
UTM

UNIVERSITI TEKNOLOGI MALAYSIA

# SECD2613 - ANALISIS DAN REKABENTUK SISTEM

# (SYSTEM ANALYSIS AND DESIGN)

## PHASE 1 - PROJECT PROPOSAL AND PLANNING

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**SECTION :** 03

**GITHUB REPOSITORY LINK:**
https://github.com/mnzmii/PERFECTTRIO_Project1_SAD_20232024

# 1.0 Introduction

The Campus Resource Management System (CRMS) is a comprehensive digital platform designed to improve the management of core operational and administrative tasks at educational institutions. The system enhances the communication and collaboration between departments by offering a centralized platform, resulting in more efficient facilities, students academic, faculty and human resource management.

Furthermore, the CRMS automates essential processes such as reserving facilities, managing students enrollments, and organizing staff schedules, which leads to a significant reduction in administrative workloads and enabling staff to dedicate more time to tasks of greater importance. This automation improves the experience for students and faculty by streamlining access to administrative services and facilitating communication between various departments.

In addition, the CRMS plays a crucial role in enhancing resource allocation efficiency throughout the institution. The system identifies usage patterns and facilitates better planning, which helps in maximizing the use of campus facilities and resources , reducing waste and increasing availability without the need for significant additional investments.

In summary, the CRMS serves as more than simply an application. It is a valuable asset that enhances operational efficiency, facilitates decision-making, and merges different administrative duties into a unified and user-friendly system. This platform plays an important part in changing how campus operations are carried out, creating a more efficient and engaging academic environment.

# 2.0 Background Study

Many colleges and universities use separate systems to handle different parts of campus life. For instance, one system might manage classroom bookings while another keeps track of student grades. These systems often don't talk to each other, which can trigger a few problems:

The first one is conflicting information can happen. When systems are not connected, they might show different data for the same thing. Thus, it will be hard for staff and students to get a clear and accurate picture of what’s going on.

Secondly, it can cause poor communication. Without a way for these systems to share information, departments end up working in isolation. This makes it difficult for them to work together effectively, which can slow down decision-making and disrupt daily operations.

Last but not least, the resources will be wasted. If nobody has a complete view of how campus facilities like lecture halls and labs are being used, these resources might be underused or overcrowded at times. This not only wastes opportunities but can also lead to unnecessary spending to manage these issues.

To summarize, this shows a clear need for a better solution to the current systems. Therefore, a single integrated system would help everyone access the same information and make it easier for different parts of the university to coordinate with each other. Additionally, this would smooth out many operational things which makes the campus run more efficiently and improves the environment for students and staff.

# 3.0 Problem Statement

Nowadays, colleges and universities often face challenges in efficiently managing their resources due to the utilization of diverse systems for various functions. This gap leads to several major problems.

To begin with, data management and access issues might occur due to inconsistent data handling. The lack of communication between systems can lead to variations in data representation depending on the source. This lack of consistency brings a difficulty for individuals across all levels including students and administrators to efficiently and promptly accessing reliable data.

Furthermore, it will cause insufficient utilization of campus facilities. The absence of a centralized system to manage room and resource reservations leads to a smaller number of reservations for spaces such as labs and lecture halls. At the same time, it also increases the possibility of accidental double-bookings. This leads to the wastage of resources and the failure to take advantage of potential chances for their utilization.

Other than that, the inefficiencies of communication. When all departments function independently, it lacks a clear way of exchanging information. In addition, the absence of coordination may result in the delays of crucial decisions and activities which will impact the overall operation of the entire campus.

Besides, students and faculty will encounter complicated procedures while trying to retrieve their schedules, grades, or reserve rooms for activities. These complex processes can be frustrating and time-consuming. As a result, it will diminish the learning experience.

To sum up, these problems emphasize the importance for an integrated system that can merge all these distinct functions. It is because implementing this system would not only optimise

operations but also improve the general academic environment by simplifying and increasing the efficiency of daily duties.

# 4.0 Proposed Solution

These proposed solutions aim to enhance the functionality and efficiency by developing the Campus Resource Management System, and ensuring it effectively meets the needs of the academic community.

First and foremost, the CRMS develops a centralized facilities booking platform where users can view availability and book facilities like classrooms, auditoriums, labs, and sports fields in real-time. This platform will include calendar integration for easy scheduling. It enforces booking policies automatically. This will include rules for who can book, when, and for how long, helping to manage reservations fairly and efficiently. Resource utilization advanced analytics also introduced to monitor and report on facility usage, enabling facility managers to optimize resource allocation and reduce idle times.

Moreover, the CRMS creates a unified student information system portal where administrators can handle all aspects of student management including enrollment, course registration, and academic records. This system will also allow students to access their profiles, register for courses, view schedules, and track their academic progress in a centralized location. This will assist in monitoring students who might need additional support.

Lastly, the CRMS also involves a comprehensive platform for managing faculty and staff details, including recruitment, scheduling, performance evaluation, and information management. This feature will provide tools for HR administrators to handle staff information more efficiently. It also implements communication tools that enable faculty members to easily access their schedules, submit grades, and communicate with students and colleagues through a unified platform.

**Technical Feasibility**

In order to ensure the technical feasibility of the Campus Resource Management System (CRMS), we need to conduct a thorough assessment of whether a project or system can be implemented with the current technology, skills, and infrastructure available within an organization. We also identify any required upgrades.

1. Facility Booking and Management:

We need to assess the hardware requirements, whether current servers can support high-frequency, real-time bookings and cancellations. After that, ensure the system integrates seamlessly with existing facility management software or evaluate the necessity for custom software development.

2. Event Management:

It is important to determine if the existing IT infrastructure can handle large-scale events with multiple users accessing the system for registrations and updates. Then, we need to check

compatibility with third-party marketing and feedback tools to enhance the event management feature.

3. Student Management:
We need to evaluate the capability of data handling by looking at database servers and whether they are able to handle complex queries and large volumes of data transactions typical in student enrollment and records management.
Then, to protect sensitive student information, make sure strong security measurements are in place.

4. Faculty and Staff Management:
We should assess the system integration capabilities with HR and academic software to manage faculty and staff information efficiently. Technical support is also required so potential skill gaps in current IT staff that could hinder the deployment and maintenance of this feature need to be identified.

**Operational Feasibility**
In the operational feasibility study of the Campus Resource Management System (CRMS), we assess whether a proposed system or project can be successfully implemented within the existing operational and organizational structures. We also evaluate whether the organization has the capability to use the system effectively once it's deployed.

1. Facility Booking and Management:
We need to conduct user acceptance tests with facility managers to ensure the booking platform meets their operational needs. Then, we develop training programs to assist facility managers in adopting new software, focusing on maximizing resource utilization.

2. Event Management:
Engagement with event organizers early in the system design process are crucial to ensure the feature caters to all necessary operational workflows. After that, implement a trial event to test the system’s effectiveness and gather initial user feedback for improvements.

3. Student Management:
We need to provide comprehensive training for administrative staff on the new student information system to ensure smooth transition and operation. Then, develop change management strategies to help staff and students adapt to the new system.

4. Faculty and Staff Management:
HR Feedback Integration: To make sure the HR management system satisfies all operational requirements, we need to solicit feedback from HR administrators. After that, provide resources for staff and teachers to receive continuing assistance and training so they can make the most of the new tools available for management and communication.

**Economic Feasibility - CBA**

| Development Cost (One-time) | |
|---|---|
| Hardware | 70000 |
| Software | 75000 |
| Consultant | 85000 |
| Training | 50000 |

| Production Cost | |
|---|---|
| Updates | 12000 |
| IS Support | 25000 |
| Maintenance | 16000 |

| BENEFITS | |
|---|---|
| Improved Customer Service | 60000 |
| Increase Productivity | 120000 |
| Improved Risk Management | 30000 |
| Inventory Management | 25000 |

| | |
|---|---|
| Assumption: Discount rate | 25% |
| Annual change in Cost | 7% |
| Annual increase in benefits | 20% |

| COSTS | Year 0 | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|---|---|---|---|---|---|---|
| **Development Cost (One-time)** | | | | | | |
| Hardware | 70000 | | | | | |
| Software | 75000 | | | | | |
| Consultant | 85000 | | | | | |
| Training | 50000 | | | | | |
| **Total (Development Cost)** | **280000** | | | | | |
| | | | | | | |
| **Production Cost** | | | | | | |
| Updates | | 12000 | 12840 | 13739 | 14701 | 15730 |
| IS Support | | 25000 | 26750 | 28623 | 30626 | 32770 |
| Maintenance | | 16000 | 17120 | 18318 | 19601 | 20973 |
| **Annual Production Costs** | | **53000** | **56710** | **60680** | **64927** | **69472** |
| **(PRESENT VALUE)** | | **42400** | **36294.4** | **31068** | **26594** | **22765** |
| **ACCUMULATED COSTS** | | **322400** | **358694** | **389762** | **416357** | **439121** |

| BENEFITS | Year 0 | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|---|---|---|---|---|---|---|
| Improved Customer Service | | 60000 | 72000 | 86400 | 103680 | 124416 |
| | | | | | | |
| Increase Productivity | | 120000 | 144000 | 172800 | 207360 | 248832 |
| | | | 92160 | | | |
| Improved Risk Management | | 30000 | 36000 | 43200 | 51840 | 62208 |
| | | | | | | |
| Inventory Management | | 25000 | 30000 | 36000 | 43200 | 51840 |
| Annual Benefit | | 235000 | 282000 | 338400 | 406080 | 487296 |
| **TOTAL BENEFITS (PRESENT VALUE)** | | **188000** | **180480** | **173260.8** | **166330** | **159677** |
| ACCUMULATED BENEFITS | | 188000 | 368480 | 541741 | 708071 | 867748 |
| | | | | | | |
| GAIN OR LOSS | | -134400 | 9786 | 151978 | 291715 | 428627 |
| | | | | | | |
| **PROFITABLE INDEX** | | **1.53081** | | | | |

Profitability index = 1.53081, showing that it is a good investment because its index is more than one.

# 5.0 Objective

1. Centralize Resource Management Across the Campus
The system is designed to centralize the administration of all campus resources into one single and integrated platform. This system will provide complete supervision of facility accessibility, including classrooms and laboratories. Hence it enables a more efficient process for making reservations. Facility managers will have the ability to set booking guidelines, monitor reservations, and effectively manage the utilization of campus resources.

2. Simplify and enhance administrative and academic procedures
The system will simplify administrative operations, improving the management of student enrollment, course registration, and the maintenance of academic records. Students will have the capability to independently control their academic involvement, including enrollment and tracking their progress in an easily accessible way. At the same time, the system will benefit faculty and staff members by offering a platform for managing class schedules, grading, and direct communication with students which lead to enhancement of operational efficiency in academic procedures.

3. Improve Communication Among Students, Faculty, and Administrative Staff
The system will function as a driver for better communication within the campus environment. It will serve as a platform for exchanging information, allowing students to rapidly and effectively communicate with faculty and administrative staff. This promotes a unified educational environment where the focus is on making knowledge easily accessible and at the same time ensures rapid communication.

4. Enhance the Efficiency of Campus Facilities Usage
The system aims to boost the allocation and use of campus facilities. Through the implementation of automated scheduling and real-time monitoring, the system offers optimum utilization of campus areas. As a result, it minimizes the times of inactivity and prevents conflicts in scheduling. All in all, this improvement increases operational productivity.

# 6.0 Scope of Projects

The scope of this Campus Resource Management System project encompasses several important functions that are necessary for improving the efficiency in managing campus operations and resources.

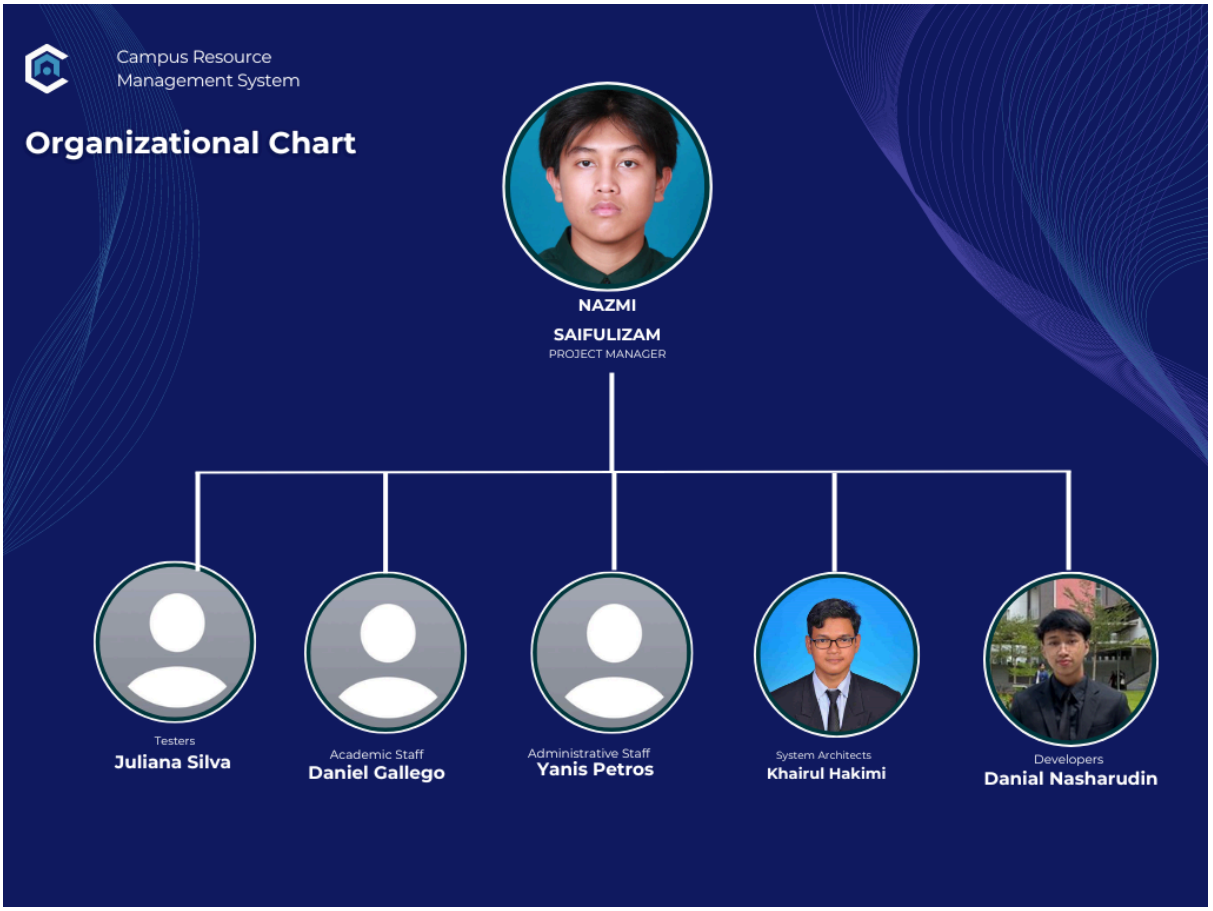
1. Book and Manage Facilities
The system will provide a centralized platform for the reservation and administration of campus facilities, including classrooms, lecture halls, laboratories, and sports fields. The system will enable users to instantly check the current availability of facilities, allocate spaces for classes, activities, or meetings, monitor current reservations, and provide the option for cancellations or modifications. Additionally, it aims to maximize the utilization of available spaces.

2. Manage Student
The system will offer capabilities for efficiently handling the diverse requirements of students. This involves the development of a student portal that allows students to register for courses, access their timetables, and monitor their academic progress. Administrators will be able to manage the enrollment of students, course registration, and academic records, as well as student activities. A robust database will be utilized for securely storing and managing personal and professional information.

3. Manage Faculty and Staff Members
The system is designed to assist faculty members in effective classroom scheduling, grading, and facilitating interaction with students. HR administrators will be equipped to perform tasks such as recording attendance, arranging leave, and conducting performance evaluations.

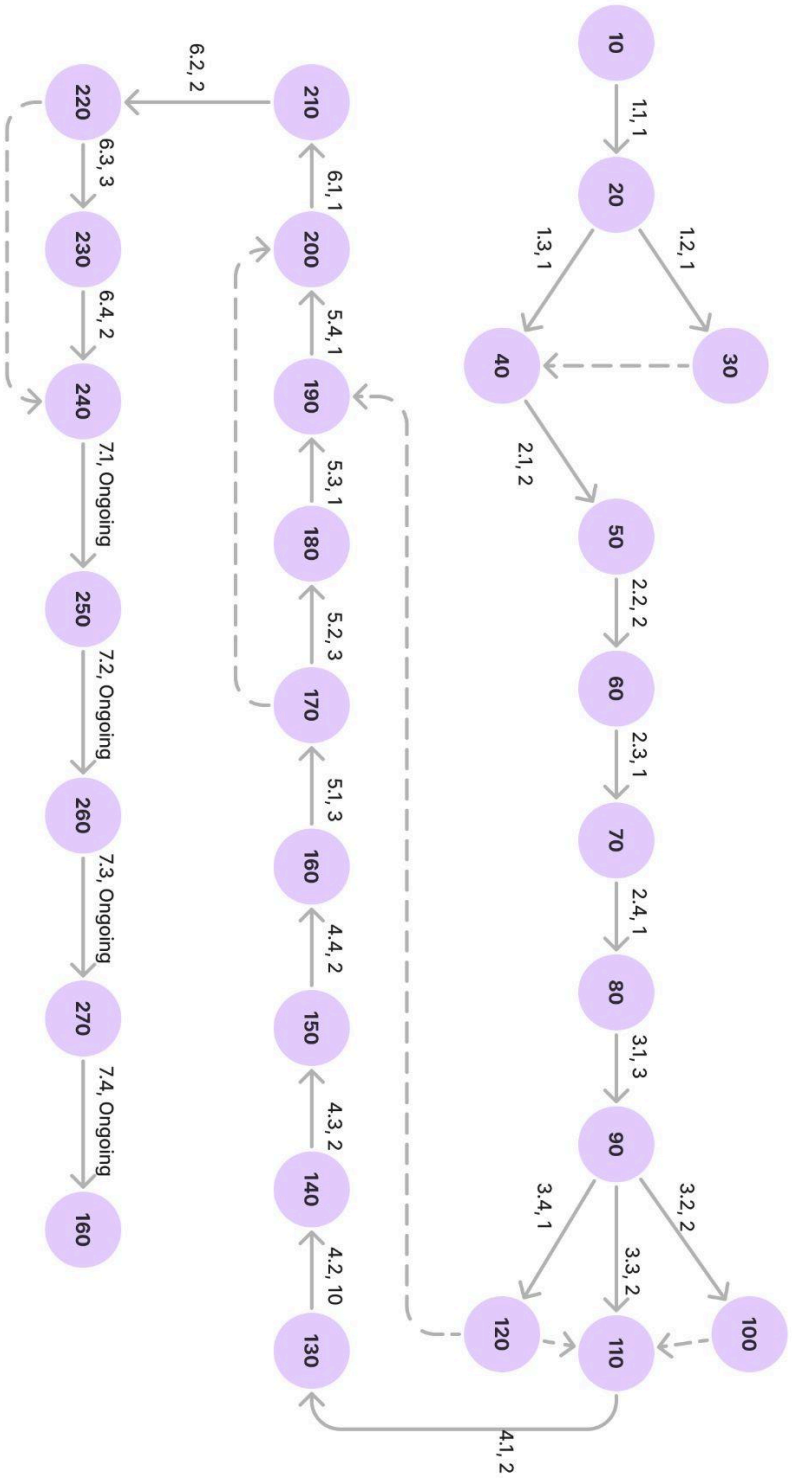
# 7.0 Project Planning

## 7.1 Human Resource

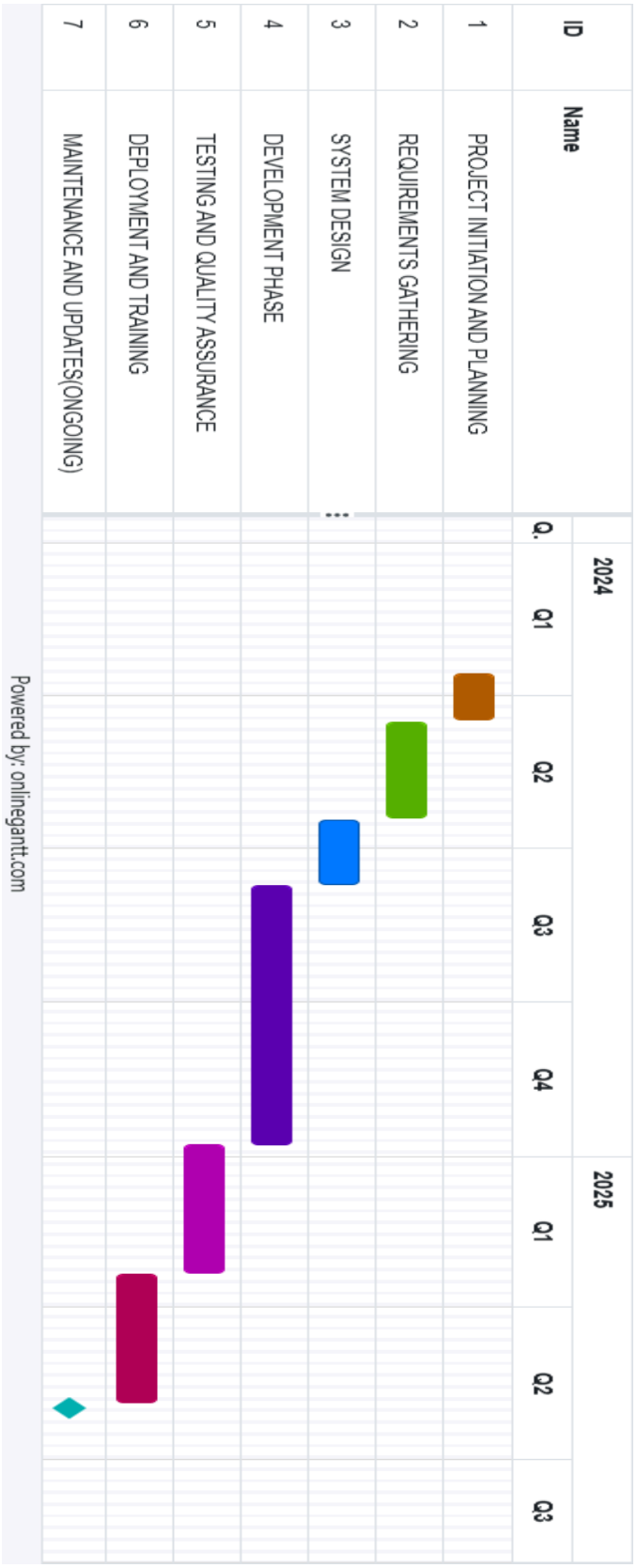


## 7.2 Work Breakdown Structure (WBS)

## 7.3 PERT Chart (based on WBS)



## 7.4 Gantt Chart



# 8.0 Benefit and Overall Summary of Proposed System

The implementation of the Campus Resource Management System (CRMS) aims to transform the management of campus resources. It provides major improvements in multiple operational areas of the institution.

First and foremost, this system will improve the efficiency of campus operations.Through the centralization of campus facilities and resources, this system will greatly simplify procedures that were previously distributed and time-consuming. This unified approach will enable quicker access to resources, optimized booking procedures, and better management of academic and administrative tasks. As a result, staff can spend less time on routine tasks and more on activities that enhance the student experience and improve campus life.

Besides, administrative duties will be reduced with the implementation of this system, which will automate various operations such as manual student enrollment, course registration, and facility bookings.This automation will result in a decrease in errors, faster processing times and a significant relief of the administrative workload on staff. The system's ability to integrate with existing academic systems also will ensure data remains consistent and accurate across all platforms, further reducing workload and potential administrative confusion.

Other than that, the system will help in boosting the academic environment. The primary goal of this integrated system is to enhance the academic environment by making it easier for students and faculty to access and use campus resources effectively. With streamlined processes and less time required for administrative tasks, students can focus more on their studies, and faculty can give more attention and concentration to do teaching and research. The improved efficiency and accessibility provided by the system then will support the campus mission to achieve excellence in education and administration while creating a more supportive and productive campus environment.

Lastly, resource allocation indeed can be improved by this system. The institution will be able to make more informed decisions about how to allocate resources efficiently. The system's analytics capabilities will provide detailed reports on the usage of campus facilities, helping administrators understand and predict patterns in resource demand. Therefore, this insight will enable better planning and utilization of campus resources in the future.

In summary, the implementation of the Campus Resource Management System (CRMS) will result in better management of the campus resources. This indirectly benefits all members of the campus community. Overall, this system promises to enhance the overall efficiency, effectiveness, and educational quality of the institution, aligning with its strategic goals and commitment to excellence.