

Alice Patience Kasedde

Kasedde Alice Patience and Group

 BBC III Proposals Submission November 23 2025

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 Makerere University Business School

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MAKERERE UNIVERSITY BUSINESS SCHOOL

DEVELOPING AND DESIGNING A DIGITAL NOTICEBOARD FOR MAKERERE

UNIVERSITY BUSINESS SCHOOL (MUBS)

By

Name	Registration Number	Phone Number
Alice Patience Kasedde	23/U/0522	+256780253473
Mercy Akiror	23/U/05727/PS	+256743756150
Blair Ambasitse	23/U/06001/PS	+256763860855
Elisa Gumisiriza	23/U/27183/EVE	+256706527665
Leah Nyebaza	23/U/16394/PS	+256751999674

Supervised By Ms. Stella Nakalema




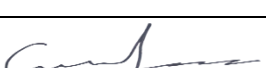

Department of...

A Project Proposal Submitted to the Faculty of Computing & Informatics of Makerere
University Business School in Partial Fulfillment for the Award of the Degree of Bachelor of
Business Computing of Makerere University

November 2025

DECLARATION

We, the undersigned, declare that to the best of our knowledge, this proposal is our original piece of work, and has never been published and/or submitted for any award in any other University or Higher Institution of Learning.

Name	Registration Number	Signature
Alice Patience Kasedde	23/U/0522	
Mercy Akiror	23/U/05727/PS	
Blair Ambasitse	23/U/06001/PS	
Elisa Gumisiriza	23/U/27183/EVE	
Leah Nyebaza	23/U/16394/PS	

Date: 23rd November,2025

APPROVAL

This project proposal has been submitted with my approval supervisor, and my signature is here appended:

Signed:

Date: 23rd November,2025



MRS NAKALEMA STELLA

Makerere University Business School

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SECTION ONE

1. INTRODUCTION

1.1 Project Background

Institutes and organizations all around the world use noticeboards to disseminate information crucial to members of the organization. For years in many places globally, this has been a literal board where a person pins printed papers but in recent years digital noticeboards have been introduced. Physical noticeboards are time-consuming to update, prone to delays, and often result in information being overlooked because users must be physically present to see updates, Rise Vision (2023). In contrast, digital noticeboards offer a modern, more efficient solution. These systems allow administrators to post real-time updates remotely using a content-management platform, ensuring that critical information reaches users immediately, regardless of their physical location, Sparsad Digital (2024).

In Uganda however, many institutions still rely on the manual noticeboards which is more time consuming and unreliable as the intended recipients may not always get the information on time for instance if they are not physically around. Based on a study carried out by students at the YMCA Comprehensive Institute Library in Kampala, it was revealed that while the physical noticeboard was widely used, students described it as outdated, inconvenient, and not frequently checked, supporting recommendations for adoption of a digital noticeboard, Akello et al., (2021). In addition, internal bulletins from institutions such as the Uganda Vice Chancellors' Forum (UVCF) indicate that physical noticeboards remain a primary medium for disseminating circulars and announcements (Uganda Vice Chancellors' Forum, 2015).

Makerere University Business School (MUBS), like any other educational institution, uses noticeboards for notices such as class schedules, examination timetables, policy updates, and event announcements. According to the Makerere University Communications Policy (2013), noticeboards are recognized as one of the official internal communication channels, alongside emails, websites, circulars, and newsletters. All of which are crucial and very important information for both students and staff, however there are many challenges and downsides of physical notebook noticeboards. The policy also highlights the importance of electronic communication, including institutional email and web platforms, as official modes of information sharing.

“These boards require manual updates, leading to delays, outdated information, and inefficiencies in communication. Additionally, they are location-dependent, meaning students and faculty must visit specific areas to view notices. This results in limited accessibility, especially for institutions with multiple departments and campuses. Furthermore, paper-based notices contribute to environmental waste, requiring constant reprinting and maintenance, making the process not only time-consuming but also costly.” Praba Devi, M., Hari Prasath, S., Daraneesh, B., Sandeepkumar, M. D., & Suraj, K. (2025). *Digitized notice board system for educational institution*. International Research Journal of Education and Technology, 7(3). ISSN 2581-7795. This, therefore, creates the need for a system to rectify the issues. This study seeks to design and develop a digital noticeboard to do just that. The proposed digital noticeboard system will streamline communication by centralizing announcements, enabling real-time updates, and allowing students and staff to access notices remotely. Digital noticeboards significantly reduce reliance on printing and contribute to environmental sustainability which has become an increasingly important factor for organizations globally (Logic Research Labs, 2023).

1.2 Statement of the Problem

Communication should be instant, reliable, and inclusive. This is one where a digital noticeboard system serves that exact purpose. It bridges departments, streamlines updates and information and eliminates the inefficiencies of manual noticeboards. However, MUBS currently uses physical noticeboards that results in poor communication between departments and students, some students who are not physically present on campus fail to access information, at times there is overcrowding of these boards all of which limit effective communication. Sticking to physical noticeboards would mean students may continue to miss important information leading to confusion, it would also mean exclusion of remote students taking in account the time and effort administrative staff use in managing manual posting. To address these challenges, the development and design of a digital noticeboard system is proposed which will focus on the current communication gaps. It will ease the posting of notices by the staff, access by students and thereby enhances communication.

1.3 Project Goal and Objectives

1.3.1 Project Goal

This project seeks to design and develop a centralized digital noticeboard system for Makerere University Business School that improves and enhances internal communication between students and staff.

1.3.2 Project Objectives

1. To study and analyze the current use of physical noticeboards at MUBS and the challenges associated with it.
2. To identify and gather requirements for designing a digital noticeboard system.
3. To design and develop a functional digital noticeboard system for MUBS.
4. To test the digital noticeboard system that has been developed.

1.3.3 Project Scope Summary

The team will design, develop and test the digital noticeboard system. The primary deliverables for this project include a functional digital noticeboard system that MUBS can use for internal communication.

Key activities to be completed include:

1. **Requirement Analysis and Planning:** Identifying stakeholder needs, defining the system requirements, and creating a detailed project plan.
2. **System Design:** Developing the architecture for the digital noticeboard system, including user interfaces and back-end components.
3. **Development:** Building the mobile and web applications, integrating payment gateways, and ensuring compatibility with the bus company's existing infrastructure.
4. **Testing:** Conducting testing to ensure the system is functional, secure, and user-friendly.

1.4 Anticipated Significance of Project

1. Improved communication: This will streamline communication, ensuring students and staff access information in real-time

2. Environmental Impact. Switching to digital noticeboard will reduce paper waste and support eco-friendly operation.

3. Retrieval of past notices. Use of a digital noticeboard will enable the users to search and access archived notices from previous periods.

4. Accessibility: The digital noticeboard will make it possible for both staff and students who may not be physically at campus to keep up to date vital information.

The team will be able to benefit and gain skills such as:

- 1.Hands-on experience in system development
- 2.Project management.
- 3.Stakeholder collaboration.
- 4.Strengthen problem-solving and teamwork skills.
5. User interface principles in solving a real-world problem

1.5 Project Assumptions

1. Stakeholder Participation

The team assumes that stakeholders that is administrative staff and students, will provide timely feedback during requirement gathering and testing phases.

2.Internet and Network Stability

A stable internet connection and reliable mobile network coverage will be available when testing and deploying the system.

3. User Adoption

It is assumed that students and staff will be flexible and easily transition to the digital noticeboard system as an efficient and convenient alternative to physical noticeboard.

4. Project Scope

The project's scope and objectives will remain consistent without significant changes after approval.

5. Team Commitment

The project team will collaborate effectively and remain committed to timely completion.

6. System Reliability and Functionality

The chosen technology (e.g., programming languages, frameworks, tools) will be available when needed and work as expected i.e. compatible and functional.

7. Timely Completion of Tasks

All project tasks, including system development, testing, and deployment, will be completed within the designated timelines.

SECTION TWO

2. LITERATURE REVIEW

2.0 Introduction

This chapter reviews existing literature relevant to the design and development of a digital noticeboard system for Makerere University Business School (MUBS). The review is guided by four objectives: analyzing the current use of physical noticeboards, identifying system requirements, designing and developing a digital solution, and testing the implemented system.

The review explores prior studies, theories, and technologies that inform this research. It is organized according to the study objectives: analyzing physical noticeboards and their challenges, identifying requirements for digital systems, designing and developing functional web-based noticeboards, and testing similar systems from existing research.

2.1 Traditional Noticeboards and Communication Challenges in Institutions

A physical noticeboard is a traditional medium for sharing official information within organizations. Despite its importance, it presents several limitations such as restricted accessibility, outdated content, and maintenance inefficiencies.

At MUBS, as in many institutions, noticeboards require students and staff to be physically present to view notices. This often leads to missed information and delays in decision-making. This corresponds with the concept in (Sackey, Yandoh & Sangban, 2023) that traditional noticeboards are constrained by physical space, require manual updates, and offer no interactive capabilities, making them inefficient for dynamic communication passive communication.

2.2 Automated Information Systems and Digital Noticeboards

(Ramakrishna & Thurbilli 2025) claim that, digital noticeboards powered by web and IoT tools offer instant updates, rich media content, and better user interaction. They are advantageous because of the eco-friendliness, operational savings and have a broader reach which makes them valuable in education, business, and governance

Digital noticeboard systems represent a type of automated information system designed to replace manual boards with electronic, web-based platforms. According to Chen et al. (2022), such systems enhance communication by allowing instant posting, real-time updates, and wide accessibility. Adebayo (2020) adds that automation minimizes human error and operational

delays, directly supporting the second objective of this study which is identifying and gathering requirements for designing a more efficient digital system.

2.3 Requirements for Designing a Digital Noticeboard System

Requirements engineering involves identifying what users expect from a system and the conditions under which it will operate.

According to Hansda, A. (2023), major functional requirements of the system include: The efficient storage of notices and files, user-friendliness in uploading and downloading content, authentication of the different role based users, a secure and well-maintained database, easy to operate and navigate, the apps should be able to work seamlessly with the web server and deliver notifications in real-time

Non-functional requirements cover: Security and data protection (Chen et al., 2022), Usability and accessibility (Ramakrishna & Thurbilli, 2025), Reliability and maintainability (Kumar & Singh, 2023)

2.4 Designing and Developing Digital Noticeboard Systems

In this study, the system was designed using a structured design approach, ensuring logical flow of data and separation between presentation and database layers. This aligns with established methodologies such as the Systems Development Life Cycle (SDLC), which includes stages of planning, analysis, design, development, testing, and deployment.

Most reviewed studies (Ramakrishna & Thurbilli, 2025; Mahantesh et al., 2020) employed open-source technologies such as HTML, CSS, JavaScript, PHP, and MySQL due to their flexibility and cost-effectiveness. These same technologies are used in developing the MUBS digital noticeboard, meeting the third objective—to design and develop a functional system that is accessible, scalable, and maintainable.

2.5 Evaluation and Testing of Digital Noticeboard Systems

Testing ensures that a system meets its functional and non-functional requirements. According to Peffers et al. (2008), evaluation validates the artifact against its intended objectives and context of use.

In related research, Sackey et al. (2023) conducted system testing using user feedback from students and staff, achieving over 85% satisfaction on usability and accessibility. Similarly, Mahantesh et al. (2020) found that prototype testing revealed usability issues early, allowing

iterative refinement. These findings align with the fourth objective of this study—to test and validate the developed digital noticeboard for accuracy, efficiency, and user satisfaction.

2.6 Challenges in Designing and Implementing Digital Noticeboard Systems

Despite the potential of digital noticeboard systems, there are challenges in designing and implementing them these are technical organizational and user related. These include technical shortcomings like limited support, training gaps and system errors; usability issues such as poor design, limited flexibility and minimal customization; and organizational barriers including poor planning, stakeholder resistance, and lack of leadership support. Concerns over data privacy, cost and insufficient promotion also contribute to slow adoption and reduced impact.(Sackey, Yandoh & Sangban ,2023).

2.7 Conclusion

The literature reviewed demonstrates that physical noticeboards are inefficient in addressing modern communication needs at institutions like MUBS. A digital noticeboard offers a reliable, real-time and cost-effective solution.

SECTION THREE

RESEARCH METHODS

3. PROJECT METHODS

This section highlights the research methods, research design/ research approach, project development process (project life cycle), requirements elicitation methods/ data collection methods and project constraints.

3.1 Research Design/Research Approach

The project team will undertake Design Science Approach. In this approach, the team will attempt to build an Information system artifact, through identifying business requirements and thereby defining a practicable/ pragmatic solution to the existing problem (Weber, 2010; Hevner et al., 2004; Au, 2001) in the organisation. Through this method, the team seeks to address inefficiencies in the existing manual noticeboards by designing and implementing a functional digital noticeboard system.

Illustration Of Design Science Research Process

DSR Stage	Research Objective	Proposed Methods	Expected Outcome
Problem identification and formulation	Identify inefficiencies in manual noticeboard within MUBS.	Holding stakeholder interviews and observations.	A summary of challenges highlighting limited accessibility, manual tedious posting.
Object Definition	Define clear requirements and goals of the system based on stakeholder needs.	Meeting with stakeholders, reviewing literature	Well established and documented goals and objectives of the system
Design and Development	Develop and document a prototype of the digital noticeboard system with main features.	Appropriate software, hardware, design tools e.g. programming languages for backend and frontend development, frameworks, database management	Logical Design of the system System elaboration diagrams Physical/actual design interfaces Sample Code A prototype of the system.

Demonstration	Test the digital noticeboard prototype	Pilot testing where the staff and students are system users.	Feedback on system usability, performance, and areas for improvement.
Evaluation	Presentation of the system and project report to supervisors and faculty for evaluation		Successful defence of the system to supervisors and faculty
Communication	Completion of Project Report, upload on e learning, and presentation of the system to Faculty.	Presentation through Video Demonstrations, Physical Screen Sharing, Online Presentations of team members.	Completion of project report, approval by supervisor, upload on e learning system, presentation/ defence of the system to supervisors and faculty, and where possible presentation at a conference, plus publication.

Stage 1: Problem Identification and Formulation. The team will identify the challenges MUBS is facing with the use of physical noticeboards. This will be achieved through conducting interviews of staff and students as well as carrying out observations. These will aid the team in developing a digital solution to solve the problem.

Stage 2: Objective Definition. Infer the objectives of a solution from the problem definition and knowledge of what is possible and feasible. (Peffer, K., Tuunanen, T., Rothenberger, M.A., & Chatterjee, S. (2008). *A Design Science Research Methodology for Information Systems Research*.) The team will come up with specific objectives such as improving communication processes and enhancing accessibility among others.

Stage 3: Design and Development. Logical models for the digital noticeboard system will be created which will have features like centralized posting, real-time updates, and department categorization and then a prototype will be developed for testing.

Stage 4: Demonstration. The prototype will be deployed to test its usability, functionality, and compatibility with MUBS communications workflows.

Stage 5: Evaluation. The system's performance will be assessed to check effectiveness and performance in areas like processing speed, user satisfaction, and alignment with the objectives. The project will be presented to the faculty and supervisors to evaluate whether it is functional as required. Artifacts need to be created that would avoid costly mistakes and/or decrease credibility within the scientific community. This requires the development and diligent application of stringent evaluation techniques and procedures [28, 43 (Storey.C. Veda & Baskerville Richard (2024). *Design with Simon's Inner and Outer Environments: Theoretical Foundations for Design Science Research Methods for Digital Science* <http://dx.doi.org/10.1145/3640819>)

Stage 6: Communication. The findings and results will be documented and presented to the supervisor and faculty through presentations and documentation in articles if approved.

3.2 Project Organization

The organization for this project is Makerere University Business School (MUBS), The digital noticeboard system is being developed to address communication challenges faced by both administrative staff and students across the institution. The project owners are the university administrators and departmental heads responsible for publishing academic notices, circulars, and updates. The actual users are:

Students. Over 30,000+ enrolled across 40 + various programs and campuses.

Academic Staff. Lecturers, teaching assistants, and researchers across 12+ faculties

Administrative Personnel. Staff involved in coordination, communication, and student support.

These statistics are based on data from the official MUBS website under the Academics section, which reports 30,000+ students, 40+ academic programs, and 12+ faculties (Makerere University Business School, 2025).

The system is designed to serve a stakeholder population of approximately 30,000+ users, with scalability to accommodate future growth and integration with other institutional platforms.

3.2.1 Sampling Design/Sampling Techniques

According to Krejcie and Morgan (1970), a sample of 379 members will be randomly selected for the study and project. The team will use Stratified Random Sampling where the population will be divided into 2 subgroups that is the administrative staff and the students. This will ensure data collected is from both owners of the system and main users, the students.

3.3 Sources of Project Data

The project team will collect both primary and secondary data about the project problem which will be used to understand the inefficiency of the current noticeboard and how best to improve by developing a digital noticeboard. The data collected will be used to generate requirements for building an IT solution.

Primary data will be obtained through carrying out interviews and surveys for example of students, the administrative staff, lecturers. It can also be obtained through observation of the current system of pinning notices.

Secondary data will be collected from existing online articles, case studies and literature about developed digital noticeboards and signage systems as well as other literature available about the organization such as reports.

3.3.1 Data Collection Techniques

The team will use the following techniques:

Observation

Interviews of both staff and students

Document review of the existing documents

Requirements workshop where key stakeholders are gathered to discuss the system requirements

Focus groups where members brainstorm ideas

3.4 System Analysis and Design Approaches

The Object-Oriented Design approach will be used to design the digital noticeboard system. This approach will allow the team to create objects representing key entities e.g. notices, users, department and their interactions. It models real-world entities and is more adaptable to changes.

3.4.1 Design Techniques

Use Case Diagrams: This will show user interactions with the system (e.g., posting a notice, viewing a notice, searching archived notices).

Prototypes: Enables stakeholders and users to test the system and provide feedback before final development. They depict what the system would be like and include main features.

Wireframes: Helps plan the design of the system and focuses on placement of buttons, navigation menus, and forms without detailed design elements like colour or images.

3.5 Anticipated Project Constraints

i. The Project may be hindered by inability to get literature and data about the subject/ topic of study. The team plans to use online sources to gather as much information about the study area as possible.

ii. Limited time for system development may delay implementation. The team plans to prioritize core features and focus on iterative prototyping to deliver essential functionality on time.

iii. The team may not have enough programming or technical skills to develop the artifact. The team plans to consult in areas where they lack.

iv. The team expects some degree of user resistance if the system is taken up especially those who have been accustomed to a particular way of doing this. This will be solved by doing training users on how the system works and emphasise its benefit.

3.6 Ethical Considerations

The team will ensure informed consent as interviews are conducted so that the interviewees are aware of all the risks and benefits and approve of the data being collected

The team will also ensure confidentiality and data security such that the personal data of the interviewed are secure and protected from unauthorized people such as the phone numbers, the name and email addresses. The database will not be accessible to all people using the site.

3.7 Timeline and Milestones

Task	Duration	Milestone
Requirement Analysis	1 month	Gathering of data and compiling of system requirements.
System Design	1 month	Delivery of wireframes, use case diagrams, and database schema.

Prototype Development	2 months	Functional prototype ready for testing.
Testing & Refinement	2 months	Completion of user acceptance testing and refinements.
Deployment & Training	1 month	Full deployment and staff training.
Project Closure	1 month	Final report and documentation submitted.

Disclosure and Declaration Statement

The team plans to use generative AI under supervision to assist in system design and coding. It will also be used to brainstorm and finetune ideas. The team declares no conflicts of interest related to this project. The digital noticeboard system is being developed for Makerere University Business School, an organization with no relation to the team members.

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APPENDIX

1.PROPOSED PROJECT BUDGET

Budget Item	Description	Estimated Cost (UGX)
Data Collection Costs	Printing questionnaires, notebooks, transport	150,000
Internet & Research Costs	Airtime/data bundles, online tools	200,000
Software & Development Tools	Hosting, design tools	300,000
Prototype Development	Cloud hosting & UI assets	250,000
Testing & Validation	Transport, UAT forms	180,000
Report Production	Printing & binding	50,000
Team Communication & Meetings	Airtime, transport	130,000
Contingency (10%)	Unexpected expenses	100,000

II.GANTT CHART

