

# Priority Determination of Forms of Online Magazine Content Using AHP-TOPSIS: Case Study of majalahbarista.com

Nurkarunia Wati\* Hadi Syahrial\*\* M.Adam Hesa\*\*\*

\*( Master Program of Computer Science, Budi Luhur University, Jakarta )

\*\* ( Master Program of Computer Science, Budi Luhur University, Jakarta )

\*\*\* ( Master Program of Computer Science, Budi Luhur University, Jakarta )

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## Abstract:

Majalahbarista.com is an online magazine that contains information about coffee and lifestyle. To increase visitors, Majalah Barista website must provide articles in the form of videos, text, pdf, and others that are appropriate for displaying them to decide the right content for the articles that will be broadcast on majalahbarista.com. Therefore the Analytic Hierarchy Process (AHP) methodology and the Order Preference Technique by Similarities with Ideal Solutions (TOPSIS) used to find out the basic form of the right content for the article to be displayed. The results of the research with these two methodologies can be used to display any results that are appropriate to launch on the barista website with the first order is the video form with a value of 0.55, then infographics with a value of 0.51, social media with a value of 0, 50, html text with a value of 0.25, and finally pdf with a value of 0.18 and only takes 10 out of 15 content that will be displayed on the barista website. The results of this calculation have an inconsistency value of 9.48%. Inconsistent value is still below 10%. The results of this study are consistent and applicable. From the results of black box testing, it was found that the features on the barista website were successful. The test results using the End-User Computational Satisfaction (EUCS) model questionnaire stated that visitors of majalahbarista.com were satisfied

**Keywords** —Barista Online Magazine, AHP, TOPSIS, Content Form, MVP, Startup, EUCS

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## INTRODUCTION

According to the internet site word stats [1] on December 31, 2017, Indonesia ranked 6th in Asia as the country with the most internet users [2]. Based on these data, a website for majalahbarista.com was created. To create a website, we must understand what kind of content is right to be displayed on the online magazine so that it can attract many visitors[3]. Therefore research is needed to determine the priority of the form of content so that the content displayed can attract visitors to visit the site of majalahbarista.com [4]. For the determination of alternatives from several alternatives the right form of content to be displayed in majalahbarista.com will be processed using

AHP-TOPSIS. AHP is used to find the weight of each content topic. while TOPSIS to choose the form of content (pdf, html. Video, etc.)

## METHODOLOGY

AHP is used to solve complex multicriteria problems into a hierarchy, unclear problem structure, uncertainty of opinion from decision makers, decision makers of more than one person, and inaccuracy of available data [5]. This study uses 15 criteria. The AHP is carried out by the following steps:

1. Sum up the value of each column in the matrix.
2. Divide each value from the column by the total column

- Sum up the values of each matrix and divide by the number of elements to get the average value

TOPSIS is used to choose available alternatives. The chosen alternative must have the closest distance from the positive ideal solution and the furthest from the negative ideal solution. The steps in TOPSIS are as follows:

- Make a normalized decision matrix obtained from the weights.
- Making a normalized decision matrix weighted
- Determine the positive ideal solution matrix and the negative ideal solution matrix.
- Determine the distance between the values of each alternative with the positive ideal solution matrix and the negative ideal solution
- Determine preference values for each alternative

After obtaining the prevention value, an alternative rating will be carried out based on the order of prevention values. The biggest value indicates that the alternative is the most recommended solution [6].

## RESULTS AND IMPLEMENTATION

The test results of the AHP and TOPSIS were tested to determine the selection of the content form at majalahbarista.com. In this study the determination of the criteria weight was carried out using the AHP, while the ranking stage was done using the TOPSIS[7].

### A. AHP Process

Determination of criteria weight was obtained from a questionnaire from 5 experts related to communication science and the owners and editors of coffee magazines. The Hierarchy of AHP in this study can be seen in the following figure:

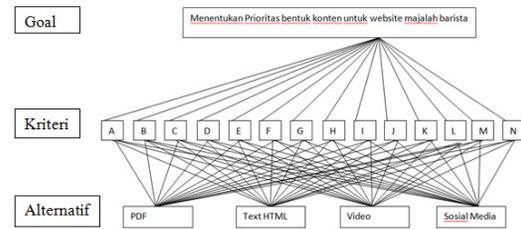


Fig 1 Hierarchy of AHP

The symbol description on the AHP criteria above can be seen below:

TABLE I  
DESCRIPTION OF CRITERIA SYMBOL

A : people opinion and coffee news	H : Barista
B : coffeshop review	I : Fashion
C : benefits of coffee	J : lifestyle
D : danger of coffee	K : health
E : coffee processing techniques	L : Traveling
F : how to do coffee business	M : Technology
G : introduction and knowledge about coffee	N : lifestyle tips & tricks

After the pairwise comparison matrix is done, then the next is the weighting process for each criterion. The weight of each criterion will be used as the initial capital to get the CR (Consistency Ratio) value to state whether the calculation is valid or not. If the CR value is <0.1 then this research is declared valid. As shown in Fig II below, the CR value is 0.094. The value of CR <0.1 means that the results of this study are valid and can be used.

TABLE II  
VALUE OF CR RESULTS ON AHP

I_max	17.09
CI	0.15
RI (n=15)	1.59
CR	0.094

From the weighting above, the criteria obtained in the AHP process are as shown in Table III below:

TABLE III  
RESULTS OF CRITERIA RANKING IN AHP

- 1 : Introduction and knowledge about coffee
- 2 : Technology
- 3 : Barista
- 4 : Coffee types
- 5 : Traveling
- 6 : Health
- 7 : How to do coffee business
- 8 : lifestyle tips & tricks
- 9 : benefits of coffee
- 10 : people opinion and coffee news
- 11 : Coffeeshop review
- 12 : Coffee processing techniques
- 13 : Lifestyle
- 14 : Fashion

	Pdf	Tex html	Video	Social media	Infographic
s*	0.33	0.30	0.22	0.23	0.21
s-	0.07	0.10	0.27	0.23	0.22
c*	0.18	0.25	0.55	0.50	0.51
Ranking	5	4	1	3	2

Of the five alternatives that were processed, this study only took the top 4 alternatives which would then be implemented to be displayed on the website of majalahbarista.com. The final results of the alternative ranking on TOPSIS can be seen in table VI below:

**B. TOPSIS Process**

The weight of the AHP results will be the main capital in the TOPSIS process. From these weights, the next stage will be calculated using the value of each alternative.

In this study, alternative values from each form of content were obtained in majalahbarista.com as seen in table IV below :

TABLE IV  
ALTERNATIVE VALUE ON TOPSIS

Criteria	Pdf	Tex html	Video	Social media	Infographic	Weights
People opinion and coffee news	3.5	3	1	1.5	3	0.03070175
Coffeeshop review	3.5	2.5	2.0	2.0	3.0	0.03011854
Benefits of coffee	3.5	3.0	1.0	1.5	2.5	0.03117845
Coffee processing techniques	3.5	3.0	3.5	2.0	2.5	0.03011854
How to do coffee business	4.0	4.0	1.5	1.5	3.0	0.04690199
Introduction and knowledge about coffee	3.5	3.5	2.5	2.5	3.0	0.19956504
Barista	3.0	3.0	3.0	3.0	2.5	0.09818819
Fashion	2.0	2.5	3.5	3.5	1.5	0.01557977
Lifestyle	3.5	2.5	3.5	3.5	1.5	0.02875843
Health	3.0	2.5	3.5	3.5	1.5	0.06140350
Traveling	4.0	4.0	4.0	4.0	3.5	0.07053410
Technology	3.5	3.5	3.5	3.5	3.0	0.19661823
Lifestyle tips & tricks	2.5	2.0	3.5	3.5	2.0	0.04690199
Coffee types	3.0	3.0	4.0	4.0	3.5	0.08741684

In table IV the alternative value in TOPSIS is obtained from the questionnaire to 3 experts related to the owner and editor of the coffee magazine.

The weight of TOPSIS is the weight that is obtained from the processing results on the weight of the AHP criteria.

After the table is normalized, then multiplied by weight.

The next step is to calculate the distance between positive and negative ideal. That way, the final results obtained from alternative processing using TOPSIS can be ranked as below:

TABLE V  
TOPSIS RESULT

TABLE VI  
ALTERNATIVE RANKING RESULTS FOR TOPSIS

No	Content Type	Value	Rank
1	Video	0.55	1
2	Infographic	0.51	2
3	Social media	0.50	3
4	Teks HTML	0.25	4
5	Pdf	0.18	5

The results of the AHP - TOPSIS calculation will be implemented on the barista magazine website [8]

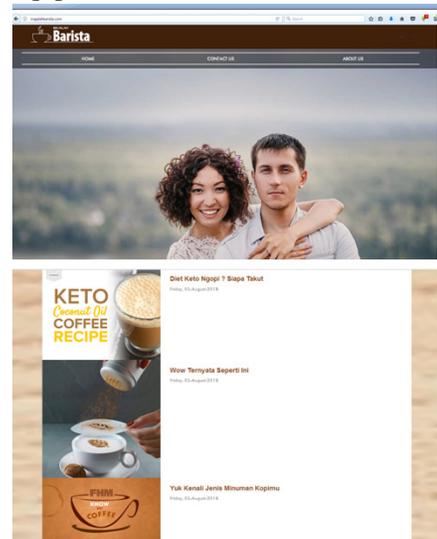


Fig 2 Display of majalahbarista websites

**TESTING**

**A. Satisfaction Test**

The results of the application of AHP-TOPSIS in majalahbarista.com will be tested for satisfaction using EUCS (End-User Computing Satisfaction) to the visitors of majalahbarista website.

Descriptive analysis in this study uses

Kode	Mean	Kode	Mean	Kode	Mean
R1	4.45	R33	3.36	R65	4.55
R2	4.18	R34	4.36	R66	4.45
R3	4.09	R35	4.00	R67	4.18
R4	4.36	R36	4.00	R68	4.64
R5	4.36	R37	4.09	R69	4.09
R6	4.27	R38	4.18	R70	4.09
R7	4.18	R39	4.09	R71	4.00
R8	4.09	R40	4.55	R72	4.18
R9	4.55	R41	4.64	R73	4.36
R10	4.45	R42	4.36	R74	4.36
R11	4.27	R43	4.09	R75	4.55
R12	4.45	R44	4.45	R76	4.18
R13	4.36	R45	4.73	R77	4.64
R14	4.36	R46	4.36	R78	4.09
R15	4.27	R47	3.55	R79	4.00
R16	4.18	R48	4.00	R80	4.27
R17	4.45	R49	4.45	R81	4.45
R18	4.36	R50	4.00	R82	4.55
R19	4.27	R51	3.91	R83	3.91
R20	4.82	R52	4.09	R84	4.27
R21	4.55	R53	4.09	R85	4.45
R22	4.00	R54	3.73	R86	4.64
R23	4.00	R55	4.45	R87	4.45
R24	3.73	R56	4.27	R88	4.27
R25	3.91	R57	4.09	R89	4.27
R26	3.82	R58	4.45	R90	4.45
R27	4.27	R59	4.09	R91	4.82
R28	4.09	R60	4.27	R92	4.36
R29	4.45	R61	4.09	R93	4.55
R30	4.00	R62	4.27	R94	4.45
R31	4.27	R63	4.00	R95	4.45
R32	4.45	R64	4.45	R96	4.55

MEAN RESULTS ON EUCS QUESTIONNAIRE RESPONDENTS

From the results of the total calculated mean on the EUCS questionnaire above obtained the result is 4.3, based on the categorization, that scale 4.3 shows that the questionnaire testing the level of satisfaction using the EUCS model states that majalahbarista.com visitors feel very satisfied.

**B. Test the Validity of the EUCS Questionnaire**

In this study tested the validity of the results of the satisfaction questionnaire using EUCS. Any of the results of the validity test can be seen in the table below:

TABLE IX  
TABLE OF TEST RESULTS FOR THE VALIDITY OF THE EUCS QUESTIONNAIRE

	C1	C2	C3	C4	A1	A2	F1	F2	E1	T1	T2
R <sub>value</sub>	0.30	0.36	0.51	0.42	0.48	0.45	0.32	0.32	0.13	0.27	0.26
r <sub>table</sub>	0.199	0.199	0.199	0.199	0.199	0.199	0.199	0.199	0.199	0.199	0.199
Result	valid	not valid	valid	valid							

From the above results stated that the questionnaire with E1 Code is declared invalid and the questionnaire can not be used.

From the above results stated that the questionnaire with E1 Code is declared invalid and that invalid questionnaire can not be used.

**C. EUCS Questionnaire Reliability Test**

The reliability test on the questionnaire was carried out with the Cronbach Alpha formula with the help of Ms.Excel using the "var" function. Provisions on reliability testing using the Cronbach Alpha formula are as follows (Guilford 1956):

- 0.80 - 1.00 very high reliability
- 0.60 - 0.80 high reliability
- 0.40 - 0.60 moderate reliability
- 0.20 - 0.40 low reliability.
- -1.00 - 0.20 very low reliability (not reliable).

Validity Test results on the EUCS Questionnaire can be seen in the following table:

TABLE X  
RELIABILITY TEST RESULTS ON THE EUCS

respondents' response categorization based on the average score [9] state that for ordinal data on a Likert scale, the concentration size used is a quartile scale. The categorization of the average score of respondents' responses is calculated based on the maximum score range and the minimum score divided by the number of desired categories with the following formula.

$$\text{Score} = \frac{\text{Max Score} - \text{Min Score}}{\text{Total}}$$

With the number of categories cooled by 5 categories, the category score range is 0.80 as can be seen in the table below:

TABLE VII  
INTERVAL SCORE

Interval skor	kuartil
4.20 - 5.00	5
3.40 - 4.19	4
2.60 - 3.39	3
1.80 - 2.59	2
1.00 - 1.79	1

TABLE VIII

QUESTIONNAIRE

Pertanyaan	C1	C2	C3	C4	A1	A2	F1	F2	E1	T1	T2
Nilai varian	0.65	0.74	0.69	0.62	0.66	0.72	0.59	0.68	0.64	0.66	0.69
Jumlah var	6.08										
Jumlah var total	8										
$\alpha$	0.60										

From table X above it can be seen that alpha ( $\alpha$ ) is 0.60 based on the provisions of reliability testing using the Cronbach Alpha formula, if the value of  $\alpha$  is between 0.60 -0.80, it means that the results of this questionnaire have a high reliability value.

**CONCLUSION**

From the results of the AHP-TOPSIS calculation, it can help Barista magazine leaders in making decisions in determining the four priority forms of the right content to be displayed in barista magazines in the following order: Video, Infographic, Social Media, HTML Text.

Of the 15 content criteria and 10 content criteria will be used from the acquisition of the highest weight that will be displayed on barista magazines.

From the results of the satisfaction test using EUCS, it was concluded that the visitors of the barista malajah were satisfied. From the results of testing the validity of the questionnaire based on the 0.05 significance test which adopted the EUCS model with 96 respondents consisting of visitors to barista magazines it was known that 1 in 12 answers to the questionnaire were invalid.

From the results of reliability testing using the cronbath alpha formula states that the test results are declared consistent.

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