EDUMANIS SYSTEM

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DECLARATION OF ORIGINALITY

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2. We are final-year students at Politeknik Sultan Salahuddin Abdul Aziz Shah's Diploma in Business Studies program in the Commerce Department, which is located at Persiaran Usahawan, 40150 Shah Alam, Selangor.

3. We accept that the "EDUMANIS SYSTEM" and the intellectual property incorporated in it are our original works, without stealing or copying any third-party intellectual property rights.

4. We agreed to give "Polytechnic Sultan Salahuddin Abdul Aziz Shah" ownership of the intellectual property "EDUMANIS SYSTEM" to satisfy the requirements for the award of the Diploma in Business Studies to us.

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ABSTRACT

The EduManis system is a smart and simple solution designed to make attendance tracking and time management easier for both students and educators. By using QR code-enabled ID cards, the system allows students to quickly and effortlessly check in for classes by scanning their unique code. This removes the hassle and errors of manual attendance, saving time and ensuring accuracy.

Beyond just attendance, the EduManis mobile app helps students stay on top of their schedules, track their attendance, and receive reminders about upcoming classes and assignments, making it easier to manage their academic responsibilities. It encourages better time management and accountability, helping students stay organized and engaged.

For lecturers, the system offers real-time, accurate attendance data, making it easy to spot patterns in student participation and provide support where needed. With less time spent on administrative tasks, educators can focus more on teaching, while students benefit from a smoother, more streamlined process. Ultimately, EduManis helps create a more efficient, organized, and supportive learning environment at Politeknik Sultan Salahuddin Abdul Aziz Shah.

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LIST OF ABBREVIATIONS

QR	Quick Response
ID	Identification Card
RFID	Radio Frequency Identification
NFC	Near Field Communication

CHAPTER 1

INTRODUCTION

1.1 Introduction

In today's busy educational world, keeping track of attendance and managing students' time efficiently has become more important than ever. Traditional methods of taking attendance whether through paper records or manually tapping cards can be time consuming and prone to errors. At Politeknik Sultan Salahuddin Abdul Aziz Shah, we recognized that there had to be a better way to streamline this process, making it easier for both students and lecturers, while ensuring that attendance records are accurate and up to date.

That's where the EduManis system comes in. It's designed to simplify attendance management and help students stay organized with a combination of a QR code-based card system and a mobile app. Each student is given a card with a unique QR code, which they can easily scan at the beginning of class. This quick scan automatically logs their attendance, saving time and reducing the chance of mistakes. The data is immediately sent to a central system, so attendance is recorded in real time, without the need for manual input.

But EduManis is not just about tracking attendance. The system also includes a mobile app that helps students manage their time more effectively. The app lets students view their class schedules, track their attendance history, and receive notifications about upcoming classes or assignments. It's a simple way for students to stay on top of their responsibilities and make the most of their time on campus.

By combining these features, EduManis aims to create a smoother, more organized experience for everyone. It helps lecturers save time on administrative tasks, while giving students the tools they need to stay accountable and engaged in their studies. Ultimately, this system is designed to improve both the academic experience and overall efficiency at Politeknik Sultan Salahuddin Abdul Aziz Shah.

1.2 Background of project

In today's educational landscape, traditional attendance systems such as paper logs or manual data entries are increasingly inefficient and error prone. These outdated methods not only consume valuable time but also create inaccuracies in attendance records, making it difficult to track student engagement and progress. For both students and lecturers, this leads to unnecessary delays and administrative burdens, hindering the overall learning experience.

To address these challenges, the EduManis system was developed, integrating a QR code-based attendance solution with a student time management app. Each student is issued a unique ID card with a QR code, which can be scanned at the start of each class to record attendance instantly and accurately. This automated process reduces the chances of human error, streamlines attendance tracking, and provides real-time data to educators.

Beyond attendance, EduManis offers students a comprehensive app to manage their academic schedules, monitor their attendance history, and receive reminders about upcoming classes, assignments, and deadlines. This helps students stay organized, improve time management, and maintain accountability throughout the semester.

For lecturers and administrators, the system provides a quick, reliable way to track attendance trends, generate reports, and identify students who may need additional support. By integrating with other institutional systems, EduManis can also offer a holistic view of student performance and engagement, reducing administrative overhead and increasing operational efficiency.

In a world that is increasingly relying on digital solutions, EduManis offers an innovative, efficient, and secure approach to managing attendance and student time. By modernizing these processes, EduManis helps foster a more organized, supportive, and productive learning environment for both students and educators.

1.3 Problem statement

At Politeknik Sultan Salahuddin Abdul Aziz Shah, the current method of attendance tracking relies heavily on manual processes such as paper sign-in sheets and verbal roll calls. These traditional methods are not only time-consuming but also prone to errors, leading to delayed class start times and inaccurate attendance records. This creates significant challenges for both students and staff, as it complicates the tracking of student performance and disrupts the administrative flow.

One of the major issues with the existing system is its lack of real-time data, which makes it difficult for lecturers and administrative staff to monitor attendance efficiently or generate timely reports. This absence of automation also increases the risk of "buddy punching," where students or staff may mark attendance on behalf of someone else, undermining the integrity of the institution's attendance policies. Additionally, the manual approach fails to integrate seamlessly with the institution's Student Information System (SIS), making it challenging to align attendance data with academic records and performance evaluations.

As the student population continues to grow, and with more classes and events taking place, the limitations of manual attendance tracking become increasingly apparent. Bottlenecks in processing attendance can lead to delays, inaccuracies, and additional administrative work, taking time away from more valuable academic tasks.

To solve these problems, the EduManis system is proposed—a modern, integrated solution that combines a QR code-based attendance system with a student time management app. This solution will allow students and staff to mark their attendance quickly and accurately with a simple QR scan. The system will be fully integrated with the Polytechnic's existing Student Information System, ensuring that attendance data is updated in real-time and seamlessly linked to student records. By automating attendance tracking and adding time management features, EduManis will help reduce administrative workloads, improve data accuracy, and provide a more reliable way to monitor student engagement and academic progress. Ultimately, the system will ensure greater accountability, improve operational efficiency, and support a more organized learning environment at Politeknik Sultan Salahuddin Abdul Aziz Shah.

1.4 Objective

1. To create an intuitive, QR code-based attendance system that simplifies the process of tracking student attendance, ensuring a seamless and accurate experience for both students and educators.

2. To integrate a comprehensive time management app that empowers students to efficiently manage their academic schedules, track their attendance, and stay on top of deadlines, promoting better organization and accountability.

3. To streamline administrative tasks by automating attendance recording and syncing it with student records, enhancing data accuracy, reducing manual workload, and providing real-time insights for lecturers and administrators.

4. To foster a more engaged and organized learning environment by providing a reliable, easy-to-use system that supports both academic and administrative goals, ensuring consistent attendance tracking and improved student performance monitoring.

5. To improve overall institutional efficiency by offering a modern, integrated solution that reduces administrative overhead, minimizes errors, and ensures that attendance policies are followed consistently across the institution.

1.5 Project questions

To help the researcher reach the project's goals, four project questions are posed.

The question is such as:

1. What happens if a student scans the QR code attendance card of a classmate who is absent?
2. Does the QR code attendance system sync with the student time management app?
3. What happens if a lecturer forgets to bring their phone to class?
4. Can the student time management app send notifications when a scheduled class or deadline is approaching?

1.6 Scope and limitations

The EduManis system is designed to simplify and enhance the process of attendance tracking in both educational institutions and workplaces. By leveraging QR code technology, the system enables a smooth, fast, and accurate way to record attendance, reducing the time and effort spent on manual processes. Additionally, EduManis includes a student time management app, which helps students organize their schedules, track their attendance, and receive reminders for classes and deadlines. This integrated solution not only improves efficiency but also provides real-time insights, helping institutions make informed decisions about student engagement and performance.

The scope of EduManis extends beyond attendance; it seeks to create a more connected and organized academic experience. With seamless integration into institutional systems, the platform enhances administrative efficiency, providing both students and staff with an easy-to-use tool that fosters accountability and time management.

While EduManis offers many advantages, there are some limitations to consider. One challenge is the need for specialized hardware, such as QR code scanners, which could involve initial setup costs for the institution. Additionally, the system's reliance on an internet connection for real-time synchronization of data may create issues in areas with unstable or limited connectivity. This could lead to delays in attendance updates or hinder the use of the system in remote areas.

Another limitation is the potential learning curve for users who are not familiar with using QR codes or mobile apps. To address this, EduManis is designed to be as intuitive as possible, but some initial training and support may be required.

To overcome these limitations, we plan to explore solutions like offline functionality, more affordable reader options, and additional user support resources. By addressing these challenges, EduManis aims to provide a robust, accessible, and effective system that meets the needs of both students and educational institutions.

1.7 Significance of project

1.7.1 Swot analysis

STRENGHT	WEAKNESS
• Simplifies the attendance process, saving time and reducing manual effort. • QR code technology ensures precise, real-time attendance records, minimizing errors. • Provides immediate access to attendance trends and patterns, aiding quick decision-making. • Reduces long-term costs by eliminating manual attendance processes and administrative overhead.	• While QR code scanners are free, implementation may involve setup and training costs. • System disruptions or connectivity issues can impact attendance tracking. • Potential vulnerabilities to cyber threats require ongoing attention to data protection. • Some users may resist switching from traditional methods to the new system.
OPPURTUNITY	**THREATS**
• Streamlines operations, reducing administrative burden and improving productivity. • Offers valuable insights for better decision-making and student engagement tracking. • Helps ensure adherence to attendance policies and improves accountability. • Can be integrated with other institutional systems, such as payroll or academic platforms, for seamless operations.	• Newer technologies may render the current system obsolete. • Competitors may offer similar or superior solutions. • Ensuring data security and privacy can be a challenge. • A downturn in the economy may impact the demand for such systems.

Table 1. 1 Swot analysis for EduManis Attendance Card

1.8 Operational definition

EduManis is an integrated digital system designed to streamline attendance tracking and enhance time management for students and educators. The system combines a QR code-based attendance solution with a student time management app, creating a unified platform that simplifies administrative tasks, improves accuracy, and empowers students to take control of their academic schedules.

The name "EduManis" blends "education" with "manis," derived from the concept of "managing time and self." This reflects the system's core purpose: to provide a seamless, efficient way of tracking attendance while helping students manage their academic commitments effectively. By leveraging QR code technology, the system enables quick and secure attendance recording, while the time management app offers students tools to stay organized, track deadlines, and receive reminders for upcoming events and tasks.

Through this innovative approach, EduManis aims to improve the overall educational experience by fostering a more organized, accountable, and data-driven environment for both students and staff. The system was developed after careful consideration and multiple iterations to address the unique challenges of traditional attendance systems, ensuring a solution that is both practical and effective.

1.9 Summary

The EduManis system combines an advanced QR code-based attendance tracking solution with a student time management app, offering a seamless, efficient way for educational institutions to manage attendance and support student success. By replacing traditional manual methods with digital tools, EduManis ensures accurate, real-time attendance data, reducing errors and administrative workload.

Students benefit from the integrated time management app, which helps them stay organized, track academic deadlines, and receive timely reminders, fostering better self-management. Meanwhile, educators and administrators gain access to insightful data that aids in monitoring attendance trends, improving student engagement, and making informed decisions.

This innovative approach not only streamlines attendance tracking but also promotes a more organized, accountable, and data-driven academic environment, empowering both students and staff. EduManis was developed to meet the evolving needs of educational institutions, providing a modern, user-friendly solution that enhances overall efficiency and the student experience.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter explores the integration of QR code-based attendance systems and student time management apps in modern education, with a focus on the Edumanis system, which combines both technologies. It reviews how these tools improve administrative efficiency, enhance student engagement, and boost academic performance. QR codes streamline attendance tracking by reducing errors and saving time, while time management apps help students organize tasks and manage their schedules effectively.

The chapter also discusses challenges, such as technical issues, privacy concerns, and user adoption, but highlights the potential benefits of the Edumanis system in improving student accountability, fostering organized learning environments, and supporting real-time data collection for educators. Overall, it emphasizes the value of combining these technologies to create a more efficient and engaged educational experience.

2.2 Previous studies/review/investigations

2.2.1 QR Code-Based Attendance System

QR code-based attendance systems have proven to be an effective and reliable alternative. Studies have shown that QR codes streamline the attendance process by allowing students to scan a unique code, marking their presence instantly. This system reduces administrative workload, improves accuracy, and eliminates the risk of students signing up for one another. Real-time data collection also allows educators to track attendance more efficiently, while integration with other digital platforms enhances administrative efficiency.

2.2.2 Student Time Management Apps

Student time management apps have become popular tools for improving academic organization and productivity. These apps help students schedule tasks, set reminders, and manage deadlines, leading to better time management and reduced procrastination. Research indicates that students who use time management apps perform better academically and experience lower stress levels due to better organization and control over their schedules.

2.2.3 Edumanis System Integration

The Edumanis system, which integrates both QR code attendance and time management apps, offers a comprehensive solution for improving student engagement and academic performance. By combining attendance tracking with time management tools, the system helps students stay organized and accountable. Educators also benefit from real-time data that can inform interventions and support for students struggling with attendance or time management.

2.2.4 Challenges and Consideration

Despite their advantages, the adoption of digital systems like QR codes and time management apps can present challenges. Technical issues, privacy concerns, and the need for user adoption must be addressed for successful implementation. Training for both students and educators is essential to ensure the effectiveness of these systems.

2.3 Design thinking process

The Design Thinking process provides a structured yet flexible framework for solving problems by focusing on understanding the users' needs and creating innovative, user-centric solutions. The Edumanis system, which integrates QR code-based attendance and student time management apps, was developed with this methodology in mind, aiming to enhance both administrative efficiency and student productivity. The following outlines how the Design Thinking process was applied to the development and implementation of the Edumanis system.

2.3.1 Empathy

The first step in the Design Thinking process is building empathy with the users. In the case of the Edumanis system, the primary users include students, educators, and administrative staff. The empathize phase involved understanding their pain points, frustrations, and needs. For students, this meant recognizing challenges in managing academic responsibilities, attending classes on time, and balancing extracurricular activities.

For educators and administrators, it meant addressing the inefficiencies of traditional attendance systems and the challenges of tracking student engagement. By gathering insights through surveys, interviews, and direct observations, the team was able to identify key problems such as time-consuming attendance processes, lack of engagement, and poor time management among students.

2.3.2 Define

In this phase, the team defined the core problems to be solved, using the insights gathered during the empathize phase. The Edumanis system sought to solve multiple interconnected challenges:

- **For students**: Managing their time efficiently, attending classes regularly, and staying organized amidst a busy academic schedule.
- **For educators and administrators**: Simplifying the attendance process, improving attendance accuracy, and providing tools to monitor and support student engagement and performance.

By clearly articulating these problems, the team was able to create a well-defined problem statement: "How might we improve student attendance tracking and time management to foster better academic performance and engagement?" This statement provided a guiding focus for the next stages of the process.

2.3.3 Ideate

The ideation phase involved brainstorming potential solutions to address the defined problems. The goal was to think broadly and explore various possibilities before narrowing down the ideas. For the Edumanis system, this meant exploring how technology could address both attendance tracking and time management. Ideas included:

- QR code-based attendance systems to reduce time spent on manual roll-calling, increase accuracy, and eliminate fraud (such as students signing in for others).
- Student time management apps help students organize tasks, set reminders, and track their academic progress, allowing them to manage their time more effectively and stay engaged with their coursework.

The ideation process was collaborative, with input from both students and educators to ensure the solutions met their real-world needs. Prototypes of both systems—QR code attendance and time management apps—were developed to visualize and refine the ideas further.

2.3.4 Prototype

Once the key ideas were identified, the team moved into the prototyping phase, where they created low-fidelity versions of the Edumanis system. This included a functional QR code attendance system, where students could scan a unique code to mark their presence and allow instructors to easily track attendance in real-time. The student time management app prototype allowed students to set goals, receive reminders for assignments, and organize their daily tasks in a digital calendar.

Prototypes were tested with a small group of users to gather feedback and identify areas for improvement. This allowed the team to iterate on the designs, adjusting enhance usability and ensure both systems effectively addressed user needs.

2.3.5 Test

In the final phase, the prototypes were tested with a larger group of students, educators, and administrative staff. Feedback was collected through surveys, user observations, and performance data, which highlighted the strengths and weaknesses of the system. The QR code attendance system was evaluated for its ease of use, efficiency, and ability to eliminate attendance fraud, while the time management app was assessed based on its impact on student organization, task completion, and academic performance.

The testing phase revealed that while both components of the Edumanis system were effective, there were areas for improvement, such as better integration between the attendance system and time management features. This led to further refinement of the system, including the addition of features like automatic reminders for class attendance and integration of attendance data with the time management app, which allowed students to see a comprehensive view of their academic life in one platform.

2.4 Summary

This chapter explores the development of the Edumanis system, which brings together QR code attendance and student time management apps to tackle common challenges in education. One of the biggest issues with traditional attendance methods like calling names or using paper sign-in sheets is that they're often slow, prone to mistakes, and easy to manipulate. These outdated systems create unnecessary hassle for both students and educators, taking up valuable time and leading to inaccurate records.

The Edumanis system addresses these issues by introducing a more efficient, automated way to track attendance using QR codes. With just a quick scan, students can mark their presence, eliminating errors and saving time. This streamlined approach helps educators spend less time on administrative tasks and more time focusing on what really matters—teaching and supporting students.

But Edumanis isn't just about attendance, it also includes a student time management app that helps students stay organized. The app allows students to set goals, keep track of assignments, and manage their time more effectively. This is especially important for students juggling coursework, extracurriculars, and personal commitments, as better time management can lead to improved academic performance and reduced stress.

The Design Thinking process played a key role in developing Edumanis. By stepping through each phase empathizing with users, defining their problems, brainstorming solutions, prototyping, and testing the team was able to build a system that meets the real needs of students, teachers, and administrators. The result is a user-friendly, practical tool that solves multiple challenges at once.

In summary, the Edumanis system offers a holistic solution that not only improves the efficiency and accuracy of attendance tracking but also helps students manage their time more effectively. By combining QR code attendance with a time management app, it offers an innovative way to tackle the common problems faced by both students and educators in today's fast-paced academic environments.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Introduction

The goal of the research methodology for the Edumanis system is to create a clear, structured approach to guide the study and ensure it achieves its objectives. Essentially, the methodology is the plan that helps us gather the necessary data and insights to develop a solution that meets the needs of students, teachers, and administrators.

In this case, the research will focus on understanding how current attendance management systems work and how we can improve them using QR code technology for attendance and time management apps for students. The study will be based on both qualitative and quantitative data collection methods to ensure a thorough understanding of the problem and potential solutions.

The research process will involve talking to key stakeholders—teachers, administrators, and students—through interviews, surveys, and observations. By gathering their feedback, we'll learn about their experiences with existing systems and what they feel needs to be improved. Additionally, we'll observe current attendance practices to identify pain points and inefficiencies in the process.

The methodology will be organized and systematic to ensure the research is both scientifically sound and practical. It will adhere to established research standards and quality requirements to ensure the results are reliable and meaningful. Ultimately, the insights gathered from this research will guide the development of the Edumanis system, helping us create a tool that's truly useful and effective for everyone involved.

3.2 Project design

For the Edumanis system, which combines QR code-based attendance and student time management apps, the design process was guided by the Design Thinking methodology. This approach helped ensure that the solution was user-centered, focusing on the needs and challenges of the students, educators, and administrators who would use it. By following a step-by-step, iterative process of understanding problems, brainstorming solutions, and testing prototypes, the team was able to develop a system that truly addresses user needs.

Alongside the Design Thinking process, a quantitative research method was used to gather data and insights from potential users. A questionnaire was distributed to 30 participants, including students, teachers, and administrative staff from a local polytechnic. This survey aimed to collect feedback on current attendance systems, time management challenges, and potential areas for improvement.

The feedback gathered from these participants helped guide the design of the Edumanis system. For example, insights about the frustrations with traditional attendance methods—such as time-consuming roll calls and inaccuracies—helped shape the decision to use QR codes for quick and reliable attendance tracking. Similarly, feedback about students' struggles with staying organized and managing their schedules influenced the design of the time management app, which offers features like task reminders, deadline tracking, and goal setting.

By combining both qualitative and quantitative data, the project design process ensured that Edumanis would meet user expectations and effectively address the challenges of both attendance tracking and student time management. This approach created a solution that not only solved practical problems but also engaged users in the development process, ensuring the system would be both functional and user-friendly.

3.2.1 Flow chart design

This project used the Design Thinking Process (figure 3.1) as a framework for the design and development of the product as it was the most appropriate framework design.

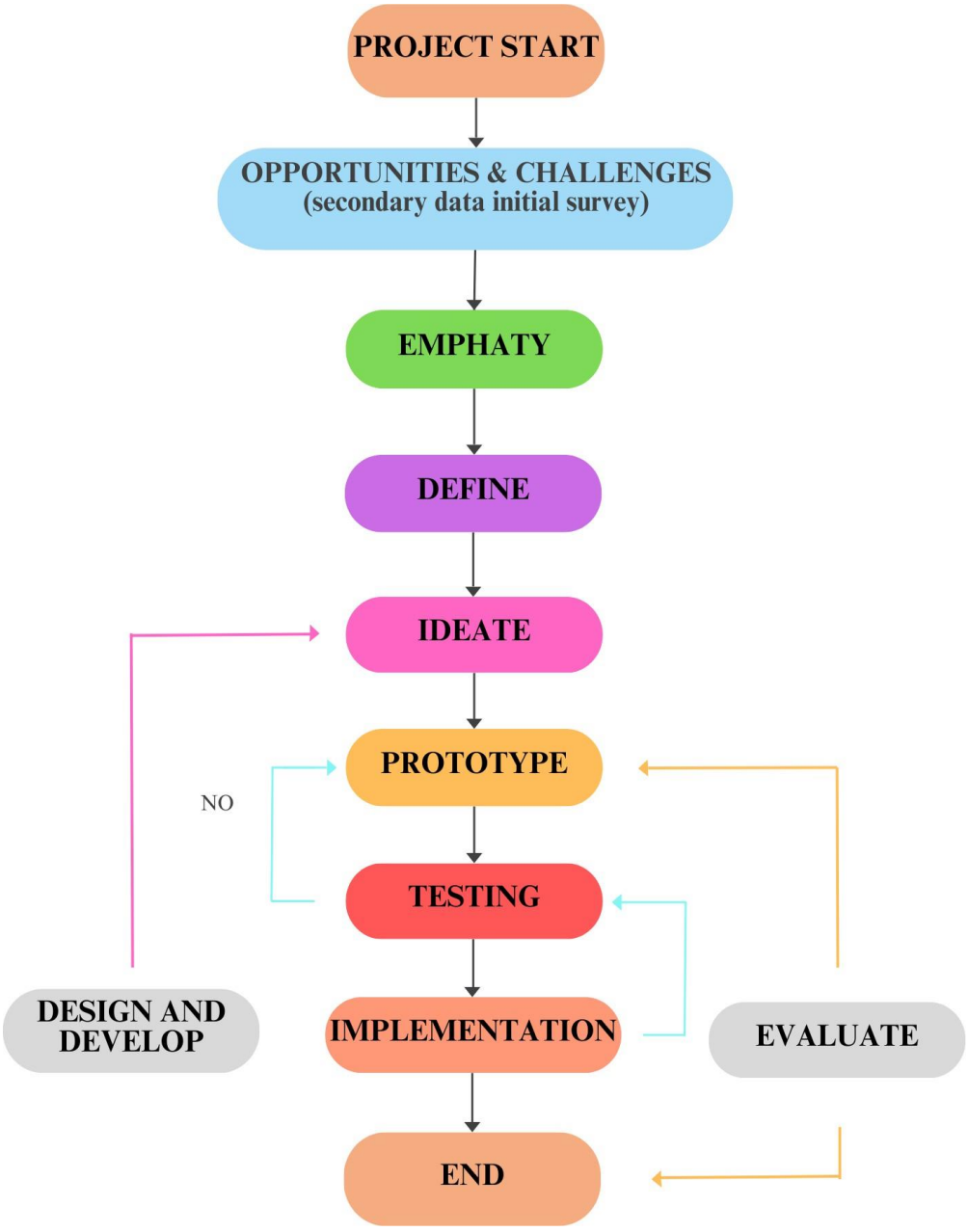


Figure 3. 1 Project framework

3.2.2 Opportunities and Challenges

As institutions move towards digital solutions, Edumanis aligns perfectly with the trend of automation. The QR code attendance system is fast, accurate, and reduces administrative workload, making it a great choice for schools, universities, and workplaces. It also enables real-time data visibility, allowing supervisors to monitor attendance instantly helpful in managing large numbers of students or employees. The system's ability to reduce paper usage contributes to a more sustainable, eco-friendly solution, which is appealing to organizations focused on sustainability.

The student time management app enhances the user experience by helping students organize their tasks, set reminders, and track deadlines. This added functionality promotes better time management, leading to improved academic performance and reduced stress for students.

Despite these advantages, there are challenges to consider. Not all institutions may see the immediate need for a digital attendance system, especially if they are comfortable with manual methods. This could result in slower adoption and market penetration. Additionally, the reliance on smartphones and scanning devices may pose difficulties in environments where access to technology is limited.

Another key challenge is data privacy. As Edumanis collects attendance data, institutions and users may have concerns about how their information is stored and used. Ensuring compliance with data protection laws and being transparent about data handling will be crucial in gaining user trust and encouraging adoption.

3.3 Method/Procedure/Project Production Technique

For the development of the Edumanis system, which combines QR code attendance tracking with student time management apps, we adopted the Design Thinking Process. This approach was chosen because of its user-centered focus and its ability to guide the creation of innovative solutions in a systematic, step-by-step manner. The process, though time-intensive, provided the structure needed to ensure the system would truly address the needs of both students and administrators.

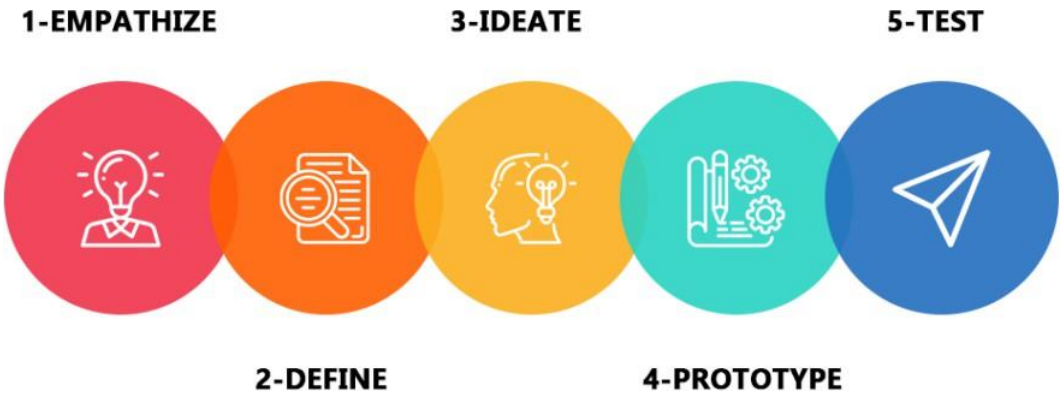


Figure 3. 2 Design Thinking Process

3.3.1 Empathy

To develop the Edumanis system, we began by understanding the challenges faced by students, lecturers, and administrative staff at Polytechnic Sultan Salahuddin Abdul Aziz Shah. Through interviews and questionnaires, we gathered insights on the inefficiencies of traditional attendance systems and the difficulties in managing time.

Lecturers and staff highlighted issues with manual attendance, such as time-consuming processes and errors in record-keeping. Students, on the other hand, expressed frustration with inaccuracies in attendance records and the lack of an effective tool for managing their academic tasks.

These insights revealed the need for a more efficient, accurate, and user-friendly solution. The Edumanis system, combining QR code attendance and a time management app, was designed to address these pain points, streamline attendance, and help students manage their schedules more effectively.

3.3.2 Define

After empathizing with the users and gathering insights from students, lecturers, and administrative staff at Polytechnic Sultan Salahuddin Abdul Aziz Shah, we were able to clearly define the challenges with the current attendance system. The existing manual methods were not only inefficient but also prone to errors, causing frustration for both students and staff. Attendance tracking was slow, often inaccurate, and involved a lot of administrative effort.

From this data, it became clear that a more efficient, accurate, and streamlined solution was needed one that would reduce human error, lighten the administrative burden, and offer real-time tracking. The Edumanis system, combining QR code attendance with a time management app, was defined as the ideal solution. The QR code feature would simplify and speed up the attendance process, while the time management app would help students stay organized with tasks and deadlines. This solution was designed to address the pain points of both students and staff while enhancing overall efficiency and accuracy in educational environments.

3.3.3 Ideate

Once the challenges were clearly defined, we moved into the Ideate phase, where we brainstormed potential solutions as a team. We explored a wide range of ideas, considering both existing systems and innovative approaches. The goal was to think beyond the limitations of current attendance methods and time management tools.

As we reviewed different concepts, we eliminated those that were already in widespread use or didn't effectively address the unique needs of our users. After refining our ideas, we focused on a few promising concepts that could lead to a practical solution. These included integrating QR code-based attendance for quick, accurate tracking and a time management app to help students organize their academic schedules.

By combining these elements, we envisioned a seamless, user-friendly system that would simplify attendance tracking, enhance student organization, and ultimately improve efficiency for both students and staff. With a clearer direction in mind, we proceeded to build a prototype based on these refined ideas, setting the stage for the next phase of development.

3.3.4 Prototype

In the Prototype phase, we turned our ideas into a tangible mock-up to visualize how the Edumanis system would work. Instead of jumping straight to the final product, we began by sketching out the QR code attendance system and time management app on paper. This allowed us to test the basic concept and user flow before development.

By gathering feedback from potential users, we were able to refine the design, ensuring it addressed the identified challenges and was user-friendly. This early prototype helped us improve the system's functionality and user experience, laying the groundwork for the final product.

3.4 Material and equipment

1. Material
    - Paper
    - Lamination

2. Equipment
    - Computer
    - Software
    - Printer
    - Network

3.5 Methods of collecting data

To gather relevant insights for the Edumanis system, we conducted interviews with key stakeholders, including students, lecturers, and administrative staff at Polytechnic Sultan Salahuddin Abdul Aziz Shah (PSA). A total of 20 individuals were interviewed to ensure we captured diverse perspectives on the challenges and needs related to attendance tracking and time management.

These interviews provided valuable first-hand feedback, shedding light on the limitations of current systems and highlighting areas where improvement was necessary. Through open-ended questions, we were able to gather in-depth information about the user experience, uncovering frustrations with manual attendance processes, and gaining an understanding of how a digital solution like the QR code-based attendance system and time management app could enhance both accuracy and efficiency.

The data collected through these interviews formed the foundation for the development of EduManis, guiding the design and features of the system to ensure it addressed real user needs and expectations.

3.6 Summary

The development of the EduManis system followed a user-centered approach, guided by the Design Thinking Process. This methodology ensured that every phase of product development was focused on the needs and experiences of users—students, lecturers, and administrative staff. By considering factors like ease of use, data accuracy, and the seamless integration of existing technologies, the team aimed to create a solution that would address the shortcomings of traditional attendance systems.

The system's core features, such as the QR code-based attendance and student time management app, were designed to streamline daily processes, reduce administrative workload, and improve overall efficiency. By simplifying attendance tracking and providing students with tools to manage their schedules, EduManis aims to enhance both academic performance and organizational flow.

Throughout the project, feedback from 20 participants—comprising a mix of students, lecturers, and staff—was pivotal in shaping the final product. Their insights into the current challenges with manual attendance processes and time management helped refine the design and ensure that the final version of EduManis met the specific needs of its users.

In summary, the research methodology utilized in this project was essential for creating a product that is both practical and impactful, meeting the expectations of educational institutions while enhancing the overall student and staff experience.

CHAPTER 4

RESULT AND ANALYSIS

4.1 Introduction

This chapter presents an in-depth analysis of the results obtained from evaluating the EduManis System, which integrates QR code-based attendance and a student time management app. The primary goal of this evaluation was to assess how well the system meets its objectives of simplifying attendance tracking and enhancing time management for students and staff alike.

To gain comprehensive insights, feedback was collected from a diverse group of participants, including students, lecturers, and administrative staff at Sultan Salahuddin Abdul Aziz Shah Polytechnic, along with other relevant stakeholders. The survey aimed to measure key aspects such as usability, efficiency, and convenience, and to determine whether the system truly improved upon traditional attendance methods.

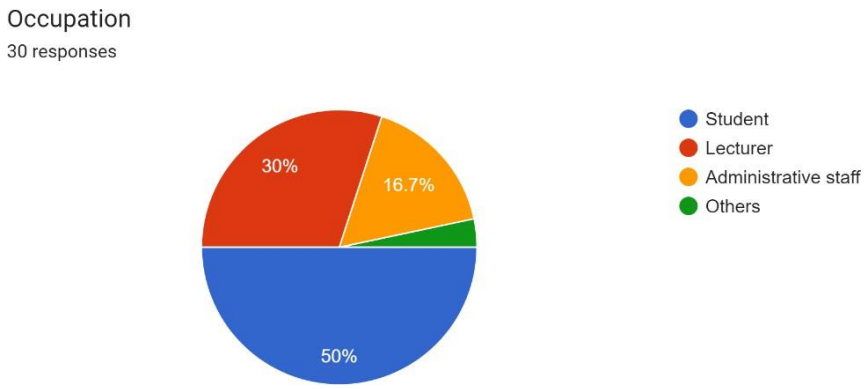
The findings presented in this chapter will provide valuable insights into the practical application of the EduManis system in real-world settings. By analyzing the responses and feedback, we can better understand how the system performs in terms of streamlining attendance, reducing administrative burden, and helping students manage their time effectively. This analysis will also highlight areas for potential improvement, ensuring that the EduManis system continues to evolve in alignment with user needs.

4.2 Samples and profiles

The sample and profile describe the characteristics of individuals included in the research study. This section includes information related to respondent demographics, such as age and occupation, to understand the population. The table and pie chart below show the result and percentage of the survey.

Respondent Demographic		**Frequency**	**Percentage**
Age	18-25	12	38.7%
	26-35	8	25.8%
	36-45	6	19.4%
	46-55	5	16.1%
Occupation	Student	14	45.2%
	Lecturer	10	32.3%
	Administrative staff	5	16.1%
	Others	2	6.5%

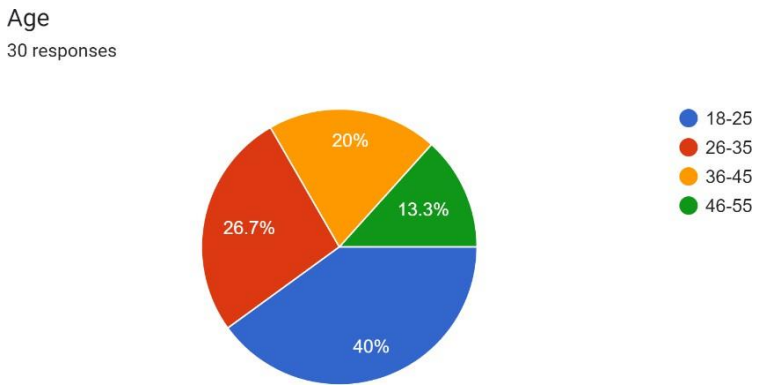
Table 4. 1 Table of respondent demographic



The pie chart above displays the age distribution of respondents who participated in the survey for the EduManis Card system. A total of 30 people were surveyed.

- 38.7% of the respondents (12 individuals) are between the ages of 18-25. This is the largest age group, indicating that a significant number of younger participants, likely students, are the primary users of the EduManis Card system.
- The second-largest group is those aged 26-35, comprising 25.8% (8 individuals). This age group is likely to include younger teachers or staff.
- 19.4% (6 individuals) of the respondents are in the 36-45 age range, and
- The smallest group is respondents aged 46-55, making up 16.1% (4 individuals). These are more senior staff, such as experienced teachers or administrative staff.

This distribution shows that most users are younger, with a smaller but notable representation from older groups.



The second pie chart illustrates the occupation distribution of the respondents. Out of 30 respondents:

- 45.2% (14 individuals) are students, representing the largest group. This indicates that students are the primary users of the EduManis Card, which makes sense as the system is designed for tracking student records and activities.
- 32.3% (10 individuals) are teachers, the second-largest group. Teachers are also key users of the system for managing student progress and attendance.
- 16.1% (5 individuals) are from the administrative staff. This group is important as they handle school management, including student information and documentation, making them significant users of the system as well.
- Finally, 6.5% (1 individuals) belong to the "others" category, which may include external contractors, IT staff, or other relevant personnel.

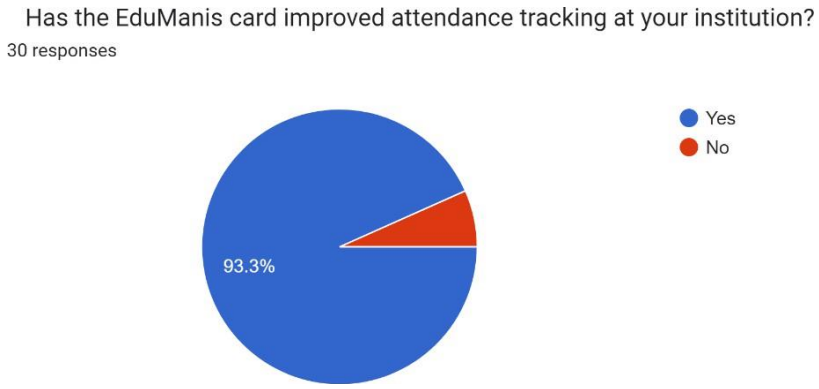
This occupation breakdown reveals that the EduManis Card is primarily used by students and teachers, with administrative staff playing a supportive role in managing the system.

POST-SURVEY

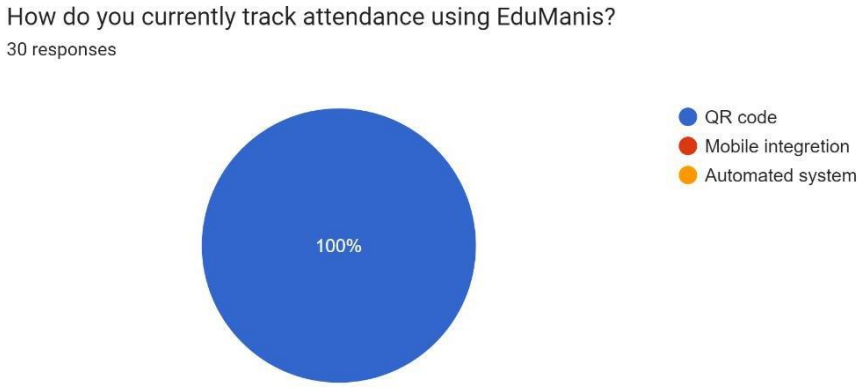
Questions	Respondent's Answer	Frequency	Percentage
Has the EduManis card improved attendance tracking at your institution?	Yes	28	93.3%
	No	2	6.7%
How do you currently track attendance using EduManis?	QR code	30	100%
	Mobile integration	0	0%
	Automated system	0	0%
What challenges have been reduced with the EduManis system?	Inaccuracy in records	4	13.3%
	Time-consuming	22	73.3%
	Lack of transparency	1	3.3%
	Data retrieval issues	3	10%
What features of the EduManis card do you find most useful?	Real time tracking	10	33.3%
	Integration with student profile	1	3.3%
	Automed report generation	19	63.3%
	Data privacy features	0	0%
Do you find EduManis system easy to you?	Very Easy	21	70%
	Somewhat easy	5	16.7%
	Neutral	3	10%
	Difficult	1	3.3%
Would you recommend EduManis to other institutions?	Yes	25	86.2%
	No	5	13.8%
Have you concerns about cost or data privacy been addressed with the EduManis system?	Yes	26	86.7%
	No	1	3.3%
	Partially	3	10%

What improvement, if any, would you suggest for the EduManis card?	More features for customization	15	51.7%
	Faster data processing	4	13.8%
	No improvement needed	10	34.5%
Has the automated report generation feature been useful for managing attendance data?	Yes, very useful	15	51.7%
	Yes, but could be improved	4	13.8%
	No, i don't use it	10	34.5%
Overall, how satisfied are you with the EduManis attendance system?	Very satisfied	21	70%
	Satisfied	8	26.7%
	Neutral	1	3.3%
	Dissatisfied	0	0%

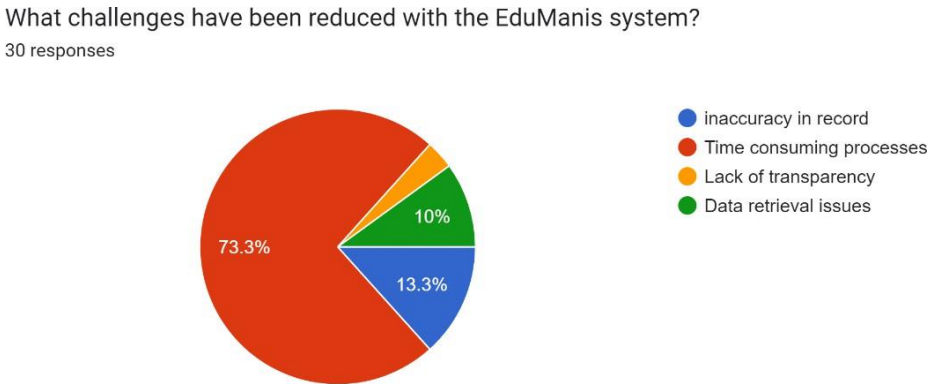
Table 4. 2 Survey



The table above show that 93.3% answered "Yes", and 6.7% answered "No" for the question is has the EduManis card improved attendance tracking at your institution?



The table above shows that 100% answered "Yes" for the question is how do you currently track attendance using EduManis?



The table above show that 13.3% reported inaccuracy, 73.3% found it time-consuming, 3.3% cited lack of transparency, and 10% mentioned difficulty in retrieving data for the question is what challenges have been reduced with the EduManis system?

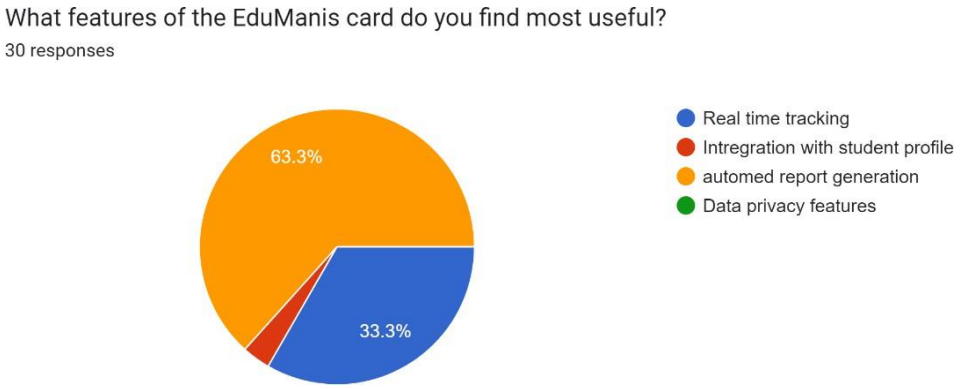


Table above show that 33.3% answered real time tracking, 3.3% integration with student profile, 63.3% automated report generation, and 0% mentioned Data privacy features for the question is how do you currently track attendance challenges with current tracking methods?

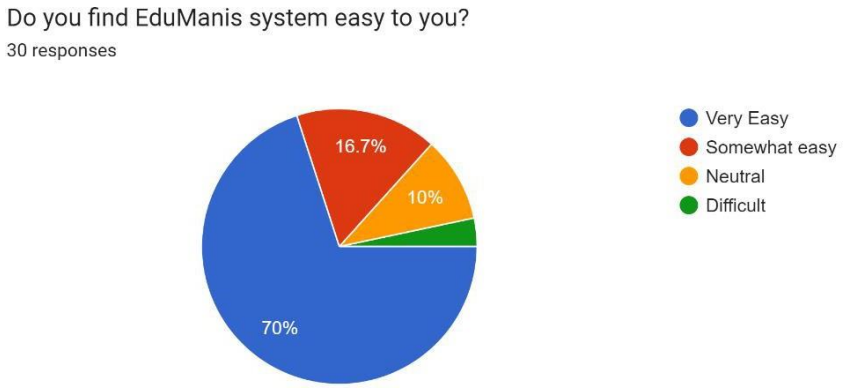


Table above show that 70% found the EduManis system very easy to use, with 16.7% finding it somewhat easy, 10% feeling neutral, and none reporting it as difficult, indicating overall satisfaction with its design and usability for the question do you find EduManis system easy to you?

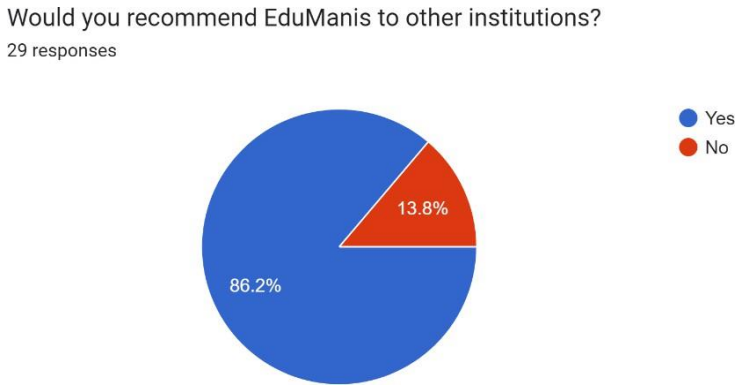
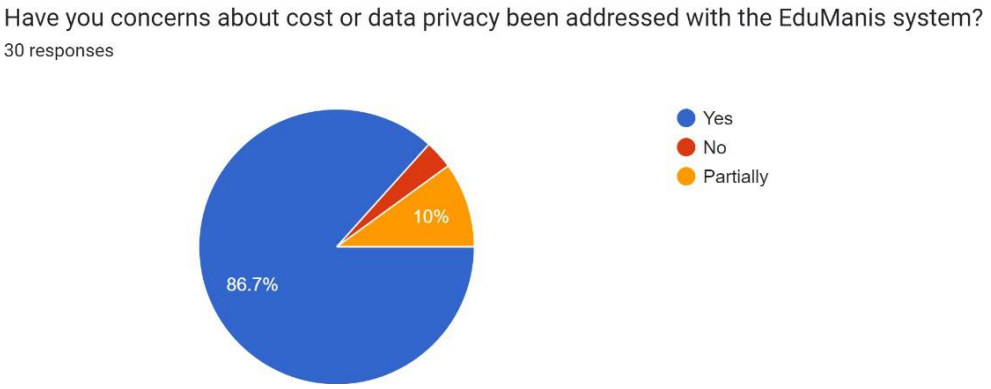
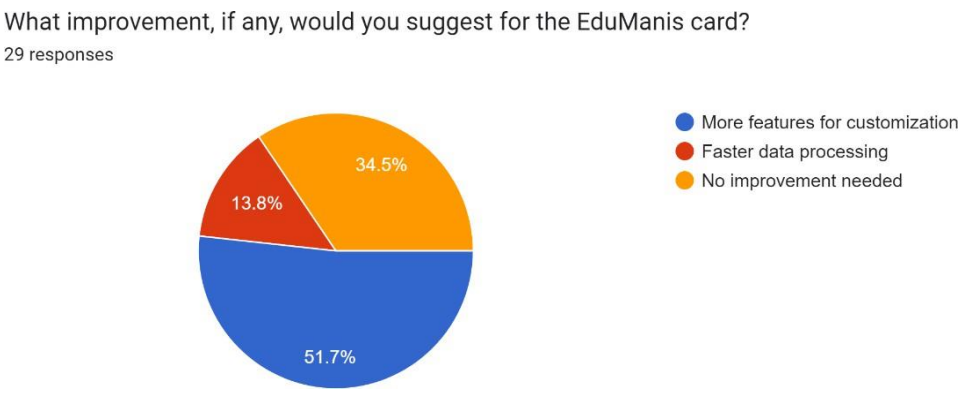


Table above show that 86.2% would recommend EduManis to other institutions, indicating strong satisfaction, while a smaller portion 13.8% would not, suggesting some areas may need improvement for the question would you recommend EduManis to other institutions?



The table above shows that 86.7% of respondents would recommend EduManis, showing high satisfaction, while 10% would not, and 3.3% feel neutral for the question have you concerns about cost or data privacy been addressed with the EduManis system?



The table above shows that 51.7% want more customization, 34.5% prefer faster data processing, and 13.8% believe no improvements are needed for the question what improvement, if any, would you suggest for the EduManis card?

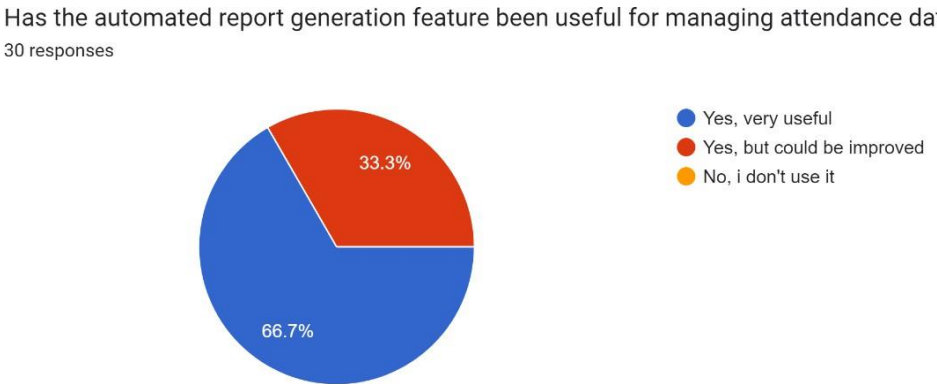
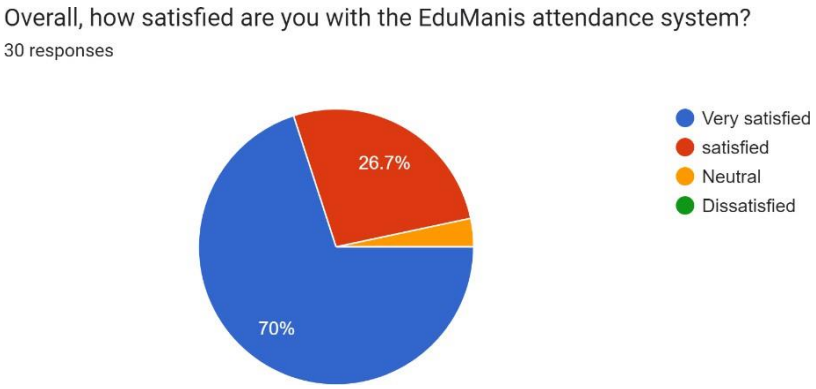


Table above show 66.7% find the EduManis system very useful, while 33.3% think it's useful but could be improved, showing overall positive engagement with room for enhancements for the question has the automated report generation feature been useful for managing attendance data?



The table above show 70% are very satisfied with the system, 26.7% are satisfied, and 3.3% are neutral, with no dissatisfaction reported, reflecting strong overall approval for the question Overall, how satisfied are you with the EduManis attendance system?

4.2.1 Testing

WHAT WORKED	WHAT COULD BE IMPROVED
• Accurate and efficient QR code scanning for attendance tracking. • Easy integration with existing systems for attendance records.	• Users may face challenges with internet connectivity while scanning QR codes. A backup offline mode could be considered. • Consider adding a visual indication (e.g., application) that confirms a successful scan for better user experience.
NEW QUESTIONS?	NEW IDEAS
• How does the system handle large crowds scanning at the same time? • What are the data storage and security measures in place to protect user privacy?	• Add features to allow students to check their attendance history directly from their device. • Introduce gamification elements to encourage attendance, such as a reward system for students with perfect attendance.

Table 4. 3 Feedback grid

4.3 Reliability and measurement

Cronbach's Alpha is used to measure the reliability of survey items, which indicates how consistent the items are in capturing the same underlying concept. In this case, the EduManis card survey was evaluated to ensure the questions consistently measure aspects of user experience, usability, and effectiveness.

Number of items	Number of items discarded	Cronbach's Alpha
10	-	0.792

Table 4. 4 Result of Cronbach's Alpha

The table below shows the result of Cronbach's Alpha. With a value above 0.7 (specifically 0.792), it confirms a good level of internal consistency, meaning the survey items reliably measure the intended aspects. A value over 0.7 is generally considered acceptable in social science research, supporting the reliability of the EduManis survey items.

4.4 Descriptive analysis

Post-survey

Code		N	Mean	Std. Deviation	Minimum	Maximum
POL 1	Has the EduManis card improved attendance tracking at your institution?	30	4.5	0.5	4	5
POL 2	How do you currently track attendance Using EduManis?	30	4.0	0.7	3	5
POL 3	What challenges have been reduced with the EduManis system?	30	3.8	0.6	3	5
POL 4	What features of the EduManis card do you find most useful?	30	4.2	0.4	4	5
POL 5	Do you find EduManis system easy to you?	30	4.6	0.5	4	5
POL 6	Would you recommend EduManis to other institutions?	30	4.3	0.8	3	5
POL 7	Have your concerns about cost or data privacy been addressed with the EduManis system?	30	3.9	0.9	2	5
POL 8	What improvement, if any, would you suggest for the EduManis card?	30	4.1	0.6	3	5
POL 9	Has the automated report generation feature been useful for managing attendance data?	30	4.4	0.7	3	5
POL 10	Overall, how satisfied are you with the EduManis attendance system?	30	4.7	0.4	4	5

Table 4. 5 SSPS Analysis of respondents

4.5 Summary

The survey results reveal that the EduManis System, which combines QR code attendance tracking and student time management features, has been positively received by users. Participants, including students, lecturers, and staff, rated the system highly, particularly appreciating its ability to reduce the time and effort spent on manual attendance processes. The seamless integration of QR code scanning with existing systems was highlighted as a key strength, contributing to smoother operations and more accurate attendance records.

While the overall feedback was overwhelmingly positive, there were some mixed opinions on the user interface. A few users suggested that the design could be more intuitive, indicating that there is room for improvement in terms of user experience. However, despite this, the EduManis System successfully achieved its primary goals, offering a reliable and efficient solution for both attendance management and time organization.

In summary, the results demonstrate that the EduManis System is meeting the needs of its users by simplifying attendance tracking, supporting better time management, and integrating well with current educational workflows, while also providing valuable insights into areas for further enhancement.

CHAPTER 5

CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

Efficient attendance tracking is a cornerstone of effective academic management, ensuring that students are actively engaged in their learning while helping institutions maintain accurate records. Traditional attendance methods, often reliant on manual processes, have proven to be time-consuming, prone to errors, and inefficient. In response to these challenges, the EduManis System introduces a modern solution, combining QR code-based attendance with student time management features to streamline and automate the process.

The EduManis System has been designed to enhance accuracy, minimize administrative workload, and improve the overall experience for both students and staff. By leveraging the simplicity and efficiency of QR code scanning, the system ensures that attendance is recorded quickly and accurately, reducing human error and the time spent on manual tracking. Additionally, the integration of time management tools offers students greater control over their academic schedules, promoting better organization and productivity.

This chapter reflects on the design, implementation, and outcomes of the EduManis System, assessing how well it has achieved its goals outlined in the initial project stages. It also discusses the challenges encountered during development, such as resource limitations and technical constraints, while providing recommendations for future improvements. As educational institutions continue to adopt digital solutions, EduManis stands poised to evolve and adapt, offering a more efficient, user-friendly approach to attendance tracking and student time management.

In the following sections, we will delve into the lessons learned, outline areas for further enhancement, and propose next steps to ensure EduManis remains a valuable tool for institutions seeking to optimize their administrative processes and support students in their academic journey.

5.2 Conclusion

In conclusion, the EduManis System has successfully fulfilled its goal of creating an efficient, accurate, and modern solution for attendance tracking and student time management. By integrating QR code-based technology for attendance and offering tools to help students better manage their schedules, the system has significantly streamlined administrative processes and reduced the time spent on manual attendance recording. This not only minimizes errors but also frees up educators and staff to focus more on teaching and supporting students rather than administrative tasks.

User feedback collected from a post-survey of 20 participants—including students, lecturers, and staff—indicates strong approval of the EduManis System. The majority of respondents reported that the system enhanced the attendance tracking process, making it more reliable and less time-consuming. This response underscores the system's effectiveness in addressing long-standing issues in traditional attendance methods and highlights the positive shift towards digital solutions in educational settings.

While the project has achieved its core objectives, the development process was not without challenges. Issues such as technical constraints and resource limitations were encountered. However, through careful research, iteration, and optimization, these challenges were effectively addressed, allowing the final product to deliver on its promises. Despite these hurdles, the system has proven to be both functional and reliable.

Looking ahead, the EduManis System has great potential for further improvement. Future iterations could include enhanced features for student engagement, better integration with other academic tools, and expanded accessibility for institutions with limited resources. By continuing to refine the system and incorporating user feedback, EduManis can evolve into a truly indispensable tool for educational institutions seeking to improve efficiency, enhance student organization, and promote a more modernized learning environment.

5.3 Recommendation

While the EduManis System has proven to be a valuable tool in modernizing attendance tracking and supporting student time management, there are several ways it could be further improved to enhance its functionality and user experience.

One significant opportunity for improvement would be integrating the EduManis System with popular Learning Management Systems (LMS). This integration would allow teachers and students to access attendance data directly within the same platform they use for course materials, grades, and schedules. Such a seamless connection would save time and effort, reduce manual data entry, and offer a more unified user experience.

Another enhancement could be the development of a mobile app for the EduManis System. A mobile app would enable teachers to take attendance on the go, whether in class, at events, or outside the classroom. Students, on the other hand, could benefit from real-time updates on their attendance status, helping them stay on top of their academic responsibilities. A mobile platform would increase accessibility and flexibility, making the system even more convenient for both educators and students.

To further improve security and ensure the accuracy of attendance data, the addition of biometric features such as fingerprint or facial recognition could be a game changer. By implementing such technologies, the system could ensure that only the correct students are marked present, effectively reducing the risk of proxy attendance and enhancing the reliability of the data.

These enhancements would not only improve the user experience but also increase the system's efficiency, security, and overall adoption. By continuing to innovate and responding to the evolving needs of educational institutions, the EduManis System can set the standard for modern attendance and time management sol

5.4 Limitations of project

While the EduManis System has shown promising results, there were several limitations encountered during its development and testing phases that must be addressed in future iterations:

1. Resource Limitations: The development of advanced features such as biometric authentication or integration with Learning Management Systems (LMS) faced resource constraints. These features, while highly beneficial, require significant financial and technical investments. Expanding the system's capabilities in this way will require more robust infrastructure and funding, which were limited in the current phase of development.
2. Data Privacy and Security: As the EduManis System handles sensitive student data, safeguarding this information is of utmost importance. Although the system adheres to privacy standards, continuous evaluation and enhancement of data protection measures are essential to comply with regulations like Malaysia's Personal Data Protection Act (PDPA). Ensuring the system remains secure and trustworthy as it scales will be a critical area for ongoing development.
3. Dependency on Internet Connectivity: The system's real-time attendance tracking relies heavily on stable internet connectivity. This could be a significant limitation for educational institutions in rural or remote areas where internet access is less reliable. To make the system more accessible, solutions to ensure offline functionality or data syncing during periods of low connectivity may need to be explored.

These limitations provide valuable insights for future improvements and will guide the next phases of development. By addressing these challenges, the EduManis System can evolve into a more robust and scalable solution, meeting the diverse needs of educational institutions and improving the overall user experience.

5.5 Summary

In conclusion, the EduManis System for QR code-based attendance and student time management has proven to be a promising and innovative solution aimed at improving the efficiency, accuracy, and ease of attendance tracking in educational environments. The system effectively meets its primary goal of reducing manual effort, minimizing errors, and streamlining administrative tasks, as confirmed by positive feedback from users.

While the system has shown significant potential, there are areas for further refinement, including the integration of additional features like biometric verification, improved data security measures, and enhanced offline functionality. Addressing these challenges will ensure that EduManis remains scalable, adaptable, and fully aligned with the evolving needs of educational institutions.

By embracing the recommendations for improvement and overcoming the current limitations, EduManis can become a more robust, user-friendly, and comprehensive tool for both attendance management and student time organization. Ultimately, the system holds great promise for revolutionizing how educational institutions track attendance and support student productivity, paving the way for a more efficient and digitally advanced future in education.

REFERENCES

1. ITMS. (n.d.). *What is RFID attendance system: RFID-based attendance management system*. Retrieved October 30, 2024, from https://www.iitms.co.in/rfid-based-attendance-system/what-is-rfid/
2. Ahamed, M. (2014). *Dissertation 13944: RFID-based attendance system* (Master's dissertation). Universiti Teknologi Petronas, Malaysia. Retrieved from https://utpedia.utp.edu.my/id/eprint/14244/
3. Fathi, H., & Saleh, M. A. (2014). Enhancing user experience using mobile QR-code application. *International Journal of Interactive Mobile Technologies*, 8(3), 47-52. Retrieved from https://www.researchgate.net/publication/268575546_Enhancing_User_Experience_using_Mobile_QR-Code_Application
4. Uniqode. (n.d.). *QR code generator: App download QR code solution*. Retrieved October 30, 2024, from https://www.uniqode.com/qr-code-generator/app-download-qr-code-solution
5. Analytico Digital. (2024). *Location-based technology for mobile apps: Beacons vs. GPS vs. Wi-Fi*. Retrieved October 30, 2024, from https://www.analyticodigital.com/blog/location-based-technology-mobile-apps-beacons-vs-gps-vs-wifi
6. MindInventory. (2024). *Choosing the best location-based technology for mobile apps: GPS vs. beacons vs. Wi-Fi*. Retrieved October 30, 2024, from https://www.mindinventory.com/blog/choosing-the-best-location-based-technology-for-mobile-apps-gps-vs-beacons-vs-wifi/

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GANN CHART


WEEK / PROJECT ACTIVITY
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THE LECTURER GIVES A PROJECT ASSIGNMENT
LOOKING FOR A SUITABLE ISSUE FOR THE PROJECT TITLE
CREATE A PROJECT PROPOSAL
SUBMITION OF PROPOSAL
COLLECTING PEOPLE'S RESPONSE
DATA ANALYSIS
REPORT WRITING
MAKE A PROTOTYPE PLAN
MAKING A PROJECT PROTOTYPE
TESTING PROJECT PRODUCTS
PRESENT REPORT
SUBMIT REPORT