

Application of the Weight Product Method on a Decision Support System for the Latest Mobile Recommendations

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Abstract

Mobile phones or what can be called mobile phones are tools for electronic communication that can be used wherever and whenever you are and can send and receive messages. To understand this, a recommendation system is needed to assist mobile phone buyers in choosing, finding, and finding phones that match what the user wants and according to the specifications desired by the user. The author makes the Application of the Weight Product Method in the Latest Mobile Recommendation Decision Support System. Here the author uses two methods, namely the waterfall method for the initial system development process, the second is the Weight Product method to find alternative values or the best results using several calculation formulas and get the best results 0.4183.

Keywords: Weight Product, Decision Support System, Recommendation Mobile

1. Introduction

Recommendation is referring to or the same as a suggestion, opinion or suggestion, it can be in the form of doing an activity or recommendation to determine an election, a mobile phone or it can also be called a cellphone is a tool for communicating, at this time the development of cellphones from year to year continues to increase. If the user is interested, then a mobile phone recommendation system is made to help users to get and determine which cellphone is the best, which cellphone is in accordance with the price, specifications and other criteria that users want to obtain and have. The author looks for comparative literature from several journals, namely among [1] Android smartphone recommendation systems with limited funds using modified simple additive weighting (M-SAW) that the selection of criteria for making recommendations, several criteria are needed as user considerations to choose the desired smartphone. [2] Analysis of the selection of recommended cellphones using the weighted product method that the ranking of the highest vector (V) values will be an alternative for selecting recommended cellphones based on criteria according to user interests. [3] Modification of the Analytic Network Process for Recommendations for Mobile Selection that by using the modified ANP method the processing time is shorter and relatively stable is not affected by the number of alternatives available. [4] The decision support system for smartphone selection uses the smart method (simple multi attribute rating) that the decision support system is designed using several 7 alternatives and criteria that will be used as a reference for the assessment and ranking of smartphones that have been sorted from highest to lowest. [5] The Best Smartphone Selection Decision Support System Using the Topsis Method that the best smartphone selection decision support system produces a fairly accurate calculation because it has been proven by manual TOPSIS algorithm calculations and the same results are found. From several comparison journals, it can be concluded that this research was conducted to assist users in finding and providing recommendations for which mobile phones are in accordance with user criteria, criteria data for alternative



mobile phones which have been determined in advance and using the weighted product method calculation to determine the best value from recommended mobile.

2. Research Methodology

Research method is a step or method taken by researchers in order to collect information or data and conduct investigations or observations on the data that has been obtained [6].

2.1. Research Stages

Research stages are levels which are also known as levels in a research activity. Where these stages have a structured process [7].

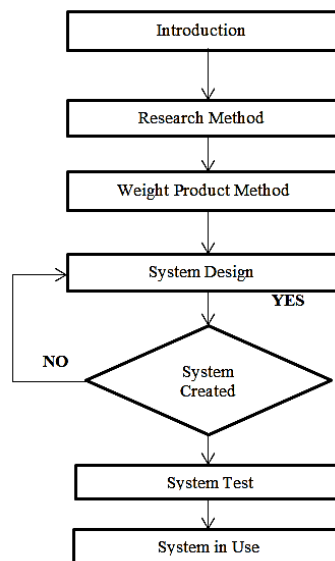


Figure 1. Research Stages

In Figure 1 is the research stage by knowing what the background is, after knowing the clarity of the background, the research method uses the Weight Product method, doing system design, the system is made, system testing, the system can be used.

2.2. Research Instrumentation

- a) Searching for Literature on the Application of the Weight Product Method in the Latest Mobile Recommendation Decision Support System.
- b) Testing with blackbox testing and direct testing to users whether there are errors or not.
- c) The method used is the Weight Product (WP).

2.3. Definition of Weight Product Method

The weighted product method is a method for a multiplication decision support system to connect attribute ratings, where the rating of each attribute is raised to the power of the attribute weight in question [8].

2.4. Definition of Decision Support System

A decision support system is an information system based on a computer which is used to assist humans in taking and getting a good decision [9].

2.5 Definition of Mobile

Mobile is a two-way electronic telecommunication tool that can be carried everywhere and has the ability to send voice messages [10].



3. Results and Discussion

3.1. Application Design

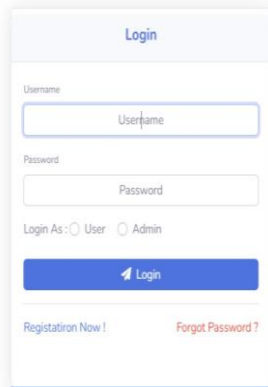


Figure 2. Admin Login



Figure 3. Main Menu Display

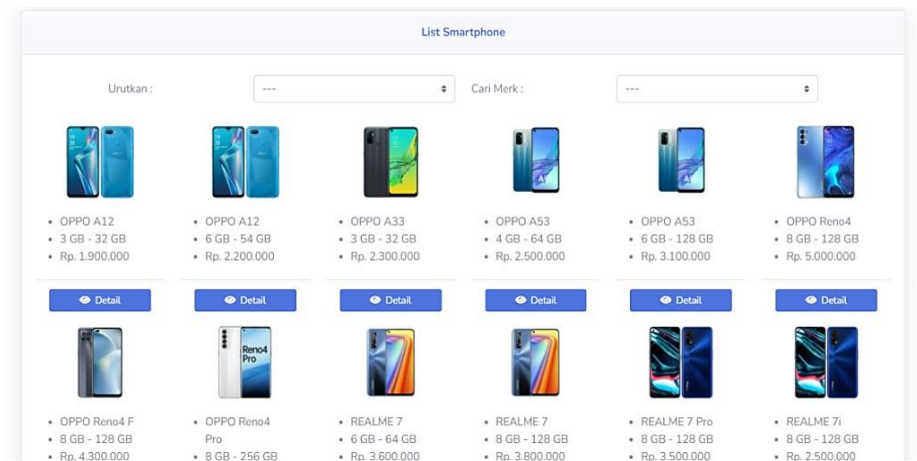
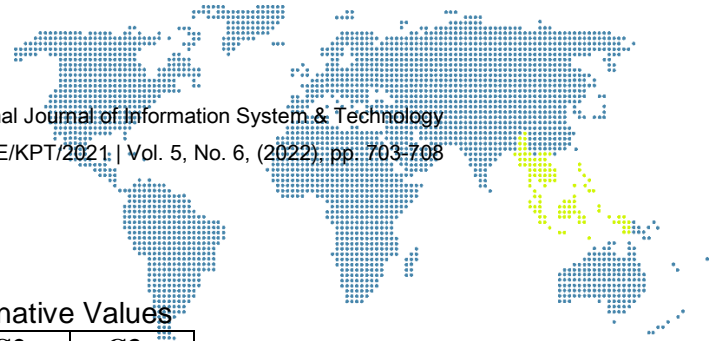


Figure 4. Display of Mobile Phone List Menu

Show 10 entries Search:

No.	Waktu Perhitungan	Merk	Hasil Perhitungan	Dicari Oleh
1	2022-02-23 16:39:50	REALME - C11	0.333333	Al Fath
2	2022-02-23 16:39:50	SAMSUNG - M30s	0.407407	Al Fath
3	2022-02-23 16:39:50	VIVO - Y12i	0.277778	Al Fath
4	2022-02-23 16:39:50	XIAOMI - Redmi Note 8 Pro	0.407407	Al Fath
5	2022-02-23 16:39:50	OPPO - A53	0.5	Al Fath
6	2022-02-23 16:39:50	SAMSUNG - A30s	0.333333	Al Fath
7	2022-02-23 16:39:50	SAMSUNG - S10 Lite	0.5	Al Fath
8	2022-02-23 16:39:50	XIAOMI - Mi 10	0.555556	Al Fath

Figure 5. Display of Calculation Data



3.2. Calculation of Weight Product Method

Table 1. Determining Alternative Values

Alternatif	C1	C2	C3
R1	11.000.000	8 GB	20 MP
R2	8.000.000	8 GB	48 MP
R3	3.000.000	4 GB	16 MP

Table 2. Criteria

Harga	C1
RAM	C2
Kamera	C3

Table 3. Criteria Weight

C1 : 4 poin
C2 : 5 poin
C3 : 2 poin

Table 4. Select Handphone

Xiaomi Mi 10	(R1)
Samsung S10 Lite	(R2)
Oppo A53	(R3)

Calculate Criteria

$$\frac{5}{4 + 5 + 2} = 0.363$$

$$\frac{4}{4 + 5 + 2} = 0.454$$

$$\frac{2}{4 + 5 + 2} = 0.181$$

Step 1 Finding the Value W

$$W1 = 0.363 * 1 = 0.363$$

$$W1 = 0.454 * -1 = -0.454$$

$$W1 = 0.181 * 1 = 0.181$$

Step 2

$$S1 = (10.000.000^{0.363}) (8^{0.454}) (20^{0.181}) = 0.7613$$

$$S1 = (8.000.000^{0.363}) (8^{0.454}) (20^{0.181}) = 0.739$$

$$S1 = (3.000.000^{0.363}) (4^{0.454}) (20^{0.181}) = 0.3194$$

Stage 3 Finding Value

$$\frac{0.7613}{0.7613 + 0.739 + 0.3194} = 0.4183$$

$$\frac{0.739}{0.7613 + 0.739 + 0.3194} = 0.4061$$

$$\frac{0.3194}{0.7613 + 0.739 + 0.3194} = 0.1755$$

Calculation Result :

$$R1 = 0.4183$$



$R2 = 0.4061$

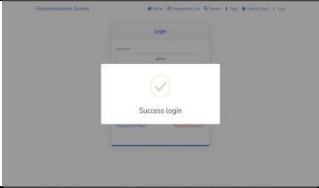
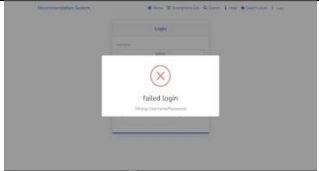
$R3 = 0.1755$

Means R1 (Xiaomi is the best alternative), The next best alternative is R2 (Samsung), R3 (Oppo).

3.3. Blackbox Testing

Black Box Testing is a test that is based on application details such as the appearance of the application which is more testing to the external appearance (Interface) of an application so that it is easy to use [11]. The following is a blackbox testing of the Application of the Weight Product (WP) Method and the Waterfall Method in the Latest Mobile Recommendation Decision Support System that been carried out

Table 5. Testing the Login Menu

Menu	Activities	Which are Expected	Results show	Final View
Login	Username & Password (Success)	Login Menu Home	Displays the message Login Successfully	
	Username & Password (Failed)	Back to Login	Failed to Enter Wrong Username and Password	

From the results of the display in table 5 it can be concluded that if the admin enters the username and password appropriately and correctly, the system will immediately enter correctly and display the initial menu page, but if the admin is wrong to enter the username and password, the system will display a failed message. Enter wrong username/password.

4. Conclusion

Based on the results of the discussion on the Application of the Weight Product Method in the Latest Mobile Recommendation Decision Support System, it can concluded that: This system was created to be able assist system users in searching, finding and getting the results of mobile recommendations and needed by users, especially in in terms of price and capacity of the mobile you want to buy. In this recommendation system using the weight product method which used to produce the best alternative value of 0.4183.

The next research can use comparisons by combining other methods and adding criteria that are not yet in this recommendation system for consideration, comparison material in choosing a mobile

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