RECOMMENDATION FOR THE BEST GAMING PHONE USING THE WEIGHT PRODUCT METHOD

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Abstract: Mobile phones, as essential telecommunication devices today, are equipped with numerous features. The plethora of mobile phone models, especially gaming phones, requires consumers to be discerning in choosing a phone for everyday use. The problem is that many consumers do not understand how to purchase a phone that meets their specific criteria. The specifications that must be considered when selecting a gaming phone that fits within a budget and meets criteria include performance or specifications, screen quality, battery life, RAM, network connectivity, and price. A decision support system is a part of information systems designed to facilitate decision-making processes based on data or common everyday problems. The Weighted Product (WP) method is typically used in decision-making that involves multiple criteria to be considered simultaneously. Based on the WP method calculations, it was found that the recommended smartphone alternative is determined by the highest vector value (V) ranking according to user-defined criteria. The analysis results indicate that the recommended smartphone alternative is Alternative 1 with a score of 0.376, which is the Infinix GT 10 Pro, due to its comparable specifications to other models but with a more affordable price."

Keywords: decision support systems ; gaming cellphone; recommendation

Abstrak: Handphone sebagai perangkat telekomunikasi yang menjadi kebutuhan utama saat ini sudah dilengkapi dengan banyak fitur. Banyaknya keluaran jenis handphone khususnya handphone untuk game membuat konsumen harus pintar memilih handphone yang dapat digunakan setiap harinya Permasalahannya adalah konsumen banyak yang tidak paham bagaimana membeli handphone sesuai kriteria yang cocok. Adapun spesifikasi yang harus di saat akan memilih jenis handphone game yang sesuai dengan budget dan kriteria diantaranya adalah perfoma atau spesifikasi, tingkat kualitas layar, daya tahan batrai, RAM, koneksi jaringan, dan harga. Sistem pendukung keputusan merupakan bagian dari sistem informasi yang digunakan untuk memudahkan proses pengambilan keputusan berdasarkan data atau permasalahan yang sering ditemui dalam kehidupan sehari-hari. Metode Weighted Product umumnya digunakan dalam pengambilan keputusan yang melibatkan banyak kriteria yang harus dipertimbangkan secara bersamaan. Berdasarkan proses perhitungan dengan metode WP maka didapatkan bahwa alternatif smartphone yang direkomendasikan untuk dipilih adalah smartphone yang ditentukan berdasarkan peringkat nilai vektor (V) tertinggi sesuai dengan kriteria yang ditetapkan oleh pengguna. Hasil analisis menunjukkan bahwa alternatif smartphone yang direkomendasikan adalah Alternatif 1 dengan skor 0.376, yaitu Infinix GT 10 Pro karena memiliki spesifikasi yang hampir setara dengan yang lain namun dengan harga yang lebih terjangkau.

Kata kunci: handphone game; sistem penunjang keputusan; rekomendasi

INTRODUCTION

The increasingly fierce competition in the gadget world today makes consumers confused about determining which product best suits their budget, desired specifications, and needs. Moreover, various well-known brands are also racing to release products at affordable prices but with unquestionable quality. Smartphones are one of the most sought-after gadgets by teenagers today due to the need for entertainment such as games that require large storage space and a stable internet connection. These factors are among the considerations for prospective consumers in choosing the best smartphone.

The problem that has arisen so far is that many consumers do not understand how to buy a phone that meets their desired criteria. The specifications that prospective buyers need to pay attention to in choosing a gaming smartphone that suits their budget and criteria include performance or specifications, screen quality, battery life, RAM, network connectivity, and price.

A decision support system is part of an information system used to facilitate the decision-making process based on data or problems frequently encountered in daily life [1] [2] . The purpose of this decision support system is to assist an organization or company in determining alternative solutions to existing problems[1][4] . One of the methods commonly used in determining the best type of product is the Product Weight method. The Weighted Product method is generally used in decision-making that involves many criteria to be considered simultaneously, such as product or project selection, performance assessment, or supplier evaluation [5] .

The research conducted by [6] uses a method to determine outstanding students, where the calculation process assigns weights according to the desired criteria. The result of this system process is a ranking list of outstanding students, which will be proposed for the selection process of outstanding students.

Research by [5] using the WP method in determining D.O students, the results obtained from this method are more absolute compared to considerations from the manual process. The research [6] on the application of the WP method functions well and is able to provide recommendations for selecting candidates for high school quizzes or can be used as a consideration in selecting candidates for high school quizzes and can select alternatives and can rank in selecting the best and most worthy candidates for high school quizzes based on predetermined criteria. The research [7] The WP method was chosen because of its ability to handle multiple criteria and provide appropriate weights for each criterion. The results of this study indicate that the WP-based DSS can be an effective and efficient tool in helping companies select the most appropriate IT vendor for their projects.

Based on previous research, the Weighted Product (WP) method has a very good ability to handle various criteria and assign appropriate weights to each criterion. This research aims to help consumers get solutions from several alternatives provided based on the criteria of each existing cellphone brand.

METHOD

The research method used is the weighted product method, which is widely utilized by several institutions as an option for making decisions based on

specified criteria. In the weighted product method, several steps need to be considered, including [8]:

The analysis steps carried out are determining the criteria and research weights of each criterion, then normalization performed with formula 1:

$$W_j = \frac{w_j}{\sum w_j} \qquad (1)$$

Where the value of $W_j = 1$ dan $j=1,2,3,..n$ represents the number of alternatives.

After the normalization process, the next step is to determine the vector value (S) by multiplying all the criteria with the alternative values resulting from the normalization. To determine the vector value, use formula 2:

$$V_i = \frac{S_i}{\sum S_i} \qquad (2)$$

Where $i= 1,2,3,.....n$ Determine the vector value used for ranking each total vector, which is the result of selecting the alternative values.

RESULTS AND DISCUSSION

From observations made by several consumers, alternative criteria were obtained to be used in determining the type of gaming mobile phone that is worth getting, some of which can be seen in table 1.

Table 1. Data on Mobile Phone Alternatives to be Ranked

Alternative	Criteria						
	Ram Capacity	Internal Memory	Camera	SO	Screen	Price	Battery
Infinix GT 10 Pro	8GB	256GB	32MP	Android 13	AMOLED, 6.67 inches FHD+ 2400 x 1080 pixels (120Hz)	Rp. 3,199,000	5000mAh
Xiaomi 13T	12GB	256GB	20MP	Android 13	6.67 inch AMOLED, FHD+ 2712 x 1220 pixels (144 Hz)	IDR 6,499,000	5000mAh
Xiaomi POCO F4 GT	12GB	256GB	20MP	Android 12	6.67 inch AMOLED, FHD+ 2400 x 1080 pixels (120 Hz)	Rp. 7,499,000	4700 mAh

The criteria obtained are based on table 1. These include RAM capacity, memory, camera, operating system, screen size, price and battery life.

Table 2. Criteria table

Criteria		Benefits / Costs
C1	Ram Capacity	Benefits
C2	Internal Memory	Benefits
C3	Camera	Benefits
C4	Operating system	Benefits
C5	Screen Size	Benefits
C6	Price	Cost
C7	Battery life	Benefits

After determining the criteria used, the next stage is determining the weight value, which can be seen in table 3.

Table 3. Weight Values

Priority Level	Weight
Absolutely important	9
Very important	8
Important	7
Simply more important	6
Quite important	5
Not important enough	4
Not important	3
Very unimportant	2
Absolutely not very important	1

The values for each criterion can be explained in table 4 to table 10.

Table 4. Criteria for Mobile Ram Capacity

C1	Mark
X = 1 terabyte	1
X > 256 G B <= 512 G B	2
X > 64G B <= 256 GB	3
X > 8 GB <= 64 GB	4
X > 8GB	5

Table 5. Cellphone Internal Memory Criteria

C2	Mark
<= 4GB	1
> 4GB - 8GB	2
> 8GB - 16GB	3
> 16GB - 32GB	4
> 32 GB	5

Table 6. Camera Criteria

C3	Mark
< 5 MP	1
> 5 MP <= 10 MP	2
> 11 MP <= 20 MP	3
> 21 MP <= 30 MP	4
> 32 MP	5

Table 7. Operating System Criteria

C4	Mark
Android 3	1
Android 3 – Android 5	2
Android 5 – Android 8	3
Android 8 – Android 10	4
Android 10 – Android 12	5

Table 8. Screen Sizes

C5	Mark
< = 2 inches	1
> 2 <= 3 Inch	2
> 3 <= 4 inches	3
> 4 <= 5 Inch	4
> 5 <= 6 inches	5

Table 9. Prices

C6	Mark
> Rp. 10,000,000	1
. > 5.000,000 - 8.000,0000	2
> Rp. 4 000,000 - Rp. 5,000,000	3
> Rp. 3 000,000 <= Rp. 4 000 000	4
<= Rp. 2 000 000	5

Table 10. Battery life

C7	Mark
<= 1000mAh	1
> 1000 Mah - 2000 Mah	2
>2000 Mah - 3000 Mah	3
> 3000 Mah - 4000 Mah	4
>= 5000	5

After grouping the data based on existing criteria, the results obtained from consumers are normalized. Where the preference weight value chosen by respondents is based on the priority level, namely **W = (8, 7, 5, 9, 5, 4, 5).**
Where is the value

$$W_j = \frac{W_j}{\sum W_j} \qquad (3)$$

Table 11. Normalization Table

Criteria	W_j value
C1	0.1860
C2	0.1627
C3	0.1162
C4	0.2093
C5	0.1162
C6	0.0930
C7	0.1162

After that, the vector value is calculated based on the criteria in table 4-table 10.

Table 12. Ranking Table

Alternatif	S value	Rank
A1	0.376	1
A2	0.348	2
A3	0.274	3

Based on the highest vector value is the best result of the calculation process, namely Alternative 1 with a value of 0.376. This alternative is the type of HP Infinix GT 10 Pro which was chosen because it has specifications that are almost equivalent to the others but at a more affordable price.

CONCLUSION

The research conducted using the decision support system with the Weighted Product (WP) method has resulted in a decision identifying the gaming mobile phone that meets the criteria: the Infinix GT 10 Pro. It is expected that the gaming mobile phone selection system utilizing the WP method can assist consumers in choosing a gaming mobile phone that matches their suitable criteria.

BIBLIOGRAPHY

[1] T. Christy, H. Herasmus, E. L. Febrianti, and F. M. Yuma, "Penerapan Metode MFEP Seleksi Penerimaan Siswa Baru Pada MTS Darul Fallah," *J. SAINTIKOM (Jurnal Sains Manaj. Inform. dan Komputer)*, vol. 22, no. 2, p. 456, 2023, doi: 10.53513/jis.v22i2.8687.

[2] Afrisawati, A., Christy, T., Efendi, Z., Parini, P., & Halim, N. (2024, April). The combination of AHP and SMART methods in the selection of laying chicken types. In AIP Conference Proceedings (Vol. 3024, No. 1). AIP Publishing.

[3] Y. Y. Bhalqis, "Sistem Pendukung Keputusan Pemilihan Smartphone Terbaik Menggunakan Metode Topsis," vol. 7, no. 7, pp. 68–79, 2020.

[4] Rahmadani, N., Yuma, F. M., Dahriansah, D., Fauziah, R., Latiffani, C., & Faturrohim, A. (2024, April). Analysis of MAUT methods in determining recipients for the hope family program (PKH). In AIP Conference Proceedings (Vol. 3024, No. 1).

AIP Publishing.

[5]　M. Katoningati and A. P. Widyassari, "Sistem Pendukung Keputusan Pemilihan Handphone Dengan Menggunakan Metode Weight Product," *Simetris*, vol. 15, no. 1, pp. 24–34, 2021, doi: 10.51901/simetris.v15i01.167.

[6]　D. Mardian, N. Neneng, A. S. Puspaningrum, A. Hasibuan, and M. H. Tinambunan, "Sistem Pendukung Keputusan Penentuan Siswa Berprestasi Menggunakan Metode Weight Product (WP)," *J. Inform. dan Rekayasa Perangkat Lunak*, vol. 4, no. 2, pp. 158–166, 2023, doi: 10.33365/jatika.v4i2.2593.

[7]　B. Krismoyo and J. R. Sagala, "Bambang Krismoyo 1 , Jijon Raphita Sagala 2 (Penerapan Metode Weighted Product (WP)Menentukan Siswa Drop Out Pada SMK Swasta Sinar Harapan)," *JIKOMSI J. Ilmu Komput. dan Sist. Inf.*, vol. 3, no. 2, pp. 8–14, 2020.

[8]　F. Aditiya and Mesran, "Sistem Pendukung Keputusan Pemilihan Calon Peserta Cerdas Cermat Tingkat SMA Menerapkan Metode ROC dan WP," *J. Ris. Tek. Inform. dan Data Sci.*, vol. 1, no. 1, pp. 14–20, 2022, [Online]. Available: https://ejurnal.pdsi.or.id/index.php /jurtidas/index

[9]　E. Dan, F. Di, and P. T. Interyasa, "IMPLEMENTASI SPK SAW UNTUK SELEKSI CALON DEBITUR Sistem Informasi , STMIK Royal PENDAHULUAN Seiring dengan berkembang pesatnya teknologi komputer , sangat banyak manusia yang memanfaatkan teknologi untuk penunjang berbagai kebutuhan . Kebutuhan informasi ," vol. 3, no. 3, pp. 197–202, 2023.

[10]　G. M. Putra and N. Irawati, "Informasi, S., & Royal, S. (2018). Analisis Pemilihan Handphone RekomendasiDengan Metode Weighted Product. Seminar Nasional Royal (SENAR) 2018, 9986(September), 199–204," vol. 9986, no. September, 2018.