A DECISION SUPPORT SYSTEM IN ELECTION BEST ONLINE BAG DISTRIBUTOR USING SAW METHOD

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ABSTRACT

The need for bags is in great demand by users. A bag is something that can carry personal items. For women, the bag is one of the symbols of socialite that can increase the status of the people. In this day and age, bags can be purchased online thereby increasing resellers to sell these bags to consumers. Resellers need a good online bag distributor so that customers are not disappointed with the quality of the bag. There are many criteria that can be tested. The SAW method can help determine an online bag distributor that has good quality. Applying this method to resellers will increase the reseller's selling value to customers. The main benefit obtained is that customers can continue to subscribe to these resellers because they have good quality

1. INTRODUCTION

A bag is an entertainment tool that is often used by someone to carry personal items. There are several types of bags, in terms of brands and models. This has brought the bag brand to the international community to be marketed to various regions and countries. This wholesale or retail bag seller is called a bag distributor. There are several kinds of bag distributors on the market. Bag distributors have their own specifications according to the store. The selection of a bag distributor is not easy because there are many types and brands in circulation. The more conveniences offered by the bag distributor, the more expensive the selling price of the bag. Bag distributors are bag distributors who can sell their goods to consumers directly or indirectly. These bags have different materials so the price of the bag has its own variations. There are bags made of genuine leather, there are bags made of synthetic leather. Each bag with different models is offered at competitive prices.

There are several criteria that must be met before choosing which bag distributor to recommend someone. Because the price varies from one bag to another, determining which bag distributor to choose requires good calculations so that there is no wrong choice. A decision support system can help provide recommendations for the best bag distributors. In the decision support system, the results of the assessment depend on the preference weights used as the process of finding the best bag distributor.

2. LITERATURE REVIEW

Decision Support System (Decision Support System) is an interactive computer-based system in assisting decision makers by utilizing data and models to solve unstructured problems.

The SAW method is often also known as the weight addition method. The basic concept of the SAW method is to find the number of weighted performance ratings on each alternative on all attributes. The SAW method requires the process of normalizing the decision matrix (X) to a scale proportional to all available alternative ratings. (Primasari et al., 2018). The SAW method is often also known as the weighted addition method. The basic concept of the SAW method is to find the weighted sum of the performance ratings on each alternative on all attributes (Ismanto, 2017).

The Simple Additive Weighting (SAW) method is often known as the weighted addition method. The basic concept of the Simple Additive Weighting (SAW) method is to find the weighted sum of the performance ratings for each alternative on all attributes. The SAW method requires the process of normalizing the decision matrix (X) to a scale that can be compared with all existing alternative ratings (S. Kusumadewi, 2006). Simple Additive Weighting (SAW) also known as weighted linear combination or scoring method is a simple multi-attribute decision technique and most frequently used.

The formula for normalization is as follows:

$$Rij = \begin{cases} \dfrac{X_{ij}}{Max\,X_{ij}} \\ \dfrac{Min\,X_{ij}}{X_{ij}} \end{cases}$$

Information:

Rij	:	Performance changes the performance rating.
Maxij	:	Maximum value of each row and column.
Minij	:	The minimum value for each row and column.
Xij	:	Rows and columns of a matrix.

With Rij is the normalized performance rating of alternative Ai

The preference value for each alternative (Vi) is given as:

Information:

Vi	:	The final value of the alternative
Wj	:	Specified weight
Rij	:	Matrix normalization

A larger Vi value indicates that the alternative Ai is preferred. Advantages of the simple additive weighting method compared to the model Other decision making lies in its ability to make more precise judgments because it is based on pre-determined values and preference weights.

$$Vi = \sum_{j=1}^{n} Wj\,r_{ij}$$

3. METHOD

The research framework will explain what steps need to be taken in conducting research related to the selection of the best online bag distributor. There are three stages in which research relates to determining the best online bag distributor. Figure 3.1 is the steps taken to support the creation of an application program to determine the best online distributor of bags.
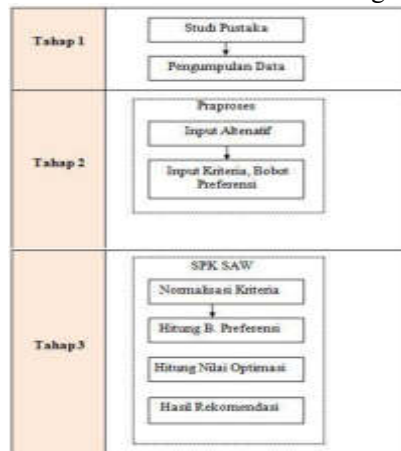

Figure 1. Research framework

There are several stages that will be used to achieve the maximum goal. This research looks at some of the criteria that exist in several online bag stores that are sold on Shopee.com. The SAW decision support system method will process the alternative data so that it will achieve the results of the SAW ranking calculation. The results issued by each store will get a SAW value so that prospective buyers will be able to choose by ranking and will be compared with all available alternatives to get the best online distributor of bags.

4. RESULT AND DISCUSSION

The research design will explain each part of the application program and to explain the activities of the users of the decision support system using the SAW method. A use case is a description of the functionality of a system from a user perspective. Use Case works by describing the typical interaction between the user (user) of a system with the system itself through a story of how a system is used. Figure 2 is a Use Case design for the admin of a decision support system.

The design of the decision support system menu with the SAW method is the application part of the most important in the decision support system application program to determine the best online distributor of bags. Figure 4. is the menu design
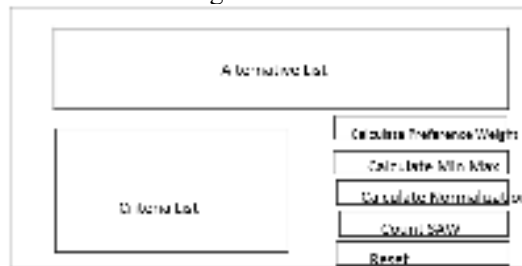

Figure 2. SPK SAW Menu Design

Criteria design is part of determining the criteria that will be used in determining the best online bag distributor. The criteria that will be used are five criteria. The values for the weighted criteria will range from 10 to 100. In the following, five tables will be shown to classify the weights based on the criteria described previously.

Table 1. Price Criteria

Price (rupiah)		Weight
0 – 200,000		0–200
200,000	– 250,000	200– 250
250,000	– 300,000	250– 300
300,000	– 350,000	300– 350
> 400,000		> 400

Table 1. is the weighting of the price criteria. The prices given are around 400 thousand rupiah and below 400 thousand rupiahs.

Table 2. Rating Criteria

Rating	Weight
1	1
2	2
3	3
4	4
5	5

Table .2 is the purchase rating criteria in which Shoppe.com has a rating scale determined from 1-5. Each store has a different rating.

Table 3. Review Criteria

	Review	Weight
10-20	review	10–20
20-40	review	20–40
40-60	review	40–60
60-80	review	60–80
> 80 reviews		> 80

Table 3. is how many reviews have been given from the number of customers who have bought bags from the store.

Table 4. Location Criteria

Location (kilometers)	Weight
0 – 500 km	0 – 5
500 – 1000 km	5–10
1000 – 1500 km	10 – 15
1500 – 2000 km	15 – 20
> 2000 km	> 20

Table 4. is the criteria for the distance from the store to the buyer, the location is useful so that the buyer can find out how far the goods have traveled and the estimated time the goods will arrive at the prospective buyer.

Table 5. Criteria for shipping costs

Shipping cost (rupiah)	Weight
20 – 25 thousand	20–25
25 – 30 thousand	25–30
30 – 35 thousand	30–35

Table 5. is the fare criteria. Each store will determine the shipping cost according to the expedition used and the amount of the shipping fee is calculated from the distance from the store's location to the buyer's destination. Shipping costs according to the distance have been determined by the shipping company and absolutely cannot be overstated or deducted by the shop selling the bag.

The main menu page is the first display that appears when the application program is executed. This view consists of several menus that function to direct users to enter other sections. There are three buttons on this menu, namely Description, SAW, and About. There is also an Exit button to terminate the application program. Figure 5. is the result of the main menu display.

Figure 3. Main Menu Page

This page is the process of calculating a decision support system to determine the best online distributor of bags. This page has a list of alternatives, preference weights and criteria. The criteria list has a datagridview. Figure 6. is the display of the decision support system page with the SAW method.
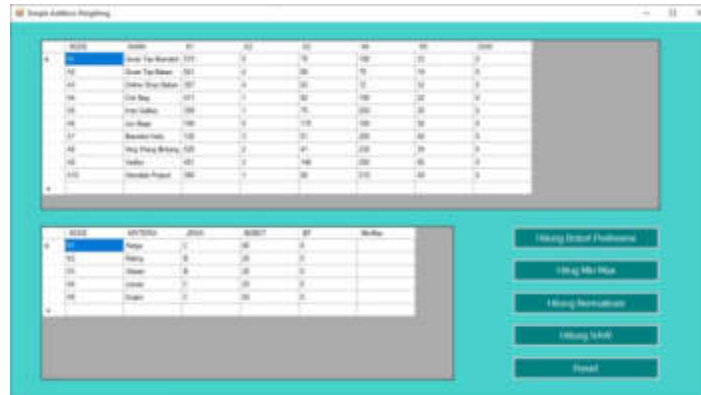
Figure 4. SAW Menu Page

This page contains the capture results from the calculations carried out by the application program in determining the best online distributor of bags. The calculation results can be sorted in descending order to show a list of the top best bag online distributors. Figure 7. is a display of the results of the SAW calculation.

Figure 5. SAW calculation results page

The test is to test the results of the calculation of the decision support system to determine the best online distributor of bags. Testing is done in two ways, namely manually and using an application program. Both outputs must obtain the same SAW value so that the calculation does not experience errors. There are several steps that need to be done in calculating the SAW value, namely the provision of alternatives, criteria and preference weights. Table 6. is the initial data used.

Table 6. Initial data

Code	Store Name	Price	Rating	Review	Location	Shipping
A1	Wholesale Branded Bags	515,000	5	75	190	33,000
A2	Batam Bag Wholesale	541,000	4	85	75	19,000
A3	Online Shop Batam	397,000	4	63	72	32,000
A4	Cnk Bag	411,000	1	92	195	22,000
A5	Indo Gallery	359,000	1	75	200	35,000
A6	Jun Bags	186,000	5	175	185	30,000
A7	Branded Holic	120,000	3	51	205	40,000
A8	Xing Star money	526,000	2	41	230	39,000
A9	Vedlyn	451,000	3	146	250	45,000
A10	Harperscollection	386,000	4	62	184	38.000
A11	Claireshop_id	284,000	5	72	245	52,000
A12	Sunny_bags	174,000	3	130	214	43,000

A13	Tasbrandedimport	294,000	2	49	190	29,000
A14	Fairiescloset	327,000	5	89	163	31,000
A15	Ta_fashion	236,000	4	91	220	18.000

The data in table 6. is the data used as the initial data for the online distributor of bags. In this data, there are 15 alternatives and five criteria used to support the SAW process. Each criterion is filled with certain values. This criterion must be normalized to determine the SAW value.

Table 7. is the result of simplifying the criteria values.

Code	Store Name	Price	Rating	Review	Location	Shipping
A1	Wholesale Branded Bags	515	5	75	190	33
A2	Batam Bag Wholesale	541	4	85	75	19
A3	Online Shop Batam	397	4	63	72	32
A4	Cnk Bag	411	1	92	195	22
A5	Indo Gallery	359	1	75	200	35
A6	Jun Bags	186	5	175	185	30
A7	Branded Holic	120	3	51	205	40
A8	Xing Star money	526	2	41	230	39
A9	Vedlyn	451	3	146	250	45
A10	Harperscollection	386	4	62	184	38
A11	Claireshop_id	284	5	72	245	52
A12	Sunny_bags	174	3	130	214	43
A13	Tasbrandedimport	294	2	49	190	29
A14	Fairiescloset	327	5	89	163	31
A15	Ta_fashion	236	4	91	220	18

5. CONCLUSION

After calculating and making the SPK application program with the SAW method in determining the best online bag distributor, there are several conclusions that the authors put forward, including: The SAW method can provide recommendations for the best online bag distributors for customers. Preference weights can provide convenience to the user in providing the composition of the criteria to obtain the SAW value. The resulting SAW value has good accuracy if it is calculated manually based on the initial data provided.

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