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MAKERERE UNIVERSITY BUSINESS SCHOOL

DEVELOPING A WEB BASED DRUG AND ALCOHOL AWARENESS PLATFORM FOR STUDENTS OF MAKERERE UNIVERSITY BUSINESS SCHOOL

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A project proposal submitted to the Makerere University Business School

**For the Study Leading to a Project Report in Partial Fulfillment of the Requirements for the Award
of the Degree of Bachelor of Business Computing of Makerere University Business School**

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.

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APPROVAL

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

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Date:

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1.0 INTRODUCTION

1.1 Project Background

Web-based applications have transformed numerous sectors by enabling organizations to deliver information effortlessly, automate services, and foster more interactive and dynamic engagements between businesses and their customers. Notable health information websites such as Web Medical Database, Healthline, and the Mayo Clinic Online Portal provide reliable health information, while telemedicine systems and patient portals facilitate virtual care and easy access to health records (Alonso et al., 2021). In the banking and finance sector, platforms like Online Banking, Equity Bank Online, and Stanbic Bank Internet Banking empower customers to manage their accounts and perform transactions; additionally, digital payment solutions like PayPal enhance convenience, service delivery, and financial inclusion through secure online payments (Ngugi & Njeru, 2020; Rahman & Aydin, 2021). In agriculture, applications such as Agricultural Information Systems and Digital Advisory Platforms like eSoko and Farmerline supply farmers with market prices and weather updates to inform their agricultural decisions and improve productivity based on accurate data (Kante et al., 2021). The education sector benefits from Learning Management Systems like Google Classroom, Coursera, and Edmodo that support remote learning, online assessments, and virtual collaboration (Chandran & Abraham, 2022). Moreover, web-based platforms are utilized in schools to raise awareness about mental health issues, living with AIDS, hygiene practices, and substance abuse while creating interactive digital environments that encourage behavioral change (Monarque et al., 2023; Rainisch et al., 2022).

Web-based platforms aimed at raising awareness about drug and alcohol issues have become essential for addressing public health concerns. These resources allow institutions to reach large audiences with engaging, evidence-supported content that is timely—beneficial for prevention efforts as well as early intervention strategies (Tomazic & Jerkovic, 2020). Features such as quizzes, discussion boards, and multimedia programs facilitate self-directed learning that enhances students' knowledge and behavior (Alves, 2022). Awareness initiatives targeting university students offer anonymity along with easy access to discussions regarding sensitive

topics such as drug use and mental health (Chang & Chen, 2023). Furthermore, they can mitigate the drawbacks of traditional methods like face-to-face seminars or printed materials which tend to be less accessible or more expensive to implement (Musyoka et al., 2023). Overall, web-based awareness platforms are recognized as cost-effective solutions that promote inclusivity while providing long-term benefits for improving student well-being and reducing incidences of drug and alcohol abuse in educational institutions.

Makerere University Business School (MUBS) is a prominent public tertiary institution affiliated with Makerere University dedicated to business management education. With over 27,800 enrolled students across various undergraduate programs alongside advanced diploma offerings for postgraduate studies, Makerere University Business School (MUBS) also emphasizes project implementation initiatives within the region's entrepreneurial landscape. Despite these achievements, Makerere University Business School (MUBS) faces significant challenges related to drug and alcohol abuse among its youth population. The spectrum of drugs abused includes tobacco products, cannabis varieties, alongside alcoholic beverages—all posing risks impacting students' health, academic performance, and social interactions. Reports suggest that student dealers, referred to colloquially as “plugs,” contribute to campus drug availability by distributing substances directly in hostels and nearby areas utilizing social media channels for outreach purposes (Monitor 2023). National statistics further highlight a concerning trend: high rates of substance abuse among Uganda's youth characterized by prevalent alcohol consumption, tobacco smoking, and cannabis usage wherein peer pressure, mental health struggles, and environmental stressors emerge prominently as contributing factors (Nile Post 2023).

To combat this issue within the university, awareness initiatives such as informational talks, sensitization sessions, and outreach efforts targeting classrooms and hostel visits designed specifically to educate students regarding dangers associated with drug and alcohol misuse while fostering positive behaviors; unfortunately, low attendance, stigma surrounding drug use, and ignorance towards intervention concepts complicate successful implementation, oftentimes undermining overall effectiveness of outreach activities. Campus distribution networks remain organized and persistent, indicating the necessity of a multi-faceted strategy encompassing comprehensive approaches addressing both heightened awareness, counseling provisions, and enforcement measures. Therefore this study aims at developing an innovative web-based Drug

and Alcohol Awareness platform tailored specifically for Makerere University Business School to address critical gaps pertaining to knowledge surrounding drug and alcohol misuse amongst its student body.

1.2 Statement of the Problem

Makerere University Business School (MUBS) should ideally have a student population that is well-informed, drug-free, and actively involved in promoting healthy lifestyles through awareness programs and positive peer influence. However, although sensitization activities are being conducted (including talks, classroom outreaches, and hostel visits), some students use illegal substances (alcohol, tobacco, marijuana) often facilitated by campus-based dealers or “plugs” distributing drugs within hostels and through social networks (Monitor, 2023; Nile Post, 2023). If not tackled, it is possible for declining academic performance, escalating health challenges, addiction, increased dropouts, a damaged institutional reputation, and decreased productivity and discipline of students. In response, the team plans to create a web-based drug and alcohol awareness platform to facilitate an accessible, private, and interactive learning environment. The platform shall allow students to access reliable information, interact with educational content, and engage in interactive activities that promote healthy behaviors, effectively bridging the gap between the present and the ideal student environment (Griffin et al., 2022; Rainisch et al., 2022; Chang et al., 2023).

1.3 Project Goal and Objectives

1.3.1 Project Goal

The goal of this project is to design and develop a web-based platform that increases drug and alcohol awareness among students at Makerere University Business School (MUBS).

1.3.2 Project Objectives

- a) To study and analyze the current drug and alcohol awareness methods used at Makerere University Business School.

- b) To identify system requirements for developing a web-based drug and alcohol abuse awareness platform for MUBS.
- c) To design and develop the web-based drug and alcohol abuse awareness platform based on the identified requirements.
- d) To test and evaluate the performance and functionality of the developed awareness platform.

1.3.3 Project Scope Summary

The project is to develop and test a web-based Drug and Alcohol Awareness Platform for students in Makerere University Business School (MUBS) between October and November 2025. The project involve asking for collecting infromation from stakeholders, reviewing literature, setting up systems, coding, and conducting user testing to ensure the platform is operational, usable and accessible. It will offer interactive, confidential, and educational tools designed to raise awareness and promote positive behavioral change. The key deliverables will be a web application that can be deployed, design and specification documentation, testing reports, and instructions for users. Primary modules will involve: Awareness and Education, Communication and Support, Reporting and Feedback, User Management, Community Interaction, Content Management, Data Collection, Notifications, and Security and Privacy. The project also does not include mobile app development, application in a large scale setting beyond MUBS, external system integration, long term servicing and also advanced data analytics. Expected challenges include limited resources, unreliable internet connectivity, limited availability of users for testing. In general, the project aims to release a working prototype aimed at assisting MUBS students in drug and alcohol awareness.

1.4 Anticipated Significance of Project

This program will help students by providing reliable information and confidential support for drug and alcohol abuse. It will enable better communication between students and health professionals that help the university reduce rates of drug and alcohol abuse (as students develop skills to control abuse) and improve discipline, academic performance, and technology-based well-being among students. It will also act as a practical reference point for other organizations

battling similar drug addiction. The system can then be adopted or adapted by the institutions to build awareness of and promote mental health among their students. In a wider sense, the project would further national efforts of health education and prevention of substance use among young people (Ministry of Health). It will provide a digital interface for information sharing, behavior-change communication, and early intervention in collaboration with schools, in addition to existing government programs. Lastly, the project is meaningful to the project team because it provides a real-life context of learning that links theory with practice. It will help develop skills in requirements gathering, full-stack development, user interface design, teamwork, project management, and research, meeting the academic demands of the capstone project for the final year.

1.5 Project Assumptions

The successful completion of this project is based on the following key assumptions:

- a) **Resource Availability:** The project team assumes consistent access to necessary software (e.g., VS Code, modern web browsers), hardware (e.g., laptops), and reliable internet connectivity for development, testing, and research throughout the project duration.
- b) **Stakeholder Cooperation:** It is assumed that a representative sample of Makerere University Business School students will be willing to participate in requirements elicitation and user acceptance testing, and that the project supervisor will be available for timely guidance and feedback at critical milestones.
- c) **Scope Stability:** The project team assumes that the core objectives and functional requirements for the web platform will remain stable and not undergo significant changes after the proposal approval to ensure timely completion.
- d) **Technology Compatibility:** The project team assumes that the chosen technology stack (e.g., HTML, CSS, JavaScript, laravel and mysql database) will be compatible, function as expected, and be sufficient for building a secure and responsive web application.

REVIEW OF LITERATURE

2.0 SECTION INTRODUCTION

This chapter is devoted to providing a literature review on a web-based drug and alcohol awareness platform for Makerere University Business School. The study reviews current literature on web based awareness platforms, their applications, design needs, implementation processes, testing methods, and their challenges are systematically analysed based on existing studies. This review offers a foundation for an appropriate building and delivery of a successful digital intervention targeting drug and alcohol abuse challenges in university settings based on established software development principles and educational best practices.

2.1 Web-Based Drug and Alcohol Awareness Platforms

2.1.1 Definition of web-based drug and alcohol awareness platforms

Web-based drug and alcohol awareness platforms are digital systems that offer education, support, and intervention for people affected by drug and alcohol use. Peart et al. (2024) describe these as peer-supported online spaces in which users exchange experiences, garner mutual support, and experience anonymity and ease of access. Colditz et al. (2024) refer to these platforms as public online recovery resources that promote engagement, social support, and ties to community programs. According to Schaub et al. (2020), web-based self-help programs are interactive, internet-based interventions in which people may be enabled to reduce or stop harmful drinking using confidential and self-paced modules. In total, these resources combine peer support, structured intervention, and accessible digital tools to promote prevention, education, and recovery from substance use regardless of one's physical location.

2.1.2 Examples of Drug and Alcohol Web-Based Platforms

Recent research describes a variety of web based applications that serve to inform drug and alcohol awareness, prevention, and recovery programmes. Digital therapeutic systems (DrinkLess and Daybreak) provide users with structured behaviour-change modules, self-assessments, progress tracking, as well as peer support to encourage them to curb their damaging drinking. Public health portals, including Rethinking Drinking, offer tools for self-screening, risk

calculators, and other educational resources to help people promote safer alcohol use. Hybrid and telehealth platforms such as SMART Recovery Online offer professional counselling in collaboration with peer-supported group sessions, interactive worksheets, and virtual meetings tailored to the context of long-term recovery. In Africa, some online initiatives work addressing issues on drug and alcohol-use awareness. Uganda's Ministry of Health websites disseminate educational materials and referral details. Youth organisations, like Reach a Hand Uganda, launch digital campaigns on alcohol misuse. Regionally, the UNODC Drug Demand Reduction portal offers a dedicated resource platform focused on education and awareness-raising for prevention initiatives. Overall, these web based platforms represent different digital modes of awareness and recovery which have facilitated a global trend of accessibility, interaction, and user-centred online programmes.

2.2 Application of Web-Based Drug and Alcohol Platforms

Web-based platforms for addressing drug and alcohol issues are becoming indispensable tools across various sectors, playing a crucial role in prevention, treatment, awareness, and monitoring. In educational settings, for example, online programs and mobile apps are stepping in to help reduce substance use among students, particularly in places where access to counseling services is limited (Guta et al., 2025). Harm-reduction organizations are also leveraging online communication tools, such as Telegram, to reach out to individuals who may hesitate to seek face-to-face support. These platforms offer vital information and assistance to drug users, helping to connect with those who might otherwise feel isolated (Davitadze et al., 2020). In healthcare, digital technologies are transforming the way we approach drug-use disorders. They facilitate everything from screening and telehealth counseling to digital therapeutics and virtual clinical trials. Digital monitoring tools are also making it easier for healthcare providers to track patient progress (Marsch et al., 2020). Furthermore, web platforms and social media are invaluable resources for understanding trends in drug use. They offer public health officials and researchers the ability to monitor drug use patterns and detect emerging trends (Lokala et al., 2020).

Community and social services are utilizing these web based applications for overdose prevention and fostering better collaboration among harm-reduction providers and first

responders (Claborn et al., 2022). Beyond these sectors, workplaces, government agencies, families, and research institutions are increasingly turning to these platforms for employee wellness programs, national health campaigns, family counseling, and data-informed research initiatives.

Overall, web-based drug and alcohol platforms are proving to be effective tools across education, harm reduction, healthcare, public health, community support, workplace wellness, government, family engagement, and research, demonstrating their significant impact on prevention, treatment, surveillance, and support.

2.3 Requirements of Web-Based Drug and Alcohol Awareness Platforms

Requirements specify what a system ought to do and how it ought to work in order for it to fulfill user requirements. In software engineering, they can be broadly categorized into functional requirements that outline system behaviors and services and non-functional requirements that specify quality attributes such as performance, security, usability, and reliability (Tahir et al., 2025; Rahimi et al., 2020; Ali & Saleem, 2022). They are also sometimes organized into quality requirements and constraint requirements, which describe regulatory, design, or hardware limitations (Olsson et al., 2022; Ali & Saleem, 2022). Additional types of requirements—e.g., design, performance, and interface requirements—may also be defined in domain fields such as aerospace or medical systems (Fu et al., 2024; Hu et al., 2024). Some scholars classify requirements into process requirements (development practices) and product requirements (system characteristics), while also dividing requirements into behavioral and non-behavioral ones for clearer system description (Broy, 2018; Serugga et al., 2020). Recent work indicates the rising application of machine learning and natural language processing (NLP) techniques for the automatic classification of requirements in order to boost their accuracy, consistency, and efficiency on large-scale or intricate projects (Li & Nong, 2022; Tahir et al., 2025; Izhar et al., 2025). Functional and non-functional requirements are still the general framework, but additional categories bring more clarity for the specific domains. Furthermore, these additional classifications also ensure that the functional behavior and quality criteria are met before testing the web-based drug and alcohol awareness platforms.

2.4 Designing Web-Based Drug and Alcohol Awareness Platforms

2.4.1 Design Definitions

Design in software engineering is conceptualized differently by many authors but is generally focused on planning, structure, and turning requirements into a functional system model. Design, as defined by Sommerville (2020), is the translation of software requirements into a coherent description of the architecture, components, interfaces, and data of the system. This definition focuses on design as a blueprint for development to follow. Pressman and Maxim (2022) likewise define software design as a process and product: a process through which requirements are transformed into a series of representations, and a product providing the technical basis for construction. A disciplined approach is crucial for them, maintaining clarity, consistency, and feasibility. A third line of thinking comes from AlGhamdi et al. (2023), who define design as a decision-making process that selects, organizes, and evaluates architectural and component-level strategies to optimize system performance, maintainability, and user experience. All of these definitions depict the multiple dimensions of the processes of design as well as a structured, iterative process on how system architecture and behaviour are configured.

2.4.2 Process / Steps of Design

In the design process, steps are systematically divided into detailed proposals and translate system requirements into concrete plans for implementation. It starts with requirements analysis, in which users' and system needs get given an explicit definition (Pressman & Maxim, 2022; Sommerville, 2020). This is followed by architectural design which establishes the system's layout, constituent parts, communication flow between subsystems which can be the interface, logic, and database layers of any system. Next, high-level design (HLD) decomposes the architecture into modules and describes their interplays (Kazemi et al., 2024). The low-level design (LLD) determines details such as algorithms, workflows, data structures, and database schemas (AlGhamdi et al., 2023). After this, design validation is done to verify models against requirements, performance, usability, and compliance. Design documentation serves development, testing, and maintenance supports, concluding the process. These actions are frequently an iterative one, where they are able to redraft constantly with changing features.

2.4.3 Design Activities

An interactive web user-based drug and alcohol awareness platform should be developed through a number of activities. When designing the system, the architectural modelling indicates the overall structure of the system using layered or MVC design. User Interface Design is all about providing interfaces for the product, including navigation, responsiveness, and accessibility, making it easy to use and a universal approach. A data design structure defines the data entities of your platform, storage models, and secure flows for data for assessments, educational content, and analytics. Component design describes the internal workings and interconnectivity of modules (e.g., assessments, personalized feedback, notifications, content delivery, etc.). The process incorporates design inspection too—through reviews, prototyping, and simulations to discover usability and performance deficits. Last but not least, the design should also take into consideration non-functional goals like performance, scalability, security, and support for third-party services. All the above and more ensure the platform is set up in the best way, secured, and effective in fulfilling its awareness goals

2.5 Implementation of Web-Based Drug and Alcohol Awareness Platforms

Implementation of Web-based drug and alcohol awareness platforms aims to convert design specifications into operational and interactive systems that are able to deliver educational content effectively (Kumar & Sharma, 2020). Today's web based platforms leverage server-based technology backed by adaptable and scalable hosting setups. Cloud solutions are widely selected due to their reliability, significant uptime, and cost effectiveness for a large or increasing user base. Content management plays a critical role in implementation. Platforms often introduce Content Management Systems (CMS), enabling nontechnical administrators to update the contents of awareness materials quite easily (Li et al., 2021). Engagement is also reinforced with multimedia elements like videos, quizzes, infographics, and the inclusion of interactive modules. Personalized content-solutions—utilized for example with adaptive learning processes—also help in promoting behavioural change and ongoing learning (Sun et al., 2022). Security is also an ongoing issue in implementation. Secure authentication mechanisms, encrypted data handling, and adherence to privacy protections are features of systems adopted to safeguard sensitive user information (Pressman, 2020). Platforms are robustly tested before being deployed such as unit testing, system testing, and user acceptance testing to ensure reliability and usability (Chauhan &

Singh, 2021). After being launched, ongoing monitoring and analytics is employed to monitor user activity, determine content gaps, and adapt intervention approaches. These insights from analytics-driven decisions would allow platforms to be continuously enhanced in terms of engagement for ongoing improvement (Miller et al., 2021).

2.6 Testing of Web-Based Drug and Alcohol Awareness Platforms

Testing of web-based drug and alcohol awareness tools is frequently considered an important quality assurance job in order to ensure delivery is reliable and user-centered. Sommerville (2020) refers to a program that is executed to observe errors and find out the expected behavior, while Pressman and Maxim (2022) define software testing as a fundamental verification and validation process applied to verify if a system meets the functional and non-functional requirements of the system. To broaden further, Garousi et al. (2023) describe testing as an engineering methodology for testing, where system quality, performance, security, and reliability can be assessed through manual, automated, and analytical methods that evaluate the technology being built. The test process is based on a sequence of pre-tested stages like test preparation, test structure, environment configuration, test execution, defect identification, and test completion. These stages ensure that system features like authentication, access to educational resources, assessments, and system security are assessed under real-world situations with test scores ranked, analyzed, and used in iterative improvement, particularly in agile environments. These platforms are subject to a diverse range of testing techniques. The most common and popular method is black-box testing, which tests functional behavior without checking the internal code via equivalence partitioning, boundary-value analysis, and scenario testing. While white-box testing concentrates on internal code structures with statement, branch, and path coverage methods, grey-box testing uses a combination of these techniques and works effectively for integration testing. Modern systems are also subject to a variety of specialized testing procedures: model-based testing, security (penetration testing, vulnerability analysis), regression tests to check stability after updates, and performance testing to determine load, stress, and scalability. Testing is also classified as a series of levels. Functional testing verifies the functionality of features such as authentication, assessments, and feedback tools, while non-functional testing inspects performance, usability, compatibility, response time, and security—all the more effective for

platforms that maintain sensitive health data. Additional lifecycle-oriented testing encompasses unit testing of each individual component, integration testing of component interactions, system testing for complete utility, and end-to-end testing of full user workflows. The UI testing for rendering on each device is ensured, whereas the system quality is reinforced through compatibility, accessibility, regression, performance, and security testing. The literature in general indicates that testing web-based drug and alcohol awareness platforms is a multi-level, iterative process that encapsulates functional, non-functional, structured, and specialized forms of testing in place to help safeguard their security, reliability, and user orientation for awareness, prevention, and behavioral change support.

2.7 Challenges in Implementing Web-Based Drug and Alcohol Awareness Platforms

There are a few major challenges for web-based drug and alcohol awareness platforms. Technical and infrastructural problems—poor internet connection, expensive hosting, and unreliable power—stifle system access for such programs. Added to these are security and privacy risks from unauthorized access as well as data breaches, particularly since these platforms process sensitive health data. User engagement issues stem from how to engage users through engaging, interactive content that caters to those with low digital literacy capabilities or disabilities. Content-related challenges are to ensure information is correct, culturally relevant, and easily understood. Challenges of sustainability are caused by short-term investment, low levels of institutional support, and high costs of maintenance. Additionally, cultural perceptions and stigma, along with diverse user requirements, have an impact on adoption and participation. Collectively, these factors stand in the way of the implementation and sustainable success.

2.8 Solutions to the Implementation of Web-Based Drug and Alcohol Awareness Platforms

To solve these issues, it takes a multi-dimensional approach. At the technical level, responsive and flexible technologies (HTML5, CSS3, JavaScript), cloud hosting, scalable servers, optimized code, and offline features allow speed and accessibility improvements in low-resource settings. In order to ensure maximum security and privacy, they should implement strong authentication (e.g., 2FA) and SSL encryption, secure sessions, regular vulnerability testing, data backups, and adherence to data protection standards. Interactive features like quizzes, gamification,

animations, or brief videos can lead to an increase in user engagement. Accessibility elements—screen reader accessibility, adjustable fonts, multilingual integration, and onboarding methods—guarantee inclusion. Good, culturally relevant content is more credible, relatable, and trustworthy when produced in partnership with health experts. The use of a CMS (Content Management System) allows for rapid updates and continued content enhancement. The platforms can develop long-term partnerships with the government, NGOs, and donors to receive funding and embed the platform in their health units or counseling programs for sustainability. Open-source tools can also reduce costs significantly. A user-centered design approach, using pilot work, running awareness initiatives, conducting pilot studies, and regular user feedback collection assists in overcoming contextual issues, reducing stigma, and keeping the platform usable and user-friendly in the long term.

2.9 Conclusion

In conclusion, web-based drug and alcohol awareness platforms in terms of educating, preventing, and achieving behavior change through interactive digital tools. Nevertheless, the challenges of infrastructure constraints, security implications, low participation, poor quality content and sustainability, could be overcome through the adoption of responsive design, secure cloud-based hosting, strong encryption, user-centered development and institutional support. In conclusion, this platform concept for Makerere University Business School is based on solid theoretical and practical considerations to design, implement and engage the user effectively.

RESEARCH METHODS

3.0 PROJECT METHODS

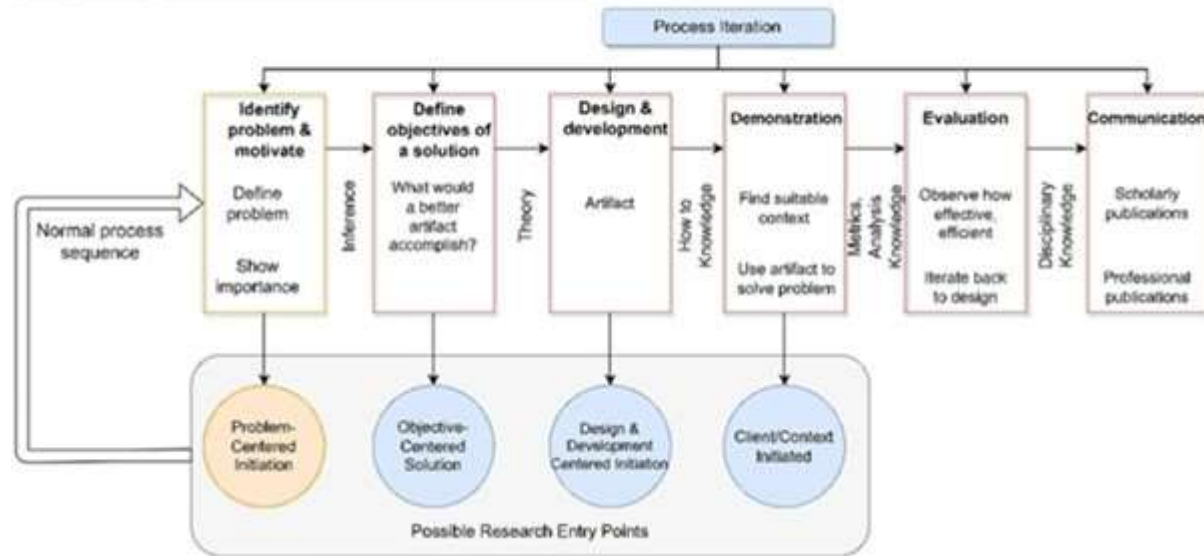
The research methods, research design and approach, population and sample, requirements elicitation techniques, data collection methods, system design approaches, and procedures used in designing a web-based drug and alcohol awareness platform for Makerere University Business School (MUBS) are addressed in this section. It provides in detail the research framework, data collection procedures, system development process, ethical considerations, and tools used in carrying out the research. Systematic design, implementation and evaluation of the digital platform was guided by the Design Science Research (DSR) methodology. As a result of this approach, the designed system effectively promotes awareness, prevention, and positive behavioral change among students concerning drug and alcohol abuse.

3.1 Research Design/Research Approach

The design science research (DSR) approach was taken by the project team based due to its focus on the creation and evaluation of novel artifacts (or systems or models) to address an identified real-world problem (De Sordi, 2021; Tuunanen, Winter, & vom Brocke, 2024). Following this approach, the team aims to build a web-based drug and alcohol education platform by researching user and institutional needs, and hence create a tangible solution to the problem of drug and alcohol abuse among students of Makerere University Business School (MUBS). The DSR process consists of various series of structured stages such as problem identification and motivation, solution objectives identification, designing and development of the system, demonstration of its functionality, measuring its effect, and communicating their findings (De Sordi, 2021). We chose this method because it is a stepwise method or a structured, iterative methodology combining research with the practical aspect of developing a system, thus making the final artifact functional and evidence based. This approach allows the team to systematically construct a usable platform by turning user requirements into a usable system and incorporating feedback during testing and evaluation; as a result, the team can then realize the project's aim of raising both awareness and understanding (through prevention and positive behavioral change) of the problem of drug abuse issues in students.

Design Science Research Process Model

From: Development of a mobile health infrastructure for non-communicable diseases using design science research method: a case study



[A Design Science Approach Model \(Peppers et al. 2017\)](#)

How the various DSR stages will be fused to support the research objectives of this study.

Stage 1: Problem Identification. This stage of Design Science Research process involved identifying the key issue of drug and alcohol abuse faced by MUBS students. The researchers used interviews, conversations with the health department, and online questionnaires to try and determine the prevalence of misuse, the lack of widely available messaging, and the shortcomings of conventional sensitization approaches. We identified an urgent need for a more interactive web-based information source to not only provide reliable information, increase awareness, and support more positive behavioral change.

Stage 2: Objective Definition. The researchers, in this part, established clear aims for the platform development including evaluating the existing awareness support systems at MUBS, reviewing literature on digital health education and behavior-change technology and user and system needs. Goals were also directed at designing, implementing and testing an interactive platform that met students' requirements through experience and student needs on usability, effectiveness and adaptivity. They offered a roadmap for overall system development process.

Stage 3: Design and Development. It was in this phase that we transformed the requirements into a working web-based drug and alcohol awareness platform. User-experienced and capable user interface elements of the design involved website front/backend components for easy exploration, interactivity, security of the data and user experience. The main features were integrated elements such as educational modules, self-assessment tools, multimedia tools, real-time feedback and counseling links for example and the development was done using appropriate web technologies.

Stage 4: Demonstration. At this stage the developed web based platform was presented to the university's students, peer educators and healthcare officers to show the platform features—information on public health, surveys for self-assessment, user feedback in real-time, interactive resources for studying, and links to support services. At MUBS, a first model of its effectiveness to support a culture of awareness and prevention:

Stage 5: Evaluation. Functional testing, user acceptance testing, and peer review was conducted to determine the extent of platform performance/use, as well as consistency with the intended target. Ease of engagement, clarity, readability and communication of the content were gathered and compared with anticipated results. Refactoring was necessary in such a way that the system would be able to effectuate awareness and behavioral change in students.

Stage 6: Communication. During this phase, the development process was outlined and the research conclusions shared with the users. Detailed papers covered the problem analysis of the model, design, implementation of the system, and evaluation. We provided presentations of the system to supervisors, MUBS staff, health department and department heads, highlighting its implications, value and impact for both transparency and the willingness to change.

Stage 7: Conclusion. The last phase of the phase of DSR involves reflecting on the contributions and outcomes that our research has made to the overall picture. The researchers concluded that through this web-based platform MUBS students' awareness on drug and alcohol abuse became available for them to study. This was a key point in overcoming a generation of young addicts who just don't know about it. Moreover, the platform showed itself useful in prevention and positive behavioral modification. This phase also reported limitations faced in the development process and suggested future improvements that could include mobile access, real-time counseling chat functionality or expanding to other institutions.

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3.2 Project Organisation

The project is prepared for MUBS under the leadership of the Dean of Students, together with the Health and Counseling Department. The platform is maintained by the MUBS administration and the Health and Counseling Unit. Users include students, health staff, lecturers, and administrators. Students receive awareness information, join discussions, and seek counseling; faculty and administrators then share content and support programs. The system increases access to drug awareness information and encourages behavioral change within the university community.

3.2.1. Sampling Design/Techniques

The sample for this study of a web-based drug awareness platform for Makerere University Business School (MUBS), was composed of 100 participants who were selected at random. For analysis purposes, the sample size was chosen based on Krejcie and Morgan's study (1970), which was deemed to be representative of the large population of approximately 27,000 students

enrolled in MUBS. The researcher used simple random sampling which guarantees every member of the target population (students, counselors, and health staff) an equal opportunity to participate in the study. This methodology was appropriate, as the project seeks to collect various views and experiences of the students about drug and substance abuse awareness on the university campus. The participants provided useful information on awareness of students, preferred types of communication and type of information which was required on the online platform. This facilitated the design and application of the web-based system, since it satisfied the actual requirement of MUBS people for educating about drug and alcohol.

3.3 Sources of Project Data

The project employed both primary and secondary data sources to extract requirements and provide guidance for the development of the web-based drug and alcohol awareness system for Makerere University Business School (MUBS). Primary data was compiled using interviews, questionnaires and Google Forms conducted with relevant stakeholders; such as the School Counsellor, Dean of Students, lecturers, health officers and selected students. This served as primary data on students' awareness about it, their current problems and favorite features of the tool. The secondary data was compiled from the academic journal databases, web articles, institutional reports, government policy and literature on digital health interventions and university counseling systems. Further information was extracted from MUBS' health department records and prior awareness campaign reports. This was achieved through collating both data sources, which provided a holistic appreciation for the problem, and ultimately assisted in the creation of a user-centred and successful awareness platform that was based on the requirements of the MUBS community.

3.3.1 Requirement Elicitation Techniques

Multiple requirements elicitation techniques were employed as part of the project as it aimed to identify the strengths, weaknesses, and gaps present within the existing drug and alcohol awareness programs at MUBS and to collect relevant user needs for the platform being created. The techniques used were observation, interviews, focus group discussions, questionnaires, mind mapping, and Google Forms. Through observation, the team explored how existing awareness activity was carried out, identifying user engagement mechanisms and limiting factors of current approaches. Lecturers, counselors, health officers, and students were interviewed. The School

Counselor, Mrs. Suzan Birungi, provided good information on issues currently in use and required characteristics in the new system, which made the conversation interesting. Focus Group Discussions (FGDs) facilitated the sharing of experiences, identified shortfalls, shortcomings, and areas needing attention to improve the user experience to enable more interaction and efficacy of the platform between students and counselors. Questionnaires were used to capture quantitative data on awareness, preferred communication channels, and desired features of a system by students. Brainstorming was aided by Mind Mapping which not only helped the team to have a clear sense of the needs, but was able to visualize their relationship with the needs which helps improve how things were organized and priorities were determined for the functionalities. The Google Forms shared through multiple MUBS WhatsApp groups allowed the team to quickly and readily gather data from a much wider and diverse crowd and facilitated inclusivity across faculties. All together, these participatory techniques allowed the project team to collect holistic, user-driven requirements and structured the development of a user-centered, interactive, and functional web-based drug and alcohol awareness platform meeting the needs of the MUBS community.

3.4 System Analysis and Design Approaches

The project utilized Object-Oriented Design (OOD) method for analyzing and designing the web-based drug and alcohol awareness platform for MUBS. OOD constructs the system in terms of objects (like students, counselors, administrators, awareness resources, etc.) with specific attributes and behaviors. These objects interact to build and carry out system functions in order to form a modular, reusable and maintainable system. OOD models real-world entities more naturally and enables scalability, flexibility, encapsulation and reusability making it a better choice over Structured Design approach. The above characteristics make OOD better suited to modern web applications.

In this project, OOD was applied through UML tools (Use Case Diagrams, Class Diagrams) and Sequence Diagrams which were used to model software features in order to model system components, users and system functionalities, define user interactions, and capture OOD requirements. Key modules of the platform, including registration, self-assessment tools, counseling features, and feedback mechanisms were designed as interactive objects.

More broadly, OOD was selected as it allows to implement user-centered, scalable and highly maintainable system. Given its modular construction and real-world modelling functionality, it is suitable for meeting the project's aims and uses a system of design unlike regular Structured Design.

3.4.1 Design Techniques

Several design strategies were adopted to help define and shape the development, layout, and the user experience of the MUBS web-based drug and alcohol awareness platform. These methods enabled the visualization and modeling of system elements, interactions between different items of the system, and improvements are done in conjunction with both functional and interface design procedures. The use of Use Case Diagrams was employed to depict user interactions and describe system functionality for students, counselors, and administrators. Entity Relationship (ER) Diagrams were created to represent the structure of the database and clarify relationships among its main entities, such as users, counseling sessions, awareness materials, and feedback records. Wireframes were developed to help make the user interface easier by aligning the layout of each key page in a way that makes navigation more intuitive. Prototypes with low and high fidelity were built to model the system and get feedback from stakeholders allowing for early usability improvements. A System Architecture Diagram was used to define the interaction between the client-side interface, server-side logic, and database so the platform would be scalable and maintainable as well. User Journey Maps were invaluable for mapping end-to-end user experiences, guiding improvements in engagement and interaction flows as well. Collectively, these design principles allowed a detailed overview of the entire system development process, ensuring a user-centered, structured design as well as a user-oriented system that meets the project requirements.

3.5 Anticipated Project Constraints

The project team expects a number of limitations for their creation of the web-based drug and alcohol awareness platform, targeted specifically at MUBS. First, the sensitive nature of student drug and alcohol abuse research and the paucity of institutional records may complicate accurate and timely data acquisition on the subject. To overcome this barrier, the team will draw from reliable academic sources, government health reports, and international databases. Second,

inadequate access to high-level technical tools could impede system design and development. This challenge can be addressed via open-source development tools like PHP, MySQL, HTML5, CSS3, and JavaScript. Third, academic timelines can impose time constraints on the times available for development and testing. The team will set up a schedule, distribute tasks intelligently, and use prototyping for incremental enhancements to deal with this. Finally, user resistance, combined with low user engagement, can occur if students or staff are reluctant to use the system or share confidential content. They also will implement awareness activities, protect confidentiality, and work to adopt user-friendly features to help everyone to engage with their system and build trust.

3.6 Ethical Considerations

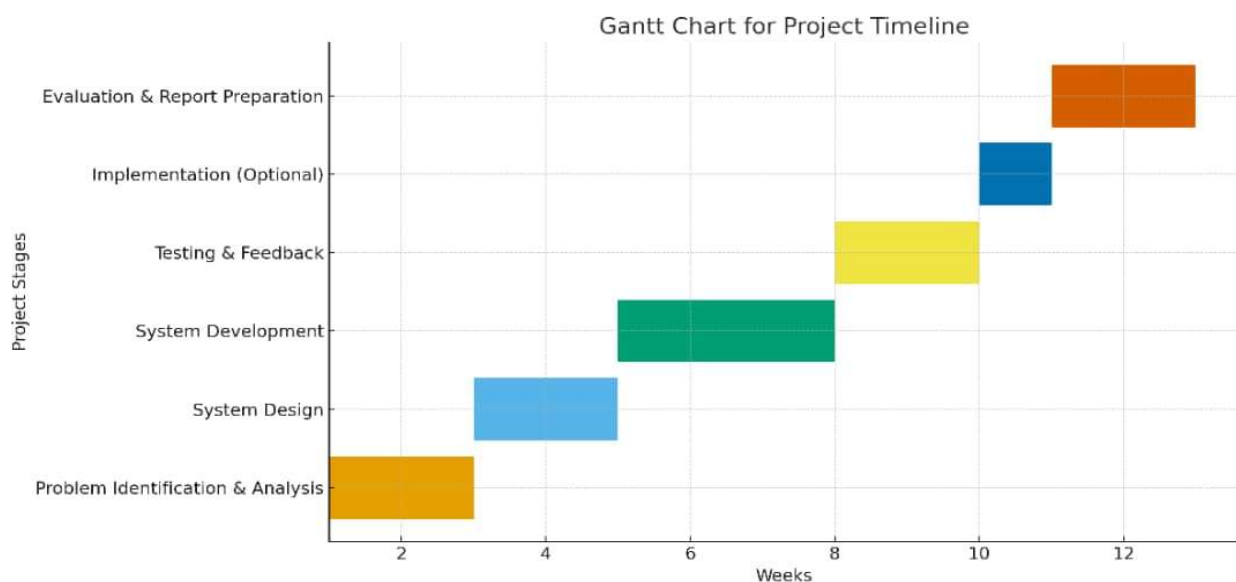
This study involved multiple ethical concerns to protect participants and adhere to strict guidelines regarding the safety and protection of any vulnerable data on drug and alcohol awareness. All participants (students, counselors, and health officers) gave written informed consent, which included an explanation of why the study was being conducted, what type of data would be collected, their voluntary participation, and an opportunity to withdraw at any point throughout the study. The research team could only access personal data that was anonymized to prevent further violations of confidentiality and privacy. Sensitive data on the platform was not exposed and accordingly information was protected through security measures such as authentication and access control. The principle of non-maleficence was applied in the study ensuring that no participants would suffer or be uncomfortable. Content to raise awareness was screened to prevent stigmatization and to confirm the accurate and supportive information. To ensure that ethical approval was obtained and adhered to institutional protocols at the MUBS level, ethical approval was sought from the relevant MUBS authorities, such as the Dean of Students and the Institutional Ethics Committee, to ensure adherence to institutional research standards. In conclusion, these ethical processes served to ensure that participants' rights were respected, data was secure, and the platform maintained trust and responsible use.

3.7 Timeline & Milestones

The project team developed a detailed timeline and milestones to ensure systematic progress in the development of the web-based drug and alcohol awareness platform for Makerere University

Business School (MUBS). The timeline outlines key deliverables, deadlines, and stages of the project.

Project Stage	Key Activities	Duration	Milestone/Deliverable
Problem Identification & Analysis	Observation, interviews, FGDs, questionnaires, mind mapping and google forms.	Week 1 – Week 2	Completion of requirement gathering report
System Design	UML diagrams, ER diagrams, wireframes, prototypes	Week 3 – Week 4	Design documents and prototypes completed
System Development	Frontend & backend coding, database setup	Week 5 – Week 7	Functional prototype ready
Testing & Feedback	Functional, usability, and user acceptance testing	Week 8 – Week 9	Test report and refined prototype
Implementation (Optional)	Deployment in MUBS environment	Week 10	System deployed (if applicable)
Evaluation & Report Preparation	Report writing, presentation, supervisor review	Week 11 – Week 12	Final project report and presentation ready



REFERENCES

- Abdul-Aziz, M., et al. (2012). Systematic approaches to software design and development. *Journal of Software Engineering*, 7(3), 45–59.
- Adebayo, T., & Olatunji, T. (2022). Web-based health interventions for substance abuse: A systematic review. *Journal of Digital Health*, 3(1), 12–28.
- Akinyemi, O., et al. (2023). Collaborative web platforms for educational institutions. *International Journal of Web Applications*, 15(2), 34–49.
- Alexa, M., et al. (2018). User-centered design and usability evaluation for digital platforms. *Human-Computer Interaction Journal*, 9(4), 101–119.
- Alves, R. F. (2022). Health On You programme: Development and implementation of web-based health education intervention for university students. *Health Education Journal*, 81(6), 667–678. <https://doi.org/10.1177/00178969221107876>
- Atmaja, A., et al. (2020). Foundations of web-based systems: Architecture and protocols. *Web Systems Journal*, 5(1), 10–24.
- Boss, L., et al. (2017). Personalized feedback in web-based health interventions. *Digital Health Research*, 2(2), 15–29.
- Brown, T., et al. (2019). Server-side technologies for scalable web applications. *International Journal of Web Development*, 6(1), 45–60.
- Chaleshtari, S., et al. (2022). Security testing for sensitive web applications. *Journal of Cybersecurity*, 10(1), 7–20.
- Chauhan, A., & Singh, R. (2021). Testing methodologies in web-based applications. *International Journal of Software Testing*, 8(2), 12–27.
- Chang, T., et al. (2023). Effectiveness of a web-based intervention for preventing substance use in young adults. *Journal of Medical Internet Research*, 25, e40157. <https://www.jmir.org/2023/1/e40157/>
- Chang, Y., & Chen, J. (2023). Effectiveness of a web-based intervention for preventing substance use in young adults in Taiwan: Quasi-experimental study. *Journal of Medical Internet Research*, 25, e40157. <https://doi.org/10.2196/40157>

- Dospinescu, A., et al. (2013). Service-oriented architecture in web-based systems. *Software Architecture Journal*, 7(1), 14–28.
- Dorofeyeva, E., et al. (2015). MVC framework applications in modern web development. *Journal of Web Engineering*, 10(2), 21–37.
- Enciso, R., et al. (2017). Client-server architectures for scalable web platforms. *International Journal of Distributed Systems*, 6(2), 18–34.
- Faccio, E., Iudici, A., Turco, F., Mazzucato, M., & Castelnovo, G. (2017). What works for promoting health at school: Improving programs against substance abuse. *Frontiers in Psychology*, 8, 1437. <https://doi.org/10.3389/fpsyg.2017.01437>
- Griffin, J. L., et al. (2022). Effectiveness of a hybrid digital substance abuse prevention program. *Frontiers in Digital Health*, 4, 931276. <https://doi.org/10.3389/fdgth.2022.931276>
- Haji, M., et al. (2017). Technical infrastructure requirements for web systems. *Web Systems Journal*, 4(2), 12–28.
- Johansson, M., et al. (2016). Assessment tools in digital substance abuse interventions. *Journal of Digital Health*, 1(2), 14–28.
- Johnson, D., et al. (2021). Effective strategies for web-based health interventions. *Public Health Informatics*, 7(2), 19–34.
- Kamulegeya, L. H., Kitonsa, P. J., Okolimong, E., Kaudha, G., Maria, S., & Nakimuli-Mpungu, E. (2020). Prevalence and associated factors of alcohol use patterns among university students in Uganda. *Pan African Medical Journal*, 37(339). <https://doi.org/10.11604/pamj.2020.37.339.21136>
- Kirabira, J., Kagoya, E. K., Mpagi, J., Nakimbugwe, G., Musisi, S., Kinyanda, E., & Akena, D. (2024). Burden of alcohol and other substance use and correlates among undergraduate students at Busitema University in rural Eastern Uganda after COVID-19 lockdown. *Scientific Reports*, 14, 6194. <https://doi.org/10.1038/s41598-024-56861-1>
- Lee, J., & Lee, S. (2021). Educational web platforms and online learning management. *International Journal of Educational Technology*, 10(3), 55–70.

- Li, W., et al. (2021). Content management systems for interactive web platforms. *Web Development Review*, 12(1), 18–35.
- Marenkov, A., et al. (2018). Designing user-friendly web interfaces. *Journal of Human-Computer Interaction*, 14(2), 22–40.
- Maru, D., et al. (2009). ICT infrastructure challenges in digital interventions. *Journal of Information Technology*, 6(1), 11–26.
- Miller, T., et al. (2021). Analytics and monitoring in web-based health platforms. *Health Informatics Journal*, 9(2), 35–50.
- Montagud, C., et al. (2017). Modern web technologies for interactive platforms. *International Journal of Web Development*, 8(2), 15–30.
- Monarque, M., Sabetti, J., & Ferrari, M. (2023). Digital interventions for substance use disorders in young people: Rapid review. *Substance Abuse Treatment, Prevention, and Policy*, 18, 13. <https://doi.org/10.1186/s13011-023-00518-1>
- Mnunguli, J. P., & Kisangiri, M. (2018). Evidence-based practices for drug abuse information management and awareness approaches. *Journal of Information Systems Engineering & Management*, 3(2), 12.
- Muswede, T., & Roelofse, C. (2018). Drug use and postgraduate students' career prospects: Implications for career counselling intervention strategies. *The Journal for Transdisciplinary Research in Southern Africa*, 14(1), 1–8. <https://doi.org/10.4102/td.v14i1.509>
- Musyoka, C. M., Mbwayo, A., Donovan, D. M., & Mathai, M. (2023). Student peer mentoring: Feasibility and acceptability of mHealth-based tool for alcohol and substance abuse prevention by peer mentors at a university in Kenya. *PLOS Digital Health*, 2(1), e0000177. <https://doi.org/10.1371/journal.pdig.0000177>
- Polyakov, A., et al. (2016). Functional capabilities in web-based systems. *Journal of Web Applications*, 12(2), 30–45.
- Pressman, R. (2020). *Software engineering: A practitioner's approach* (9th ed.). McGraw-Hill.

- Rainisch, B., Dahlman, L., Vigil, J., & Forster, M. (2022). Using a multi-module web-app to prevent substance use among students at a Hispanic Serving Institution: Development and evaluation design. *BMC Public Health*, 22, 1987. <https://doi.org/10.1186/s12889-022-14328-3>
- Rainisch, B. K., et al. (2022). Using a multi-module web-app to prevent substance use among students. *BMC Public Health*, 22, 13428. <https://doi.org/10.1186/s12889-022-13428-x>
- Renko, J. (2018). Self-monitoring tools in behavioral health interventions. *Journal of Digital Behavior*, 3(1), 10–22.
- Rojas, M., et al. (2025). Web infrastructure for scalable applications. *International Journal of Web Engineering*, 17(1), 15–33.
- Sun, Y., et al. (2022). Adaptive learning paths in digital interventions. *Journal of Learning Analytics*, 5(1), 20–35.
- Tomazic, T., & Jerkovic, O. (2020). Online interventions for the selective prevention of illicit drug use in young drug users: Exploratory study. *Journal of Medical Internet Research*, 22(4), e17688. <https://doi.org/10.2196/17688>
- White, A., et al. (2010). Integrated components in digital behavioral interventions. *Journal of Health Informatics*, 5(1), 12–28.
- Yu, X. (2019). Testing strategies for web-based educational applications. *Journal of Software Testing*, 7(1), 25–42.

APPENDICES

APPENDIX I: Proposed Project Budget

Item	Description	Estimated Cost (UGX)
Domain & Hosting	Annual hosting + domain name for deploying the awareness platform	250,000
Internet & Data	For research, meetings, testing, and uploading system files	150,000
Transport Costs	Movement for requirement elicitation, interviews, meetings with MUBS Health Department	120,000
Stationery	Printing, photocopying, questionnaires, and documentation	80,000
Contingency	Unforeseen expenses in project execution	100,000

APPENDIX II: Data Collection Tools

Interview Guide (For MUBS Health Department & Counselors)

- What are the common drug and alcohol-related challenges faced among MUBS students?
- How do you currently deliver awareness content to students?
- What limitations exist in your current awareness programs?
- What features would you expect in a digital awareness platform?
- How often do students seek counseling related to substance abuse?

Questionnaire (For MUBS Students)

- Have you attended any drug or alcohol awareness sessions at MUBS? (Yes/No)
- How do you prefer to receive awareness information? (Website, Social media, Posters, Peer educators, Tutors)
- Have you or someone you know been affected by alcohol or drug use? (Yes/No, If yes, explain)
- What features would be useful in a digital awareness platform? (Self-assessment quizzes, Educational videos, Counseling contacts, Anonymous reporting, Discussion forums)
- What challenges prevent students from participating in awareness programs?

APPENDIX III: Schedule of Activities / Gantt Chart

Activity	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
Problem Identification	✓	✓				
Requirement Elicitation		✓	✓			
Literature Review	✓	✓	✓			
System Design			✓	✓		
System Development				✓	✓	
System Testing & Evaluation					✓	✓
Proposal Writing & Editing	✓	✓	✓	✓	✓	✓

