Research Article

Paper Design and Development of A School Management System

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ABSTRACT

The study shows the design, development, and implementation of a comprehensive School Management System (SMS), which is aimed at computerizing and making administrative processes in educational institutions simple. SMS platforms mix various administrative functions such as student enrollment, attendance tracking, grade management, fee processing, and timetable management. As the difficulty and volume of tasks in school administration grows big, the need for well-organized, solutions becomes evident. The projected SMS integrates these it main functionalities into a unified platform, enhancing resource and data management in schools. The method used involved system design, coding, testing, and implementation of the SMS in a simulated school environment to assess performance and usability. The process of developing the system automated and computerized routine administrative tasks, significantly reducing the workload of teachers, staff, and administrators. The results of the study show that automation improved efficiency, reduced errors, and provided real-time access to critical information. This further enhanced communication and decision-making among students, teachers, parents, and administrators. The SMS embraces critical modules for student enrollment, attendance tracking, grade management, fee processing, and timetable management. Discussion of the findings shows that these modules simplified and improved school operations by reducing manual effort, increasing accuracy, and optimizing resource allocation. The user-friendly interface, scalability, and data security measures made the system adaptable to institutions of different sizes. The study recommends adoption of SMS to address operational challenges in schools. However, a limitation noted was that the system requires stable ICT infrastructure, regular updates, and training to maximize its effectiveness.

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1. INTRODUCTION

Effective school management is very vital in making a much productive learning environment and also ensuring academic success. It supports educational institutions by coordinating administrative processes, such as supporting teachers, and providing students with the access to essential resources (Mwaura, 2020; Akpovire, 2019).

To overcome these challenges, this project focuses on the design and implementation of a School Management System (SMS) that automates key administrative tasks such as student registration, attendance tracking, and grading. Through integrating data and enabling real-time access, the SMS increases accuracy, efficiency, and decision-making. Moreover, automating administrative processes reduces the workload on staff, allowing schools to prioritize enhancing teaching quality and student learning outcomes (Olufemi, 2021; Mwaura, 2020).

1.1. Background

An effective and efficient school management is very important in today's educational environment, as it improves enhancing academic performance and institutional effectiveness. Traditional methods, relying on manual processes for tasks such as student enrollment, attendance, grading, and parent communication, are increasingly inadequate. The old methods often resulted in errors, delays, and miscommunication, especially as student populations grow (Mwamba & Musonda, 2017).

In conclusion, this proposed SMS will look into these challenges of school administration by automating tasks, improving data management, and enhancing communication, thus modernizing school operations and offering a scalable solution for managing student and faculty data

1.2. Motivation and significance of the study

This study focuses so much on the for more efficient and transparent management solutions in schools. Traditional school management systems, which rely heavily on manual processes, often make it so very much difficulties with managing tasks like attendance, grading, and data handling. These inefficiencies can cause delay and errors, makes it difficult for schools to provide accurate and timely information for decision-making at both the administrative and classroom levels (Bua & Adzongo, 2014). The development of School Management Systems (SMS) offers a chance to improve administrative tasks and also improve communication. These systems can provide real-time data, improve collaboration between students, parents, and educators, and reduce the administrative workload, ultimately increasing operational efficiency (Almalki, 2018).

This system brings in things like web-based SMS environment designed to automate key tasks, such as attendance tracking, grading, and parent communication. By reducing the administrative job, the system mets to improve transparency and foster greater parental involvement (Olufemi, 2021).

In conclusion, introducing a well-developed SMS can improve the operations of the school and also enhance transparency, and contribute to better educational outcomes. To bring this type of program in schools can better meet the needs of students, teachers, and parents in a modern educational setting.

The significance of SMS includes:
The use of School Management System has the significance effect and this can be enumerated as follows:

  i. To help the school to know the pedigree of all the student admitted into the school.

  ii. To create a storage of large volume of data on school records.

  iii. To assist the school management for easy identification of students.

  iv. To prevents students from involving themselves in havoc happening in the school because of fear of tracking them.

1.3. Scope

This system is created to be user-friendly and efficient while also supporting a wide range of tasks that are key for school administration which include registering new students, managing classes, handling exams, and performing various other administrative functions that contribute to the smooth operation of the school (Chilufya & Banda, 2022).

1.4. Problem statement

Traditional school management systems face many challenges due to their dependance on manual processes in handlying the student data. These old systems always depended on paper-based records, which maybe lost, damaged, and also misplaced especially during pek periods such as exams or enrolment. The lack of a computerised system even made the retrieval, updating, and sharing of crucial student information difficult which led to delays in the administrative operations. The teachers also struggled to manage student data, such as academic performance, behaviour, and attendance, as data becomes scattered across records, hindering a comprehensive view of progress. The absence of real-time access to data blocks the school from making informed decision-making, and the manual system creates administrative inefficiencies with staff spending excessive time on data entry and reporting (Garg & Gupta, 2015; Zhou et al., 2015).

Furthermore, na manual systems raise significant concerns regarding data integrity and security. the paper based system made information about students is also vulnerable to being lost, damaged, or can mistakenly be accessed unauthorized people and was also vulnerable to human error, fraud, and data theft, posing risks to both students and institutions. With the growing demands for data privacy and transparency, this lack of protection can lead to legal and reputational challenges (Akpovire, 2019; Olufemi, 2021).There is a lot of paper used to keep track of student information, results, and their performance.Manual systems are difficult to locate and update with information about students, their grades, and how well they performed in class.The manual system doesn't protect the academic information that could be lost.

1.5. Objectives

The most reason to come up with this project is to help management system in track with Zambian education standards is to construct an efficient, unified platform that enhances administrative processes, communication, and academic management mu Zambian schools. This system

will make sure it help in the areas of student enrolment and attendance, consolidate data management for student records and performance, and provide real-time updates to support informed decision-making. It will have things such as robust writing and analytics tailored to Zambian educational standards, warrant data security, and offer an intuitive user experience. Furthermore, the system will be climbable and adaptable to accommodate future needs like while observing with Zambian educational standards, Educational regulations, and standards (Zambia Ministry of Education, 2020). The important points of the study to design and implement a school management system. Specific objectives of the study are:

1.5.1. General objectives

The main objectives of the school management system remain to make a system that is, efficient, a user-friendly platform that enhances numerous features of school administration and academic management. The system aims to:

i. Towards advancement of administration efficiency by automating key responsibilities and rationalisation school processes.

ii. Towards appliance safe, compacted database that guarantees data integrity, privacy, and easy access for authorized users.

iii. To scheme in-built and something which is simple to use which will simplifies continuous interaction elyo for teachers, students, and administrators.

iv. To scalability and flexibility in the school management system, permitting for prospect growth, updates, and new features

1.5.2. Specific objectives

These specific objectives points to address the cole functionalities and requirements of the school management system, as follows:

i. To plan and cultivate an efficient school management system

ii. To use a safe and centralized database

iii. To generate an intuitive and user-friendly interface

1.5.3. Research questions

The academic devised and adopted the following research questions to inform the study:

i. What are the vital requirements for designing a contemporary, web-based School Management System in Zambian schools?

ii. By what means can a web-based SMS improve administrative efficiency in schools compared to traditional manual systems?

iii. To what degree can a prototype of the School Management System be tested and developed based on user feedback and requirements?

1.6. Summary

In summary hypothesis intends the development of a School Management System (SMS) to dicourse contests in handling student information and administrative tasks? It highlights the boundaries of traditional manual systems need for efficient management solutions (Jones & Taylor, 2021). The many statements highlight key contests such as data loss, inefficiency

in administrative tasks, and the lack of a centralized system for managing student records. These will disputes predominantly in traditional school management systems that rely on manual processes, making it difficult for schools to manage information effectively and make ishita timely decisions. Without a looking digital platform, critical data is regularly predisposed to errors, delays, and security vulnerabilities (Almalki, 2018). This study intends to design and implement a safe, user-friendly School Management System (SMS) that discourses these chellenges wao bring into line with Zambian educational standards.

Lastly conclusion, the thesis gauges the SMS effectiveness and applauds enhancements to improve usability and enactment, indicating how technology can improve education and streamline administration.

2. LITERATURE REVIEW

This subdivision analyses current research on School Management Systems (SMS), by means of an importance on their applicability to Zambian educational institutions. Traditional school administrative responsibilities have continued to grow manually, with error-prone and inefficient (Omwenga & Rodrigues, 2016). The escalation of digital technologies has directed to automated systems that progress data management, communication, and decision-making (Parvez, 2020). Cloud-based SMS platforms offer distant access and scalability, transforming school management (Sharples, 2019).

A decree of international and Zambian SMS platforms highlights both resemblances and contests. While innovative countries have progressive systems, Zambia surface challenges like poor infrastructure and low digital literacy (Sife *et al.*, 2017). Mobile-based SMS platforms have exposed potential as cost-effective solutions, leveraging widespread mobile phone use (Akpovire, 2019). Local designs necessity to address matters such as offline functionality and language support (Mwamba & Musonda, 2017).

Systems that encourage working together with students, teachers, and administrators have been shown to improve learning outcomes (Olufemi, 2021). Equally, challenges such as resistance to change, insufficient trainning, and infrastructure issues remain significant (Olufemi, 2021). Data security concerns, including encryption and user authentication, must also be addressed (Akpovire, 2019). To make sure these challenges are overcome, comprehensive training and user involvement are essential.

2.1. Review of the literature

The beauty of this program is that it makes use of digital tools to make sure that teaching and learning takes place for administrative tasks. Despite the effort met, there is still a big gap in the allocation of educational resources, due to disputes such as a lack of interoperability and inexact descriptions (Hirsch, 2015). The programs like learning online, which mostly use digital tools for delivering lessons and interaction, have changed traditional classrooms into more conducive environments, fostering greater student engagement and participation (Omwenga & Rodrigues, 2016).

It's from this background that Zambia embarks e-learning, which will help to address the digital issues which are crucial.

The educationalist civil societies, Stakeholders, politicians, educators, and technology providers a crucial network to guarantee equitable access to educational tools, particularly in rural and remote areas. This literature review emphasises on the importance of SMS and e-learning in promoting educational outcomes and the need for strategies that overcome implementation barriers, such as technology access and training (Munyika & Chirwa, 2022).

2.2. Related works

This scope has considered a lot to see to it that there is a shift in education circle the way works are done especially where administrative works are concern by integrating e-learning This section appraisals key contributions and influential works in the area, underscoring their significance to the anticipated system and highlighting exactly how these developments inform the design and implementation of modern school management solutions.

2.3. Moodle

A lot of stages have been deployed to see to it that there is a smooth operation platform like moodle which is one of the most widely accepted open-source Learning Management Systems (LMS), designed to expedite the establishment, management, and delivery of online learning content. Looking on its primary go as LMS, The merit of Moodle its incorporates several features that are commonly found in School Management Systems (SMS). For instance student registration, grade tracking, attendance management, and communication tools that enable interaction between teachers, students, and parents (Hegarty, 2016).

2.3.1. School

Another platform is called Schoology which is a cloud-based Learning Management System (LMS) that faultlessly integrates in cooperation teaching and administrative functions. It's mainly offers a wide array of tools for course creation, assignment management, student assessment, and attendance tracking. This tool integrates an academic and administrative structures makes it a robust display place for educational institutions looking for all-inclusive solution to accomplish both learning and school operations effectively (Zydney et al., 2016).

2.3.2. Blackboard

This is the traditional tool which has been since time memorial. Been it a widely used Learning Management System (LMS) that compromises a range of structures designed to support both hypothetical and administrative functions in educational institutions. The merits of this is that its integrates student enrollment, enactment tracking, grading, and communication, making it an inclusive solution for managing many features of education. While it is utmost usually accepted in higher education, its functionalities serve as a valued model for the development of School Management Systems (SMS), mainly for assimilating academic and administrative competences professionally (Garrison & Kanuka, 2004).

2.4. Summary

This analysis of related works provides an emphasis to the

numerous contributions to the field of school management systems and e-learning. Through many means of examining established frameworks, the greatest practices, and continuing challenges, the proposed school management system can influence existing knowledge to create a vigorous, user centered solution that recovers educational outcomes in Zambia. Its main foundation understanding will update the design, implementation, and evaluation processes, ensuring that the system effectively come across the needs of all stakeholders involved.

3. METHODOLOGY
3.1. Overview

This chapter lists the methodologies used to meet the project's objectives which include the tools, techniques, data collection, analysis, design, implementation, testing, and validation of the system. The methodologies which were used structured and effective execution, guiding the project from conception to realization. In order to ensure methodological rigor, instrument calibration was conducted to guarantee that all tools used during data collection and system testing produced accurate and reliable results. The Measurement error was carefully considered by performing repeated trials, cross-verification of records, and minimizing human input errors. Furthermore, statistical treatment of data, including descriptive statistics and error analysis, was applied to interpret the collected results objectively and validate the findings

3.2. Research design

This refers to the overall strategy or blueprint which were used to structure a research study while ensuring the collection, analysis, and interpretation of data are aligned with the research questions or objectives. A mixed-method approach will be used which is combining quantitative and qualitative data collection techniques to assess the impact of the School Management System (SMS) on administrative operations, communication, and overall school management. Quantitative data collected will provide measurable insights into the system's effectiveness, while qualitative data that will be collected will offer deeper understanding through personal experiences and perceptions of administrators, teachers, students, and parents regarding user satisfaction and system usability (Creswell & Plano Clark, 2018).

3.3. Baseline study

The baseline study collects essential data about current processes, systems, and requirements before implementing a new solution. It helps identify areas for improvement and gaps that the new system will address, using qualitative and quantitative data from surveys, interviews, and document analysis. The findings will create a foundation into the system's development and also establish a software requirements baseline, ensuring that aligned with the institution's goals and objectives.

3.3.1. Data collection

Data collection is the process of gathering relevant information to answer research questions and define system requirements,

it also ensures that stable and accurate requirements are defined for the development of the system. Questionnaires, focus group discussions, observation, and document analysis will be used to collect comprehensive data as well as involving active participation from stakeholders and developers. This approach ensures that the collected data reflects both user needs and technical considerations (Saunders *et al.*, 2016).

3.3.2. Research approach

This uses a mixed-method strategy by combining both qualitative and quantitative methods to gather and analyze data which ensures a comprehensive evaluation of the School Management System (SMS) by focusing more on its impact on participants and to also see if it meets user needs, thereby enhancing school management (Creswell & Plano Clark, 2018).

i. Requirements gathering (qualitative)

The needs of users are gathered through interviewing them, creating focus groups, and doing surveys to identify required system features.

ii . System design (iterative approach)

Wireframes, prototypes, and mock ups are created, with iterative development incorporating user feedback to improve usability and functionality.

3.3.3. Development of the application

The development of the SMS will use an agile methodology which will ensure repeated improvements through the user's feedback which will be received throughout the process as the system is being developed.

i. Planning and Requirements Analysis: The requirements will be gathered from stakeholders or the users so as to understand the specific features that will be needed, such as attendance tracking, grading, and communication tools.

• *System Design:* The blueprint of the design and the prototype of the user interface will be created, reviewed together with stakeholders or users as it will require approval, these will keep on being refined to meet the user's expectations.

• *Development and Coding:* The system will be developed using a suitable technology stack and language so as to have a good well implemented system. The coding will be broken down into stages that will help to implement and build features like registration, grading, attendance, and reporting.

• *Testing:* Features undergo unit testing, integration testing, and User Acceptance Testing (UAT) to ensure functionality and usability.

• *Deployment:* The system is deployed to a live environment, monitored for performance, and user support is provided.

• *Continuous Improvement:* Feedback from users post-deployment is used to guide updates and new features to maintain system effectiveness and user-friendliness.

3.4. System Design

The stage described involves the physical realization of the educational School Management System (SMS), which includes an educational digital resource-sharing component. The implementation will utilize various tools and technologies, including MySQL, HTML, CSS, PHP, JavaScript, Bootstrap, jQuery, D3.js, and Ajax.

3.5. Context diagram

This section will define the physical architectural design and the logical design showing processes, sub processes and data flows to and from external entities and database design of the system required to satisfy the specified requirements.
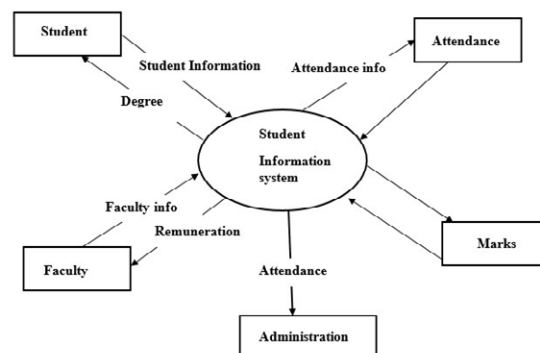

Figure 1. Context diagram

3.6.1. System software level architectural design

The Resource sharing system architecture will mainly consist of an XAMP web server, a MySQL database, and a file server (JetBrains, 2019). The Internet will be used to interconnect the servers and the user computers. The users could be mobile users with small devices such as mobile phones, desktop users, or any other users as long as they possess a device with a web browser and a connection to the internet.

When a user sends a request, such as a resource download request, the web server queries the MySQL Database to get resource details, locates the requested resource from the file server, and returns an appropriate response to be displayed in the client web browser.
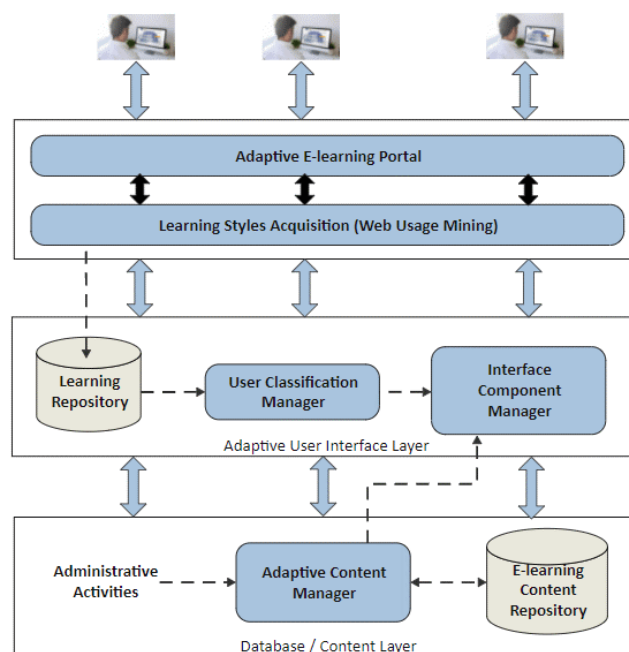

Figure 2. System software level architectural design

3.6.2. Modular design of the system function

This stage is where now the major complex system or functions the SMS are divided into smaller components using process modeling, tools such as context diagrams and data flow diagrams (DFDs) are used to map out system activities and data flows. The context diagram basically provides a high-level outlook of the system's interactions with external entities, while the DFD details these processes. A data dictionary is also created to define the processes and data elements involved, ensuring clear system functionality.
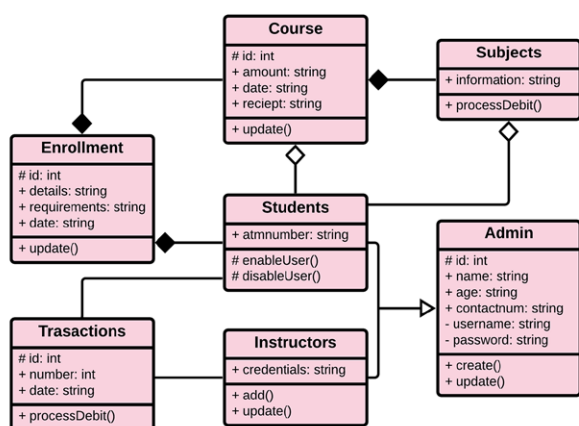

Figure 3. System Software Level Architectural Design

3.6.3. System class diagram

A context diagram is a high-level visual representation that illustrates the boundaries of a system, external entities interacting with the system, and the flow of information between them. This diagram simplifies the understanding of how a system interacts with external elements and helps to define the scope of the system's operations and also helps the developers know the flow in the operations of the system. This diagram is crucial for understanding system requirements and its interactions within its environment.
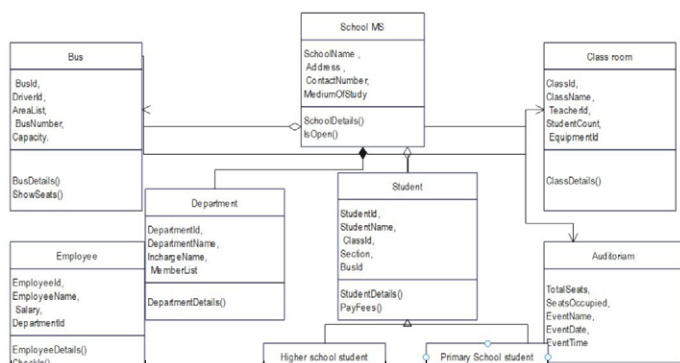

Figure 4. System class diagram

3.6.4. Database schema diagram

Below is a diagram showing an entity relationship diagram for the School Management System.

The Learner Interface will provide functionality that enables a learner to pay school fees, view payment details, check balance,
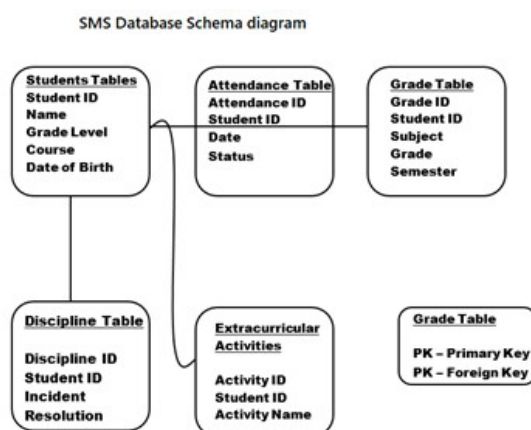

Figure 5. SMS Database schema diagram

request hostel accommodation, and change their password. The Administrator Interface allows the administrator to create new learners, update learner school fees, adjust term and level information, and view learners and accommodation. Lastly, the Bank Interface enables bank staff to register learners and confirm deposits whenever a learner makes a payment into their account (Sharma & Jain, 2020).

3.6.5. Input specification

The input specification tries to define the interface through which users interact with the system to enter data, typically using a keyboard or mouse for various forms. The system will include different forms for three user categories: learners will log in with a username and password, then access forms for paying fees, requesting accommodation, and changing passwords; administrators will log in to create new learners, and update terms, levels, and school fees. These forms will user friendly which will really help ensure that there is a smooth data entry and system interaction.

3.6.6. User interface design

User interface design involves creating secure, intuitive interfaces that are also user friendly and help control user access based on defined privileges, such as Student or Administrator. The system will authenticate users before granting access to different application features, ensuring only authorized individuals can interact with specific areas using a automated backend which will smartly look at the role before giving the privileges to the user. It will also enable new students, registered by administrators, to register and use the application (Shneiderman *et al.*, 2016).

Figure 6. Admin login
Source: Author

3.7. Summary

In summary, this chapter outlines the procedures for designing the school management system through implementing these structured methodologies which will ensure the system will be robustly developed and effectively support the management and operation of schools. The design approach aims to improve and make work for educational administration effective while also enhancing resource sharing, and improve overall efficiency within Zambia's education sector.

4. RESULTS AND DISCUSSION
4.1. Overview

This chapter presents the main findings from the research, including survey results and their discussion, followed by an evaluation of the system's implementation. It includes the development of a computer-based software, testing with real data, and preparing system documentation.

4.2. Baseline study results

A baseline study looks into the current state of school operations while also identifying inefficiencies, user satisfaction, and data management issues. It provides a reference for measuring improvements in these areas after the implementation of the School Management System (SMS) (Patton, 2015).

4.2.1. Survey results and discussion

Survey results from the surveys done show that the School Management System (SMS) has improved school operations, communication with parents, and student engagement. While stakeholders are generally satisfied, they suggested enhancing mobile access and user customization to optimize the system's performance (Creswell, 2014).

4.2.2. Implementing the proposed project

This proposed project involves deploying the system by ensuring all components, such as affordable hardware, online registration management, system updates, and proper infrastructure, are in place for it to be implemented and this process aligns technical, operational, and financial elements to achieve the project's goals (Kerzner, 2017).

4.3.1. Network Scale

Computers and network clients and services software will enable client computers to connect to the server, using SQL databases for efficient data management. Installing the database on the server and the corresponding interface on the client system is essential for seamless communication and system functionality (Kurose & Ross, 2017).

4.3.2. Network clients and network services

Network clients and services software enable client computers to connect to the server, using SQL databases for efficient data management. Installing the database on the server and the corresponding interface on the client system is essential for seamless communication and system functionality (Kurose & Ross, 2017).

4.3.3. How it works

The database will be saved on the server and this will act as a central server while client computers will have the user interfaces for interaction with the system. This setup improves database performance and reduces network traffic. The client program sends requests to the server to manipulate the database.

4.3.4. Implementation

The system modules will be reviewed one by one to ensure proper implementation.

4.3.5. Using the graphical user interface forms

A Graphical User Interface (GUI) allows users to interact with the system through visual elements like icons and buttons. The student data form, as a GUI example, connects the user to the database, enabling administrative tasks such as adding classes, printing receipts, and changing passwords (Shneiderman *et al.*, 2016).
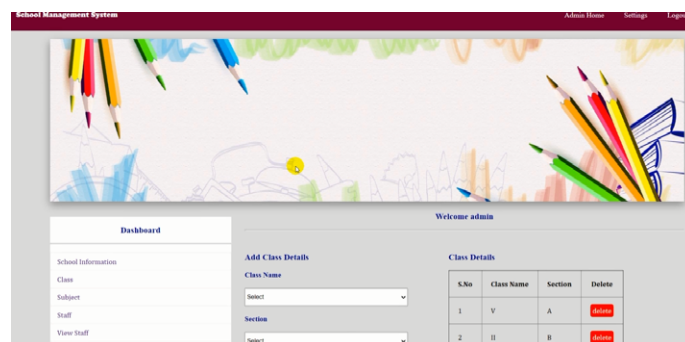

Figure 7. Using the graphical user interface forms
Source: Author

4.3.6. Student subject

The school curriculum is integrated is integrated into the system to allowing for the tracking of subjects. Users can add subject details by clicking the "*Add Subject Details*" button, which updates the information immediately. The subject data can be confirmed and updated with the "*Confirm Add*" button, or deleted using the "*Delete*" button. These processes are consistent/ the same across other modules in the system, ensuring smooth interaction via the Graphical User Interface (GUI) forms (Shneiderman *et al.*, 2016).

4.3.7. View staff

The View Staff page allows administrators to add and manage staff information, including qualifications and salary details, it also provides an interface for inputting, viewing, and updating staff records, ensuring efficient staff management (Pressman, 2014).
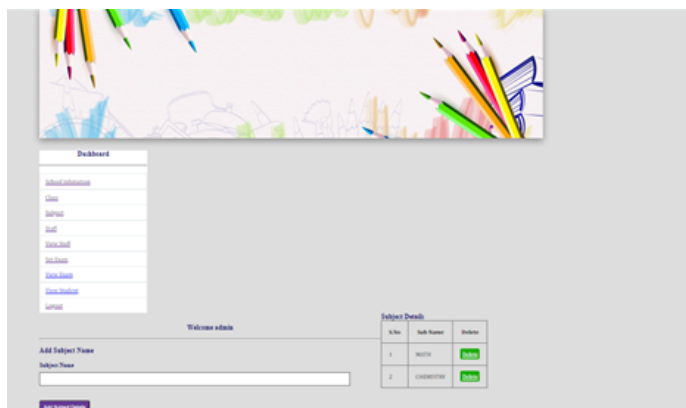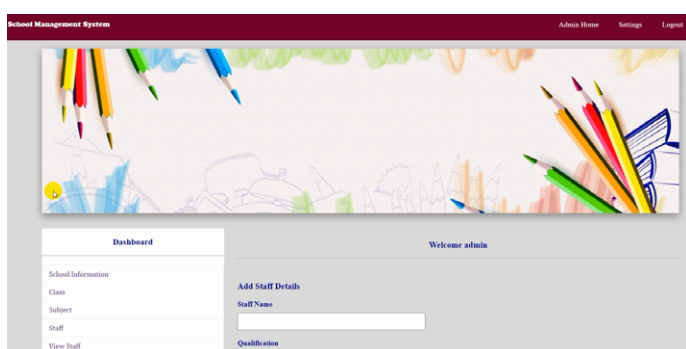
Figure 8. Student Subject
Source: Author

Figure 9. View staff
Source: Author

4.4. Set exams

The "*Set Exams*" feature makes it possible for teachers or educators to create and manage exam schedules, questions, and assessment methods to make sure there is efficiency in the running of exams, it also ensures that exam information is organized and easily accessible, streamlining the exam management process.
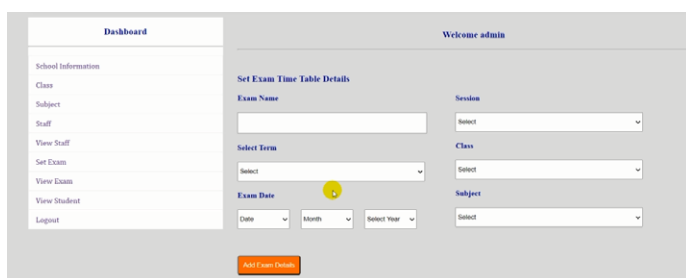

Figure 10. Set Exams
Source: Author

4.4. System implementation results

Functional requirements

i. The system shall accept registration of learners.

ii. The system shall name of the subject, class and session to write exams

iii. The system shall produce a listing of transaction information to learners.

iv. The system shall provide provision to add subjects, student and staff

v. The system shall be able to delete subjects.

Non functional requirements

i. The system should be easy to maintain.

ii. The system should be compatible with different platforms.

iii. The system should be fast as customers always need speed.

4.5. Summary

Chapter four intended to give the main findings derived from this research study. We concatenated the survey results and the discussion. We concluded by discussing resonate matters concerning the system implementation results.

This is the final chapter of the research project. It focus on offering the candid discussion of the whole research project and gives a general conclusion to the study. Essentially, it considers different aspects including how this system would solve the challenge of school management operations in Zambian schools and concludes by stating its possible application.

4.6. The baseline study

The baseline study is a research approach used to gather information about an institution's current processes and requirements before implementing a new system. It identifies existing inefficiencies and challenges through qualitative and quantitative methods, guiding the development of a system that meets the institution's needs. This study establishes a software requirements baseline to ensure that the new system aligns with the institution's goals and objectives, forming the foundation for system design and future development (Kendall & Kendall, 2019).

4.7. Use of technology

The use of technology in designing a School Management System (SMS) enables administrators and educators to efficiently create, manage, and organize various academic processes such as exam scheduling, assessment criteria, and student evaluations. The integration of automated tools for exam management ensures accurate structuring of exam data, reducing administrative errors, improving security, and enhancing accessibility for both students and staff (Schach, 2011).

4.8. Development of the system as a solution

The development of a School Management System (SMS) addresses the need for effective data storage and analysis, improving the overall management and operation of schools. SMS helps create a more organized environment by facilitating tasks such as student tracking, grade management, and communication. Numerous School Management Software systems are already in use globally, providing valuable solutions for school administration and efficiency (Kumar, 2012).

4.9. Comparison with other similar works

When comparing our School Management System (SMS) to other similar applications, it is evident that each system has its strengths and weaknesses. Our application incorporates the

best features from reviewed systems while introducing unique advantages. For example, unlike many other systems, ours is optimized for lower memory usage and employs a defense-in-depth security strategy to mitigate potential threats. This approach not only improves efficiency but also addresses many of the issues present in existing systems (Pressman, 2014).

4.10. Possible application

This software's main potential application is in the management of school daily activities in Zambian schools to bring in the much needed efficiency in such operations.

4.11. Summary

This segment has obtainable a general view regarding the discussion and conclusions based on the developed system. It has also demonstrated that other such software are already in existence though variant in functionalities.

5. CONCLUSION

There is a great benefits for schools to capitalize on the implementation of School Management Systems (SMS), as these technologies are essential for supporting the growth and development of educational institutions. The significant of SMS in administration is to streamline tasks, enhancing communication, and improving student data management is widely appreciated (Bates, 2015). However, the scope of change occurring within educational departments due to technological advancements is both exciting and challenging. As institutions continue to adapt to an increasingly digital environment, there are rising concerns about how to manage the vast streams of technological innovations entering the system. Scholar's stress that the implementation of SMS must be go along with by continuous research into user requirements, particularly in e-learning and e-registration systems. Systematic feedback from users such as educators, administrators, and students is essential to ensure these systems meet the evolving needs of educational communities (Williams & Johnson, 2018). Only introducing an online learning and digital administrative services is not easily enough without addressing the perceptions, such as needs, and challenges of that users face.

These issues are definitely crucial for the successful integration of SMS, as they straightly impact both the quality of learning and the efficient management of student records (Sutton & Robinson, 2017). Despite these insights, this study has a number of limitations. It does not widely explore the infrastructural, financial, and policy-related barriers that may hinder SMS adoption in diverse school contexts. Furthermore, the viewpoints gathered may not fully represent all educational stakeholders, such as parents or policymakers, whose involvement is critical in shaping sustainable digital transformational. The Future researcher should therefore manly concentration on comparative studies across different educational levels and regions to better understand contextual challenges. Another aspect which can be able to provide a deeper insights is a longitudinal studies which can insights into how user perceptions of SMS evolve over time, while investigations into cost-effectiveness, data security, and policy alignment would further strengthen the discourse. By addressing these gaps will definitely ensure that SMS implementation remains both relevant and effective in meeting the demands of the 21st-century, technology driven educational environment.

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