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Development of a Mouse Pad Selection Recommendation System Using the Simple Additive Weighting (SAW) Approach

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***Abstract*— In the current era of technological advancement and growth, especially in the realm of virtual entertainment, specialized equipment like mouse pads has become increasingly essential. Often, the vast array of mouse pad types and brands available can be overwhelming, making it challenging for consumers to choose one that meets their specific needs. This research aims to design and develop a mouse pad recommendation system to assist individuals in selecting the most suitable mouse pad. The study employs the Simple Additive Weighting method, a weighted sum approach for problem-solving, enabling users to receive tailored recommendations based on criteria such as size, thickness, stitching, material, and price across various brands. User satisfaction was measured using the End User Computing Satisfaction (EUCS) method, achieving a satisfaction percentage of 88.67%. This indicates that the system is effective as a mouse pad recommendation tool. The mouse pad recommendation system has been successfully constructed using the Simple Additive Weighting method, following a comprehensive process of design, development, and system testing.**

***Index Terms*— Mouse pad; Simple additive weighting; Recommendation system; Website**

I. INTRODUCTION

The rapid advancement of technology has led to a surge in innovations, particularly in the entertainment industry. Entertainment is no longer confined to television but has expanded significantly into the realm of computers, resulting in a consistent year-over-year increase in computer ownership. Household computer ownership rose by approximately 18.83% in 2020 [1]. Computers offer a wide array of entertainment options, with online gaming being a prominent example. The global online gaming community has reached 3.5 billion, with 41% of individuals engaging in computer-based games [2]. A diverse group, including eSports athletes, streamers, content creators, and video game enthusiasts, routinely engage in online gaming, either as a leisure activity or as a means of livelihood.

In gaming, several factors are crucial to ensure optimal gameplay performance, one of which is equipment. A critical piece of equipment for computer-based video gaming is the mouse pad. The absence of a mouse pad can hinder mouse movement and result in undesirable friction [3]. Furthermore, consumer interest in owning quality mouse pads is evident from the sales data of official shops representing various brands. This highlights a significant market demand for mouse pads, underscoring their importance in enhancing the gaming experience.

In response to the diverse and ever-expanding range of mouse pads available in the market, a survey was conducted to assess the community's need for a system that aids in selecting the appropriate mouse pad. The survey, primarily targeting mouse pad users such as content creators, streamers, and eSports athletes, was distributed via Google Forms. These participants represent a significant portion of the mouse pad user demographic. Approximately 50 individuals participated in the survey, providing a reliable dataset for analysis. In addition to the questionnaire, a direct interview was conducted with a professional Apex Legends player, for whom a mouse pad is an essential gaming accessory. The findings from both the survey and the interview indicated a prevalent confusion among consumers regarding the purchase of mouse pads, stemming from the variety of materials and price ranges available. The survey also revealed that while Zowie is a popular brand among users, other brands like Logitech, Steelseries, Artisan, and HyperX are also considered in purchasing decisions. Given this context, it becomes imperative to develop an application with a recommendation system for mouse pad selection. Such a system would assist consumers in making informed decisions that align with their specific needs and preferences in mouse pads.

In this research, the Simple Additive Weighting (SAW) method is employed. This method was selected for its ability to provide precise evaluations based on predetermined criteria values and preference weights [4]. The SAW method is not only accurate but also one of the simplest to implement due to its straightforward algorithm [5], and it requires less computational effort compared to other multicriteria methods [6]. Additionally, the Simple Additive Weighting method is renowned and widely utilized in Multiple Attribute Decision Making (MADM) scenarios [7]. MADM is a methodology employed to identify the optimal alternative from a set of options, each with its unique set of criteria [8]. This method's suitability for the study is rooted in its efficacy in handling the complexities inherent in decision-making processes where multiple attributes must be considered.

II. THEORETICAL BASIS

A. *Decision Support System*

The Decision Support System (DSS) is often described as a computer system that assists in converting data into information for resolving issues and making informed decisions. The Decision Support System involves several stages, as follows [9]:

1. Intelligence Phase

   This stage involves a process of exploration to map the level of complexity and identify the existing problems.

2. Design Phase

   This phase begins with the development of potential alternative solutions. However, to determine the accuracy of the model being researched, verification and validation are necessary.

3. Choice Phase

   This stage is crucial for selecting among the various available alternative solutions.

4. Implementation Phase

   This phase involves adapting and finalizing the previously designed system.

Additionally, the Decision Support System comprises components such as [10]:

1. Database Management

   This is a space for storing relevant, organized data within a database.

2. Model Management

   This component translates problems into quantitative data formats. This is vital for analyzing issues and developing optimal solutions.

B. *Simple Additive Weighting (SAW)*

The Simple Additive Weighting (SAW) method is a decision-making technique [11]. The fundamental concept of SAW involves calculating the weighted sum of performance ratings for each alternative across all attributes. The SAW method necessitates the normalization of the decision matrix (X) to a comparable scale for all alternative rankings [12]. The following are the steps involved in implementing the Simple Additive Weighting method [13]:

1. Identification of alternatives, denoted as Ci.
2. Determination of the preference weights or the importance level (W) for each criterion.
3. Assignment of rating values for each alternative's compatibility with each criterion.
4. Normalization of the decision matrix by calculating the normalized performance rating ($ri\ j$) for alternative Ci on criterion W:

$$r_{ij} = \begin{cases} \dfrac{x_{ij}}{\text{Max } x_{ij}} & \text{if j is a benefit attribute} \\ \dfrac{\text{Min } x_{ij}}{x_{ij}} & \text{if j is a cost attribute} \end{cases} \qquad (1)$$

5. Calculation of the final preference value (Vi):

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

Explanation:
V_i = ranking for each alternative
W_j = weight value for each criterion
r_{ij} = normalized performance rating value

C. *Mouse Pad*

A mouse pad is a pad designed to enhance the tracking of a mouse's movement. It ensures the smooth and multidirectional rolling of the mouse ball. Mouse pads come in various shapes and sizes. The primary functions of a mouse pad include facilitating sensor movement, stabilizing mouse motion, simplifying mouse control, and prolonging the lifespan of the mouse. The utility of mouse pads is significant as they enhance the functionality of the mouse compared to using it directly on a desk surface. Furthermore, mouse pads prevent unnecessary mouse slippage and protect the desk surface [14].

D. *End User Computing Satisfaction (EUCS)*

End User Computing Satisfaction (EUCS) is a method used for assessing user satisfaction with a system by comparing expectations against actual experiences. EUCS defines overall system evaluation based on the user’s experience with the system [15]. The End User Computing Satisfaction (EUCS) method encompasses five dimensions, described as follows:

1. Content

   This dimension evaluates user satisfaction by examining the relevance and adequacy of the information provided by a system, ensuring it meets user needs.

2. Accuracy

This dimension assesses user satisfaction by evaluating the system's precision in processing inputs and generating accurate information.

3. Format

   This dimension involves assessing user satisfaction by evaluating the visual presentation and aesthetic appeal of the system's interface.

4. Ease of Use

   This dimension measures user satisfaction by determining the ease with which users can navigate the system from start to finish and achieve their desired outcomes.

5. Timeliness

   This dimension gauges user satisfaction by assessing the system's efficiency in providing information promptly and within an acceptable timeframe.

E. Likert Scale

The Likert scale is a psychometric scale widely used in questionnaires and is the most prevalent scale in surveys [16]. It measures attitudes and opinions by asking respondents to complete a questionnaire that indicates their level of agreement with a given statement. Typically, a Likert scale in a questionnaire consists of five response options, each assigned a numerical value as shown in Table 1 [17].

TABLE I. LIKERT SCALE

Category	Score
Strongly Agree	5
Agree	4
Neutral	3
Disagree	2
Strongly Disagree	1

Formula 3 represents a calculation method that can be utilized for assessing user satisfaction, which is as follows:

$$\text{Score Perentage } = \frac{T \times Pn}{Y} \times 100\% \quad (3)$$

Explanation:
T = the total number of respondents who have chosen that specific value
Pn = the value of each variable in the Likert category
Y = total number of respondents x the highest value in the Likert scale

III. RESEARCH METHODOLOGY

The research methodology section of this study is designed to outline a systematic approach to address the identified problem, ensuring rigor and accuracy in the research process. It encompasses a series of structured stages, ranging from the initial problem identification through surveys and observations, to an extensive literature review for theoretical grounding. The methodology further includes a detailed analysis of user needs, comprehensive data collection from various credible sources, and the careful design of the system. Crucially, the development and subsequent testing phases ensure the system's functionality and effectiveness, with a special focus on user satisfaction. This systematic methodology is integral to achieving the study's objectives and ensuring the reliability and validity of its findings.

1. Identifying the Problem
   This stage involves conducting observations and surveys within the community regarding issues related to mouse pads. The survey is executed by distributing questionnaires through Google Forms.
2. Literature Review
   This involves researching various literature sources to support and provide a theoretical foundation for inputting data into the system. This includes summaries and reviews obtained from articles, journals, survey results, and reliable websites. Gathering extensive information is necessary to provide trustworthy information to users and to enhance the precision of this research.
3. Needs Analysis
   This step entails researching and collecting information about the specifications of mouse pads that are highly needed and desired by users.
4. Data Collection
   This stage involves conducting research and collecting data and information directly from the websites of Artisan, HyperX, Logitech, SteelSeries, Zowie, as well as from reputable gaming sites and through experts regarding size, price, stitching, thickness, and materials.
5. System Design
   This phase includes creating design models and workflow diagrams for the decision support system using the gathered data, such as flowcharts, database schemas, and mockups.
6. System Development
   This is the implementation stage of the system design, focusing on both the visual aspects using the Tailwind CSS framework and the system functionality using PHP programming language, applying the simple additive weighting method.
7. System Testing
   This stage involves functional testing of the developed system. System testing is carried out using the Blackbox Testing method. Additionally, the system's effectiveness is tested by comparing manual calculation results with those obtained through the system, using the simple additive weighting method.
8. User Satisfaction Testing
   After the system's completion, user satisfaction testing will be conducted to evaluate the system in terms of functionality and user satisfaction. This testing is done using the End User Computing Satisfaction (EUCS) method.

IV. RESULT AND DISCUSSION

A. Homepage Flowchart

Figure 1 illustrates the user interface upon accessing the system via a web platform. The main page is presented to the user, featuring a navigation bar from which various menus can be selected. Selecting the 'Mouse Pad' menu option displays the available brands of mouse pads. Subsequently, the user can choose a specific brand, leading to a list of available mouse pads under that brand. Upon selecting a mouse pad, a detailed information page about that particular mouse pad appears. Additionally, the 'Recommendation' menu option directs the user to a page offering mouse pad recommendations. Lastly, selecting the 'Login' menu navigates to a page where users can log into the system.

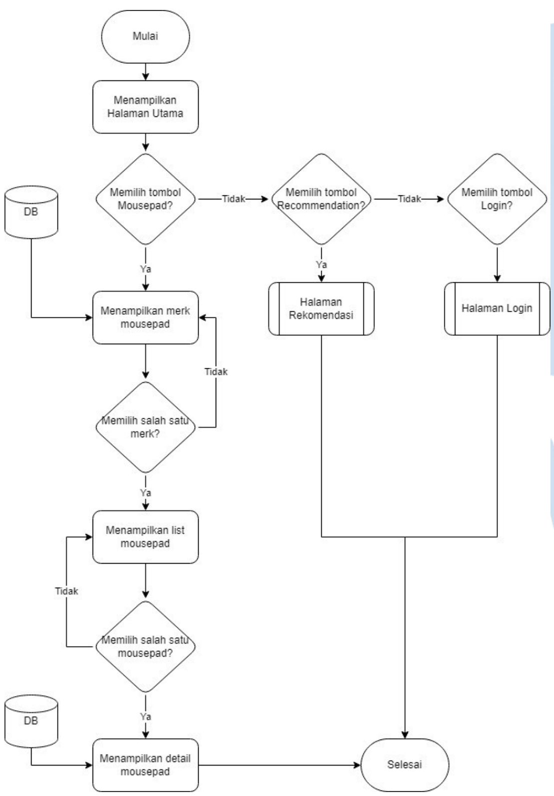

Figure 1. Homepage flowchart

B. Method Implementation

The implementation of the method necessitates several critical steps, including the determination of criterion weights as depicted in Figure 2, and the acquisition of minimum and maximum weight values as shown in Figure 3.

```php
$bobot = [
    $_POST["harga"],
    $_POST["bahan"],
    $_POST["jahitan"],
    $_POST["ketebalan"],
    $_POST["ukuran"]
];
```

Figure 2. Retrieving Criterion Weights

```php
$minhargaBobot = query("SELECT MIN(harga.bobot_harga) as 'min_harga' FROM mousepad JOIN harga ON mousepad.harga_id=harga.harga_id");
$maxukuranBobot = query("SELECT MAX(ukuran.bobot_ukuran) as 'max_ukuran' FROM mousepad JOIN ukuran ON mousepad.ukuran_id=ukuran.ukuran_id");
$maxbahanBobot = query("SELECT MAX(bahan.bobot_bahan) as 'max_bahan' FROM mousepad JOIN bahan ON mousepad.bahan_id=bahan.bahan_id");
$maxjahitanBobot = query("SELECT MAX(jahitan.bobot_jahitan) as 'max_jahitan' FROM mousepad JOIN jahitan ON mousepad.jahitan_id=jahitan.jahitan_id");
$maxketebalanBobot = query("SELECT MAX(ketebalan.bobot_ketebalan) as 'max_ketebalan' FROM mousepad JOIN ketebalan ON mousepad.ketebalan_id=ketebalan.ketebalan_id");
```

Figure 3. Retrieving Minimum and Maximum Criterion Values

Subsequently, the normalization process (r) is conducted. This is achieved by dividing the weight value of each criterion for every mouse pad by the smallest weight value for cost criteria (price) and dividing the largest weight value by each mouse pad's weight value for benefit criteria (size, material, stitching, and thickness). The implementation code for this normalization can be seen in Figure 4.

```php
foreach($mousepads as $key => $mp){
    $r[$key]["mousepad_id"] = $mp["mousepad_id"];
    $r[$key]["mousepad_name"] = $mp["mousepad_name"];
    $r[$key]["mousepad_img"] = $mp["mousepad_img"];
    $r[$key]["mousepad_harga"] = $mp["mousepad_harga"];
    $r[$key]["mousepad_merk"] = $mp["merk_name"];

    $r[$key]["harga"] = $minhargaBobot[0]["min_harga"]/$mp["bobot_harga"];
    $r[$key]["ukuran"] = $mp["bobot_ukuran"]/$maxukuranBobot[0]["max_ukuran"];
    $r[$key]["bahan"] = $mp["bobot_bahan"]/$maxbahanBobot[0]["max_bahan"];
    $r[$key]["jahitan"] = $mp["bobot_jahitan"]/$maxjahitanBobot[0]["max_jahitan"];
    $r[$key]["ketebalan"] = $mp["bobot_ketebalan"]/$maxketebalanBobot[0]["max_ketebalan"];
}
```

Figure 4. Normalization Process

Following the normalization process, the system proceeds to calculate the preference values for each alternative (v). This is done by multiplying the normalized values of each criterion by the predetermined criterion weight values. The products of these multiplications are then summed up and ranked according to the resulting values. The implementation code for this preference value calculation can be observed in Figure 5.

```php
foreach($r as $key => $saw){
    $v[$key]["mousepad_id"] = $saw["mousepad_id"];
    $v[$key]["mousepad_name"] = $saw["mousepad_name"];
    $v[$key]["mousepad_img"] = $saw["mousepad_img"];
    $v[$key]["mousepad_harga"] = $saw["mousepad_harga"];
    $v[$key]["mousepad_merk"] = $saw["mousepad_merk"];
    $v[$key]["harga"] = $bobot[0] * $saw["harga"];
    $v[$key]["ukuran"] = $bobot[1] * $saw["ukuran"];
    $v[$key]["bahan"] = $bobot[2] * $saw["bahan"];
    $v[$key]["jahitan"] = $bobot[3] * $saw["jahitan"];
    $v[$key]["ketebalan"] = $bobot[4] * $saw["ketebalan"];

    $v[$key]["v"] = $v[$key]["harga"] + $v[$key]["bahan"] + $v[$key]["jahitan"] + $v[$key]["ketebalan"] + $v[$key]["ukuran"];
}
```

Figure 5. Process of calculating Value v

Subsequently, the preference values (v) are stored in an array named $saw_mousepads. Following this, the system sorts the mouse pad data based on the preference values from highest to lowest. The implementation code for this sorting process can be viewed in Figure 6.

```php
foreach($saw_mousepads as $key => $value){
    $sort["v"][$key] = $value["v"];
}
array_multisort($sort["v"], SORT_DESC, $saw_mousepads);
```

Figure 6. Sorting process

C. Design Implementation

Figure 7 represents the outcome of implementing the design for the recommendation page. Users have the option to select the desired criteria, and the system will display mouse pads that match these specified criteria.

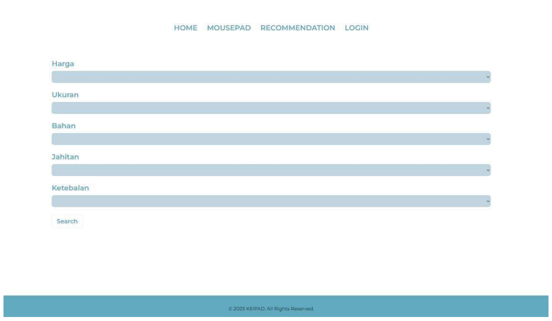

Figure 7. Recommendation Page

Figure 8 displays the implemented view of the recommendation results page. The recommendations for mouse pads are sorted according to the selected criteria. Information about each mouse pad is presented, allowing users to select a specific mouse pad to view detailed information.

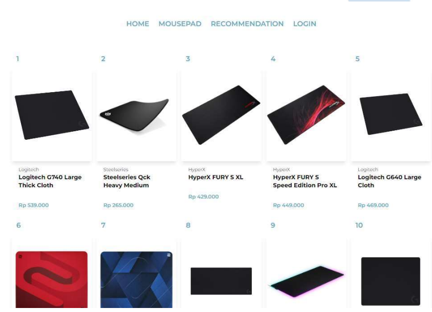

Figure 8. Recommendation Result

D. System Testing

There are two stages in the system testing process: testing the calculation using the Simple Additive Weighting (SAW) method and assessing user satisfaction with the system. The calculation test with the SAW method is conducted manually, and user satisfaction testing is carried out by distributing a questionnaire that implements the End User Computing Satisfaction (EUCS) method.

Table 2 presents the mouse pad data that will be used for the calculation testing with the SAW method. In this context, C1 represents the price of the mouse pad, C2 its size, C3 the material type of the mouse pad, C4 the stitching on the edges of the mouse pad, and C5 the thickness of the mouse pad.

TABLE II. MOUSE PAD DATA FOR TRIAL TESTING

Mouse pad	C1	C2	C3	C4	C5
Artisan Ninja Fx Hayate Otsu XSoft XL	3	4	1	1	2
Artisan Ninja Fx Hayate Hien Soft XL	2	4	1	1	2
HyperX FURY S XL	1	4	1	1	2
HyperX FURY S Speed Edition Pro XL	1	4	1	1	2
Zowie BenQ G-SR Red XL	2	4	1	2	2
Zowie BenQ G-SR Deep Blue XL	2	4	1	2	2
Steelseries Qck Heavy Medium	1	2	2	2	3
Steelseries QcK Prism Cloth 3XL (RGB)	3	5	1	1	2
Logitech G640 Large Cloth	1	3	1	2	2
Logitech G740 Large Thick Cloth	1	3	1	2	3

Table 3 presents the criterion weights to be used in the calculation with the Simple Additive Weighting (SAW) method. The weight values applied in the trial are as follows: for C1 (price), the range is 600,000 - 1,199,999 with a weight of 2; for C2 (size), the range is 461x401 - 900x400 with a weight of 4; for C3 (material type), Clothpad has a weight of 1; for C4 (stitching), Jahitan (stitching) has a weight of 1; and for C5 (thickness), the range is 4.1 - 7 with a weight of 3.

TABLE III. TRIAL WEIGHTS TABLE

Criteria	C1	C2	C3	C4	C5
Weight	2	4	1	1	3

TABLE IV. TABLE OF MANUAL NORMALIZATION PROCESS

Mouse pad	C1	C2	C3	C4	C5
Artisan Ninja Fx Hayate Otsu XSoft XL	1/3	4/5	1/2	1/2	2/3
Artisan Ninja Fx Hayate Hien Soft XL	1/2	4/5	1/2	1/2	2/3
HyperX FURY S XL	1/1	3/5	1/2	1/2	2/3
HyperX FURY S Speed Edition Pro XL	1/1	2/5	1/2	1/2	2/3
Zowie BenQ G-SR Red XL	1/2	4/5	1/2	2/2	2/3
Zowie BenQ G-SR Deep Blue XL	1/2	4/5	1/2	2/2	2/3
Steelseries Qck Heavy Medium	1/1	2/5	2/2	2/2	3/3
Steelseries QcK Prism Cloth 3XL (RGB)	1/3	5/5	1/2	1/2	2/3
Logitech G640 Large Cloth	1/1	3/5	1/2	2/2	2/3
Logitech G740 Large Thick Cloth	1/1	3/5	1/2	2/2	3/3

The initial step in the calculation test using the Simple Additive Weighting (SAW) method is the normalization of the mouse pad data. The process of normalizing mouse pad data for the SAW method calculation test is presented in Table 4. Here, C1 is considered an attribute of cost, while C2, C3, C4, and C5 are attributes of benefit. The normalization formula for the cost attribute is the smallest value of that criterion divided by the criterion value of the mouse pad. For benefit attributes, the normalization formula is the value of each criterion divided by the largest value of that respective criterion. The results of the mouse pad data normalization process using the SAW method can be viewed in Table 5.

TABLE V. RESULTS FROM THE MANUAL NORMALIZATION PROCESS

Mouse pad	C1	C2	C3	C4	C5
Artisan Ninja Fx Hayate Otsu XSoft XL	0.33	0.8	0.5	0.5	0.67
Artisan Ninja Fx Hayate Hien Soft XL	0.5	0.8	0.5	0.5	0.67
HyperX FURY S XL	1	0.8	0.5	0.5	0.67
HyperX FURY S Speed Edition Pro XL	1	0.8	0.5	0.5	0.67
Zowie BenQ G-SR Red XL	0.5	0.8	0.5	1	0.67
Zowie BenQ G-SR Deep Blue XL	0.5	0.8	0.5	1	0.67
Steelseries Qck Heavy Medium	1	0.4	1	1	1
Steelseries QcK Prism Cloth 3XL (RGB)	0.33	1	0.5	0.5	0.67
Logitech G640 Large Cloth	1	0.6	0.5	1	0.67
Logitech G740 Large Thick Cloth	1	0.6	0.5	1	1

After completing the normalization process, the next step is to calculate the value of v. The following describes the process of calculating the value of v for the trial using the Simple Additive Weighting (SAW) method.

1. Artisan Ninja Fx Hayate Otsu XSoft XL $= (0.33 \times 2) + (0.8 \times 4) + (0.5 \times 1) + (0.5 \times 1) + (0.67 \times 3) = 6.87$
2. Artisan Ninja Fx Hayate Hien Soft XL $= (0.5 \times 2) + (0.8 \times 4) + (0.5 \times 1) + (0.5 \times 1) + (0.67 \times 3) = 7.2$
3. HyperX FURY S XL $= (1 \times 2) + (0.6 \times 4) + (0.5 \times 1) + (0.5 \times 1) + (0.67 \times 3) = 8.2$
4. HyperX FURY S Speed Edition Pro XL $= (1\times2)+(0.4 \times 4) + (0.5 \times 1) + (0.5 \times 1) + (0.67 \times 3) = 8.2$
5. Zowie BenQ G-SR Red XL $= (0.5\times2) +(0.8\times4) +(0.5\times1) + (1 \times 1) + (0.67 \times 3) = 7.7$
6. Zowie BenQ G-SR Deep Blue XL $= (0.5 \times 2) + (0.8 \times 4) + (0.5 \times 1) + (1 \times 1) + (0.67 \times 3) = 7.7$
7. Steelseries Qck Heavy Medium $= (1 \times 2) + (0.6 \times 4) + (1 \times 1) + (1 \times 1) + (0.33 \times 3) = 8.6$
8. Steelseries QcK Prism Cloth 3XL (RGB) $= (1 \times 2) + (0.8 \times 4) + (0.5 \times 1) + (0.5 \times 1) + (0.33 \times 3) = 7.67$
9. Logitech G640 Large Cloth $= (1 \times 2) + (0.6 \times 4) + (0.5 \times 1) + (1 \times 1) + (0.67 \times 3) = 7.9$
10. Logitech G740 Large Thick Cloth $= (1 \times 2) + (0.6 \times 4) + (0.5 \times 1) + (1 \times 1) + (1 \times 3) = 8.9$

Once the calculation of the value v is completed, the next step involves sorting the mouse pads based on the total value v for each mouse pad. Table 6 displays the results of the sorting process for the mouse pads.

TABLE VI. MANUAL SORTING RESULT

Mouse pad	v total
Artisan Ninja Fx Hayate Otsu XSoft XL	8.9
Artisan Ninja Fx Hayate Hien Soft XL	8.6
HyperX FURY S XL	8.2
HyperX FURY S Speed Edition Pro XL	8.2
Zowie BenQ G-SR Red XL	7.9
Zowie BenQ G-SR Deep Blue XL	7.7
Steelseries Qck Heavy Medium	7.7
Steelseries QcK Prism Cloth 3XL (RGB)	7.67
Logitech G640 Large Cloth	7.2
Logitech G740 Large Thick Cloth	6.87

E. User Satisfaction Testing

To assess user satisfaction, a questionnaire was distributed via Google Forms. The statements included in the questionnaire are based on the variables of the End User Computing Satisfaction (EUCS) method, namely content, accuracy, format, ease of use, and timeliness. Table 7 presents the statements featured in the questionnaire.

TABLE VII. STATEMENTS FOR USER SATISFACTION TESTING

Variable	Question
Content	1. The information provided in the recommendation system aligns with my needs. 2. The information in the recommendation system is presented clearly and comprehensively.
Accuracy	1. The mouse pad recommendations provided by the system are appropriate (accurate) and align with my preferences. 2. The distribution of criteria in the recommendation system is appropriate (accurate).
Format	1. The design layout provided by the system facilitates ease of use in navigating the mouse pad recommendation system. 2. The structure of menus and design options offered by the mouse pad recommendation system is easily understandable.
Ease of Use	1. The mouse pad recommendation system is user-friendly and easy to use. 2. The camera recommendation system is accessible anywhere and at any time.
Timeliness	1. The mouse pad recommendation system saves time in finding the required and desired mouse pad. 2. The mouse pad recommendation system provides information quickly.

Based on the outcomes of the user satisfaction testing, the percentage of user satisfaction for each variable of the EUCS was calculated using the Likert Scale formula. Table 8 displays the percentage results for each variable.

TABLE VIII. EUCS PERCENTAGE RESULT

Variable	Percentage
Content	88.43%
Accuracy	86.08%
Format	89.22%
Ease of Use	90.39%
Timeliness	89.22%

Based on the average calculations, a user satisfaction percentage of 88.67% was obtained, indicating that the system has been developed very effectively.

V. CONCLUSION

Following the design, development, and testing phases, the mouse pad recommendation system has been successfully constructed using the simple additive weighting method. The process commenced with the system workflow design, including flowcharts, a database schema comprising seven tables, and mockups encompassing four distinct system views. Subsequently, the system was developed by applying the simple additive weighting method, incorporating criteria such as material, stitching, thickness, size, and price.

System testing was conducted through blackbox testing, which validated the overall functionality. Additionally, manual calculation results were matched against the system's computations using the simple additive weighting method, further affirming the system's accuracy.

Moreover, user satisfaction was assessed using the End User Computing Satisfaction (EUCS) method. The user satisfaction testing achieved an overall success rate of 88.67%, comprising content at 88.43%, accuracy at 86.08%, format at 89.22%, ease of use at 90.39%, and timeliness at 89.22%. These results lead to the conclusion that the system has been excellently constructed and serves as a reliable tool for mouse pad selection recommendations.

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