Research Article

WASPAS Method for Defining a Content Creator

Muhammad Sabir Ramadhan^a, Nizwardi Jalinus^b, Refdinal^c, SaifulNurArif^d, MukhlisRamdhan^e, Muhammad Dahria^f, Asyahri Hadi Nasyuha^g

^aramasabir@gmail.com, ^bjnizwardi228@gmail.com, ^crefmoein@gmail.com, ^dSaiful.nurarief@gmail.com, ^emukhlis_ramadhan@trigunadharma.ac.id, ^fm_dahria@trigunadharma.ac.id, ^gasyahrihadi@gmail.com

ABSTRACT:In the era of the Industrial Revolution 4.0, social media is very influential in marketing company products, therefore companies interested in using social media need the role of content creators and employees. This is because the selection of prospective employees for content creators is still manual, and the selection of employees who are still related to family leads to an objective selection. Information technology and decision support systems need to be used as a tool to determine the selection of quality content creation staff using the WASPAS method, a combination of the WSM and WPM methods. By assigning weights to each criterion and then conducting a ranking evaluation process, this method can be used to solve the "multi-criteria decision making" problem. The result of this research is to find content creators who meet the standards of the WASPAS analysis method.

KEYWORDS: Content Creator; Decision Support System; WASPAS.

1. INTRODUCTION

In the era of the Industrial Revolution 4.0, social media is currently very influential(Daniel et al., 2018)(Salman et al., 2016), and many companies are interested in using social media as a way to market products(McShane et al., 2019)(McShane et al., 2019), so it takes creative people to come. Create content, but what is happening now is that the content obtained is not in accordance with the company's wishes(McShane et al., 2019). The problem of content creator employees is due to the manual recruitment process and the selection of employees who are still connected with their families. Employee records itself is a process of finding, finding and attracting job applicants in a company or organization (Setiani, 2013). Therefore, information technology and decision support systems are needed as a tool to determine the selection of quality content creator employees. Like previous studies, a decision support system is a system specifically designed for semi-structured and unstructured problem decision-making processes. In order to properly achieve the objectives of the DSS, a method in the decision support system (namely the WASPAS method) can be used to assist this method, which is a combination of the WSM and WPM methods. This method can be used to solve MCDM (multi-criteria decision-making) problems. Previous research has proven that by using the WASPAS method to determine the weighted value of each criterion, then through the ranking process prospective employees can select prospective employees who meet the requirements. (Handayani et al., 2018)(Sugiarti et al., 2018)(Sugiarti et al., 2018)

2. METHODOLOGY

Decision Support System (DSS) is an interactive information system used to provide information, modeling, and data processing. This system functions in making decisions in both semistructured and unstructured situations(Kusrini M.Kom, n.d.)(Purwokerto et al., 2014)(Zavadskas et al., 2012). The Decision Support System states that the Decision Support System is a system that helps make decisions using data and models(Abdullah & Adawiyah, 2014). A system that can solve problems (Al-hafiz, 2017)(Nasyuha, 2019)(Gunawan, 2015)(Hossein Hojjati & Anvary, 2013). Decision Support Systems are computer-based information systems capable of

^{a,} Faculty of Engineering, Asahan University, Kisaran, Indonesia

b, Faculty of Engineering, Universitas Negeri Padang, Indonesia

^c, Faculty of Engineering, Universitas Negeri Padang, Indonesia

d Computer System of STMIK Triguna Dharma, Medan, Indonesia

^e.Computer System of STMIK Triguna Dharma, Medan, Indonesia

f-Information System of STMIK Triguna Dharma, Medan, Indonesia

^g·Information System of STMIK Triguna Dharma, Medan, Indonesia

providing information, modeling and manipulating data. This system is used for a problem in decision making in a semi-structured and unstructured situation. Basically, a Decision Support System is designed to support all stages of decision making, from identifying problems, selecting relevant data, determining the approach used in the decision-making process, to evaluating alternative choices. Decision support system (DSS) is part of a computerbased information which includes a knowledge-based system or knowledge management that is used as decision support in an organization or company. Decision Support Systems have the following objectives, to assist managers in making decisions to solve a structured problem. support the manager's judgment in making decisions and not try to replace the manager's position, increasing the effectiveness of manager's decision-making rather than its efficiency. In Decision Making, there are three stages that must be passed as follows:

- The tracing and detection stage of the problematic scope is in the process of problem recognition, the incoming data is processed and tested in order to identify the problem.
- b. The design stage is the process of tracing, developing, and analyzing alternative actions that can be taken.
- The stage of selecting among various alternative actions that may be carried out. The results are then implemented in a decision-making process.

Conceptually, there are three elements related to the Decision Making System, namely:

Problems

In a decision support system there are several types of problems, namely: Structured Problems, Semitructured Problems, Unstructured Problems.

Solutions

In solving a problem, the Decision Support System has several types of solutions, namely: Multi Attribute Decision Making (MADM), Simple Additive Weighting (SAW) Method, Analytical Hierarchy Process (AHP) Method, Weighted Aggregated Sum Production Assessment (WASPAS) Method.

Results

The result or output of a Decision Support System is in the form of a decision from a problem being researched or discussed which can be used as a benchmark for a policy.

In weighting, the weight is the value or value of a criterion indicator. There are things that need to be considered in the weighting of a decision support system, namely, the weighting sources of the criteria, the sub-criteria (indicators) the causes of a problem being discussed must come from the optional standards (standard standards) and the policy makers from the case studies (case studies) discussed. .

There are several rules for weighting criteria in a decision support system, namely:

- a. The percentage approach. Has a value range of 0 to 100% with a record value of $\sum Wj = 100\%$
- b. 2. Fuzzy Logic Approach. Has a value range of 0 to 1
- 3. Actual Value Approach. Has a value range of 0 to 10 or 0 to 100 with normalization $\sum W_j = 100\%$ except for the Profile Matching method which has an sktusl value from 0 to 5

2.1 Weighted Aggregated Sum Product Assessment

Weighted Aggregated Sum Product Assessment (WASPAS) is a method that has an error rate which is a combination method from two sources commonly known as WMM, MCDM (Multi Criteria Decision Making) approaches and WPM (Weigth Product Models). The WASPAS method is a method used to reduce errors and determine estimates when selecting the highest and lowest scores. The WASPAS method is a unique combination of the WSM and WPM methods. WASPAS is used to solve various problems, such as decision making, evaluation, alternatives, etc[9][8][18]. Following are the steps that must be completed using the Weighted Sum Product Evaluation (WASPAS) method, namely(Hutagalung et al., 2018):

- 1. First, make a value for each alternative (Xij) and on each criterion (Cij) that has been determined (Sianturi et al., 2018)(Amalia et al., 2019).

$$X = \begin{pmatrix} X_{11} & X_{12} & \dots & X_{1n} \\ X_{21} & X_{22} & \dots & X_{2n} \\ X_{m1} & X_{m2} & \dots & X_{mn} \end{pmatrix}$$

3. Normalizing the X matrix. For Benefit Criteria (Handayani & Marpaung, 2018): $X_{ij} = \frac{x_{ij}}{\max\ ix_{ij}}$

$$X_{ij} = \frac{x_{ij}}{max \ ix_{ij}}$$

For Cost Criteria

$$X_{ij} = \frac{min_{ixij}}{xij}$$

4. Calculating the Preference Value (Q_i)(Panjaitan et al., 2019):

$$Qi = 0.5 \sum_{j=1}^{n} Xijw + 0.5 \prod_{j=1}^{n} (xij)^{wj}$$

Where:

Qi = Value from Q to i

Xij W = Multiply the value of Xij by weight (w)

0.5 = Provision

The alternative that has the highest Qi value is the best alternative.

3. EXPERIMENTAL RESULT

The following research methods used in this study are(Indriani & Warnilah, 2019):

1. Observation

In making observations, it is reviewed directly to companies that need a content creator. In these companies, analysis and observations are carried out how the previous system was in the selection of content creator employees, where the system there is still manual in selecting content creator employees.

2. Interview

After making observations, interviews are conducted with company leaders or related parties who need a system in selecting content creator employees. In Table 1. below shows the data obtained from companies that require content creators with the criteria used, the data are as follows:

Table 1. Prospective Content Creator Employee Data from the Company

No Alterna Criteria									
NO	tive	C1	C2	С3	C4	C5	C6	C7	
1	Melinda Gina Tresia	Pretty good	Master CorelDraw	Master Corel Video Studio	2 Certificates	6 Months	Diploma 3	Pretty Good	
2	Andika Chambe rlin	Good	Master CorelDraw	Master Cyberlink Power Director	4 Certificates	2 Years	vocational high School	Good	
3	Andrian syah	Very Good	Master Adobe Photohop	Master Corel Video Studio	6 Certificates	2 Years	Senior High School	Good	
4	Naufal Alfaqir	Very Good	Master CorelDraw, dan Adobe Photohop	Master Corel Video Studio, Cyberlink PowerDirector dan Adobe Primiere Pro	15 Certificates	3,5 Years	vocational high School	Very Good	
5	Apri Manulla ng	Very Good	Master Adobe Photoshop	Master Adobe Primiere Pro	5 Certificates	3 Years	Diploma 1	Good	
6	Sri Wahyun i	Good	Master Adobe Photoshop	Master Cyberlink Power Director	2 Certificates	6 Month	Vocational high School	Good	
7	Saiful Silungli ngga	Very Good	Master Adobe Photoshop	Master Corel Video Studio	2 Certificates	2 Month	Senior High School	Very Good	
8	Dedy Syaputr a	Not Good	Master Adobe Photoshop	Master Cyberlink Power Director	10 Certificates	2 Years	Vocational high School	Not Good	
9	Febbry Anto Situmor ang	Good	Master CorelDraw	Master Cyberlink Power Director	5 Certificates	6 Month	Vocational high School	Good	
10	Evi Ulina Sitorus	Very Good	Master Adobe Photoshop	Master Corel Video Studio	5 Certificates	1 Year	Diploma 2	Very Good	

Table 2. below explains that the decision-making process requires criteria that have been determined by the company in determining potential content creators, here are the criteria used:

Table 2. Name of Criteria and Weighted Criteria

No	Id	Criteria	Weight (W _{j)}	Type
1	C_1	Ethics	20% = 0.2	Benefit
2	C_2	Mastery of Graphic Design Editing	20% = 0.2	Benefit
3	C_3	Video Editing Mastery	20% = 0.2	Benefit
4	C_4	Design Certificate / Charter Grafis/Videografi	5% = 0,05	Benefit
5	C_5	Work experience	20% = 0.2	Benefit
6	C_6	Education	5% = 0,05	Benefit
7	C_7	Interview	10% = 0.1	Benefit

Based on the data that has been obtained, conversion of each criterion is carried out so that the calculation process can be carried out into the WASPAS method. The following is a conversion table of the criteria used:

a Ethics

Table 3. below explains the weight value of the Ethical criteria as follows:

Table 3. Ethical criteria

Ethical Information	Alternative Weights
Very Good	5
Good	4
Pretty Good	3
Not Good	2
Very Bad	1

b. Mastery of Graphic Design Editing

The weight value of the criteria for Graphic Design Editing Mastery is described in table 4. as follows:

Table 4. Graphic Design Editing Mastery

	8 8 3	
Sof	tware mastered in Graphic Editing	Alternative Weights
Master Corel	Draw, Adobe Photoshop, dan Adobe Illustrator	5
Master Corel	Draw dan Adobe Photoshop	4
Master Adob	Elllustrator	3
Master Adob	e Photoshop	2
Master Corel	Draw	1

c. Video Editing Mastery

Table 5 explains the weight value of the Video Editing Mastery criteria as follows:

Table 5. Video Editing Mastery Criteria

Software mastered in Graphic Editing	Alternative Weights
Master Corel Video Studio, Cyberlink PowerDirector dan Adobe	5
Primiere Pro	
Master Corel Video Studio dan Cyberlink PowerDirector	4
Master Adobe Primiere Pro	3
Master Cyberlink PowerDirector	2
Master Corel Video Studio	1

d. Design Certificate / Charter Grafis/Videografi

The following is the weight value of the Graphic Design / Video Certificate / Charter criteria shown in table 6. as follows:

Table 6. Criteria for Certificate / Charter in the Field of Graphic / Video Design

Applicant's Owned Certificate	Alternative Weights
14-16 Certificates	5
11-13 Certificates	4

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8-10 Certificates	3
5-7 Certificates	2
0-4 Certificates	1

e. Work Experiences

In table 7. below the weight value of the work experience criteria is explained as follows:

Table 7. Work Experience

Work Experience	Alternative Weights	
4 Years	5	
3 - 4 Years	4	
2 - 3 Years	3	
1 - 2 Years	2	
0 - 1 Years	1	

f. Education

The following is the weight value of the education criteria which can be seen in table 8. Below:

Table 8. Educational Criteria

Education	Alternative Weights
Diploma 3	5
Diploma 2	4
Diploma 1	3
vocational high School	2
Senior High School	1

g. Interview

In table 9. the following is the weight value of the interview criteria as follows:

Table 9. Interview Criteria.

Results of the Interview	Alternative Weights
Very Good	5
Good	4
Pretty Good	3
Not Good	2
Very Bad	1

Based on the data above, it is necessary to evaluate each criterion with a criteria table in order to perform calculations. In table 10, the following is the data conversion result of alternative data.

Table 10. Results of alternative data conversion

No	Alternative		Criteria					
110		C_1	C_2	$\mathbf{C_3}$	C_4	C5	C6	\mathbf{C}_{7}
1	Melinda Gina Tresia	3	1	1	1	1	5	3
2	Andika Chamberlin	4	1	2	1	1	2	4
3	Andriansyah	5	2	1	2	2	1	4
4	Naufal Alfaqir	5	4	5	5	4	2	5
5	Apri Manullang	5	2	3	2	4	3	4
6	Sri Wahyuni	4	2	2	1	1	2	4
7	Saiful Silunglingga	5	2	1	1	1	1	5
8	Dedy Syaputra	2	2	2	3	2	2	2
9	Febbry Anto Situmorang	4	1	2	2	1	2	4
10	Evi Ulina Sitorus	5	2	1	2	1	4	5
	Nilai Max	5	4	5	5	4	5	5

3.1 Algorithm

The system algorithm is an explanation of the steps for solving problems in the design of a decision support system in Defining A Content Creator. This is done to increase the effective and efficient assessment. The following is a Flowchart of the WASPAS algorithm, which is as follows:

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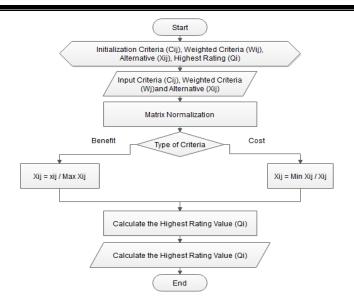


Figure 1. Flowchart of the WASPAS Algorithm

3.2 Analysis and Result

The following are the steps in completing the WASPAS method as follows:

1. Creating a Decision Matrix

The following is a decision matrix based on the data converted to alternative values, namely, as follows:

2. Calculating the Normalized Matrix

The following is a matrix normalization of alternative values according to the criteria.

$$=\frac{x_{ij}}{\max i x_{ij}}$$

Performance Criteria Matrix I:

Performance Criteria Matrix 1:

$$A_{11} = \frac{3}{5} = 0,6$$

$$A_{21} = \frac{4}{5} = 0,8$$

$$A_{31} = \frac{5}{5} = 1$$

$$A_{41} = \frac{5}{5} = 1$$

$$A_{41} = \frac{5}{5} = 1$$

$$A_{41} = \frac{5}{5} = 1$$

$$A_{51} = \frac{5}{5} = 1$$

$$A_{101} = \frac{5}{5} = 1$$

Performance Criteria Matrix II:

$$A_{12} = \frac{1}{4} = 0,25$$

$$A_{22} = \frac{1}{4} = 0,25$$

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

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

$$A_{42} = \frac{4}{4} = 1$$

$$A_{52} = \frac{1}{4} = 0,2$$

$$A_{42} = \frac{1}{4} = 0,2$$

$$A_{42} = \frac{1}{4} = 0,2$$

$$A_{52} = \frac{2}{4} = 0,5$$

$$A_{102} = \frac{2}{4} = 0,4$$

Performance Criteria Matrix III:

$A_{13} = \frac{1}{5} = 0.2$	$A_{63} = \frac{2}{5} = 0.4$
$A_{23} = \frac{2}{5} = 0,4$	$A_{73} = \frac{1}{5} = 0.2$
$A_{33} = \frac{1}{5} = 0.2$	$A_{83} = \frac{2}{5} = 0.4$
$A_{43} = \frac{5}{5} = 1$	$A_{93} = \frac{2}{5} = 0.4$
$A_{53} = \frac{3}{5} = 0.6$	$A_{103} = \frac{1}{5} = 0.2$

Performance Criteria Matrix IV:

i cirorinance criteria manifi i .	
$A_{14} = \frac{1}{5} = 0.2$	$A_{64} = \frac{1}{5} = 0.2$
$A_{24} = \frac{1}{5} = 0.2$	$A_{74} = \frac{1}{5} = 0.2$
$A_{34} = \frac{2}{5} = 0.4$	$A_{84} = \frac{3}{5} = 0.6$
$A_{44} = \frac{5}{5} = 1$	$A_{94} = \frac{2}{5} = 0.4$
$A_{54} = \frac{2}{5} = 0,4$	$A_{104} = \frac{2}{5} = 0.4$

Performance Criteria Matrix V:

$A_{15} = \frac{1}{4} = 0.25$	$A_{65} = \frac{1}{4} = 0.25$
$A_{25} = \frac{1}{4} = 0.25$	$A_{75} = \frac{1}{4} = 0.25$
$A_{35} = \frac{2}{4} = 0.5$	$A_{85} = \frac{2}{4} = 0.5$
$A_{45} = \frac{4}{4} = 1$	$A_{95} = \frac{1}{4} = 0.25$
$A_{55} = \frac{4}{4} = 1$	$A_{105} = \frac{1}{4} = 0.25$

Performance Criteria Matrix VI:

$A_{16} = \frac{5}{5} = 1$	$A_{66} = \frac{2}{5} = 0.4$
$A_{26} = \frac{2}{5} = 0.4$	$A_{76} = \frac{1}{5} = 0.2$
$A_{36} = \frac{1}{5} = 0.2$	$A_{86} = \frac{2}{5} = 0,4$
$A_{46} = \frac{2}{5} = 0.4$	$A_{96} = \frac{2}{5} = 0.4$
$A_{56} = \frac{3}{5} = 0.6$	$A_{106} = \frac{4}{5} = 0.8$

Performance Criteria Matrix VII:

$A_{17} = \frac{3}{5} = 0.6$	$A_{67} = \frac{4}{5} = 0.8$
$A_{27} = \frac{4}{5} = 0.8$	$A_{77} = \frac{5}{5} = 1$
$A_{37} = \frac{4}{5} = 0.8$	$A_{87} = \frac{2}{5} = 0.4$
$A_{47} = \frac{5}{5} = 1$	$A_{97} = \frac{4}{5} = 0.8$
$A_{57} = \frac{4}{5} = 0.8$	$A_{107} = \frac{5}{5} = 1$

From the above calculations, the following results from the normalized performance matrix:

0,6 0,25 0,2 0,2 0,25 0,6 0,8 0,25 0,4 0,2 0,25 0,4 0,8 0,5 0,2 0,4 0,5 0,2 0,8 0,4 1 1 0,5 0,6 0,4 0,6 0,8 0,8 0,5 0,4 0,2 0,25 0,4 0,8 1 0,2 0,2 0,25 0,2 1 0,4 0,4 0,6 0,5 0,4 0,4 0,25 0,4 0,4 0,25 0,4 0,8 0,5 0,2 0,4 0,25

3. Calculating the Value of Qi

The formula used in calculating Qi is as follows:

$$\begin{array}{l} Qi = 0.5 \sum_{j=1}^{n} Xijw + 0.5 \prod_{j=1}^{n} (xij)^{wj} \\ Score Q1 \\ = 0.5 & (0.6\%0,2) + (0.25\%0,2) + (0.2\%0,2) + (0.2\%0,05) + (0.25\%0,2) + (1\%0,05) + (0.6\%0,1)) + 0.5 & ((0.6\%2) * (0.25\%2) * (0.2\%2) * (0.25\%2) * (0.25\%2) * (0.25\%2) * (0.25\%2) * (0.6\%1)) = 0.19 + 0.16476 = 0.35476 \\ Score Q2 \\ = 0.5 & (0.08\%0,2) + (0.25\%0,2) + (0.4\%0,2) + (0.25\%0,3) + (0.25\%2,2) + (0.4\%0,05) + (0.8+0,1)) + 0.5 & ((0.8\%2) * (0.25\%2) * (0.4\%2) * (0.25\%3) * (0.4\%3) * (0.8\%1)) = 0.225 + 0.19708 = 0.42208 \\ Score Q3 \\ = 0.5 & ((0.4\%2) + (0.5\%2,2) + (0.2\%2,2) + (0.4\%0,05) + (0.5\%0,2) + (0.25\%0,3) + (0.8+0,1)) + 0.5 & (1^{0.2}) * (0.25\%3) * (0.4\%3) * (0.8\%1)) = 0.225 + 0.19708 = 0.42208 \\ Score Q3 \\ = 0.5 & ((1\%0,2) + (0.5\%0,2) + (0.2\%0,2) + (0.4\%0,05) + (0.5\%0,2) + (0.2\%0,05) + (0.8+0,1)) + 0.5 & (1^{0.2}) * (0.5\%3) * (0.8\%3)) = 0.275 + 0.23672 = 0.51172 \\ Score Q4 \\ = 0.5 & ((1\%0,2) + (1\%0,2) + (1^{18}0,2) + (1^{18}0,2) + (1^{18}0,2) + (0.4^{18}0,05) + (1+0,1)) + 0.5 & (1^{0.2}) * (1^{0.2}) * (1^{0.5}) * (1^{0.5}) * (1^{0.5}) * (1^{0.5}) * (1^{0.5}) * (1^{0.5}) * (1^{0.5}) * (1^{0.5}) * (1^{0.5}) * (1^{0.5}) * (1^{0.5}) * (0.5\%3) * (0.8\%3) * (0.8\%3) * (0.8\%3) * (0.8\%3) * (0.8\%3) * (0.8\%3) * (0.8\%3) * (0.8\%3) * (0.8\%3) * (0.8\%3) * (0.8\%3) * (0.8\%3) * (0.25\%3) *$$

4. Ranking

Based on the Qi value above, the following results and rankings from the Qi assessment are shown in table 11, as follows:

Table 11. Results of the WASPAS Method ranking

No	Alternative	Score Qi	Rangking
1	Naufal Alfaqir	0.96261	1
2	Apri Manullang	0.73286	2
3	Andriansyah	0.51172	3
4	Evi Ulina Sitorus	0.50085	4
5	Sri Wahyuni	0.47638	5
6	Saiful Silunglingga	0.45855	6
7	Dedy Syaputra	0.44815	7
8	Febbry Anto		8
	Situmorang	0.43403	
9	Andika Chamberlin	0.42208	9
10	Melinda Gina Tresia	0.35476	10

From the results of the ranking above, the one who passed to become a Content Creator is rank 1, namely Naufal Alfaqir with a value of 0.96261. if there is the same value at the time of calculating the value of Qi and has the same rank, then the decision is given to the company leadership to determine who is entitled to be accepted as an employee of the content creator

4. CONCLUSION

- 1. The WASPAS method in this study provides the best alternative results from the analysis carried out.
- 2. Selection of the right criteria in the analysis makes this research very accurate in determining the results.
- 3. In applying the WASPAS method, the selection of criteria is based on the level of importance, and gives weight to the alternatives to be selected.
- Analysis of this method can be used in different cases by providing suitable criteria for the problem to be solved.

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