DECISION SUPPORT SYSTEM SOCIAL MEDIA SELECTION IN PURCHASING DECISIONS IN KOTIM USING TOPSIS METHOD

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Abstract: Based on the era of globalization people in East Kotawaringin almost all people have used social media, for example, as a personal post some use it to see the promotion of beauty products fashion, and others. The KOTIM community has many who use social media, especially the Young Generation Z who have often used to buy products on social media, for example, Instagram, TikTok, and Facebook. This study will be made using the TOPSIS method for ranking to know which social media is often used by consumers. The researcher also made a questionnaire with Google form that will be tested for the validity or not of the data obtained using SPSS. The object of research is made in East Kotawaringin. The purpose of this study was to determine which social media is often used by the public to purchase decisions in the Kotim Regency. The result of the calculation using the TOPSIS method the social media platform with the highest rating is considered the best choice for decision-making, in this case, TikTok with a rating value of 1. It can be concluded that the social media platform that is widely used by KOTIM residents to make decisions is TikTok.

Keywords: buying decision; social media; TOPSIS

Abstract: Berdasarkan era globalisasi bahwa masyarakat di Kotawaringin Timur hampir seluruh masyarakat telah menggunakan media sosial, contohnya sebagai postingan pribadi ada juga yang menggunakan sebagai melihat promosi produk kecantikan dan fasion dan lainnya. Karena masyarakat KOTIM sudah banyak yang menggunakan media sosial apalagi para anak muda generasi z yang sudah sering menggunakan untuk membeli produk pada media sosial contohnya media sosial instagram, TikTok, dan juga facebook. Pada penelitian ini akan dibuat menggunakan metode TOPSIS untuk perangkingan agar mengetahui media sosial mana yang sering digunakan oleh konsumen. Peneliti juga membuat kuisoner dengan google form yang akan diuji valid atau tidak nya data yang didapat dengan menggunakan SPSS. Objek penelitian yang dibuat berada di Kotawaringin Timur. Tujuan dari penelitian ini adalah untuk mengetahui media sosial mana yang sering digunakan oleh masyarakat terhadap keputusan pemebelian pada wilayah kabupaten KOTIM. Hasil dari perhitungan menggunakan metode TOPSIS platform media sosial dengan peringkat tertinggi dianggap sebagai pilihan terbaik untuk pengambilan keputusan, dalam kasus ini adalah TikTok dengan peringkat nilai 1. Dapat disimpulkan bahwa platform media sosial yang banyak digunakan oleh penduduk KOTIM untuk mengambil keputusan adalah TikTok.

Keywords: keputusan pembelian; media sosial; TOPSIS

INTRODUCTION

In the digital era, the use of social media has become an important factor influencing purchasing decisions. In this context, buyers often need help in choosing the most effective social media to support their purchasing decisions[1]. Social media has become a platform that influences consumer behavior in shopping. Product information, reviews, and recommendations from other users can influence a person's purchasing decision. Purchasing decisions are actions taken by consumers in deciding to buy the goods or services they need [2].

There are four factors influencing consumer behavior during the purchasing process: cultural, social, personal, and psychological. Culture affects habits and preferences, social factors involve influences from the surrounding environment, personal factors encompass variables such as age and lifestyle, while psychological factors include motivation and perception. A deep understanding of these factors is crucial for marketers to comprehend how consumers make purchasing decisions[3].

In the era of globalization, almost all residents in East Kotawaringin utilize social media, particularly the Generation Z, such as Facebook, Instagram, and TikTok. Social media is utilized for personal posts, viewing promotions for beauty products, fashion, food, and more, as well as for conducting purchase transactions. Consumers typically consider promotions, user responses to products, habits, and recommendations before making purchases, along with evaluating various information before deciding whether to buy or not[4].

This study investigates the impact of electronic word of mouth (e-WOM) on purchasing decisions at Oncu's Fruit Dessert on Jl. Piet A. Tallo, Liliba Kupang. The dimensions explored include platform assistance, concern for others, social benefits, advice seeking, expressing positive feelings, and helping the company among 100 respondents who are customers and Instagram account followers[1]. Using the TOPSIS method, the study recommends Facebook as the optimal marketing choice, although results may vary based on criteria values[5]. nother study evaluates the influence of Brand Image on the purchase decisions of Deenay hijabs at Gea Fashion Banjar[3]. Meanwhile, others aim to create a measurement tool in the form of an achievement motivation questionnaire along with the validity and reliability test results of the questionnaire[6]. Additionally, another study aims to develop an achievement motivation measurement tool and determine the criteria weight in selecting class guardians, proposing a prototype application using the TOPSIS method for determining Class Guardians [7].

This study aims to bridge the gap by analyzing the specific influence of social media platforms (such as Facebook, Instagram, and TikTok) on purchasing decisions in East Kotawaringin. The research employs the TOPSIS method to determine the most effective social media platform and analyzes various factors such as promotions, user reviews, habits, and recommendations. The objective is to ascertain the most effective platform, measure the influence of social media, identify factors affecting purchasing decisions, and ensure data validity using SPSS. This research is crucial for providing insights to local marketers, advancing theories, aiding in better decision-making, and understanding the influence of local culture, thus making a meaningful contribution to marketing

theory and business practices in East Kotawaringin.

In this study, the TOPSIS method will be employed for ranking to determine which social media platform is frequently used by consumers. The TOPSIS method is suitable for this research as it allows for in-depth analysis of social media platforms such as Facebook, Instagram, and TikTok based on relevant criteria. Focusing on the local context in East Kotawaringin, this method can accommodate unique variables in that area. TOPSIS provides a systematic quantitative approach, aiding in integrating various factors influencing purchasing decisions, such as promotions and user reviews. Researchers will also create a questionnaire using Google Forms to validate the data obtained using SPSS. Validating the data using SPSS ensures accurate and reliable results, supporting better decision-making for local marketers and entrepreneurs.

METHOD

Data Collection

The data collection process was carried out to obtain the data needed for research. Here the researcher uses data collection techniques, namely using a questionnaire. The questionnaire was distributed by researchers to the public using Google Forms. The data that was taken first and then carried out for validation and reliability tests was 46 data.

Validity Tests

Validity refers to how accurately a measurement instrument fulfills its function as a measuring tool. SPSS, which stands for Statistical Product and Service Solution, is used to test validity, which is a step to assess the accuracy of

measurement tools, such as survey questions. Validity is established if the correlation between survey items and overall scores is significant. On the other hand, reliability indicates the reliability and consistency of a measurement tool such as a survey. To calculate reliability, validity must be ensured first. Common reliability criteria include a Cronbach's alpha (α) value of > 0.6[6][8][9][10].

Application of the TOPSIS method

The TOPSIS method, known as a decision-making technique using various criteria, was first introduced by Yoon and Hwang in 1981. This technique is an approach that is often used to complete practical decisions [11]. With this method, alternatives can be ranked by calculating the ideal solution to a problem and determining the relative value of each criterion [12]. Topsis ranks alternatives based on the relative suitability value between the alternative and the ideal solution. After the ranking is given, the alternatives that have been ranked become a reference for decision-makers to choose the best solution that suits their needs [7]. The Topsis method is used to determine performance determination, evaluation, and comparison [12]. The advantages of choosing the TOPSIS method are, has a simple and easy-to-understand concept, efficient calculation time, and have the ability to measure relative performance and decision alternatives. Topsis has several stages, including :

1. Create a normalized decision matrix [13].

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

2. Create a weighted normalized decision matrix $Y_{ij} = W_i * r_{ij}$.

3. The next step is to calculate the

ideal matrix. This matrix requires determining the ideal solution in both directions, both positive and negative [5].

$$A+=\{y1^+, y2^+, y3^+, ..., yn^+\} \quad (2)$$
$$A-=\{y1^-, y2^-, y3^-, ..., yn^-\} \quad (3)$$

4. Calculate the distance.

D+ is an alternative distance parameter for a positive ideal solution.

$$D_i^+ = \sqrt{\sum_{j=1}^n (y_{ij} - y_i^+)^2} \quad (4)$$

Where i = 1,2,3,... , m

D- is an alternative distance parameter for negative ideal solutions.

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

Where i = 1,2,3,... , m

5. Calculate the preference value for each alternative.

$$V = \frac{Di^-}{Di^- + Di^+} \quad (6)$$

6. Determine Alternative Rank.
Ranking Vi alternatives based on the order from largest value to smallest value, so that the alternative with the largest Vi value will be considered the best solution.

RESULTS AND DISCUSSION

Testing using the TOPSIS method :

Tabel 1. Social Media Alternatives

Alternatives (A)	Explanation
A1	Facebook
A2	Instagram
A3	TikTok

Tabel 2. Alternative Values And Criteria

	Alternative	Facebook	Instagram	TikTok
C1	Easy to understand	110	120	165
C2	Give trust	106	110	160
C3	Interesting visuals	104	117	165
C4	Message Clarity	103	112	161
C5	Information Conveyed to Consumers	101	115	160
C6	Trust in the media used	104	105	159
C7	Description of Product Advantages	100	112	157
C8	Reasons to Buy	101	113	155
C9	Arouse Consumers' Desire to Buy	108	110	160
C10	Convincing	102	110	157
C11	Making Purchases	104	110	148
C12	Product Suitability with Advertising Promotion	100	111	151
C13	Product Stability	105	108	153
C14	Consumer Habits	97	109	151
C15	Recommendation	101	111	152
C16	Make a repeat purchase	103	109	152

Tabel 3. Normalized Matrix R

Divider	R		
231.79	0.47	0.52	0.71
221.21	0.48	0.50	0.72
227.44	0.46	0.51	0.73
221.53	0.46	0.51	0.73
221.42	0.46	0.52	0.72
217.08	0.48	0.48	0.73
217.24	0.46	0.52	0.72
216.78	0.47	0.52	0.71
222.18	0.49	0.50	0.72
217.15	0.47	0.51	0.72
211.71	0.49	0.52	0.70
212.42	0.47	0.52	0.71
214.70	0.49	0.50	0.71
209.98	0.46	0.52	0.72
213.60	0.47	0.52	0.71
213.53	0.48	0.51	0.71

Tabel 4. Normalized Matrix Y

Weight	Y		
4	1.90	2.07	2.85
4	1.92	1.99	2.89
4	1.83	2.06	2.90
4	1.86	2.02	2.91
3	1.37	1.56	2.17
3	1.44	1.45	2.20
4	1.84	2.06	2.89
4	1.86	2.09	2.86
3	1.46	1.49	2.16
3	1.41	1.52	2.17
2	0.98	1.04	1.40
3	1.41	1.57	2.13
4	1.96	2.01	2.85
3	1.39	1.56	2.16
2	0.95	1.04	1.42
2	0.96	1.02	1.42

Tabel 5. Positive as well as negative Ideal solutions

Criteria	A+	A-
Benefits	2.85	1.90
Benefits	2.89	1.92
Benefits	2.90	1.83
Benefits	2.91	1.86
Benefits	2.17	1.37
Benefits	2.20	1.44
Benefits	2.89	1.84
Benefits	2.86	1.86
Benefits	2.16	1.46
Benefits	2.17	1.41
Benefits	1.40	0.98
Benefits	2.13	1.41
Benefits	2.85	1.96
Benefits	2.16	1.39
Benefits	1.42	0.95
Benefits	1.42	0.96

Determine the distance between the weighted values of each alternative the distance between the weighted value of each alternative to the positive ideal solution (D+).

Tabel 6. Positive Ideal Distance

D1+	3.32
D2+	2.80
D3+	0.00

The distance between the weighted value of each alternative to the positive ideal solution (D-).

Tabel 7. Negative Ideal Distance

D1-	0.00
D2-	0.58
D3-	3.32

Preference value for each alternative.

Tabel 8. Rate preferences and determine Rank

Preferensi	Nilai	Peringkat
V1	0	3
V2	0.1708528	2
V3	1	1

The calculation results using TOPSIS can show the ranking from highest to lowest. In this context, the social media platform with the highest rating is considered the best choice for making a decision, in this case, it is TikTok with a value rating of 1.

CONCLUSION

Based on applying the TOPSIS method to activate social media in East Kotawaringin (KOTIM), TikTok shows a higher calculation score than other plat-

forms. This means that the KOTIM community prefers and uses TikTok more often to make decisions than other social media platforms. These results were obtained from data collected from respondents in the area. Thus, TikTok ranks top in social media preferences on KOTIM based on TOPSIS analysis.

BIBLIOGRAPHY

[1] Soinbala & Bessie, "Pengaruh Electronic Word of Mouth (eWOM) melalui Media Sosial Instagram terhadap Keputusan Pembelian (Studi Pada Oncu's Fruit Dessert)," *GLORY J. Ekon. Sos Science.*, vol. 1, no. 1, pp. 65–83, 2020.

[2] M. M. Batee, "The Influence Of Social Media On Purchasing Decisions In Nias Gunungsitoli T-Shirt Stores, " *Jesya (Journal Ekon. Ekon. Syariah)*, vol. 2, no. 2, pp. 313–324, 2019, doi: 10.36778/jesya.v2i2. 108.

[3] I. Miati " "the influence of brand Image on the purchase decision of Deenay veils (study on Gea Fashion Banjar consumers)," *Abiwara J. The Election Of Adm. Business*, vol. 1, no. 2, pp. 71–83, 2020, doi: 10.31334/abiwara. v1i2. 795.

[4] N. Pratiwi " "the effectiveness of promotion using media purchases in Online shopping services," pp. 1–121, 2021.

[5] E. Suryadi " "the application of Topsis method of Social Media Marketing selection for the sale of Lombok Tourism accessories'"' *JATISI (Jurnal Tek. Inform. and Sist. Information)*, vol. 7, no. 3, pp. 429-440, 2020, doi: 10.35957/jatisi.v7i3.545.

[6] R. Al Hakim, I. Mustika, and W. Yuliani " "validity and reliability of achievement motivation questionnaire," *focus (Study Guide. Counseling in Education*, vol. 4, no. 4, p. 263, 2021, doi: 10.22460/focus.v4i4. 7249.

[7] R. Ghaniy and A. P. Sudrajat " " Teknois: Scientific Journal of Information Technology and Science [238] application of TOPSIS method in determining homeroom," vol. 12, no. 2, pp. 238–252, 2022.

[8] A. Arsi, "test measures validity and reliability of instruments using Spss, " *Sekol. High Islamic religion Darul Dakwah Wal-Irsyad*, pp. 1–8, 2021.

[9] N. M. Janna and Herianto " "true statistical articles," *J. Darul Dak wah Wal-Irsyad*, no. 18210047, pp. 1–12, 2021.

[10] L. Amanda, F. Yanuar, and D. Devianto " "test the validity and reliability of the level of political participation of the people of Padang," *J. Mat. UNAND*, vol. 8, no. 1, p. 179, 2019, doi: 10.250 77/jmu.8.1.179-188.2019.

[11] Y. E. Kiswati and L. M. C. W, "Best Digital Marketing Media decision making using TOPSIS method" " *Pros. Semin. Nas. Ris. and Technology. Apply. 2021*, no. 2020, pp. 1–6, 2021.

[12] R. Adi Sofyan and A. Arfian ""' a social Media analysis as a means of information dissemination and promotion using the Topsis method," *PROSISKO J. Pemb. Ris. and Obs. Sist. Computer.*, vol. 10, no. 1, pp. 56–62, 2023, doi: 10.30656/prosisko.v10i1. 557