Bit-Tech (Binary Digital - Technology)
Vol.6, No.2, December 2023
Available online at: http://jurnal.kdi.or.id/index.php/bt

Optimizing Student Housing Search with MAUT-Based Dorm Finder Web System

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Article history:

Received 08 Dec 2023;
Revised 15 Dec 2023;
Accepted 20 Dec 2023;
Available online 28 Dec 2023

Keywords:

Dorm Finder
MAUT
Optimizing Search
Student Housing
Web System

Abstract

In response to the challenges faced by students in finding suitable temporary accommodations, this study introduces 'Dorm Finder,' a web-based information system utilizing Multi Attribute Utility Theory (MAUT). This innovative platform is designed to assist students in locating boarding houses that align with their preferences, taking into account amenities, location, and rental prices. MAUT allows for a nuanced and personalized decision-making process, enabling students to assign importance to various attributes, simplifying their search. The study also addresses the growing demand for efficient housing solutions, as the number of university students has increased by 4.02% in 2022. The research extends to evaluating the system's impact, aiming to support students in their search for accommodations that meet their specific needs based on key attributes. This evaluation will inform the development of more effective MAUT-based systems in the future. The use of MAUT in this context, with its demonstrated effectiveness in decision-making processes, reinforces the potential efficacy of the Dorm Finder system. The 'Dorm Finder' system offers a tailored platform that provides comprehensive information and customizes the search experience for individual student preferences. The system's design and implementation ensure an intuitive and efficient user experience through strategic interface design, including color selection, layout, and interactivity, facilitating a straightforward and enjoyable user journey. The system's potential to revolutionize the way students locate and select accommodations is a significant contribution to the digitalization of the housing search sector.

I. INTRODUCTION

In the current era, marked by rapid digitalization, the integration of information technology across various sectors has become increasingly prevalent. This includes the domain of housing information search, an area of particular relevance to students in need of temporary accommodations like boarding houses during their college years. Students require reliable, detailed information about the amenities and rental prices of these boarding houses, which are often chosen for their affordability and convenience during specific periods of their education [1]. However, the process of finding suitable boarding houses is not without its challenges. The vast array of options, diverse factors to consider, limited time for search, and a general lack of comprehensive information resources contribute to the complexity of this task [2]. These challenges underscore the critical need for an efficient and easily accessible online information system tailored to streamline the boarding house selection process for students [3].

Despite the technological advancements that have simplified access to housing information, students continue to face significant challenges in this realm. One major issue is the necessity of conducting on-site surveys to obtain detailed information about potential accommodations. This requirement not only consumes considerable time but also imposes a financial burden, especially on students from distant areas. Additionally, boarding house owners encounter difficulties in effectively marketing their properties due to a lack of systematic advertising platforms. These challenges collectively point to the inefficiency of the current system and highlight the need for a more comprehensive and accessible solution.

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ISSN 2622-2728 (online) 2622-271X (print)
doi: 10.32877/bt.v6i2.1053

To address these issues, this research introduces the concept of a web-based information system named 'Dorm Finder', which incorporates the Multi Attribute Utility Theory (MAUT) method. This innovative system is designed to assist students in finding boarding houses that closely align with their specific preferences, taking into account various attributes such as amenities, location, and rental prices. The use of MAUT in this context facilitates a more nuanced and personalized decision-making process. It allows students to assign varying degrees of importance to different attributes, thus simplifying and streamlining their search for suitable accommodations. The effectiveness of MAUT in enhancing decision-making processes has been demonstrated in previous studies across different contexts [4], reinforcing the potential efficacy of the Dorm Finder system.

Furthermore, the increasing number of university students, which saw a rise of 4.02% in 2022 [5], amplifies the demand for efficient housing solutions. This is particularly true for students who are studying away from their homes. The Dorm Finder system is strategically designed to cater to this growing need by offering a platform that not only provides comprehensive information but also customizes the search experience according to individual student preferences.

The scope of this research extends beyond the mere design and implementation of the Dorm Finder system; it also encompasses an evaluation of the system's impact and effectiveness. The goal is to support students in their quest to find boarding houses that meet their specific needs and preferences, based on various key attributes. This evaluation is crucial as it will inform the development of more effective MAUT-based information systems in the future. By addressing the current challenges encountered in the boarding house search process, the Dorm Finder system has the potential to revolutionize how students locate and select appropriate accommodations.

II. Related Works/Literature Review (Optional)

In the realm of digital innovation for housing solutions, several notable studies have made significant contributions. Among these, the research by Jenie Sundari and Dwi Arumaryawan in 2018 [6] stands out for its development of an application system aimed at providing detailed boarding house information. This system, serving as an alternative promotional tool for boarding house owners and offering real-time updates, was crafted using web-based Geographic Information System (GIS) technology. The researchers employed PHP and MySQL, focusing on boarding houses in the DKI Jakarta area. Their work, documented in the Inovtek Polbeng - Seri Informatika, highlighted the application's ability to display addresses and maps automatically but also noted its limitations, such as the lack of a booking process and detailed information provision.

Similarly, Didit Gunawan and Ernes Cahyo Nugroho's 2015 [7] study contributed to this field by developing a website for renting boarding houses and apartments in Surakarta. Their project aimed to simplify user searches based on various criteria such as price and amenities, using PHP and MySQL. Published in the Go Infotech Scientific Journal, the system provided updated information about room availability and facilitated online booking and payment. However, it was restricted to the Surakarta area and lacked in-depth methodological details.

In a different context, Tia Imandasari and her team in 2019 [4] focused on consumer product selection using the MAUT method. Their research in Pematangsiantar centered on choosing safe deodorants to prevent skin irritation. Nature's Gate Organics Fruit Blend emerged as the top recommendation from their study. While providing a solid foundation for future research and valuable consumer guidance, the study's scope was limited to product recommendations without developing a new application system.

Adding to the diversity of MAUT applications, Edy Satria and colleagues' 2018 [8] research developed a decision support system for selecting the best tourist destinations in Sidamanik. Their study, published in the Journal of Computer Engineering System and Science, utilized the MAUT method to recommend Bah Biak as a prime destination. Despite its valuable insights, the research did not extend to creating a new application system.

Lastly, the Android-based boarding house information system developed by Kalis Wahyu and Ernes Cahyo in 2016 [9] in the AUB Surakarta area addressed the need for effective promotional tools for boarding house owners and an efficient search mechanism for students. Employing PIECES analysis and building on a MySQL database, the application improved the search process and promotional capabilities, though it faced challenges in providing detailed promotional information and comprehensive order reports.

Accordingly, these studies collectively demonstrate the evolving landscape of digital solutions in housing and consumer decision-making, underlining the importance of detailed information provision, real-time updates, and user-friendly interfaces in application systems. Although each study had its unique focus and limitations, they all significantly contributed to the development of digital tools that enhance user experience in finding accommodations or making informed product choices. Similarly, boarding houses offer a type of dwelling for rent or lease, providing significant benefits to those in need of temporary accommodation or living away from home, thus becoming a popular choice in large cities for their affordability and convenience [10].

III. METHODS

In this study, we opted for a quantitative approach aimed at collecting and analyzing numerical and statistical data. This approach was chosen for its capability to measure and compare various aspects related to boarding house search in an objective and structured manner.

A. Quantitative Approach and Data Collection

To gather the essential data for our research, we conducted a multifaceted data collection process. data collection is a systematic process of gathering information needed to answer research questions, solve a particular research problem or/and provide a basis for accepting or rejecting research hypotheses [11].

An online survey targeting students in search of boarding houses was carried out to obtain quantifiable data on their housing preferences, needs, and behaviors. We complemented this with a review of secondary sources such as journals, books, and articles to understand the broader context of the boarding house market. Additionally, field research, including site visits, interviews with owners, and observations, provided practical insights into the actual living conditions and facilities. This systematic collection of varied data forms a comprehensive basis for our analysis, enabling us to address research questions and test hypotheses effectively.

B. Data Collection and Analysis

Online Surveys as a qualitative research tool [12]. In this research, an online survey was used to determine student participation in data collection. The survey includes questions about their preferences for various student housing attributes, such as the types of facilities they require, their desired rental price range, and other important factors in choosing student accommodation.

Secondary Data Collection: Here, we see the collection of secondary data through field research and literature studies. This step involves gathering information about existing housing attributes, further enriching the primary data obtained from the survey.

Data Analysis: The final part shows the analysis of the collected data. Initially, descriptive statistics were used to examine the housing preferences revealed by survey respondents. Subsequently, Multi Attribute Utility Theory (MAUT) was applied to calculate the value of each housing attribute preference and determine its weight as set by the student respondents.

C. System Design Method

The suitable method for developing the information system is the Software Development Life Cycle (SDLC). SDLC is a framework that defines a process used by organizations to develop applications from the beginning to the end of their life cycle [13].

a. Analysis: In the Analysis phase, the foundation of the system is established through a comprehensive understanding of the core issues and requirements. This phase begins with Problem Identification, where the focus is on pinpointing the specific challenges students encounter in their housing search. A thorough understanding of these challenges is vital for ensuring that the Dorm Finder application addresses them effectively. Next, the Requirement Analysis stage involves gathering and analyzing user needs and requirements. This includes conducting surveys, interviews, and market research to gain a clear understanding of what students are seeking in a housing search application. The collected data is then scrutinized to define both the functional and non-functional requirements of the application. Lastly, a Feasibility Study is conducted to assess the proposed solution's technical, economic, and operational viability. This step is crucial to ensure that the MAUT-Based Dorm Finder application is feasible in all aspects - not only technically possible but also economically sensible and operationally practical.
b. Design: In the Design phase of the Software Development Life Cycle, the theoretical concepts and requirements identified during the analysis phase start to materialize into concrete designs. This phase is pivotal in shaping how the Dorm Finder application will look and function. Firstly, the Interface Design is meticulously developed with a strong emphasis on user experience (UX). This step involves designing the layout, navigation, and overall visual aspects of the application. The primary objective here is to ensure that the user interface is not only intuitive and easy to navigate but also visually appealing and engaging. This aspect is crucial as it directly impacts how users interact with the application, influencing their overall experience and satisfaction. Simultaneously, the System Architecture is formulated, detailing the comprehensive structure of the application. This process includes defining how various components of the system will interconnect, the flow of data within the application, and the design of the underlying database. This architectural blueprint serves as a critical guide for the development team, providing clear direction and structure for the subsequent coding phase. By meticulously planning the system architecture, the team ensures that the application is not only functionally robust but also scalable and maintainable in the long run..
c. Coding & Testing: In the Coding & Testing phase of the Software Development Life Cycle, the actual construction of the application commences. During the Coding stage, developers begin the process of writing code, a task that entails translating the system design, as outlined in the design documents, into a functional

software application. This process is executed using appropriate programming languages and tools that best fit the project's needs. Once the coding is completed, the application undergoes a rigorous Testing phase. This phase is crucial for identifying and rectifying any bugs or issues in the software. The testing process encompasses various types of tests, including unit testing, integration testing, system testing, and user acceptance testing. Each of these tests serves a specific purpose in ensuring that every component of the application functions correctly, integrates seamlessly with other parts of the system, and, ultimately, that the entire application operates smoothly. The overarching goal of this phase is to verify that the application meets all the specified requirements and delivers a reliable, error-free user experience.

d. Implementation: In the final phase of the Software Development Life Cycle, known as Implementation, the Dorm Finder application is transitioned from a development phase into actual use. This critical stage begins with the deployment of the fully developed and rigorously tested application. It is at this point that the application is deployed onto the server, making it accessible to its intended users. Depending on the project's strategic approach, this deployment could either be a phased rollout, where the application is released in stages, or a full launch, where the entire application becomes available at once.

D. Information System Evaluation

Following the development of the Dorm Finder information system, a thorough evaluation process is initiated to assess the system's effectiveness and user satisfaction [14]. This crucial evaluation ensures the system's goals are met and that it delivers a positive user experience.

The evaluation adopts a multi-pronged approach, including:

1. System Functionality Testing to confirm all features work correctly and without errors.
2. Interviews with Users for qualitative insights into their experiences and challenges.
3. User Satisfaction Surveys to quantitatively measure satisfaction and system efficacy.

Additionally, Usability Testing is integrated to evaluate the ease with which users can navigate the application, its efficiency in aiding users to achieve their goals, and user contentment with the application. This testing is vital for refining the user interface and enhancing the overall effectiveness of the application.

E. Multi Attribute Utility Theory (MAUT) Method

The Multi-Attribute Utility Theory (MAUT) is an evaluation scheme that determines the final value v(x) of an object x by adding weights corresponding to the values of its dimensions [15]. This method converts various interests into numerical values on a scale from 0 to 1, where 0 represents the worst choice and 1 the best choice. This enables direct comparison of different measures. The overall rating can be calculated using several equations.

$$V(x) = \sum_{i=1}^{n} WiVi(x) \tag{1}$$

Where Vi(x) is the evaluative value of the i-th item, Wi is the weight determining the importance of the i-th item relative to others, and n is the number of items. The sum of the weights must equal 1.

$$\sum_{i=1}^{n} Wi = 1 \tag{2}$$

In each dimension, the score value Vi(x) is defined as the sum of the corresponding attributes.

$$Vi(x) = \sum_{e=Ai} Wai.Vai\left(I(a)\right) \tag{3}$$

Description:

V(x) = Evaluation value
n = Number of items/criteria
i = Total weight is 123
ai = Set of all relevant attributes
Vai (l(a)) = Assessment of the actual level
Wai = Weight determining the influence of attribute evaluation on the dimension
vi = Overall value of the alternative choice criteria
a = Criteria

Therefore, it can be concluded that the steps involved in the MAUT method are as follows:

1. Determine criteria as a reference for calculation.
2. Assign weights based on the importance of each criterion.
3. Configure the criterion values across all parameters.
4. Calculate the utility matrix value for each alternative according to its attributes.
5. $$U(x) = \frac{(x - Xi)}{xi^{+} - xi^{-}} \quad (4)$$

Description:

U(x) = Normalization of alternative weights.
xi^{-} =Minimum criterion value (worst weight).
xi^{+} = Maximum criterion value (best weight).
x = Alternative weight.

6. Calculate the final value for each criterion.
7. Rank based on the highest to the lowest final value.

IV. RESULTS

A. *Usecase*

In the results section there is a Use Case diagram as in figure 1 which comprehensively summarizes the functionality of the 'Dorm Finder' application. This diagram serves as a blueprint, illustrating the interactive process between users—namely Hostel Seekers and Dorm Selectors—and the system itself, managed by Hostel Admins and Managers. It visually communicates the flow of operations from user registration to data validation, capturing the essence of the application's user experience.

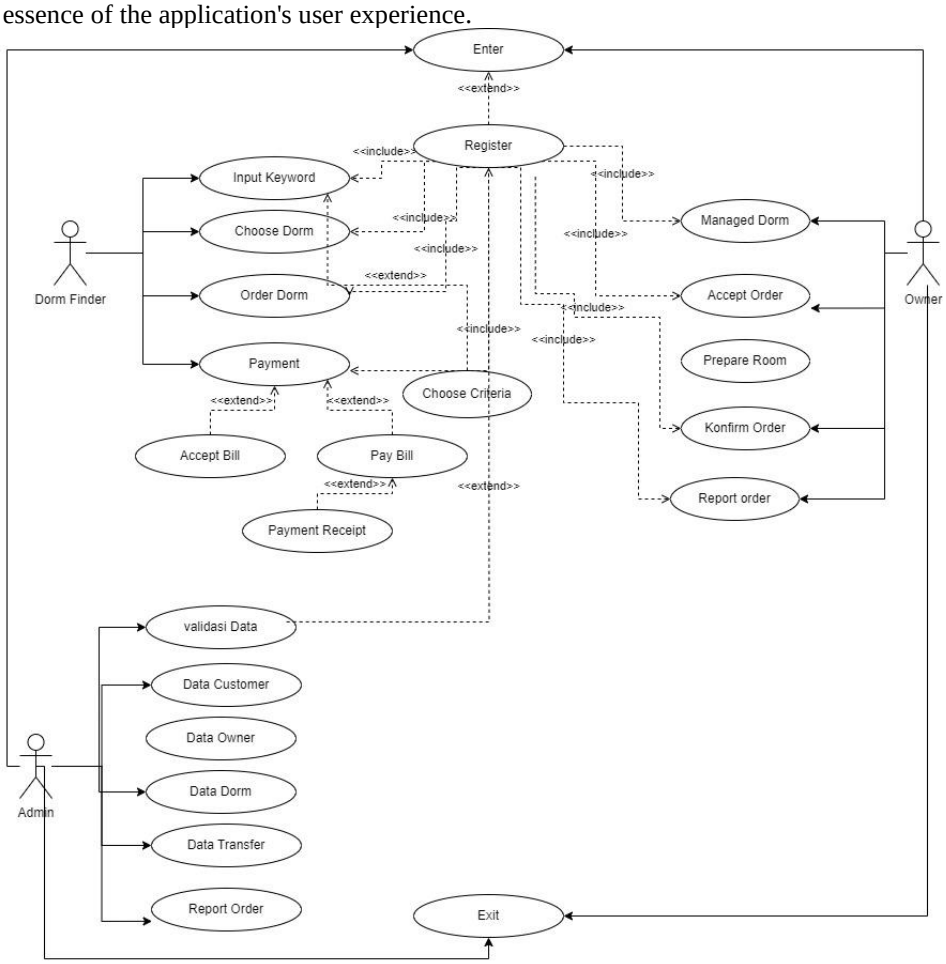

Fig. 1 Use Case Diagram

B. Activity Diagram

Next, procedures and Activity Diagrams are created, which provide a dynamic view of the 'Hostel Finder' system workflow. The diagram in figure 2 articulates the sequence of actions performed by the various actors in the system, mapping the flow from the beginning of user involvement to the culmination of the dorm selection process. This is an integral component of our analysis, offering a deep understanding of the operational logic and interactions between co-occurring processes. This visual representation is very important for identifying potential procedures that are still under-optimized and improving overall system efficiency.

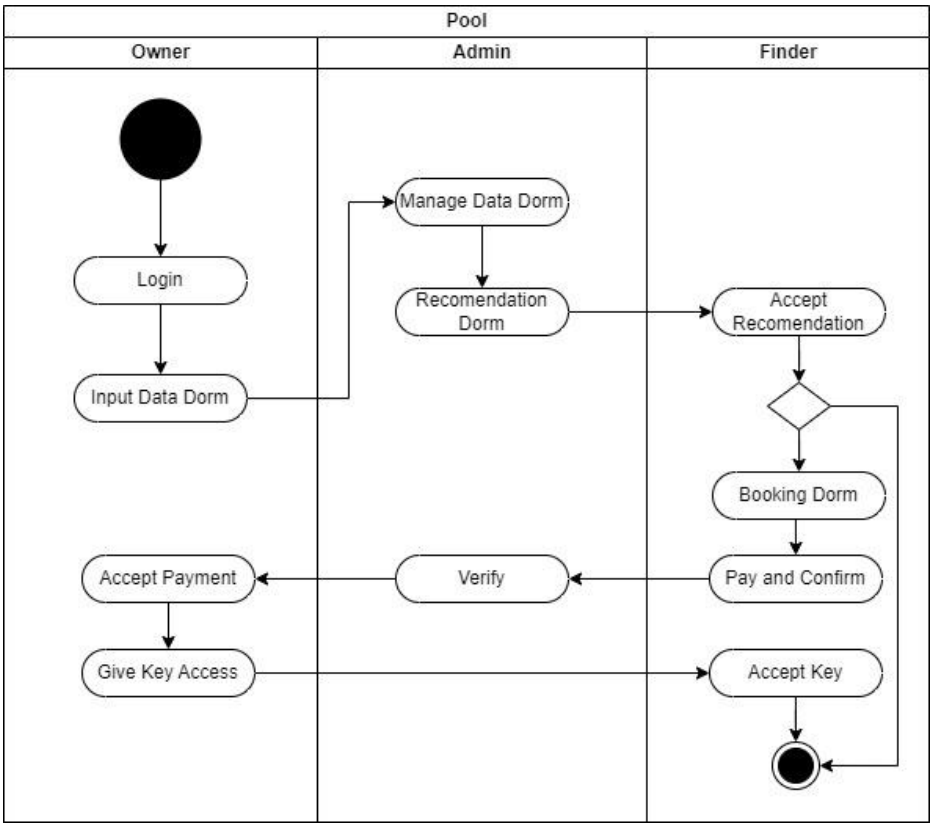

Fig. 2 Activity Diagram

The following is an explanation of the flow of the proposed design :

a. Both dormitory seekers and owners must register with the system using the available options to access all the system features.
b. For dormitory owners, the system provides a dormitory management feature that includes options to add, modify, and delete dormitory information.
c. Dormitory search can be performed by entering keywords such as the name of the nearest university or using options on the filter feature.
d. The system will display the best dormitory recommendations based on search criteria.
e. To proceed to the booking process, users can select the 'booking' option on the desired dormitory, make a payment, and confirm the order.
f. The system admin will verify the payment made by the dormitory seeker and then disburse the funds.
g. Dormitory owners will receive information about orders and fund disbursements for the rented dormitory rooms.
h. Dormitory seekers and owners meet for the process of handing over the dormitory room keys. i. Dormitory seekers receive the keys to the rented dormitory room.

C. Application of the MAUT Method

After reviewing the current boarding house search system, it was found that there were many obstacles that hindered the boarding house search process, both for boarding house seekers and owners. Boarding house seekers often face difficulties in finding boarding houses that suit their needs, while boarding house owners are limited in their ability to promote boarding houses due to the unavailability of effective platforms.

As explained previously, the aim of the proposed system design is to make it easier for both boarding house seekers and owners to find and promote boarding houses. Therefore, we decided to apply the Multi-Attribute

Utility Theory (MAUT) method in the boarding house search system. This method is expected to provide more accurate recommendations about which boarding houses are most suitable for boarding house seekers. The following are details of the application of the MAUT method in the boarding search system we developed, Dorm Finder:

a. Determining Criteria

There are 5 criteria used for determining the choice of boarding house, namely:
C1 = Price: information containing the boarding house price category.
C2 = Distance: information containing the category of distance traveled from boarding house to campus.
C3 = Facilities: information containing the category of boarding house facilities.
C4 = Building condition: information containing how condition of the boarding house building.
C5 = Strategic access: information containing the closest access is around the boarding house.

b. Criteria weighting

The weighting is based on the importance of each existing criterion which is determined by the percentage obtained from respondents which was discussed previously, resulting in a distribution of weights for each criterion which is as follows in Table 1:

TABLE 1
CRITERIA WEIGHTING

Criterion Name	Weight
Price	42
Distance	20
Facility	16
Building Condition	14
Strategic Access	8
Amount	100

c. Configure Criteria Values

Below in table 2, the criteria values are given for all existing parameters:

TABLE 2
CRITERIA VALUE WEIGHTING

Criterion Name	Parameter	Criteria Weight
Price	500.000 – 700.000	5
	700.000 – 900.000	4
	900.000 – 1.100.000	3
	1.100.000 – 1.300.000	2
	>1.300.000	1
Distance	<1 km	5
	1 km – 2 km	4
	3 km – 4 km	3
	4 km – 5 km	2
	>5 km	1
Facility	0-5	5
	0-4	4
	0-3	3
	0-2	2
	<1	1
Building Condition	6-9	4
	6-8	3
	6-7	2
	6	1
Strategic Access	10-14 (5)	5
	10-13 (4)	4
	10-12 (3)	3
	10-11 (2)	2
	10 (1)	1

Description:

1. Facilities
   0 = standard (bed, cupboard, study table, kitchen, parking)
   0-1 = standard, WIFI
   0-2 = standard, WIFI, AC
   0-3 = standard, WIFI, AC, CCTV
   0-4 = standard, WIFI, AC, CCTV, ensuite bathroom/washing machine
   0-5 = standard, WIFI, AC, CCTV, ensuite bathroom/washing machine, TV

2. Building Condition
   6 = Clean, neat, safe
   6-7 = Clean, neat, safe, level
   6-8 = Clean, neat, safe, multi-storey, new building
   6-9 = Clean, neat, safe, multi-storey, new building, 1 location with boarding house owner
3. Strategic Access
   10 = Places to eat (warteg etc.)
   10-11 = Places to eat (warteg etc.), Supermarkets/Department Stores/Warungs
   10-12 = Places to eat (warteg etc.), Supermarkets/Department Stores/Warungs, Clinics/Hospitals
   10-13 = Places to eat (warteg etc.), Supermarkets/Department Stores/Warungs, Clinic/Hospital, Market/Mall
   10-14 = Places to eat (warteg etc.), Supermarkets/Department Stores/Warungs, Clinic/Hospital, Market/Mall, Transportation (Station etc.)

d. Configure Utility Values

In this stage, it will be divided into several steps, namely:

1. Below is detailed data on alternative boarding houses located around Buddhi Dharma University which will be an example reference in calculating the utility value of boarding houses, namely as show in table 3:

TABLE 3
PROVIDING ALTERNATIVE DATA

NO	Alternative	Price (Rp)	Distance (km)	Facilities	Building Condition	Access (<2km)
1	Anton Kost	650,000	0.21	Standard	Clean, tidy, safe, and Multi-level (2 levels)	Warteg, Shops, Supermarket, Tangcity Mall, Tangerang Station, and Cimone Terminal
2	Margianda Kost	1,300,000	0.75	Standard, Wifi, AC, CCTV, Ensuite bathroom, shared washing machine, and TV	Clean, tidy, safe, Multi-level (2 levels), and New building	Warteg, Shops, Supermarket, Clinic, Tangcity Mall, Tangerang Station, and Cimone Terminal
3	K53 Kost	1,450,000	1.80	Standard, Wifi, AC, CCTV, Ensuite bathroom, and shared washing machine	Clean, tidy, safe, and Multi-level (4 levels)	Warteg, Shops, Supermarket, Clinic, Tangcity Mall, and Tangerang Station
4	Sumber Bahari Kost	1,500,000	1.80	Standard, Wifi, AC, CCTV, Ensuite bathroom, shared washing machine, TV, and prayer room	Clean, tidy, safe, and Multi-level (3 levels)	Warteg, Shops, Supermarket, Clinic, Tangcity Mall, and Tangerang Station
5	Ko San-San Kost	1,200,000	1.50	Standard, Wifi, AC, CCTV, Ensuite bathroom, shared washing machine, and TV	Clean, tidy, safe, and Multi-level (3 levels)	Warteg, Shops, Supermarket, Clinic, Tangcity Mall, and Tangerang Station

2. Assign weights to each alternative and determine their weight values. Then, configure the criteria values for weighting using formula (1), which is 1 divided by the sum of the parameter weights multiplied by the criterion weight value. The weights are as shown in Table 4.

TABLE 4
FILL IN THE CRITERIA VALUE WEIGHTS

NO	Alternative	Price (Rp)	Distance (km)	Facilities	Building Condition	Access (<2km)
1	Anton Kost	1,00	1,00	0,20	0,50	0,80
2	Margianda Kost	0,40	1,00	1,00	0,75	1,00
3	K53 Kost	0,20	0,80	0,80	0,50	1,00
4	Sumber Bahari Kost	0,20	0,80	1,00	0,50	1,00
5	Ko San-San Kost	0,40	0,80	1,00	0,50	1,00
Max		1,00	1,00	1,00	0,75	1,00
Min		0,20	0,80	0,20	0,50	0,80

3. Calculate the results of weighting the criteria values for each boarding house using formula (4), namely the criteria value minus the minimum criteria value divided by the maximum criteria value minus the minimum criteria value. As shown in table 5

TABLE 5
CRITERIA VALUE WEIGHTS

NO	Alternative	Price (Rp)	Distance (km)	Facilities	Building Condition	Access (<2km)
1	Anton Kost	1,00	1,00	0,00	0,00	0,00
2	Margianda Kost	0,25	1,00	1,00	1,00	1,00
3	K53 Kost	0,00	0,00	0,75	0,00	1,00
4	Sumber Bahari Kost	0,00	0,00	1,00	0,00	1,00
5	Ko San-San Kost	0,25	0,00	1,00	0,00	1,00

e. Calculating the Final Grade

After obtaining the criteria values, the next stage is to determine the final value of each criterion using formula (3), namely the criteria value times the criteria weight.

TABLE 6
FINAL SCORE

NO	Alternative	Price (Rp)	Distance (km)	Facilities	Building Condition	Access (<2km)
1	Anton Kost	42,00	20,00	0,00	0,00	0,00
2	Margianda Kost	10,50	20,00	16,00	14,00	8,00
3	K53 Kost	0,00	0,00	12,00	0,00	8,00
4	Sumber Bahari Kost	0,00	0,00	16,00	0,00	8,00
5	Ko San-San Kost	10,50	0,00	16,00	0,00	8,00

f. Rangking

After calculating each criterion value for the final value, then Next, ranking is carried out based on the highest final score Lowest. The results of the MAUT method calculation will produce Recommendations for the best boarding houses around Buddhi Dharma University are as follows followingin the table 7:

TABLE 7
FINAL SCORE

NO	Alternative	Score	Rank
1	Margianda Kost	68,50	1
2	Anton Kost	62,00	2
3	Ko San-San Kost	34,50	3
4	K53 Kost	24,00	4
5	Sumber Bahari Kost	20,00	5

D. System Implementation

The implementation section of the system details the process of how the dormitory search interface was designed and implemented to ensure an intuitive and efficient user experience. This discussion will encompass various elements of interface design, including color selection, layout, and interactivity, all of which are utilized to create a user experience that is both enjoyable and straightforward.

Figure 3 displays the homepage of the 'DORM FINDER' application interface, showcasing the 'Pencarian Kost' (Dormitory Search) feature. This main screen is designed with a clean and modern aesthetic, predominantly using a soothing teal color scheme that underscores the application's branding.

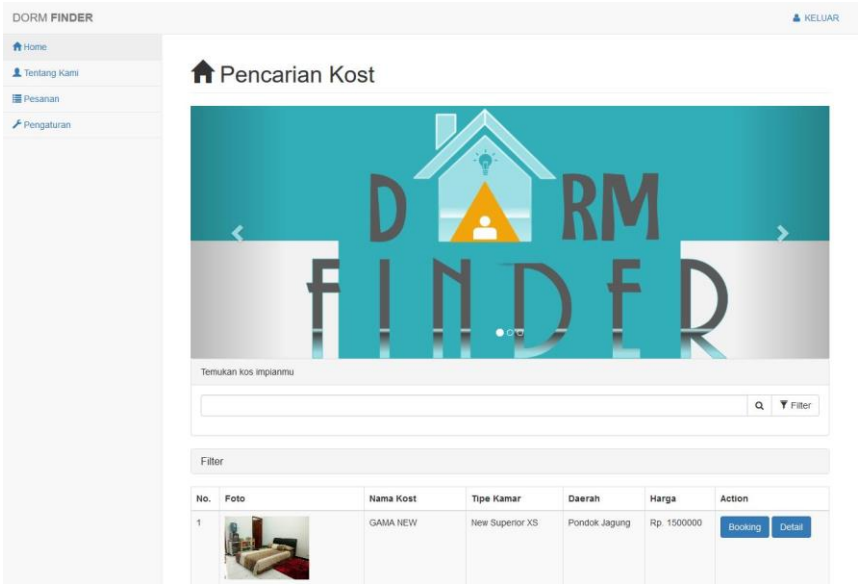

Fig. 3 Homepage

Figure 4 a detailed view of the filter section from the 'DORM FINDER' application, which is designed to refine dormitory searches according to various user-defined criteria. The filter categories include 'Kota Kunci' (Key City), 'Wilayah' (Region), 'Harga' (Price) with a price range option, 'Luas Kamar' (Room Size), and 'Gender' indicating the gender suitability of the dormitory. Additional filters are provided for 'Fasilitas' (Facilities), where users can select from options such as standard, air conditioning, hot water, TV, and CCTV among others. 'Kondisi' (Condition) of the dormitory can also be specified, with choices like new, shared with owner, or with a balcony. The 'Akses' (Access) category allows users to filter based on proximity to strategic places such as markets, supermarkets, transportation hubs, and educational campuses. At the bottom, there's a field for 'Jarak Terdekat' (Nearest Distance) from a campus, and an input box for a maximum distance. A 'Search' button at the bottom indicates where users can apply these filters to initiate the search.

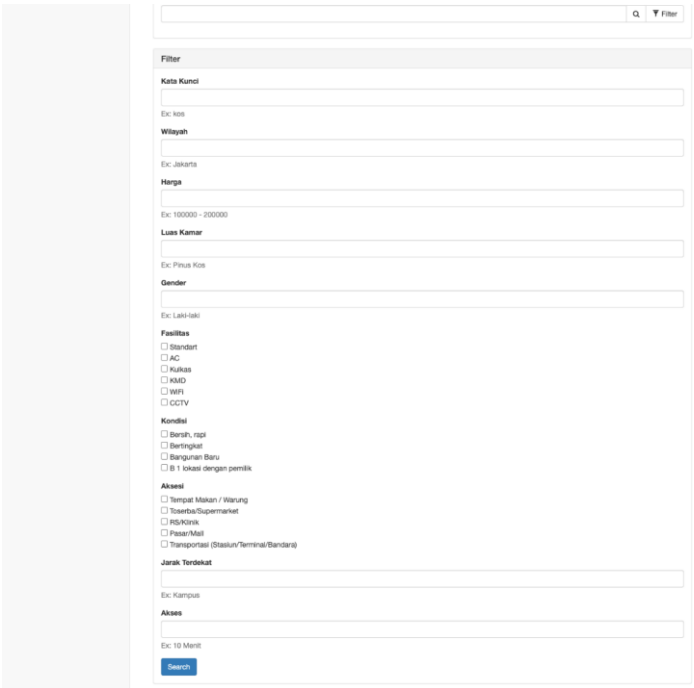

Fig. 4 Filter Search Criteria

Figure 5 shows the search results of the dormitories selected based on criteria and using the MAUT method. The list of dormitories is made based on the ranking of the weights obtained

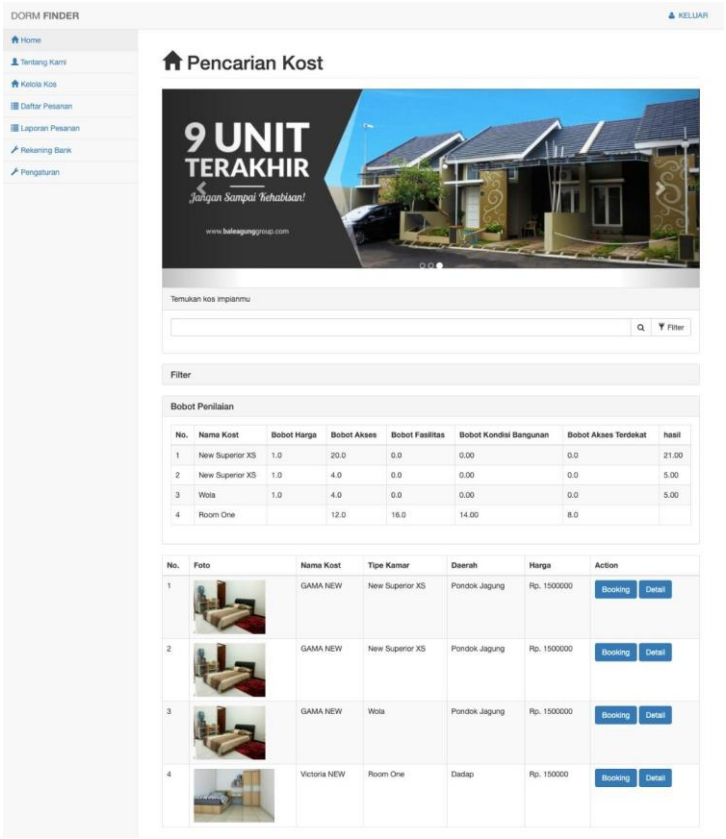

Fig. 5 Search Result

V. DISCUSSION

The research on the Web-Based Dorm Finder Information System, employing the Multi Attribute Utility Theory (MAUT), reveals significant insights into interface design and its impact on user experience. The implementation of MAUT in the system's design process played a crucial role in determining the most effective way to present and prioritize information for users. By assigning weights to various attributes of the dormitories, such as price, location, and facilities, MAUT enabled the development of a user interface that intelligently sorts and presents options based on user preferences. This application of MAUT ensures that the search results are not only relevant but also aligned with the specific needs and priorities of the users.

In terms of the user interface design, the system exhibits a carefully crafted balance between aesthetics and functionality. The color scheme, layout, and interactive elements were chosen and organized to foster an intuitive and engaging user experience. The colors were strategically selected to create a visually appealing and calming environment, crucial for retaining user interest and reducing visual strain. The layout, on the other hand, was meticulously designed to facilitate easy navigation and quick access to important features, ensuring that users can find what they need without feeling overwhelmed. This thoughtful arrangement of elements significantly enhances the usability of the system.

The interactive components of the system, such as search filters and customizable parameters, are a testament to the system's user-centric approach. These features empower users to refine their search based on individual preferences, a functionality made more robust by the integration of MAUT. The interactivity aspect not only contributes to a more personalized search experience but also makes the process more efficient and user-friendly. The blend of MAUT's analytical approach with a well-considered interface design results in a system that is not only functionally superior but also enjoyable to use. This synergy between methodical data processing and user-focused design is what sets the Dorm Finder system apart, making it an exemplary model in the realm of web-based accommodation search tools.

VI. CONCLUSIONS

The deployment of the Web-Based Dorm Finder Information System, architected with the analytical rigor of Multi Attribute Utility Theory (MAUT), marks a transformative step in enhancing the dormitory discovery and decision journey. By leveraging the nuanced evaluation capabilities of MAUT, the system offers users a suite of

highly accurate and personalized recommendations, ensuring that each search yields options that closely match individual preferences and requirements.Beyond mere listings, the platform delivers a wealth of detailed information on each dormitory, laying out a comprehensive digital brochure that assists users in making well-informed choices. The robust search engine, fortified with customizable filters, allows for the tailoring of queries to the minutiae of users' desires, from price ranges to amenities, distilling the vast pool of data into a finely curated selection of viable accommodations.

For dormitory owners, the system presents a meticulously organized management interface, enabling them to efficiently oversee their listings, enact updates, and engage with potential tenants. The streamlined processes embedded within the platform significantly accelerate the booking and payment transactions, diminishing wait times and administrative overhead for both seekers and owners alike. Furthermore, the system's intelligent design incorporates strategic location data, offering users valuable insights into the surrounding area, access to local amenities, and connectivity, which are crucial factors in the decision-making process. This comprehensive approach ensures that the act of finding and securing a dormitory is not only about the space itself but also about integrating into the community and lifestyle that the location affords.

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