance rating value (rij) form a normalized matrix (R).

$$R = \begin{bmatrix} 0,67 & 1 & 0,6 & 0,8 \\ 1 & 0,67 & 0,6 & 0,6 \\ 0,5 & 0,4 & 1 & 1 \end{bmatrix}$$

e. Calculating the value of preference (Vi)

$$V_i = \sum_{j=0}^{n} W_j R_{ij}$$

$$W = (0,4|0,3|0,2|0,1|)\ R$$

$$= \begin{bmatrix} 0,67 & 1 & 0,6 & 0,8 \\ 1 & 0,67 & 0,6 & 0,6 \\ 0,5 & 0,4 & 1 & 1 \end{bmatrix}$$

$$A1 = (0,4\,.\,0,67) + (0,3\,.\,1) + (0,2\,.0,6) + (0,1\,.\,0,8) = 0,768$$

$$A2 = (0,4\,.\,1) + (0,3\,.\,0,67) + (0,2\,.0,6) + (0,1\,.\,0,6) = 0,781$$

$$A3 = (0,4\,.\,0,5) + (0,3\,.\,0,4) + (0,2\,.\,1) + (0,1\,.\,1) = 0,62$$

4 CONCLUSION

The Special forces desperately need a place to carry out joint exercises. Determination of the alternative joint training area's is determined by criterias and methods. From data processing using the Simple Additive Weighting (SAW) method the results were: A1 = 0.768, A2 = 0.781 A3 = 0.620. Thus the selected location for the joint training of the TNI special forces was A2, namely Sangatta in East Kalimantan.

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