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Social Media Analysis for Effective Information Dissemination and Promotions Using TOPSIS

Reka Hani Latifah Nurhasanah [1]*, Abdul Halim Anshor [2], Asep Muhidin [3]***
* Teknik Informatika, Universitas Pelita Bangsa
hanireka@mhs.pelitabangsa.ac.id [1], abdulhalimanshor@pelitabangsa.ac.id [2], asep.muhidin@gmail.com [3]

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ABSTRACT

Social media has become an essential tool for spreading news and promotions. This research aims to evaluate the effectiveness of using social media as a strategy for disseminating information and promoting products using the TOPSIS method. Initial data was collected from a survey of social media users. The data was gathered through questionnaires distributed to various groups, including students, entrepreneurs, and office workers. The TOPSIS method was used to analyze the data and identify the most effective social media channels for information dissemination and promotion. The findings indicate that Facebook is the most effective platform for disseminating information, followed by Instagram and Twitter. Conversely, Instagram is the most effective platform for content promotion, followed by Facebook and YouTube. This study has significant implications for businesses and organizations that use social media for information dissemination and promotions. The TOPSIS (Technique for Order Preference by Similarity to Ideal Solution) method was used to evaluate and rank platforms based on criteria such as reach, accessibility, topicality, ease of use, creativity, informativeness, adaptability, transactionability, and security. The results show that TikTok is the best social media platform with the highest preference score of 0.755, followed by Facebook in second place, Instagram in third place, Twitter in fourth place, Telegram in fifth place, and YouTube in sixth place.

I. INTRODUCTION

After seeing a sharp decline in the last few years, social media has become the most popular communication and information channel worldwide. Social media platforms like Facebook, Instagram, Twitter, and YouTube have active users who participate in various activities like sharing information, interacting with others, and consuming content. Social Media is a digital media platform in the 4.0 era that reaches the people of Indonesia and its surroundings. In the 4.0 era it reaches the people of Indonesia and its surroundings. Today, social media is used by people of all ages, genders, and backgrounds. Media is very closely related to our daily lives. According to research data from a report entitled Digital 2022: Indonesia, DataReportal stated that social media use reached 68.9% of Indonesia's population of 277.7 million as of January 2022.

Media is currently one of the most popular and frequently used applications. Now social media is so intertwined, so closely related to our daily lives that it is widely used as a promotional tool, starting from billboards to advertisements and other forms of information. In our daily lives, it is widely used as a promotional tool, from billboards to advertisements and other forms of information. Compared to other forms of media, forms of media focus on research/advertising, social media allows us to obtain this information. Focuses on research/advertising, social media allows us to obtain this information. With so many interactions between social media, media research is needed, research is needed to identify the best social media platforms for information dissemination and promotion to identify the best social media platforms for information dissemination and promotion [1].

One of the most common applications of social media is in the business sector. Currently, many businesses operate offline. Currently, although most businesses operate offline, there are also those that operate online due to the availability of social media. Social media has become an effective tool for communicating about business, for communicating about business, especially businesses that operate online (Sulaeman, 2020). Business is online popular among entrepreneurs as it provides many benefits to the business in terms of communication and growth in various fields among entrepreneurs as it provides many benefits to the business in terms of communication and growth in various fields. Some of them include ease of reaching the target audience, costs of running a business, the costs of running a business are not as expensive as running an offline business, business processes become easier, and many other benefits. They are not as high as running an offline business, making the process easier, and other benefits.

The benefits of social media can be felt by both sellers and buyers. Social media can be realized by both sellers and buyers. From a business perspective, a simple online business is easy to run because the products sold are heavily promoted via social media. To operate because the products sold are heavily promoted via social media. Furthermore, unlike other purchasing methods, consumers do not need to submit a request to make a purchase, so they can do it simply through social media. There is no need to submit a request to make a purchase, they can only do so through social media. In fact, social media makes it easier for businesses and consumers to interact, so that it can encourage growth. It is easier for businesses and consumers to interact, so that it can encourage growth [2].

According to Kotler and Keller, social media is a means for consumers to share text, images, audio, and information with each other and with companies [3]. Permadi and Fathussyaadah highlighted in their research that the good influence of social media is that in this modern day, the digital-based Micro, Small, and Medium Enterprises (UMKM) sector is everywhere, and it may help strengthen the regional economy in Indonesia [4].

In accordance with this, many sellers now use social media platforms such as Instagram, TikTok, Twitter, and Facebook to promote their items by creating content about the products or services they offer. According to Refiani and Mustikasari's research, Instagram is the most often utilized social media for promotion, with its primary function focusing on visuals in the form of images and videos [5]. Instagram includes a number of unique features, like instastory. Diansyah et al define purchasing decisions as activities made by consumers to purchase a product and a process of picking one of numerous alternative problem resolution with genuine follow-up [6].

Social media has a variety of platforms and features, each with its own set of advantages and disadvantages. When choosing a suitable social media platform for information sharing and promotion, it is important to consider various criteria. This makes it difficult for social media users to determine which platform is the best and most suitable for sharing information and promotions. In this case study, researchers used the TOPSIS method to determine the best platform. TOPSIS allows researchers to analyze all criteria simultaneously and select the social media platforms that best suit individual, organizational, or business needs. TOPSIS helps identify the perfect solution, namely a social media platform that meets all the specified criteria. This allows researchers to compare different social media platforms with an ideal solution and choose the platform closest to the ideal solution.

In carrying out this research, researchers refer to previous research by discussing or using relevant methods. In research conducted by Emi Suryadi and Ahmad Yani with the title "Application of the TOPSIS Method for Selection of Social Media Marketing for Sales of Lombok Tourism Accessories", the results show that this method identifies Facebook as the platform with the highest value among other social media, based on calculations of respondent data . Optimal marketing recommendations can be provided based on these results, although it should be noted that these recommendations may change depending on the value of the criteria used in the evaluation of existing alternatives. Variations in respondent data can also influence the resulting recommendations, given differences in the availability of data used in the analysis [7].

The following research was conducted by Dwi Andini Putri and Enok Tuti Alawiah with the title "Decision Support System To Choose The Best Social Media Platform For Product Marketing Using Topsis Method", with results showing 0.31 for YouTube social media, 0.24 for social media TikTok social media, 0.20 for Instagram social media and 0.11 for Facebook social media. The results of this study can be used by policy makers to determine the right choice of social media to market their products [8].

The fourth research was conducted by Yohana Endah Kiswati1 and Lusi Mei Cahya W with the title "Making The Best Digital Marketing Media Decisions Using The Topsis Method", the results of this research review the application of the Topsis method in determining the best social media decisions for promotion. Of the 150 questionnaires analyzed, TikTok stands out as the most effective platform with a value of 0.424. This method proves that TikTok is the optimal choice for an effective promotional strategy [9].

These two studies have striking similarities and differences. Both studies use the TOPSIS (Technique for Order Preference by Similarity to Ideal Solution) method to evaluate and rank social media platforms based on certain criteria, and both highlight the use of social media for promotional and information dissemination purposes. The data in these two studies was obtained from respondents who use social media, although the respondent profiles are slightly different.

The main difference lies in the focus and object of each research. The first research focuses on selecting the best social media to promote typical Lombok accessories as part of a

marketing strategy to increase sales of local products. Data was taken from respondents related to the marketing of Lombok accessories, although the profile of the respondents was not stated in detail. The research results show that Facebook has the highest value for promoting typical Lombok accessories compared to other social media, although these results may change depending on the criteria used and different respondent data. This research aims to help the people of Lombok increase their income through digital marketing.

Meanwhile, this research evaluates the effectiveness of various social media platforms, such as Facebook, Instagram, Twitter, YouTube, TikTok, and Telegram, in disseminating information and promoting products in general. Data was collected from students, entrepreneurs and office workers. The results show that TikTok is the most effective social media platform overall based on TOPSIS calculations, followed by Facebook and Instagram. This study provides recommendations for businesses and organizations regarding the use of social media for promotion and information dissemination. Overall, although both studies use the same methods and focus on the use of social media for promotion, they have significant differences in the research objects and samples used.

The first research used three housing samples in Depok and found that the third housing had the highest preference value, namely 0.6456, indicating that this housing was the best choice. This research provides a decision support system that helps prospective buyers choose housing that is healthy, comfortable and safe. On the other hand, this research uses survey data from social media users, including students, entrepreneurs and office workers. The analysis results show that TikTok is the most effective social media platform with the highest preference value of 0.755, followed by Facebook, Instagram, Twitter, Telegram and YouTube. This research emphasizes the importance of social media in information dissemination and promotion and provides guidance for businesses and organizations in selecting the most effective platforms based on various criteria such as reach, accessibility, topicality, ease of use, creativity, informativeness, adaptability, transactional ability, and security.

These two studies examine the use of social media for different purposes. The first research finds out which social media platforms are best used to market products. They used a special method, TOPSIS, to rate and compare platforms such as YouTube, TikTok, Instagram, and Facebook. The results show that YouTube is rated the highest for marketing purposes.

Meanwhile, this research focuses on how social media can be effective in disseminating information and promoting products. This research conducted a survey of various people, such as students and entrepreneurs, to see which platforms are best at disseminating information (Facebook, Instagram, and Twitter) and promoting content (Instagram, Facebook, and YouTube). This research found that TikTok is most effective in disseminating information based on certain criteria.

The two studies discussed have different focuses but use the same method, namely TOPSIS, to evaluate the effectiveness of social media. The first research explores the use of TikTok as the best platform for promotion of the Darma Cendika Catholic University Surabaya campus. By processing 150 questionnaires, the research found that TikTok received the highest score of 0.424 in preference as a promotional tool. On the other hand, this research is broader in scope by evaluating various platforms such as Facebook, Instagram, and Twitter for informational and promotional purposes. Through a survey involving students, entrepreneurs and office workers, the second study determined that TikTok also dominates with the highest preference value of 0.755, but Facebook leads in terms of disseminating information, while Instagram is effective for content promotion. Even though they focus on different aspects, these two studies show how important social media is in the context of promotion and information in this digital era.

Based on the analysis above, researchers will continue similar research with different objects. It is hoped that the results of this research can become scientific evidence that can strengthen previous research hypotheses regarding the implementation of the TOPSIS method in making decisions by looking for the best alternative with existing criteria.

II. METHODS

This research adopts a qualitative methodology commonly used in social sciences and education [10]. This approach allows researchers to deepen their understanding of social phenomena and human issues through detailed analysis of words, reports, and respondents' perspectives, as well as direct observation in natural settings. Researcher s serve as the primary instruments in data collection and interpretation, involving direct observation and document studies. Triangulation is employed to ensure data validity and reliability using inductive methods. This methodology enables researchers to pose relevant questions, meticulously analyze data, and construct research objects [11]. Through this approach, researchers observe individuals in their natural environments, interact with them, and seek to understand their language and interpretations of the surrounding world.

Researchers utilize two primary methods: primary data and secondary data. The process begins with gathering primary data, which includes observations and questionnaires. In the first step, the researcher carefully plans the observation. By outlining the research objectives, defining the required data, and selecting appropriate settings, both offline and online. Next, researchers conduct observations in the selected environment, carefully recording every relevant detail using tools such as observation forms or digital applications to ensure accurate and detailed data.

Apart from making observations, researchers also used questionnaires designed to suit the research objectives. This questionnaire was distributed via social media platforms to a

wide audience with 105 respondents. Respondents filled in their data via an online form, which was then automatically collected and analyzed to gain meaningful insights for the study. The next step is to analyze the survey data by ensuring that the questionnaires submitted match the given theme, in addition to cleaning or deleting any valid or empty data. Then the data will be validated and coded according to the survey theme. Data validation begins by ensuring that the theme and content of the questions match the theme created by the researcher, and that the data entered is ensured that it matches the theme (data that does not match will be deleted). Next, the data will be coded manually with criteria based on gender, type of work, age, and the social media most frequently used. Valid data can then be used to implement the TOPSIS method.

Second, by applying the TOPSIS method to valid data. The stages carried out in solving problems using the TOPSIS method include, namely, the first stage involves determining criteria as a basis for the decision making process along with the characteristics attached to each criterion. Next, the alternative suitability value for each criterion is determined [12]. The next stage involves making a performance assessment for each alternative on each criterion which has been normalized using the equation 1 formula [13][12].

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

The third stage involves multiplying these to form a matrix Y, which can be determined based on the normalized weight rankings using the formula equation 2[14][15].

$$Y_{ij} = w_i r_{ij} \quad (2)$$

The fourth stage involves determining the positive ideal solution matrix and negative ideal solution matrix using equations 3 and 4[15][16][17].

$$y_j^+ = \begin{Bmatrix} \max_i y_{ij} \text{ ; if j atribute benefit} \\ \min_i y_{ij} \text{ ; if j atribute cost} \end{Bmatrix} \quad (3)$$

$$y_j^- = \begin{Bmatrix} \min_i y_{ij} \text{ ; if j atribute benefit} \\ \max_i y_{ij} \text{ if j atribute cost} \end{Bmatrix} \quad (4)$$

The fifth stage involves determining the distance between the value of each alternative with the positive ideal solution matrix and negative ideal solution matrix using the formulas of equations 5 and 6[18][19].

$$D_i^+ = \sqrt{\sum_{j=1}^{n} \left(y_i^+ - y_{ij}\right)^2} \quad (5)$$

$$D_i^- = \sqrt{\sum_{j=1}^{n} \left(y_{ij} - y_i^-\right)^2} \quad (6)$$

The sixth stage involves determining the preference value for each alternative using an equation formula 7[9][20].

$$V_i = \frac{D_i^-}{D_i^- + D_i^+} \quad (7)$$

The final stage is to rank the final preference values obtained. Ranking is obtained based on the highest final score. The alternative that has the highest preference value is the best alternative for disseminating information and promotions [21].

III. RESULTS AND DISCUSSION

A. Data Analysis

The TOPSIS method is a decision-making method based on the basic idea that the alternative chosen has the closest distance to the ideal solution and the furthest distance to the negative ideal solution, with the following steps. The decision-making process begins with determining the criteria, labeled D1-D13, which serve as the foundation for evaluation. Each criterion is characterized by specific attributes, and the suitability value of each alternative is assessed for each criterion.

B. Data Collection

The following are the questionnaire data collected by the researcher, categorized by gender, occupation, respondent age, and the most frequently used social media platform.

TABEL I.
RESPONDENT'S GENDER

Gender	Number of Respondents	Percentage
Man	50	47,6%
Woman	55	52,4%
Total	**105**	**100%**

From the resulting questionnaire data, the number of male respondents was 50 people and the number of women was 55 people, as shown in table 1.

TABLE II.
RESPONDENT'S OCCUPATION

Type of work	Number of Respondents	Presentase
Student/Students	49	47,1%
Employee	31	29,8%
Self-employed	24	23,1%
Total	**105**	**100%**

Table two above shows the number of respondents based on their type of work, including 49 students, 31 employees, and 24 entrepreneurs.

TABLE III.
RESPONDENT'S AGE

Respondent's Age	Number of Respondents	Presentase
>18	10	9,5%
18-20	19	18,1%
21-25	33	31,7%
26-30	13	12,4%
31-35	7	6,7%
36-40	8	7,6%
41-45	5	4,8%
46-50	10	9,5%
Total	**105**	**100%**

Table three above shows the number of respondents based on their age, including 29 people aged 18-20, 46 people aged 21-30, 15 people aged 31-40 and 15 people aged 41-50.

TABLE IV.
SOCIAL MEDIA RESPONDENT SELECTION

Code	Social Media	Number of Respondent	Percentage
A1	YouTube	5	4,8%
A2	Facebook	14	13,5%
A3	Instagram	14	13,5%
A4	Telegram	3	2,9%
A5	Twitter	6	5,8%
A6	Tiktok	62	59,6%
Total	6	105	100%

Table four above shows the number of respondents based on the social media they use most often, including YouTube with 5 people, Facebook with 14 people, Instagram with 14 people, Telegram with 3 people, Twitter with 6 people, and Tiktok with 62 people.

TABEL V.
NAMA ALTERNATIVE NAME

Code	Nama Alternative Name
A1	YouTube
A2	Facebook
A3	Instagram
A4	Telegram
A5	Twitter
A6	Tiktok

Alternatives are objects that are used as research to get results. Some of the alternatives chosen include YouTube with code A1, Facebook with code A2, Instagram with code A3, Telegram with code A4, Twitter with code A5, and Tiktok with code A1.

TABLE VI.
SOCIAL MEDIA CRITERIA

Code	Criteria	Weight
D1	Has a wide and even coverage	15
D2	Dissemination of information quickly and accurately	15
D3	Easily accessible to the public	8
D4	Able to influence the response of many people	10
D5	Influence development	8
D6	Affordable/cheap costs	3
D7	Can be used for all criteria	3
D8	Has complete and interesting features	2
D9	As a source of knowledge, entertainment, and lifestyle	3
D10	Provide clear and easy to convey information	2
D11	Allows interaction with other people	4
D12	Easy to carry out transactions	5
D13	Maintain personal data security	4

In the table above the results of normalizing the criteria weights for each criterion with the previous weighting. By calculating the weights (the criteria themselves) divided by the total weights (the total weights of all the criteria), the results of the normalization of the weights for each criterion are obtained.

TABLE VII.
INFORMATION ON WEIGHT VALUES

Weight Value (W_j)	Information
1	Very low
2	Low
3	High enough
4	Tall
5	Very high

In table VII, the weight value information shows the level of importance of each criterion in the analysis. A weight of 1 means very unimportant, while a weight of 2 indicates that the criteria are not important. A weight of 3 indicates a fairly important criterion. A weight of 4 is considered important, and a weight of 5 indicates a very important criterion. This understanding helps determine priorities in decision making.

C. System Analysis

To create a normalized decision matrix (r = [rij]), we first need to determine the values of rij using equation (1). The first step is to gather the raw data that represent the relevant criteria for each alternative being evaluated. Next, we apply the normalization equation, which is generally in the form $r_{ij} = \frac{x_{ij}}{\sqrt{\sum_{i=1}^{m} x_{ij}^2}}$ where x_{ij} is the original value of the j-th criterion for the i-th alternative. Each of these original values is then divided by the square root of the sum of the squares of all the original values in the same criterion column. This process is repeated for every element in the decision matrix, resulting in a normalized decision matrix. By following these steps, we obtain the matrix (r = [rij]), whose elements have been adjusted to allow direct comparison between criteria with different units as shown in table VIII.

$$r_{11} = \frac{5}{\sqrt{5^2 + 5^2 + 5^2 + 3^2 + 4^2 + 5^2}} = 0{,}4472$$

TABLE VIII.
NORMALIZED DECISION MATRIX TABLE

Criteria	Alternative ($r = [r_{ij}]$)					
	A1	A2	A3	A4	A5	A6
D1	0,4472	0,4472	0,4472	0,2683	0,3577	0,4472
D2	0,2683	0,4472	0,3577	0,4472	0,4472	0,4472
D3	0,4210	0,3368	0,4210	0,4210	0,4210	0,4210
D4	0,3866	0,4833	0,3866	0,2900	0,3866	0,4833
D5	0,4193	0,3144	0,5241	0,3144	0,4193	0,4193
D6	0,3273	0,4364	0,3273	0,4364	0,3273	0,5455
D7	0,3312	0,4417	0,3312	0,4417	0,4417	0,4417
D8	0,1980	0,3960	0,3960	0,4950	0,3960	0,4950

D9	0,3831	0,2873	0,4789	0,2873	0,4789	0,4789
D10	0,3110	0,3110	0,4147	0,3110	0,5184	0,5184
D11	0,3713	0,4642	0,4642	0,3713	0,2785	0,4642
D12	0,2519	0,3779	0,3779	0,5039	0,3779	0,5039
D13	0,3638	0,3638	0,4850	0,3638	0,3638	0,4850

To determine the weighted normalized decision matrix ($y = [y_{ij}]$), we start with the provided table and use W as the preference weights (5 3 5 4 4 3 3 2 4 3 4 2 3). Using equation (2), the first step is to calculate the value of y_{11}. This is done by multiplying the preference weight for the first criterion (5) by the previously calculated normalization value (0.4472). The result of this calculation is y_{11}. = 5 x 0.4472 = 2.236. This process is continued for each element in the matrix, multiplying each preference weight by the appropriate normalized value to produce a complete weighted normalized decision matrix. Determine the weighted normalized decision matrix shown in Table IX.

TABLE IX.
WEIGHTED NORMALIZED DECISION MATRIX TABLE

Criteria	Alternative ($y = [y_{ij}]$)					
	A1	A2	A3	A4	A5	A6
D1	2,236	2,236	2,236	0,8049	1,4308	2,236
D2	0,8049	2,236	1,4308	2,236	2,236	2,236
D3	2,105	1,3448	2,105	2,105	2,105	2,105
D4	1,5464	2,4165	1,5464	0,87	1,5464	2,4165
D5	1,6772	0,9432	2,6205	0,9432	1,6772	1,6772
D6	0,9819	1,7456	0,9819	1,7456	0,9819	2,7275
D7	0,9936	1,7668	0,9936	1,7668	1,7668	1,7668
D8	0,3964	1,584	1,584	2,475	1,584	2,475
D9	1,5324	0,8619	2,3945	0,8619	2,3945	2,3945
D10	0,933	0,933	1,6588	0,933	2,592	2,892
D11	1,4852	2,321	2,321	1,4852	0,8355	2,321
D12	0,5038	1,1337	1,1337	2,0156	1,1337	2,0156
D13	1,0914	1,0914	1,94	1,0914	1,0914	1,94

To determine the positive ideal solution matrix (A^+) and the negative ideal solution matrix (A^-) using equations (3) and (4), the following steps are followed. First, we calculate the Euclidean distance from each data point to the positive and negative ideal points using the equations: $d_i^+(A)\sqrt{\sum_{j=1}^{n}\left(\frac{a_{ij}}{a_j^+}\right)^2}$ $or\ A^+$, $d_i^-(A)\sqrt{\sum_{j=1}^{n}\left(\frac{a_{ij}}{a_j^-}\right)^2}$ $or\ A^-$

Here, a_{ij} is each element in the data matrix, a_j^+ and a_j^- are the elements from the ideal positive and negative matrices. Next, we normalize these distances to obtain the final matrices. For the positive ideal solution matrix (A^+), we calculate:

$$a_{ij}^+ = \frac{\sum_{i=1}^{m}\left(\frac{a_{ij}}{d_i^+(A)}\right)^2}{\sqrt{n}}, a_{ij}^- = \frac{\sum_{i=1}^{m}\left(\frac{a_{ij}}{d_i^-(A)}\right)^2}{\sqrt{n}}$$

Here, a_{ij}^+ and a_{ij}^- are the elements in the final positive and negative ideal solution matrices for each corresponding data element. By following these steps, we effectively create a matrix that represents the best and worst scenarios based on our data, which helps in making comparative analyzes and decisions. The same results are shown in Table X and XI.

TABLE X.
POSITIVE IDEAL SOLUTION MATRIX TABLE

Criteria	The positive ideal solution (A^+)
D1	2,236
D2	2,236
D3	2,105
D4	2,4165
D5	2,6205
D6	2,7275
D7	1,7668
D8	2,475
D9	2,3945
D10	2,892
D11	2,321
D12	2,0156
D13	1,0914

TABLE XI.
NEGATIVE IDEAL SOLUTION MATRIX TABLE

Criteria	The negative ideal solution (A^-)
D1	0,8049
D2	0,8049
D3	1,3448
D4	0,87
D5	0,9432
D6	0,9819
D7	0,9936
D8	0,3964
D9	0,8619
D10	0,933
D11	0,8355
D12	0,5038
D13	1,94

The first step in determining the distance between the value of each alternative and the positive ideal solution matrix (d_i+), and the negative ideal solution matrix (d_i-), involves using the weighted normalized matrix. Initially, we compute the weighted normalized matrix by multiplying the weight of each criterion with each element of the normalized matrix. Then, we apply the relevant equation, specifically equation

(5), to calculate the distance between each alternative and both the positive and negative ideal solutions. This equation allows us to measure how close or far each alternative is from the desired ideal solution, whether positive or negative. The results of these calculations are then used for further evaluation in the decision making process which is shown in Tables XII and XIII.

$$d_{1^+} = \sqrt{\begin{matrix}(2{,}236-2{,}236)^2+(0{,}8049-2{,}236)^2\\+(2{,}105-2{,}105)^2\\+(1{,}5464-2{,}4165)^2+(1{,}6672-2{,}6205)^2\\+(0{,}9819-2{,}7275)^2\\+(0{,}9936-1{,}7668)^2+(3{,}964-2{,}475)^2\\+(1{,}523-2{,}3945)^2\\+(0{,}933-2{,}892)^2+(1{,}4852-2{,}321)^2\\+(0{,}5038-2{,}0156)^2\\+(1{,}0914-1{,}0914)^2\end{matrix}} = \mathbf{4{,}383}$$

In the same way we obtain d_i+, i.e

TABLE XII.
DISTANCE TABLE FOR POSITIVE IDEAL SOLUTIONS

Alternative	d_i^+
A1	4,383
A2	3,479
A3	2,843
A4	4,084
A5	3,001
A6	1,663

By using the weighted normalized matrix and equation (5), then:

$$d_{1^-} = \sqrt{\begin{matrix}(2{,}236-0{,}8049)^2+(0{,}8049-0{,}8049)^2\\+(2{,}105-1{,}3448)^2\\+(1{,}5464-0{,}87)^2+(1{,}6672-0{,}9432)^2\\+(0{,}9819-0{,}9819)^2\\+(0{,}9936-0{,}9936)^2+(3{,}964-3964)^2\\+(1{,}523-0.8619)^2\\+(0{,}933-0{,}933)^2+(1{,}4852-0{,}8355)^2\\+(0{,}5038-0{,}5038)^2\\+(1{,}0914-1{,}94)^2\end{matrix}} = \mathbf{2{,}2774}$$

In the same way we obtain d_i-, i.e

TABLE XIII.
DISTANCE TABLE FOR NEGATIVE IDEAL SOLUTIONS

Alternative	d_i^-
A1	2,277
A2	4,783
A3	3,640
A4	3,402
A5	3,461
A6	5,143

To determine the preference value (v_i) for each alternative, we first need to identify the relevant criteria and assign weights to each criterion based on their importance in the decision-making context. Next, each alternative is evaluated against each criterion and given a score based on how well the alternative meets that criterion. This score is then multiplied by the weight of the respective criterion. The following step is to sum the results of these multiplications for each alternative. The sum obtained is the preference value (v_i) for that alternative. This preference value is then used to determine the priority or ranking of each alternative, with the alternative with the highest preference value being considered the best or most preferred choice, which is shown in Table XIV.

$$V_x = \frac{D_{x^-}}{(D_{x^-} + D_{x^+})}$$

$$V_1 = \frac{2{,}277}{(2{,}277 + 6{,}66)} = 0{,}341$$

In the same way we obtain (v_i), i.e

TABLE XIV.
TABLE OF PREFERENCE VALUES

Alternative	Preference (v_i)
A1	0,341
A2	0,578
A3	0,561
A4	0,454
A5	0,535
A6	0,755

Alternatives can be ranked based on the results of the v_i preference values that have been obtained. First, each alternative is evaluated based on relevant criteria and assigned weights according to their importance. Then, the preference values for each alternative are calculated by multiplying the criteria values by the assigned weights. After all preference values are calculated, the alternatives are ranked from highest to lowest v_i value. From the calculation results above, the ranking of the alternatives can be seen in the following table, which shows the ranking of each alternative based on its preference value.

TABLE XV.
RESULTS OF CALCULATING PREFERENCE VALUES

Alternative Name	Preference (v_i)	Ranking
YouTube	0,341	6
Facebook	0,578	2
Instagram	0,561	3
Telegram	0,454	5
Twitter	0,535	4
Tiktok	0,755	1

Based on the results of calculating the preference value for each alternative listed in the table above, it underline the importance of understanding social media usage trends to choose the most effective platform. In today's digital era, where social interactions and marketing are increasingly dependent on online platforms, knowing which platforms are the most popular and the reasons behind their popularity is crucial. In this research, an analysis of the popularity of various social media platforms shows that TikTok is in first

place with a preference value of 0.755, Facebook is in second place with a preference value of 0.578, followed by Instagram in third place with a preference value of 0.561, Twitter is in fourth place with a preference value of 0.535, Telegram is in fifth place with a preference value of 0.454, and YouTube is ranked sixth with a preference value of 0.341. These results are consistent with previous research highlighting Facebook's dominant role in the global social media landscape.

The first research used different variables and criteria from this research. with variables using surveys and criteria including number of users, number of followers, flexible and attractive, and adequate features and facilities. With the selected result being Facebook with a preference value (0.98444271167187)[7].

From the second research using different criteria to this research, it was found that these criteria included, the number of social media users, popularity, social media platforms according to business characteristics, and availability on all application platforms. With the results obtained, YouTube has a preference value of 0.31[8].

From the third research using different criteria to this research, it was found that these criteria included cost, popularity of social media, user interface, and reach. The results obtained are Tiktok with a preference value of 0.424[9].

This research continues previous research which used the Topsis method to determine the best social media platform. This research differs from previous research in terms of the variables used. The results of this study show that xxxx. which is different from the results of previous research. This difference can be caused by variables and the amount of sample data with different environments.

IV. CONCLUSION

From the research results, researchers distributed questionnaires to 101 respondents in the Bekasi City/Regency area. Data collection from all respondents took approximately seven days. Respondent information includes name, gender, age, and occupation, as well as 10 assessment questions for each category. Using predetermined criteria and the TOPSIS (Technique for Order Preference by Similarity to Ideal Solution) method, calculations show that TikTok is the best social media platform, ranking first with a preference value of 0.755. Facebook is in second place with a preference value of 0.578, followed by Instagram in third place with a preference value of 0.561, Twitter in fourth place with a preference value of 0.535, Telegram in fifth place with a preference value of 0.454, and YouTube ranked sixth with a preference value of 0.341. TikTok is the best alternative for spreading information and promotions.

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