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# Decision Support System: UTHM Pagoh Residential College Online Registration and Complaint

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**Abstract**: This study developed a web-based system using a decision support rule for online residential college room registration. This system help students register their rooms, making complaints, and obtaining information about activities from residential colleges online as well as providing a mechanism for reporting any damage in the occupied room. A preliminary interview and survey have been administered to assess the feasibility and requirement in developing the system. It is discovered that that the residential college management is currently using a manual business process in allocating room upon student registration regardless of student race or religion. Therefore this study developed a system to handle the issues in assigning a room for a student. The evaluation of the system usability and enhancement to support mobile access has been planned for future works.

**Keywords**: Decision Support System, Web-Based System, Online System

## 1. Introduction

Over the past two decades, governments in many developing countries have engaged private hostel providers to help build student hostels and residential halls to meet the requirement for more accommodation infrastructure. Likewise, UTHM provides full-fledged accommodations for students placed in the Pagoh campus. Every semester, the students are required to register manually at the residential college within the time frame scheduled. However, most of them came from hometown afar. In addition, residential college students are responsible for reporting any damage in their room, and getting involved in the residential college activities. The residential college administration notifies students on information updates such as memo and notice by posting on notice boards located on the ground floor of every residential college block. However, the information is less noticeable and inconvenient to be read by students.

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This study aims to develop an online system as an alternative to facilitate residential college registration. Besides college registration, the system provides a channel for the student to report any damage of properties in the occupied room. Additionally, the system provides information such as transportation schedules from college to the campus, the fellow on duty, and residential college activities. Furthermore, majority of Malaysians, especially UTHM students are mostly Muslim and there is a possibility where non-muslim students cook in the college or bring outside food, which is non-halal. This study implements a Decision Support System (DSS) in programming the business process considering the above mentioned issues. Decision Support System (DSS) have commonly used by many organizations [1,2,3]. Some authors have extended the definition of DSS to include any system that might support decision making [4].

## 2. Materials and Methods

This study adopts the waterfall methodology in implementing DSS in the developed system. The system requirements are elicited by conducting a preliminary interview with the representative of residential college administration. The purpose of this interview is to get in-depth feedback and information on the student room registration process each semester as well as new admissions students. Table 1 list the interview questions.

**Table 1: List of the interview questions**

| Topic of Question | Question |
|---|---|
| Currently used management information system | 1. What is the current management information system used by the residential college? |
| | 2. How does the system work? |
| | 3. Does the system handle room management? |
| | 4. What is the limitation of the system? |
| Room Assignment for existing student | 5. How does the residential college administration assign room upon existing student registration? |
| | 6. Does the room allocation is assigned by race? |
| | 7. Is there any specific procedure in assigning students a room? |
| Change of room | 8. How does the residential college administratron decide whether a student should move to a different room? |
| | 9. Is there any procedure when moving a student to a different room? |
| | 10. Is there a procedure for students to request for room change? |
| New Instake Student's room registration | 11. Is there any procedure for the registration of new intake students? |

The questions cover aspects such as current system limitations and the business process involved in assigning a room to students. In addition, a feasibility survey among Pagoh campus residential college students has been conducted to investigate the importance of developing this system. The survey consists of eight closed-ended questions with a dichotomous scale. Table 2 list the survey questions.

**Table 2: List of the survey questions**

| Topic of Question | Question |
|---|---|
| Knoweledge and experience | 1. Do you know the importance of the Decision Support System (DSS) for decision making? |
| | 2. Have you ever booked a room online? |
| Functional Requirement Needs | 3. Have you ever had problems registering room at residential college manually? |
| | 4. Do you agree that students can register rooms faster online than the manual way (coming to the office)? |
| | 5. Do you agree that students can make a complaint of room damage online faster than manual (coming to the office)? |
| | 6. Information, memos, and notices about residential colleges easier to see and access on the web or internet than pasted on a billboard? |
| Need for an online system | 7. As a student living in a residential college, are you interested in using our website? |
| | 8. As a senior student in the residential college, is this website a necessity? |

The system aims to focus on the primary business process of a residential college, namely room registration for existing and new student, complaint management, and information updates. Subsequently, the user interface for the identified functionalities are designed. Figure 1 shows the modules of the system functions.

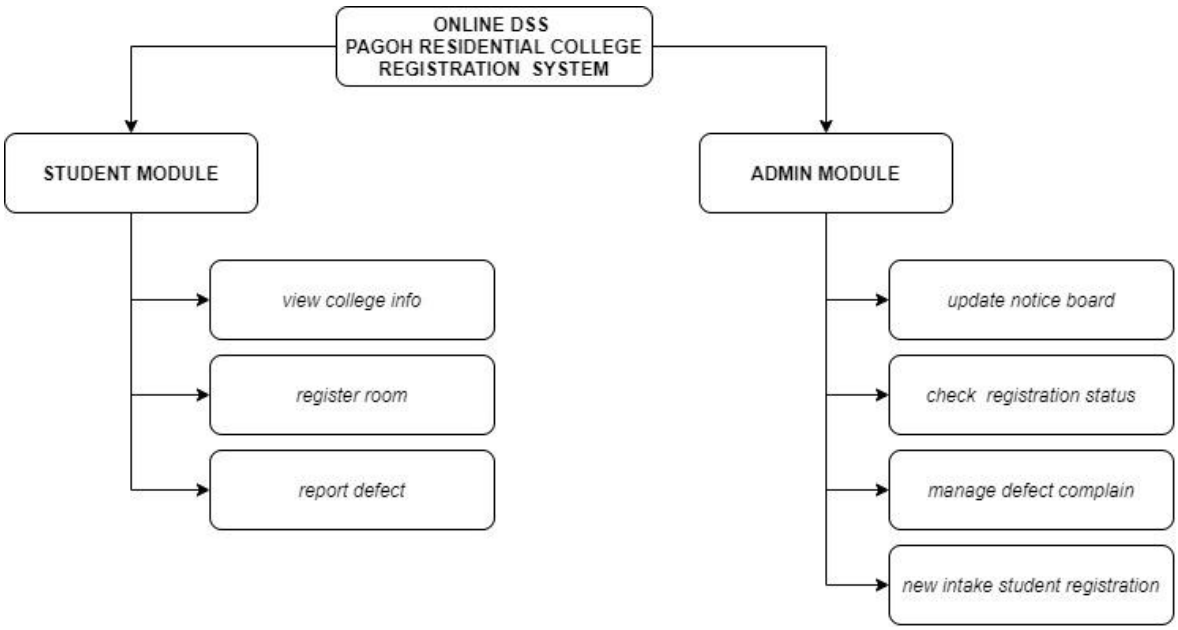


**Figure 1: Modules of the system functions**

The system is intended for use by existing residential college students and the administration of the residential college, as the system admin. A student can register for residential college, make a report on property defects in the occupied room, and view college information such as transportation schedules, the fellow in duty, facilities provided, and college activities pictures. A system admin, on the other

hand, can view student registration status and complaint, as well as register room for new intake students and update information for students in replace of memo and notices.

Subsequently, the decision rules are implemented in the user interface design. The decision rules are translated into the if-else selection control structure in PHP language. The registration data are stored in a MySQL database using a client-server system architecture. Table 3 list the decision rule used in developing the system.

**Table 3: List of the survey questions**

| Scenario | Decision rule | Descripion |
|---|---|---|
| Assigning room to existing students | intake=existing = > status=registered | Existing students are given the room they hav occupied in the previous semester |
| Assigning room to new students | room=vacantˇ(room=availableˆgender=requestˆ religion=request)ˆlevel=vacantˇlevel=available = > update room quota ˆ roommate | Assign the student to the vacant or available room of currently available flow, given that the gender and religion are of the same with other roommates. Else, seek the next floor level within the same building |
| Changing room upon a defect | room=vacantˇ(room=availableˆgender=requestˆ religion=requestˆlevel=request)= > update room quota ˆ roommate | Assign the student to other rooms on the same floor if available, given that gender and religion are of the same with changed roommates. Else, seek the next floor level within the same building |
| Changing room upon request | room=vacantˇ(room=availableˆgender=requestˆ religion=request) = > update room quota ˆ roommate | Assign the student to the requested room if the room is available, given that the gender and religion is of the same with changed roommates |

Finally, user acceptance testing among the residential college administration and students is planned. However, the evaluation is not possible due to the spread of the Covid-19 pandemic.

## 3. Results and Discussion

This section presents the results and discussion for the preliminary interview, feasibility survey, and the developed system.

3.1 Results

The face-to-face interview session with a residential college representative, Mrs. Nur Ashikin binti Muhsin, found that the process of pre-registration and registration of students for each new semester are still using the manual method. It is the same for the process of complaint damage.

Likewise, the feasibility survey responses from 70 respondences indicate that they preferred an online system for defect complaints and information updates. However, the proportion of agreement regarding online registration is almost equal, as presented in Figure 2.

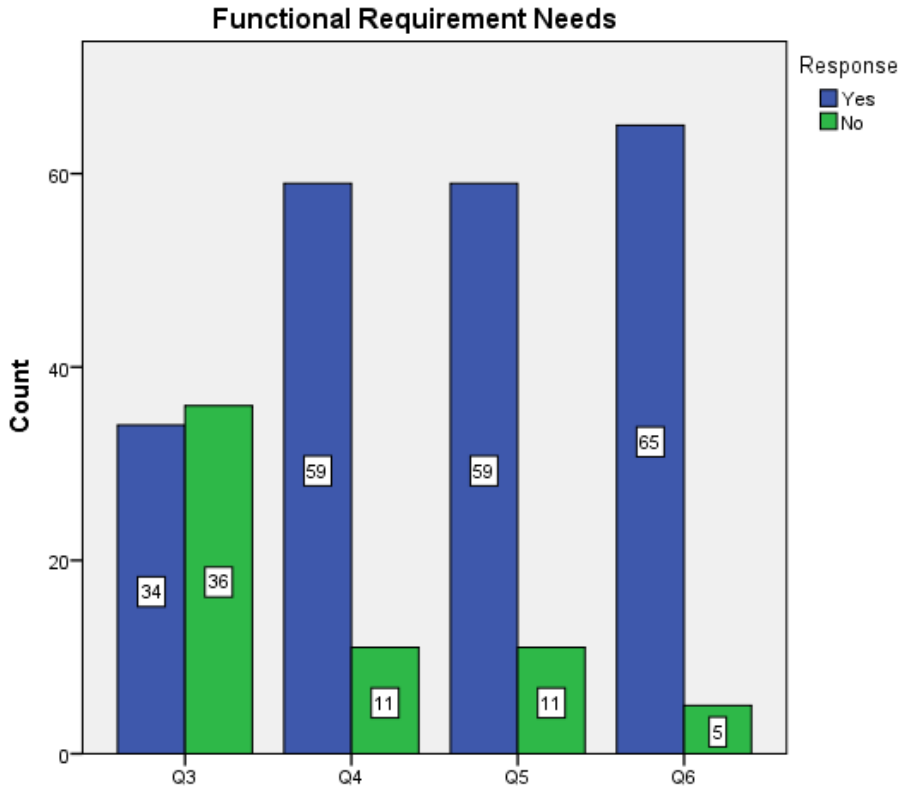


**Figure 2 : Response of Question 3, Question 4, Question 5, and Question 6**

Most of the respondents are not sure of how a decision support system looks like and have no experience in booking an online room. This is shown by the distribution of the survey response for question 1 and question 2, as in Figure 3.

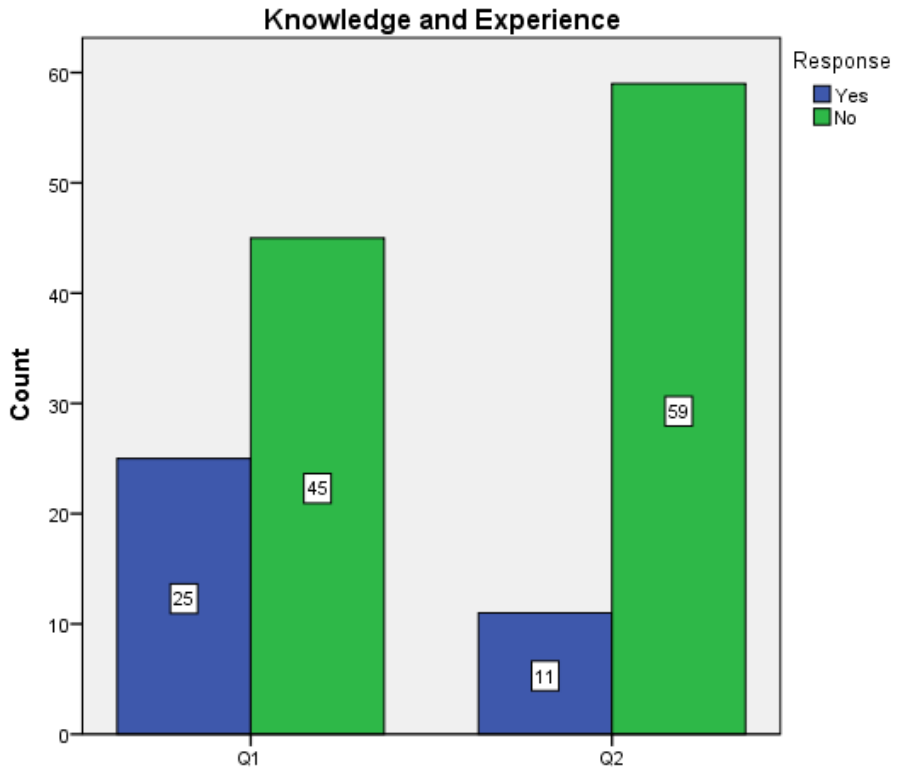


**Figure 3 : Response of Question 1 and Question 2**

The respondents also showed great interest in using the online system. Figure 4 depicts the survey response distribution for question 7 and question 8.

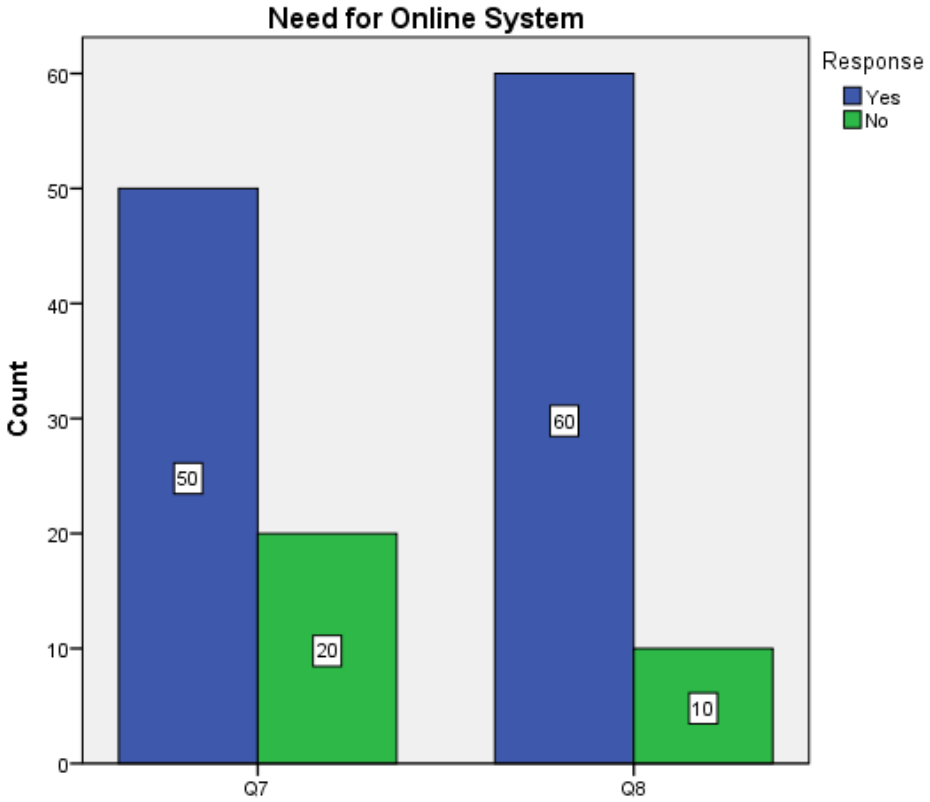


**Figure 4 : Response of Question 7 and Question 8**

The interview and survey resulted with in online DSS system for UTHM Pagoh residential college registration system. Figure 5 illustrates the user interface for room registration in the case of exiting students.

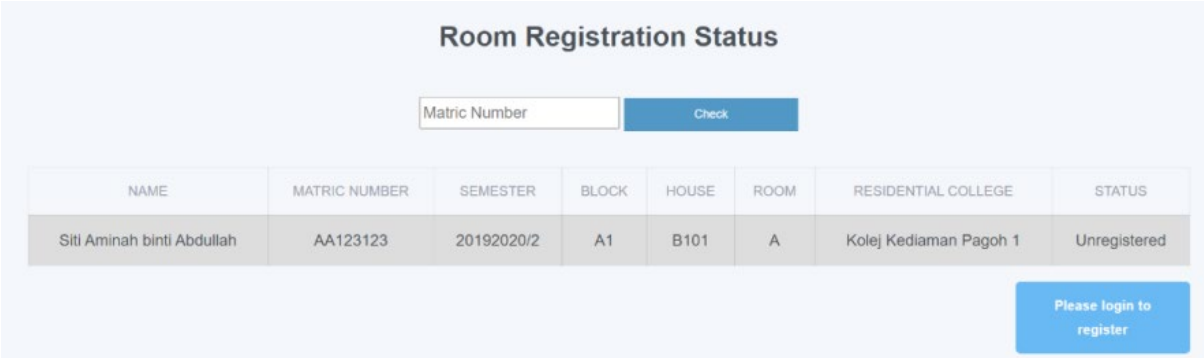


**Figure 5 : Registration UI for existing student**

Upon registration, an existing student is assigned to the room they occupied in the previous semester. However, in case of a new intake student's registration on residential college, the system admin is responsible for managing the registration. Figure 6 illustrates the user interface for new student registration.

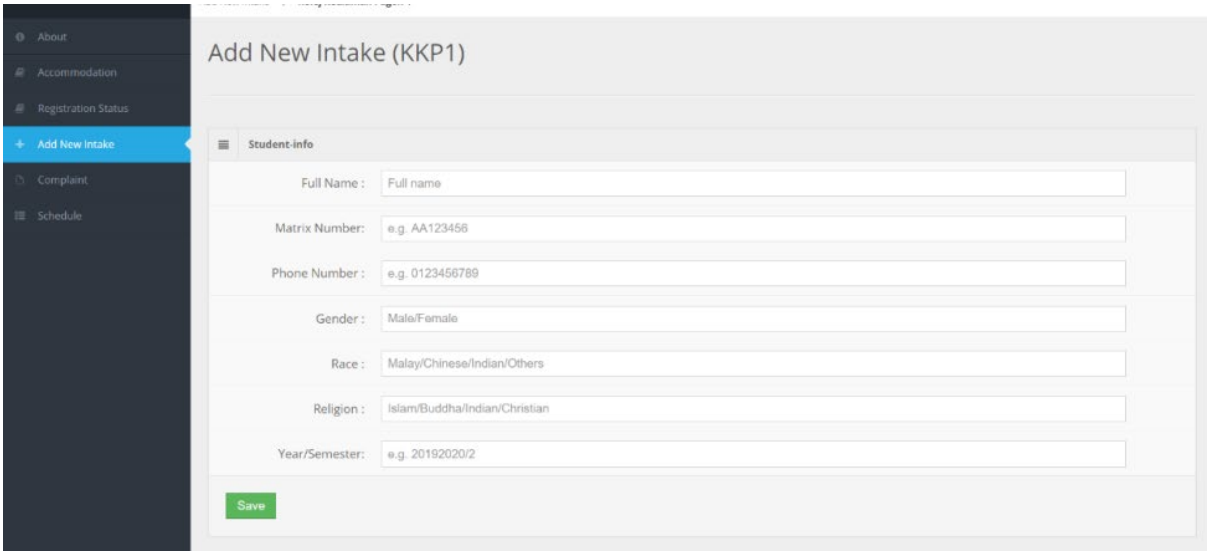


**Figure 6 : Registration UI for new student**

Once the system admin key-in the new student detail, the DSS engine will assign an appropriate room based on the gender, race, and religion.

3.2 Discussions

A preliminary interview with the residential college administration indicates that the residential college management is currently using a manual business process in allocating room upon student registration where students are given a room without consideration of their race or religion. However, the majority of Malaysians, especially UTHM students, are mostly Muslim. Therefore, providing residential with proper room allocation is crucial as there is a possibility where students cook in the college or bring outside food, which is non-halal.

The DSS approach system is favored amongst residential students due to travel time and cost convenient.

## 4. Conclusion

This study has developed an online decision support system to handle residential college registration for UTHM Pagoh Campus. A preliminary interview and survey have been conducted prior to system development. The results indicate that the residential college management is currently using a manual business process in allocating room upon student registration. Consequently, the system implements a decision support system approach in assigning an appropriate room to the student upon registration based on gender and religion. We have planned to evaluate the system usability and enhance it to support mobile access in the future.

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