



## Implementation Simple Additive Weighting Method in Determining Feasibility Sacrificial Animals

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### ARTICLE INFO

#### *History of the article :*

Received 30 - 12- 2021

Received in revised form 09-07-2022

Accepted 09-07-2022

Available online 28-07-2022

#### **Keywords:**

Decision Support System; Simple Additive Weighting; Qurban

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### ABSTRACT

Many things from the life sector have used the existence of technology. Where a technology is able to help various problems in various fields such as livestock and agriculture. Computers have been included in it as a tool to do a job or identify existing problems. However, sometimes as a practitioner in the field of animal husbandry, especially qurban animals, they come to the conclusion that it is often found that sacrificial animals in the market that want to be sacrificed do not meet the requirements both in syari'ah (law) and health. With the application of determining the feasibility of sacrificial animals according to the Shari'a using the web-based Simple Additive Weighting (SAW) method. This system is later expected to be able to determine whether or not a sacrificial animal will be sacrificed so that the community or people who sacrifice are not harmed and the reward for the sacrifice is perfect.

## 1. INTRODUCTION

The development of technology today has shown tremendous progress. where a technology is able to help various problems in various fields such as livestock, agriculture, medicine, military, offices, companies, and others [1]. Also included in the field of livestock and agriculture, computers have been included as a tool to do a job or identify existing problems such as the feasibility of choosing sacrificial animals [2].

According to the language, qurban comes from the word qaruba-yaqrobu-qurban-qurbanan which means close and close. Meanwhile, according to the term, qurban means slaughtering an animal or animals with the intention of worshipping Allah on Eid al-Adha [3]. Based on the discussions and conversations I had with as a practitioner in the field of sacrificial animals, I came to the conclusion that it is often found that sacrificial animals in the market that want to be sacrificed do not meet the requirements both in syari'ah (law) and health [4].

The sacrificial worship that was ordered to the people of the Prophet Muhammad SAW is a worship that refers to the history of the sacrifice of the Prophet Ibrahim AS. The order to sacrifice

his beloved son, Prophet Ismail AS, which Allah then replaced with a Gibas, is one of the proofs of Prophet Abraham's obedience in carrying out Allah's commands [5]. Therefore, the implementation of qurban worship must be intended in order to obey and carry out Allah's commands, as the translation of the verse above. Qurban worship also has the virtue of forgiveness and pleasure from Allah SWT. The most beloved practice to Allah on Eid al-Adha is slaughtering sacrificial animals [6]

The UPGRIS qurban committee always slaughters sacrificial animals every year, people who want to sacrifice can register themselves through the UPGRIS committee, or through the individual route, namely by buying the qurban animals themselves and then submitting them to the UPGRIS qurban committee to be sacrificed.

The UPGRIS qurban committee must ensure that the sacrificial animal complies with the provisions of syari'ah and health conditions. Because we often encounter sacrificial animals in the market that want to be sacrificed that do not meet the syari'ah and health requirements, for example, they have not reached the minimum age, there are still defects, and diseases in the sacrificial animals [6]. In determining the feasibility of sacrificial animals, the UPGRIS qurban committee still uses the manual method. Of course it will take time and be less efficient, especially if there are many qurban animals identified [7]. So to overcome this the author will create an application system for determining the feasibility of sacrificial animals according to the Syari'ah using the web-based SAW method.

## RESEARCH METHOD

### 1. Decision Support System

Decision Support System (DSS) is a computer-based system intended to assist decision makers by utilizing certain data and models to solve various unstructured problems [8]. The DSS application uses a computer-based information system that has interactive and flexible characteristics so that it helps decision makers in completing information from data that has been processed relevantly and is needed to make decisions about a problem more quickly and accurately [9].

The characteristics of the Decision Support System are as follows[10]:

- a) Decision Support Systems are designed to assist decision makers in solving semi-structured or unstructured problems by adding human wisdom and computerized information.
- b) The Decision Support System is designed in such a way that it can be used/operated easily.
- c) In its processing, the decision support system combines the use of analytical models with conventional data entry techniques and information search/interrogation functions.
- d) The Decision Support System is designed by emphasizing the aspects of flexibility and high adaptability.

### 2. Simple Additive Weighting (SAW)

The Simple Additive Weighting (SAW) method is often also known as the weighted addition method. The basic concept of Simple Additive Weighting is to find a weighted sum of alternative performance on all attributes [11].

The basic concept of the SAW method is to find a weighted sum or ranking of performance ratings on each alternative of all attributes, in this method is able to provide problem solving by providing information or suggestions towards certain decisions. So it is a computer-based support system for management decision-making related to problems according to aspects of work. In this journal, the SAW method has a weakness, namely if the variables are the same, the results are the same. SAW method requires the process of

normalizing the decision matrix (X) to a scale that can be compared with all rows of the normalized matrix (R) with preference weights (W) corresponding to the column elements of the matrix (W). The following is the formula for the Simple Additive Weighting (SAW) method [12]

$$r_{ij} = \begin{cases} \frac{x_{ij}}{\text{Max } x_{ij}} & \text{jika } j \text{ atribut keuntungan (benefit)} \\ \frac{\text{Min } x_{ij}}{x_{ij}} & \text{jika } j \text{ atribut biaya (cost)} \end{cases} \quad (1)$$

Description :

Max X<sub>ij</sub> : The greatest value of each criterion i

Min X<sub>ij</sub> : The smallest value of each criterion i

X<sub>ij</sub> : The attribute value of each criterion

Benefit : If the biggest value is the best

Cost : If the smallest value is the best

R<sub>ij</sub> : Normalized performance rating

The prevention value for each alternative (V<sub>i</sub>) is given as follows:

$$V_i = \sum_{j=1}^n w_j r_{ij} \quad (2)$$

Description :

V<sub>i</sub> : Rank for each alternative

W<sub>j</sub> : Rank weight value (from each criterion)

R<sub>ij</sub> : Normalized performance rating value

The result of the calculation of the larger value of V<sub>i</sub> indicates that the alternative A<sub>i</sub> is the best alternative. The research steps in using the SAW (Simple Additive Weighting) method are [13]:

1. Determine the criteria that will be used as a reference in decision making
2. Determine the suitability rating of each alternative on each criterion
3. Make a decision matrix based on the criteria (C<sub>i</sub>), then normalize the matrix based on the equation that is adjusted to the type of attribute (profit attribute or cost attribute) in order to obtain a normalized matrix R
4. The final result is obtained from the ranking process, namely the addition of the normalized matrix multiplication R with the weight vector so that the largest value is chosen as the best alternative (A<sub>i</sub>) as the solution.

### 3. RESULT AND DISCUSSION

Data collection methods are used to obtain data from an information, then the methods used in the data collection process are as follows:

1. Observation Method

The data collection method to be carried out is to see and study the problems that exist in the field that are closely related to the object under study.

2. Library Study Method

The literature study conducted in collecting the information needed to build a Decision Support System for the Selection of Feasibility of Sacrificial Animals with the SAW Method is as follows.

- a) Reference

The references used are books and the internet related to Decision Support Systems.

b) Journal

The journals cited are journals related to the Decision Support System Method which is carried out as learning material by looking for materials that support the definition of problems through books and the internet.

c) Interview

At the interview stage, adjust the information about the criteria with an expert person to get the appropriate data.

The software development method used for this research, including the prototype model. Prototype is a method in system development that uses an approach to make a program quickly and gradually so that it can be immediately evaluated by the user.

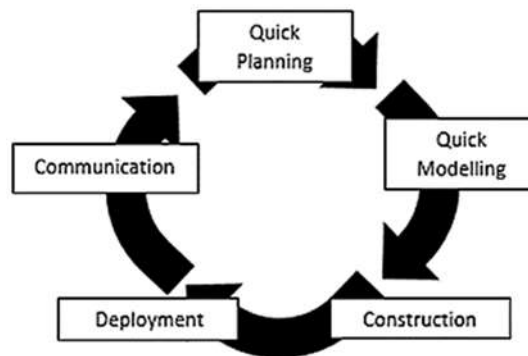


Figure 1. Prototype Model

With this prototype model, designers and users meet to objectively define the entire software, identify known needs, and larger areas where further definition is a must. Then a quick design of the system is carried out for later evaluation by users to filter software development needs.

In this system, the steps taken to fit the prototype model are:

1. Listen to the customer or rather the process of analyzing a problem.
2. Build a system according to the results of the analysis.
3. The testing process will be carried out by the user himself.

The results of the system user interface design that have been created have 3 main menus with 2 sub menus:

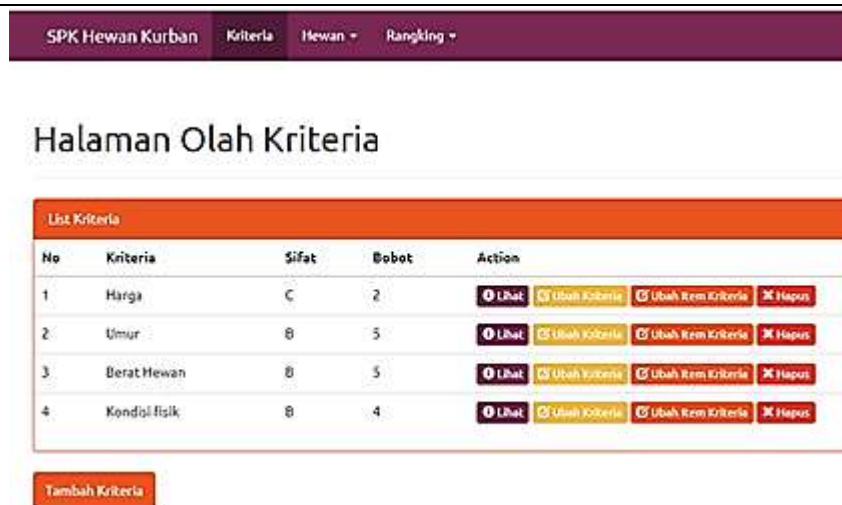


Figure 2. Criteria menu

For the initial display on the system it only contains title information from the system. On the Criteria menu page, users can see what criteria for selecting a sacrificial animal as shown in Figure 2. This menu is also equipped with several buttons that can change, delete and add criteria that need to be added again.

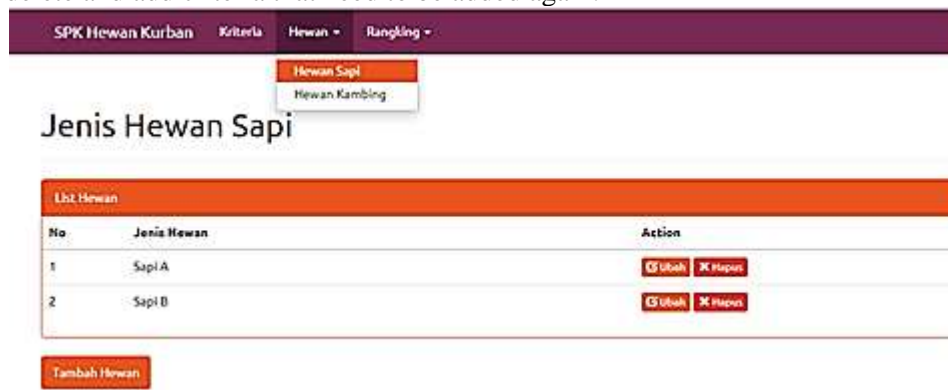


Figure 3. Animal Menu

This animal menu is made with a drop down menu, which means that in the menu there is another menu or submenu. The sub-menu in the Animal menu is the type of cattle and goats. The menu is divided into 2 types because each type of animal has different criteria in the selection of sacrificial animals based on Islamic law. As shown in Figure 3, this menu has additional buttons, namely buttons for adding, changing, and deleting.

Halaman Hitung Rangking

Table Perhitungan

Table 1 - Sesuai dengan Perhitungan di dapat hasil rangking

No	Universitas	harga	umur	bobot	kondisi	Total	Rangking
1	Sapi A	0.00	5.00	3.75	3.00	12.55	2
2	Sapi B	2.00	5.00	5.00	4.00	16.00	1

Kesimpulan : Dari hasil perhitungan yang dilakukan menggunakan metode SAW Hewan terbaik untuk di pilih adalah Sapi B dengan nilai 16.00

Figure 3. Ranking Menu

#### 4. CONCLUSIONS AND RECOMMENDATIONS

Based on the description of the discussion and the results that have been written above, the author can conclude that the use of a prototyping system development model can make it easier for system development, especially at the evaluation and improvement stage of the system that will be continued or developed again. This system can make it easier to choose animals, because the design is not made complex so that users are easy to use. The author's suggestion for the continuation of this article is a comparison of system development models and a comparison between a website-based system and a mobile-based system

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