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**MAKERERE UNIVERSITY BUSINESS SCHOOL****A HOSPITAL INFORMATION MANAGEMENT  
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**A Project Proposal Submitted to the Faculty of Computing & Informatics of Makerere  
University Business School in Partial Fulfilment for the Award of the Degree of  
Bachelor of Business Computing of Makerere University**

## Declaration

We, the undersigned, declare that this project proposal titled 'A Hospital Information Management System for AMSAM Clinic' is our original work and has not been submitted, either in whole or in part, for any academic award at any other institution. All sources of information used in preparing this proposal have been acknowledged and appropriately referenced. Where the work of others has been used, this has been clearly cited. We accept responsibility for the content of this proposal and consent to its use by the Faculty of Computing & Informatics for academic assessment purposes.

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## APPROVAL

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

Signed.....

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## CHAPTER ONE

### 1. INTRODUCTION

In recent years, health care worldwide has been moving towards digital solutions because hospitals and clinics are realizing that relying only on paper files slows down service delivery and can compromise patient safety. Health Information Systems (HIS) have been introduced to make it easier to store, access, and share patient records across different departments. According to (World Health, 2022), HIS are essential in strengthening health systems because they improve decision-making, reduce errors, and help facilities to deliver quality care. Many countries in Africa, including Uganda, are now trying to integrate digital health strategies into both public and private hospitals (World Health Organization, 2021).

In Uganda, most hospitals and clinics, especially private ones, still rely heavily on manual systems. Paper-based record keeping is common, and this creates challenges such as misplaced files, difficulty in accessing past patient information, and delays in treatment. Research by (Nabukenya, 2023) shows that although digital health systems have been introduced in some larger hospitals, smaller private clinics are left behind mainly due to costs and lack of technical

skills. This gap creates inequalities in service delivery and contributes to inefficiencies in patient management.

AMSAM Clinic, located in Kampala, is a privately owned clinic that has been operating for more than five years. It offers services in general medicine, obstetrics and gynaecology, paediatrics, minor surgery, dental care, and pharmacy. The clinic currently depends on pen and paper for recording patient information and medication orders. This method has served the clinic since its establishment in 2019, but as the patient numbers increase, it has become more difficult for staff to keep up. The clinic officer, Mr. Robert Mugume, who has worked in AMSAM for four years and has five years of medical experience, explained that the system is time-consuming and requires continuous writing, which can be tiring for staff. Although major errors are rare, he confirmed that the current method is inefficient and makes it hard to quickly trace old records when needed. He further noted that a digital system would make record keeping safer and more accessible, though cost is the biggest obstacle.

This research will focus on the health sector, specifically AMSAM Clinic because health directly affects lives and requires accurate, reliable, and timely information to make critical decisions. Mr. Robert Mugume of AMSAM Clinic says the impact of poor information management in health care is far more serious than in many other sectors because it can lead to delays in treatment, wrong prescriptions, or even loss of life. For that reason, introducing a hospital information management system at AMSAM Clinic is not only about efficiency but also about patient safety and the long-term growth of the clinic.

Health Information Systems (HIS) have been successfully implemented in several developing countries to address the inefficiencies associated with manual record-keeping. In Rwanda, the adoption of (OpenMRS, 2024) a free and open-source electronic medical record system enabled clinics to centralize patient data, reduce treatment delays, and improve continuity of care, even in rural areas with limited infrastructure. Similarly, Kenya's (AfyaEHMS, 2023) platform has enhanced maternal and child health services by enabling real-time tracking of patient visits, prescriptions, and referrals. These examples demonstrate that even in low-



resource settings, digital health systems can significantly improve workflow, reduce medical errors, and support better decision-making. Drawing from these successes, this study proposes a tailored hospital information management system for AMSAM Clinic to address its operational challenges and contribute to broader efforts in strengthening Uganda's private healthcare sector.

### 1.1 Problem Statement

Efficient information management is critical in the delivery of quality healthcare services. However, many health facilities in Uganda, particularly private clinics, continue to rely on paper-based systems for recording and managing patient information. This reliance on manual methods presents significant challenges, including misplaced or incomplete files, difficulty in accessing historical patient data, delays in treatment, and increased workload for healthcare staff. Research by (Nabukenya, 2023) indicates that while some large hospitals have begun adopting digital health systems, smaller private clinics are often left behind due to high implementation costs and limited technical expertise. This gap has created inequalities in service delivery and contributes to inefficiencies in patient management.

AMSAM Clinic, a privately owned facility in Kampala that has been operating for over 5 years, faces these exact challenges. Despite offering a wide range of services including general medicine, obstetrics and gynaecology, paediatrics, minor surgery, dental care, and pharmacy the clinic still depends entirely on pen and paper. As patient numbers continue to grow, the system has become increasingly unsustainable. Staff members spend considerable time writing and searching through files, which is not only tiring but also slows down service delivery. While major errors are infrequent, the inability to quickly retrieve patient records compromises efficiency and can potentially affect patient safety. According to the clinic officer, Mr. Robert Mugume, a digital solution would greatly improve accessibility, reliability, and safety of medical records, but financial limitations remain the biggest obstacle.

According to the clinic officer, Mr. Robert Mugume, a digital solution would significantly improve accessibility, reliability, and safety of medical records, but financial limitations remain the biggest obstacle.

Therefore, there is a pressing need to develop and test a cost-effective and user-friendly Hospital Information Management System for AMSAM Clinic. Such a system will not only improve operational efficiency but also enhance patient safety, support accurate medical decision-making, and contribute to the clinic's long-term sustainability.

### General Objective

To develop and test a hospital information management system for AMSAM Clinic that improves record keeping, enhances efficiency, and strengthens patient care.

### Specific Objectives

1. To identify the challenges faced by staff and patients.
2. To identify the requirements for a hospital information management system, that addresses inefficiencies in data handling, accessibility, and service delivery.
3. To develop and test the information management system/app that will be suitable for AMSAM Clinic, focusing on secure record keeping and electronic drug ordering.

### 1.2 Justification

Health systems all over the world are under pressure to deliver safe, timely, and efficient services. Hospitals and clinics rely heavily on accurate patient information for diagnosis, treatment, and follow-up care. Studies show that digital health solutions are no longer optional but necessary for modern health care. For example, (Abedin et al., 2022) argued that electronic hospital systems support continuity of care, reduce medical errors, and improve patient outcomes. This makes the adoption of a hospital information system a scientifically relevant area of research.

At the local level, AMSAM Clinic currently depends on paper-based records and stand-alone registers. While this traditional method has the advantage of being simple and inexpensive, it also creates challenges such as misplaced files, delayed access to patient history, and difficulties in coordinating services across different departments. Given that AMSAM is a growing private clinic, it requires an information system that matches its workload and

patient demand. As (Alotaibi & Federico, 2021)observed, the use of digital record systems in small and medium health facilities enhances workflow, reduces duplication, and supports better decision-making.

This research is therefore justified because it addresses both a practical problem at AMSAM Clinic and a wider scientific concern in health informatics. The study not only highlights the gaps in current practices but also suggests a feasible hospital information system tailored to the clinic's needs. In the long term, the findings can serve as a reference for other small health centres in Uganda that wish to shift from paper-based records to electronic health solutions.

### 1.3 Scope

#### 1.3.1 Subject Scope

This study primarily focused on developing a Hospital Information Management System for AMSAM clinic to address delays caused by manual record-keeping. It emphasizes secure digital storage of patient data, streamlined medication management, and improved departmental communication. The system is tailored to the clinic's workflows and resource limitations, aiming to enhance service delivery and patient safety.

#### 1.3.2 Geographical Scope

This study is geographically limited to AMSAM Clinic in Nakawa Division, Kampala. The clinic serves as the pilot site for designing and testing the Hospital Information Management System (HIMS), allowing focused evaluation of its impact on patient data management and administrative efficiency in a low-resource setting.

#### 1.3.3 Time Scope

The study will be conducted over a period of 4 months.

### 1.4 Significance

AMSAM Clinic requires a Hospital Information Management System (HIMS) to address inefficiencies in accessing, recording, and coordinating patient information. The current

reliance on paper-based records leads to misplaced files, delayed retrieval, and fragmented service delivery, which compromise the quality of care and strain administrative operations.

Implementing a digital system will streamline workflows, support timely and informed clinical decisions, and reduce the administrative burden on staff. It will also improve patient data accuracy and continuity of care across departments.

In the long term, this study offers a practical model for digitized health information management systems that can guide other small clinics in low-resource settings away from manual record-keeping toward more efficient, technology-driven solutions.

## CHAPTER TWO

### 2. LITERATURE REVIEW

#### 2.1 Introduction

This chapter reviews existing studies and evidence on Hospital Information Management Systems (HIMS) and their impact on healthcare efficiency, accuracy, and patient outcomes. It focuses on small health facilities such as AMSAM Clinic, which still rely heavily on manual methods for data management. The literature review is organized under six main themes as guided by the research supervisor: clinical and operational efficiency; data quality and reporting; adoption drivers and human factors; infrastructure, cost, and sustainability; interoperability and privacy; and equity and contextual design.

The review draws upon reliable international and Ugandan-based sources including (World Health, 2022), (Kabukye, 2021), (Nabukenya, 2023), (Alotaibi & Federico, 2021) and (Abedin et al., 2022), who have analysed the benefits and limitations of digital health systems in low-resource settings.

#### 2.1 Clinical and Operational Efficiency

Health Information Systems (HIS) significantly improve workflow, reduce paperwork, and enhance coordination across departments. (Abedin et al., 2022) found that electronic hospital systems reduce medical errors by up to 30% and shorten patient record retrieval time from an average of 15 minutes using manual files to 5 minutes in digital systems. Similarly, (World Health, 2022) emphasizes that digital health tools improve clinical efficiency and enable faster decision-making.

At AMSAM Clinic, records are currently managed manually using paper files. Although this approach is inexpensive, it causes delays when locating patient files or tracking medication history. In Uganda, a study by (Nabukenya, 2023) revealed that over 65% of private clinics experience delays in record retrieval and data duplication due to manual record systems.

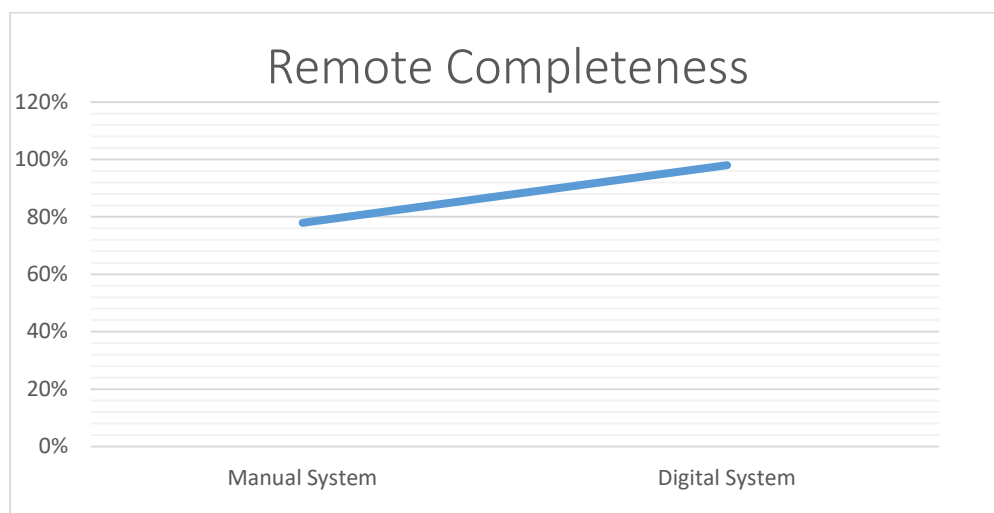
## 2.2 Data Quality, Reporting and Public Health Integration

Manual systems make it difficult to maintain complete and accurate records. According to (World Health, 2022), countries that adopted electronic health systems achieved 98–99% accuracy in patient information, compared to 75–80% in paper-based environments. Digital tools enable instant data sharing with national systems thus improving public health reporting.

(Kabukye, 2021) found that incomplete and illegible records remain a major problem in Uganda's private clinics, leading to misdiagnoses and poor reporting to the Ministry of Health. A digital HIMS would automate reporting, minimize human error, and make it easier for facilities like AMSAM Clinic to send monthly data to the Ministry of Health in real time.

Suggested Chart (Insert in Word):

Line chart showing report completeness (in %)



Source: (World Health, 2022); (Kabukye, 2021).

## 2.3 Adoption Drivers and Human Factors

The success of digital systems in hospitals depends on staff readiness, computer literacy, and management support. (Alotaibi & Federico, 2021) noted that in developing countries, over 40% of digital health projects fail because of limited training and user resistance. In Uganda,

many healthcare workers are familiar with mobile technology but lack experience using medical software (Kabukye, 2021).

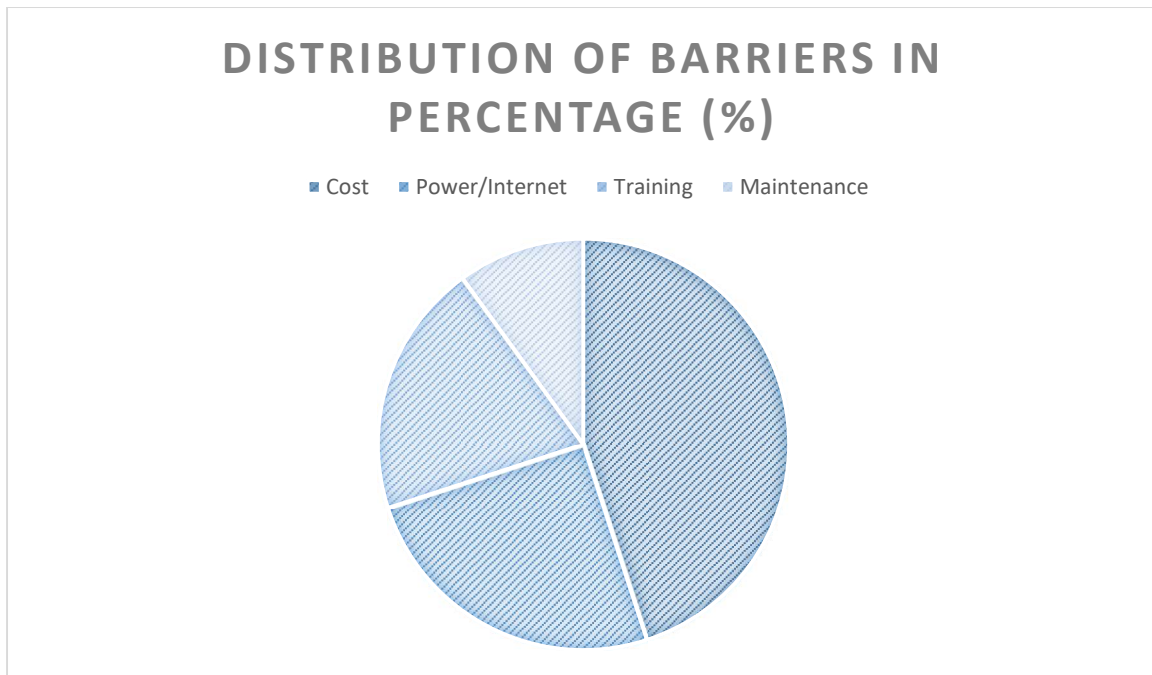
AMSAM Clinic's staff expressed willingness to adopt a digital system, highlighting "ease of access" and "reduced writing" as major motivations. However, they also cited cost and lack of training as barriers. According to (Nabukanya, 2023) motivation and perceived usefulness are strong predictors of whether staff will accept a new HIMS.

## 2.4 Infrastructure, Cost and Sustainability Challenges

One of the most persistent challenges in digital health adoption is the cost of implementation and maintenance. (Alotaibi & Federico, 2021) explain that digital transformation in healthcare often requires initial investments exceeding \$10,000 USD for servers, software, and training, which is unaffordable for many small clinics. Similarly, (Kabukye, 2021) highlighted unreliable power supply and poor internet as additional barriers in Uganda's rural and peri-urban areas.

At AMSAM Clinic, management confirmed that the main obstacle to implementing an HIMS is the cost of infrastructure. Although the clinic acknowledges that digitalization would improve workflow and record safety, it lacks funds to acquire computers and hire IT specialists. (World Health, 2022) stresses that governments and partners should subsidize system costs for small private health facilities to ensure long-term sustainability.

### Pie Chart showing Distribution of Barrier



Source: Adapted from (Kabukye, 2021) and AMSAM interview data (2025).

## 2.5 Compatibility, Standards and Privacy

Compatibility refers to how well health systems share and protect data across institutions. (World Health Organization, 2021) emphasizes the need for standardization in patient data formats to allow smoother reporting and privacy compliance. Systems such as (OpenMRS, 2024) already provide open-source solutions and ensure compliance with the Ministry of Health's digital standards.

For AMSAM Clinic, adopting a modular HIMS and uses authentication features like user logins, encryption, and audit trails would enhance patient privacy and reduce unauthorized access. This aligns with (World Health, 2022) call for safe, compatible systems in African healthcare environments.



## 2.6 Equity, Access and Contextual Design

Digital health should not only improve efficiency but also ensure inclusivity. (World Health Organization, 2021) and (Abedin et al., 2022) both note that well-designed systems should consider local context — low bandwidth, language, and device availability. (AfyaEHMS, 2023) project in East Africa demonstrates that simplified, mobile-friendly systems can be affordable for clinics without full-time IT staff.

AMSAM Clinic, being a small privately owned facility, needs a lightweight and user-friendly system with offline access for when the internet is down. As (Kabukye, 2021) states, systems designed for low-resource settings must emphasize simplicity and reliability over complexity.

### Comparison Between Large Hospital Information Systems and Clinic Level HIMS

Feature	Large Hospital HIMS	Clinic-Level HIMS (AMSAM)
Cost	High (above \$10,000)	Low (\$1,000-\$2,000)
Internet Dependence	High (requires continuous connection)	Moderate (offline-capable)
Staff Training	Intensive, requires IT specialists	Basic 1-2 days of training
Hardware	Dedicated servers and desktops	Laptops or tablets
Maintenance	Managed by in-house IT department	Outsourced or occasional technical support
Implementation Time	6-12 months	1-3 months
Scalability	Complexity, multi-departmental	Simple, single-facility focus

Source: (World Health, 2022); (Kabukye, 2021); (AfyaEHMS, 2023).

## 2.7 Summary of Literature

The reviewed literature shows that digital health systems play a major role in improving efficiency, data quality, and access to healthcare information. Studies consistently reveal that while manual systems are affordable and simple, they lead to inefficiencies such as delays, data loss, and poor coordination. Digital systems, though costly to implement initially, offer

long-term benefits in terms of accuracy, reporting, and integration with national health databases.

For AMSAM Clinic, adopting an affordable and user-friendly Hospital Information Management System can enhance productivity, reduce paperwork, and improve patient care provided that cost, training, and infrastructure challenges are addressed.

## CHAPTER THREE

### 3. RESEARCH DESIGN AND METHODOLOGY

#### 3.0 Introduction

This chapter will outline the methodology that will be utilized in creating the Hospital Information Management System for AMSAM Clinic.

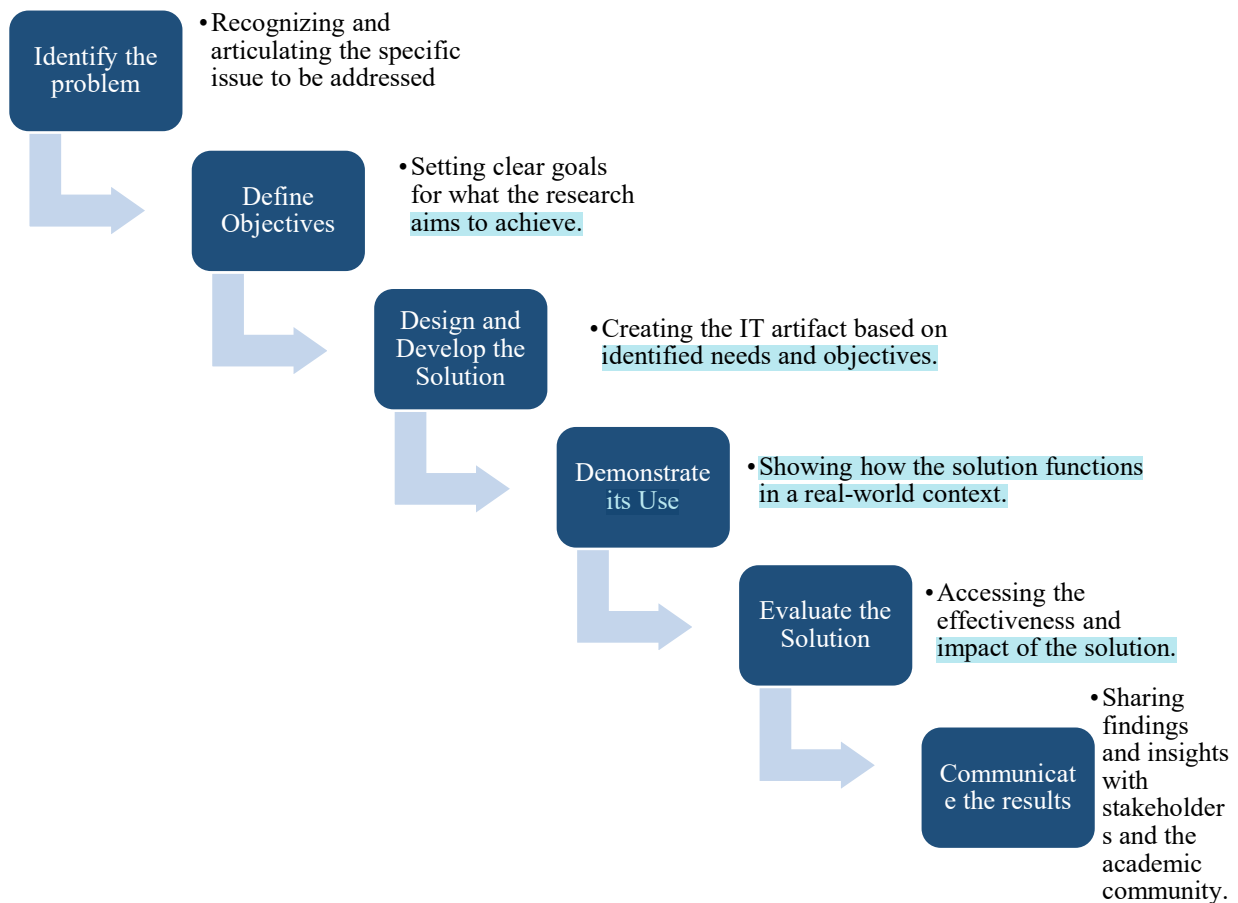
#### 3.1 Research Approach

Research in information systems can adopt several approaches depending on the study objectives. Common approaches include quantitative research, which emphasizes numerical data and statistical analysis to test theories; qualitative research, which explores experiences, perceptions, and processes through interviews, observations, and document analysis; and mixed-methods research, which combines both qualitative and quantitative techniques to provide a clear understanding of a problem. While these approaches are valuable for interpreting the observations or evaluating outcomes, they primarily focus on analysis and interpretation rather than the creation of innovative solutions.

In contrast, the Design Science Research (DSR) approach is specifically suited for studies aiming to develop and evaluate artefacts that solve real-world problems (Hevner et al., 2021). DSR emphasizes iterative design, implementation, and assessment, ensuring that the solution is both practical and rigorously validated. For this study, DSR is particularly relevant because the objective is to create a Hospital Information Management System (HIMS) for AMSAM Clinic that addresses specific challenges in patient record management, workflow efficiency, and data accuracy. By adopting DSR, the study not only analyzes existing problems but also produces a functional artefact that can be directly applied in the clinical setting. Therefore, DSR is the most appropriate approach, as it aligns with both the practical and scholarly goals of this research, whereas purely observational or descriptive approaches would not facilitate artefact creation or iterative testing.

### 3.2 Why DSR:

#### Design Science Research Process



Firstly, DSR allows the researcher to design a practical HIMS tailored to AMSAM Clinic's needs. Unlike general research approaches that focus on observation or analysis alone, DSR emphasizes the creation of a solution in this case, a demo HIMS (Hevner et al., 2021). This system will be designed based on the clinic's current workflows, staff capacity, and resource

limitations. By grounding the design in actual clinic operations, the proposed solution becomes more relevant, usable, and sustainable.

Secondly, DSR focuses on both problem-solving and knowledge contribution, which is essential for small private clinics in Uganda. While solving AMSAM Clinic's immediate challenges, the research also contributes to broader academic knowledge in health informatics and system design for low-resource settings (Hevner et al., 2021) (Peffer et al., 2022). The findings can inform future implementations in similar clinics, helping bridge the digital divide in Uganda's healthcare sector.

Finally, (Peffer et al., 2022) demonstrate that DSR has been successfully applied in designing HIMS in low-resource settings, making it a proven and applicable methodology for this study. Their framework outlines clear stages from problem identification to artefact evaluation that align well with the goals of this research. By following these stages, the study ensures methodological rigor while producing a solution that is both innovative and grounded in practical realities.

Other approaches, such as quantitative surveys or case-only observational studies, were not chosen because they do not provide a framework for designing and testing a new system. DSR allows both analysis of the current system and the creation of a suitable solution, which aligns with the objectives of this study.

### 3.2 Stages of the Design Science Research Approach

The DSR approach will follow six stages as outlined by (Peffer et al., 2022):

#### Stage 1: Problem Identification and Motivation

This initial stage involves thoroughly understanding the challenges faced by AMSAM Clinic due to its reliance on manual record-keeping. Currently, the clinic uses handwritten files to document patient consultations, prescriptions, and departmental reports. While this method is simple and low-cost, it has become increasingly inefficient as patient numbers grow. Staff members report fatigue from continuous writing, difficulty retrieving old records, and delays in service delivery.

To accurately capture these limitations, the research will involve **interviews with clinic staff**, including the clinic officer, Mr. Robert Mugume, and **direct observation of daily practices**. These activities will help identify specific pain points in the current system, such as time consumption, risk of data loss, and lack of coordination between departments. Understanding these issues is essential for designing a solution that is both relevant and practical.

### **Stage 2: Define Objectives for a Solution**

Once the problems are clearly understood, the next step is to define the objectives of the proposed hospital information system. These objectives should directly address the challenges identified in Stage 1 and guide the overall design of the system. For AMSAM Clinic, the system's objectives include improving patient record management, enhancing workflow efficiency, supporting effective communication among healthcare staff, and promoting informed decision-making. By establishing these objectives, the system can be designed to meet the clinic's core needs while aligning with broader goals in health informatics, such as improving patient safety and facilitating quality healthcare delivery.

### **Stage 3: Design and Development**

- In this stage, the research team will develop a demo framework of the proposed Hospital Information Management System (HIMS). This stage translates the objectives and requirements identified earlier into a tangible system model. It is useful in the research because it allows the team to test design concepts, evaluate functionality, and identify potential improvements before full implementation. By creating a demo system, the study demonstrates practical solutions to the clinic's challenges while providing insights into the feasibility and effectiveness of digital health interventions in small healthcare settings.
- Diagrams showing how different modules (e.g., patient records, pharmacy, departmental communication) interact.
- A database schema outlining how patient data will be stored, accessed, and secured.
- Workflow processes that illustrate how staff will use the system in their daily routines.

The system will be built using simple, cost-effective technologies that are suitable for a small private clinic like AMSAM. This may include open-source platforms, lightweight databases, and user-friendly interfaces that require minimal training. The goal is to ensure that the system is not only functional but also affordable and easy to adopt within the clinic's existing infrastructure.

#### **Stage 4: Demonstration**

In this stage, the proposed Hospital Information Management System (HIMS) will be demonstrated to AMSAM Clinic staff to illustrate how it addresses the challenges identified during the problem analysis. The demo will include visual representations such as interface mock-ups, workflow diagrams, and sample data entries to simulate real clinic operations. This hands-on presentation will allow staff to interact with the system and understand its functionalities, including patient record management, medication ordering, and departmental communication.

The demonstration serves two purposes: first, to validate that the system aligns with the clinic's operational needs; and second, to gather feedback from end-users doctors, nurses, and administrative staff on usability, relevance, and potential improvements. Their input will be critical in refining the system's features to ensure it is intuitive, efficient, and adaptable to the clinic's environment. This participatory approach also increases the likelihood of user acceptance and successful implementation.

#### **Stage 5: Evaluation**

After the demonstration, the system will be evaluated to assess its potential effectiveness in addressing the identified problems. This evaluation will involve system testing using sample data that simulates real clinic operations. By inputting mock patient records, medication orders, and typical workflows, the research team can observe how the system performs under realistic conditions, identify potential errors, and assess whether it meets the clinic's needs.

The evaluation will focus on three key criterias:

- **Efficiency:** How well the system reduces time spent on repetitive tasks such as writing and searching for patient records.

- **Ease of Access:** Whether staff can quickly retrieve patient information and communicate across departments.
- **Record Safety:** The system's ability to securely store patient data and prevent loss or misplacement.

To conduct this evaluation, the research may simulate real clinic scenarios using sample data and workflows. For example, a mock patient consultation could be run through the system to test how quickly records are accessed and updated. Staff may also be asked to perform typical tasks using the demo system and provide feedback on its performance. This practical testing ensures that the system is not only theoretically sound but also functionally effective in the clinic's day-to-day operations.

### **Stage 6: Communication**

The final stage involves documenting and communicating the results of the research. This includes a detailed report outlining the design of the proposed HIMS, its expected benefits, and recommendations for implementation. The report will present findings from each stage of the DSR process, supported by diagrams, user feedback, and evaluation results.

Beyond academic documentation, the findings will be shared with AMSAM Clinic to inform their decision-making regarding digital transformation. The report may also be disseminated to other small private clinics in Uganda facing similar challenges, offering them a blueprint for adopting cost-effective digital health solutions. By doing so, the research contributes not only to solving a local problem but also to advancing knowledge and practice in health informatics across the region.

### **3.3 How the DSR Stages Will Be Applied**

The Design Science Research (DSR) methodology will be applied in a structured manner to guide the development of a hospital information management system (HIMS) tailored to AMSAM Clinic. Each stage will build upon the previous one to ensure that the final solution is both practical and evidence-based.



In **Stage 1**, data will be collected through semi-structured interviews with Mr. Robert Mugume, the clinic officer, and other staff members. These interviews will explore the limitations of the current manual record-keeping system, such as time consumption, data loss, and inefficiencies in accessing patient information. Additionally, direct observation of daily practices will be conducted to understand how records are created, stored, and retrieved. This will provide a realistic view of the clinic's operational challenges.

In **Stage 2**, the insights gathered from Stage 1 will inform the definition of solution objectives. These objectives will focus on addressing the identified inefficiencies and risks. For example, the system must enable secure digital record keeping, streamline medication management, and facilitate communication across departments. These goals will serve as design criteria for the proposed HIMS.

**Stage 3** will involve the design and development of a demo HIMS framework. This prototype will include modules for patient records, pharmacy orders, and departmental communication. The demo will be structured using diagrams, database schemas, and workflow illustrations to show how the system can improve clinic operations. Technologies chosen will be cost-effective and suitable for AMSAM's resource constraints, ensuring feasibility and sustainability.

In **Stage 4**, the demo system will be presented to AMSAM Clinic staff for review. Their feedback will be used to refine system features, improve usability, and ensure alignment with actual workflows. This participatory approach will enhance user acceptance and increase the likelihood of successful implementation.

**Stage 5** will focus on evaluating the system's effectiveness. The demo will be tested against the objectives defined in Stage 2, using criteria such as efficiency, ease of access, and data safety. Simulated clinic scenarios will be used to assess how well the system performs in real-world conditions, including how quickly staff can retrieve patient records and process medication orders.

Finally, in **Stage 6**, the research findings will be documented in a comprehensive report. This will include the proposed system design, expected benefits, and recommendations for implementation. The report will be shared with AMSAM Clinic and may also serve as a

reference for other small private clinics in Uganda seeking to transition from manual to digital health information systems.

### 3.4 Data Collection Techniques

To ensure a thorough understanding of AMSAM Clinic's current practices and challenges, the study will employ three complementary data collection techniques. First, **semi-structured interviews** will be conducted with clinic staff to gather insights into their experiences with manual record-keeping, including difficulties in accessing patient data, managing medication orders, and coordinating across departments. These interviews will allow for open-ended responses while maintaining focus on key research themes.

Second, **direct observation** of manual processes will be carried out during clinic operations. This will involve watching how patient records are created, stored, and retrieved, as well as how staff communicate and manage workflows. Observations will help validate interview responses and reveal inefficiencies that may not be explicitly mentioned.

Third, a **document review** will be conducted to examine existing patient files, medication logs, and departmental registers. This will provide concrete evidence of the current system's structure and limitations, such as missing data, duplication, or delays in record retrieval. Together, these techniques will offer a comprehensive view of the clinic's information management practices.

### 3.5 Ethical Considerations in Methodology

Ethical integrity is a critical component of this research. To protect patient privacy and ensure responsible data handling, several measures will be implemented.

**Confidentiality** will be maintained throughout the study; no personal patient information will be exposed or recorded. Observations will focus solely on workflow and system processes, not on individual medical records.

**Informed consent** will be obtained from all clinic staff participating in interviews or observations. Participants will be briefed on the purpose of the study, their rights, and how the data will be used. They will have the option to withdraw at any time without consequence.

**Data security** protocols will be followed to ensure that all collected information is stored safely and used exclusively for research purposes. Digital files will be password-protected, and physical notes will be kept in secure locations. These ethical safeguards will uphold the dignity and rights of all participants and ensure compliance with institutional research standards.

Additionally, **plagiarism** will be strictly observed. All sources of information, ideas, and data used in the research will be properly cited, and the work will be original. Any use of external material will comply with academic standards to ensure honesty and credibility in reporting findings.

### 3.6 Expected Results

The study is expected to yield several key outcomes that will benefit AMSAM Clinic and contribute to broader health informatics knowledge.

**First, a demo Hospital Information Management System (HIMS)** will be designed. This system will include a conceptual and practical framework tailored to AMSAM's needs. Core modules will include:

- **A Patient Records Module** for centralized, secure storage of patient histories and consultations.
- **A Pharmacy & Medication Management Module** to streamline drug ordering and tracking.
- **A Departmental Communication Module** to enhance coordination between doctors, nurses, and lab personnel.

The demo will be presented visually using workflow diagrams, database schemas, and interface mock-ups to illustrate how the system functions.

**Second**, the proposed HIMS is expected to improve **efficiency and accuracy**. By reducing repetitive writing and enabling quick access to patient data, staff workload will decrease and service delivery will become faster and more reliable.

**Third**, the system will promote **safe and accessible records**. Patient information will be stored securely in a centralized database, minimizing risks of data loss or misplacement. Staff will be able to retrieve records easily, improving the quality of care.

**Fourth**, the study will provide a **feasibility analysis for small clinics**. It will highlight cost-effective strategies for implementing HIMS in resource-constrained environments. Benefits such as improved record management, enhanced workflow, and better decision-making support will be emphasized.

Overall, the research will offer AMSAM Clinic a practical blueprint for transitioning to digital record-keeping and generate insights that can be applied to other small private health facilities in Uganda. Below, the budget and work project schedule are presented, indicating the resources required, project activities, and their duration to ensure efficient implementation of the Hospital Information Management System.

### Budget for the project

Item	Description	Cost (UGX)
Hardware	Networking equipment	10,000
Internet	For development and testing	100,000
Total		110,000

### Project Schedule for AMSAM Clinic's Hospital Information Management System

Activity	Duration (weeks)	Start Date	End Date

Requirements gathering	2	01-Sep-2025	14-Sep-2025
System Design	2	15-Sep-2025	28-Sep-2025
Development and coding	6	29-Sep-2025	09-Nov-2025
Testing with sample data	2	10-Nov-2025	22-Nov-2025
Final adjustments and deployment	1	17-Jan-2025	23-Jan-2026

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