

University Mobile Enrollment System: A Nigeria Perspective

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Abstract: *The application of ICT in the Nigerian university system is taking up a revolutionary trend. This is especially given the fact that the ICT, if utilized well, is an indispensable tool in achieving enhanced learning environment. One consequence of the effective utilization of ICT is the integration of mobile phones and applications as a tool to facilitate admission and university entrance processes. The reason to have a mobile application is to give support for students where they can use any internet access at anytime, anywhere and anyplace. The objective of this paper therefore is to evaluate the success in utilizing a developed mobile application system for enrollment of students. It will analyze the perceived user friendly experience and user satisfaction toward a new mobile application for students' enrollment. OOADM was used as the preferred methodology. In the end, the study maintains that effective use of this mobile application will definitely speed up university enrollment processes, reduce errors and increase efficiency whilst giving users the convenience of usage and increased security of their operations.*

Keywords: *Mobile application, Web Application, Mobile enrollment system, OOADM.*

I. Introduction

The emergence of mobile phones has provided better way for faster and better communication, efficient storage, retrieval and processing of data, exchange and utilization of information to its users, be they individuals, groups, businesses, organizations or governments. With growing computerization and increasing internet connectivity, universities/higher institutions around the world have engaged in the process of developing a wide range of online services such as e-library, e-bookshop, e-lecture etc; by using web-based internet applications. These technological advances have tended to occur at a much slower rate in developing countries. Meanwhile, smart phones are considered as the representative for the various mobile devices as they have been connected to the Internet with the rapidly growing wireless network technology. Mobile university enrollment system is a development of mobile computing and an extension to online enrollment system. In mobile university enrollment system, higher institutions and or universities administration creates a platform (software) for admittance or enrollment of freshmen and women, such that, the user(s) can use their mobile devices to complete necessary forms irrespective of their phone OS, screen sizes and location. This simplifies the natural enrollment process.

II. Overview of Some Related Works

This research paper is being carried out to show how a mobile device or system could be used to ensure an improved enrolment practice in the university system. Although there is seeming not much information on mobile enrolment system, but, there is much more to learn from existing works on online enrolment system, computerisation of university admission system and impact of computerized information system in an organization.

According to [1], enrolment system is used for student information records. A well-built enrolment system can be useful to reduce the load of the people that normally has to do all the manual work. A well enrolment system is built for faster processing of information. On top of that, the system must be updated for it to be at a top more level and it must meet all clients' requirements in order for it to have its functionality and service appreciated and it will be efficient to the clients to use the said system. During enrolment, student needs to pass the entrance examination conducted by the school. Upon passing it, they need to submit the needed requirements. They are going to be assessed and will be given the needed instruction to complete the enrolment. [1]

[1] went further to describe how the system needs the manual requirement and its manual procedure. It executes them process by process in a step by step mode, in which every process must be done inside the system the way

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manual process do, and follow on what is on the manual process like on how students fill out the registration form for enrolment, assessment form for the miscellaneous matters, and the paying scheme for parents on how they will handle financial transactions with the school. Then, the system will be printing out the registry form, included with the student financial report on how much will be the tuition fee and on what term of payment will be used. According to [2], Computerization is a control system that manages processes in industrial workplace. It reduced human errors and processing time, thus it can boost productivity and resulted into high quality of product produce. In Information System, computerization is concerned about interrelating different but interdependent transactions. This can result in a system with well-integrated processes that can perform much faster and more accurate than a manual system.

University enrollment is the process of entering and verifying data of student to register on a particular school. Different interrelated processes build up enrollment procedures called University Enrollment System (UES) [2]. UES are used particularly in recording and retrieving student's information. Tracking student's information is also one feature of UES, in which the school can trace the standing of a student. Verifying payments was also added to update or browse student's billings. University enrollment system is a good example of a computer generated process. This can lessen the workload and provides accurate information needed of the school. As a result, it will benefit not only the student but the administration as a whole. [3]

In University of Nigeria Nsukka, (UNN) the admission enrolment system is done partly online and partly manual. That is, students' bio data is done online and every other enrolment process is done manually. Just like UNN, most universities in Nigeria practice the same enrolment process. In summary, all the literatures above have little or nothing in terms of mobility in university enrolment system. This is the problem the researcher has identified and proposed a solution to address it by providing a platform independent mobile university enrolment application. In the end, it will reduce human error, promote easy access i.e. users can access the system anywhere, anytime, reduce cost, increase security of data and saves time.

III. The Existing System

Most tertiary institutions in Nigeria do the manual way of enrollment where paper work and long queue are the other of the day [4]. It is pertinent to note that the advent of ICT has brought about the change we need in the enrollment process in Nigeria. Different arms of the government have in one way or the other embraced ICT; this is indeed a welcome development. Businesses and organizations have made their enrollment processes online to enable them produce faster and better result [5]. In recent times, most multinational companies have embraced the method of online enrollment processes to reduce crowd. This is where people apply and register for jobs online, take exam online and are screened online [6].

Unlike Africa, most university in the western world practice online registration very well. In University of Nigeria, Nsukka the enrollment process is manual and online. That is, students pay fees online with a scratch card, this will help them to generate receipt and then proceed to their different faculties for manual registration. So, all the registration and enrollment processes cannot be done anywhere. You must come to the school. This is common to most tertiary institutions in Nigeria and that is what this research tries to solve.[7][8]

IV. Research Methods and Design

Questionnaires were designed and self-administered to undergraduate and post-graduate students as well as staff in selected Departments (Computer Science, Electronics engineering, Mathematics, Political Science, and ICT) of University of Nigeria. The purpose of this questionnaire was for needs assessment. A total of One hundred questionnaires were distributed to students and staff, out of which 60% respondents were undergraduates, 22% were postgraduate students and 18% were staff. All questionnaires were filled and returned appropriately. A total of 70 males and 30 females responded, respectively.

The responses would determine the justification for developing the mobile application and were analyzed to determine the following:

- The category of users that will most favour the use of the application
- The population that are in need of mobile enrollment system
- Motivation for mobile application

The responses are shown in the following charts.

Figure 1: The category of users that will most favour the use of the application

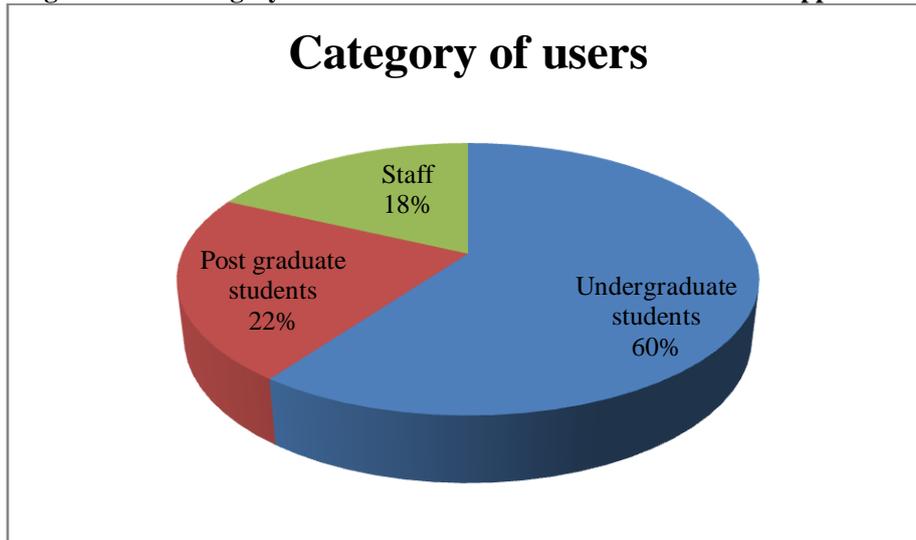


Figure 2: Age range of respondents

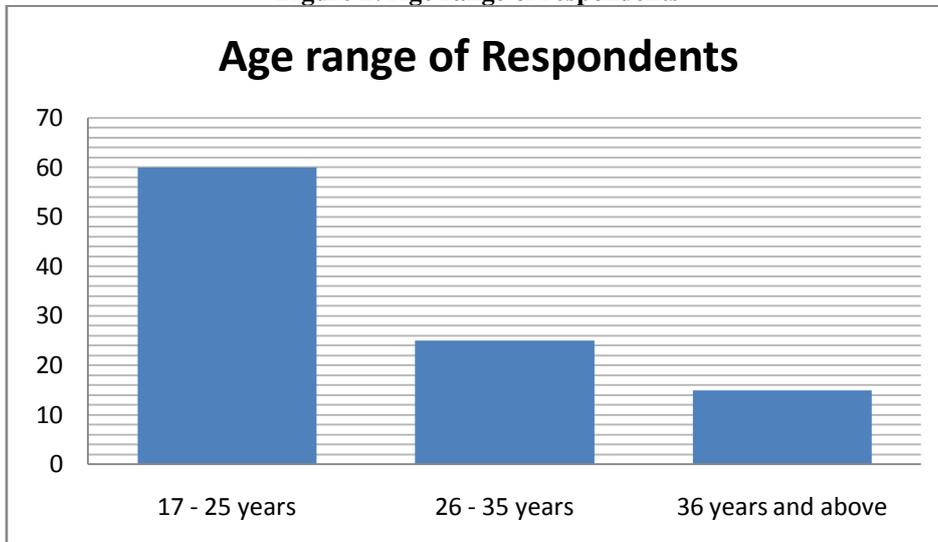
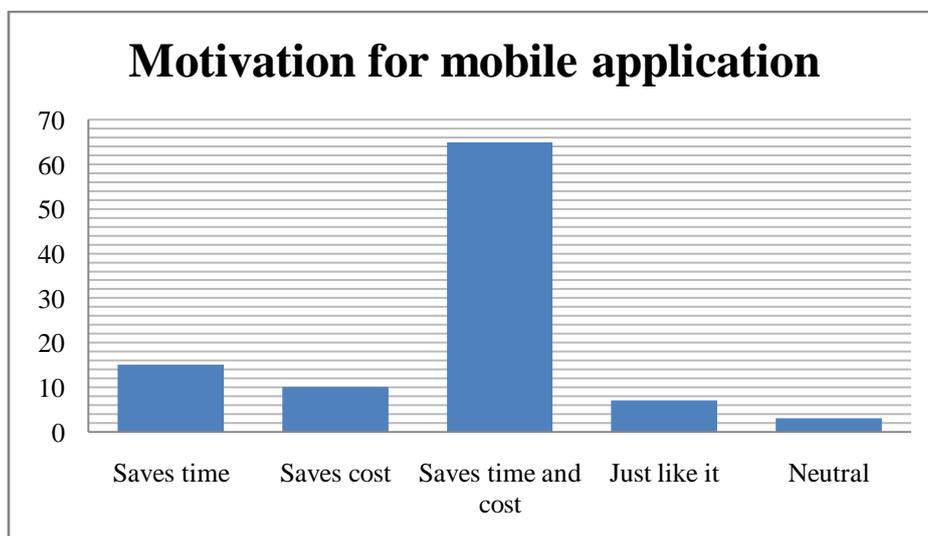


Figure 3: Motivation for mobile application



4.1 Findings

The following are findings from the responses provided by the respondents from the needs assessment questionnaire. The category of users that will most favour the use of the application are 60 percent undergraduate, 22 percent post graduate and 18 percent staff. While the age ranges are 17-25 years 60 percent, 26-35 years 25 percent, 35 years and above 15 percent. This implies that undergraduate will use the application more. The motivation for use of the mobile application for enrollment processes 15 percent said it saves time, 10 percent said it saves cost, 65 percent said it saves time and cost, 7 percent just like it and 3 percent are neutral. The user responses clearly showed the need to develop a mobile enrollment application for universities.

4.2 Design method

This is the method used to analyze the system with the aim of developing software for the system. The design method used in this research is Object Oriented Analysis and Design (OOAD). And Unified Modelling Language (UML) is the design tool used also. Below are some of the UML tools used.

4.2.1 Use case diagram

A use case diagram is a simple diagram that shows who is using the system and what processes they will perform in the system. Example

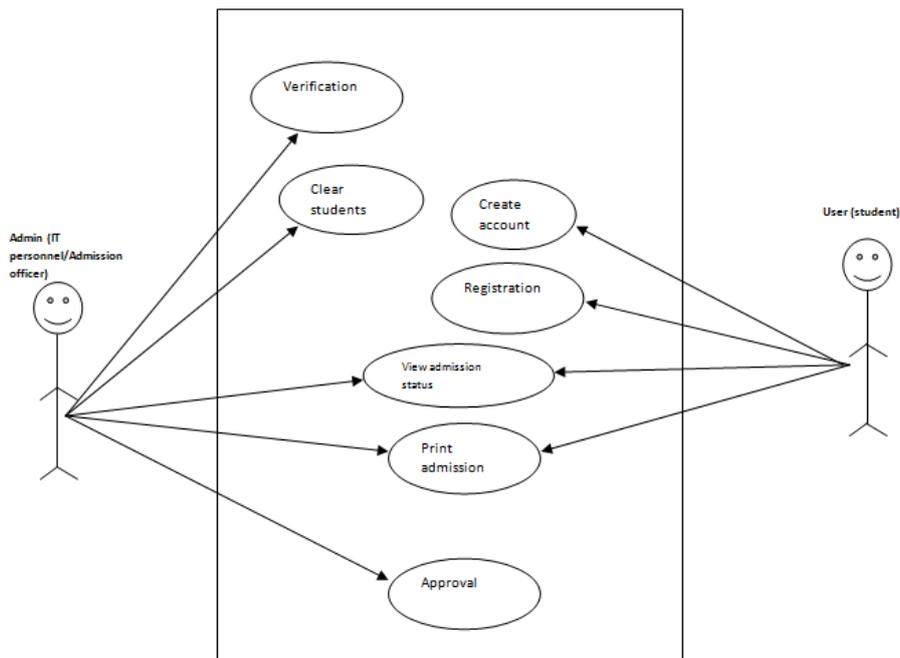


Figure 4: Use case diagram of the mobile university enrollment system.

4.2.2 Class Diagram

A class diagram shows a set of classes in the system and the associations and inheritance relationships between the classes. Class nodes might also contain a listing of attributes and operations

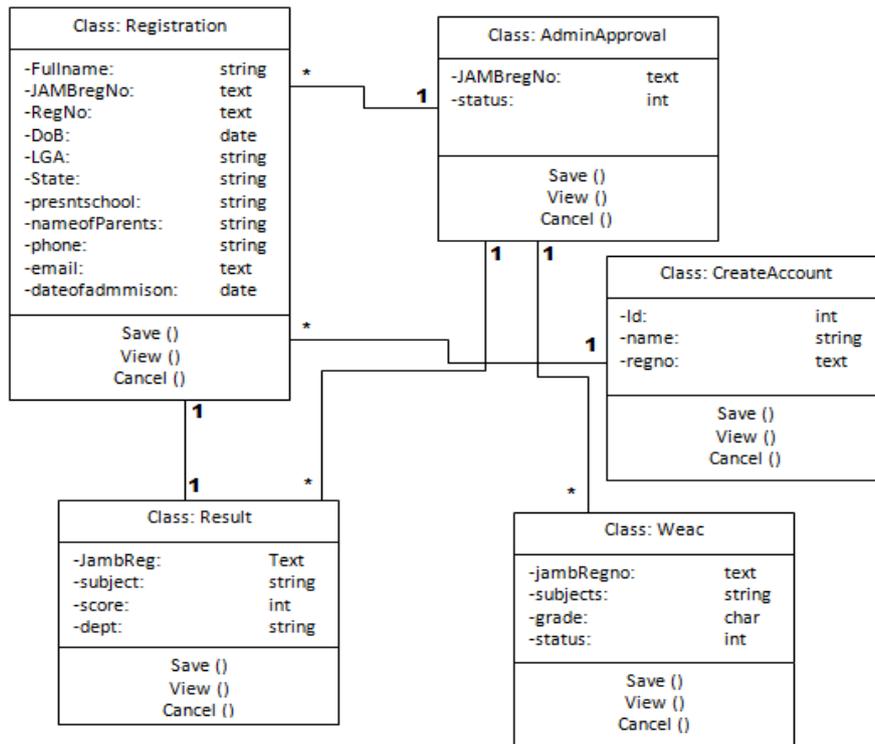


Figure 5: Class diagram of mobile university enrollment system

V. Architecture of mobile university enrollment system

This is partitioned into three major layers. Layer one also known as 1st tier is the data layer; this is where the database and the backup database are resident. Layer two (2nd Tier) is the business logic; where the webservice is, here is where the application will reside when hosted. The last layer is the presentation layer (3rd Tier); this is where all the levels of users can access application with mobile phones. The architecture is shown in figure 6.

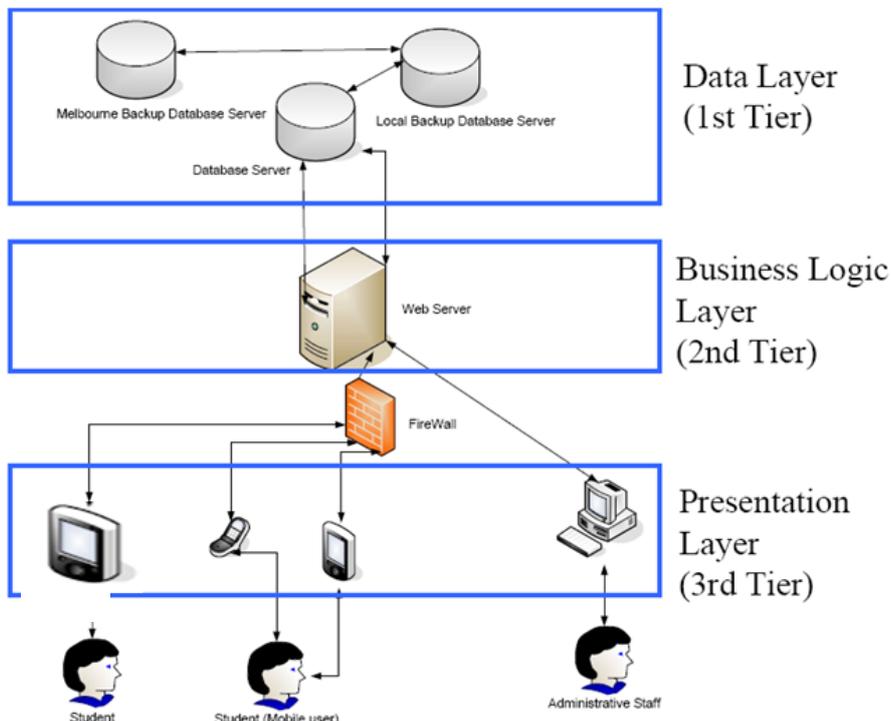


Figure 6: Architecture of mobile university enrolment system

Mobile university enrolment system is designed to be accessed through heterogeneous mobile devices. In order to provide seamless user experience, same applications need to run on different mobile devices. The application mobility plays a crucial role in enabling users to access university portal while on the go, with their mobile devices. The database will be hosted on a server (virtual machine) in the internet which is accessed through wireless access point. When a user (student(s)) makes a request the admin verifies and approves such request if it meets the requirement. The system has two major parts the admin and the user who may be a student.

During enrolment, a student needs to supply his/her surname as username and JAMB registration number as password. Upon supply of such, he/she needs to submit the needed requirements i.e. WEAC grades and JAMB scores. They are going to be assessed and will be given the needed instruction to complete the enrolment. The process of enrollment verification is done at the admin side. Where the admin verifies the authenticity of student's result and tracks student's information. He activates and deactivates accounts and generates the registration number. This automatically lessens the workload, and provides accurate information needed.

VI. Database table design

Mobile university enrolment system is designed with MySQL. The database is made up of five (6) tables. Which are: -

1. Admin approval
2. Login
3. Passport
4. Result
5. Student details
6. WEAC_neco

Figure 7 is a view of the database and the tables with their relationship

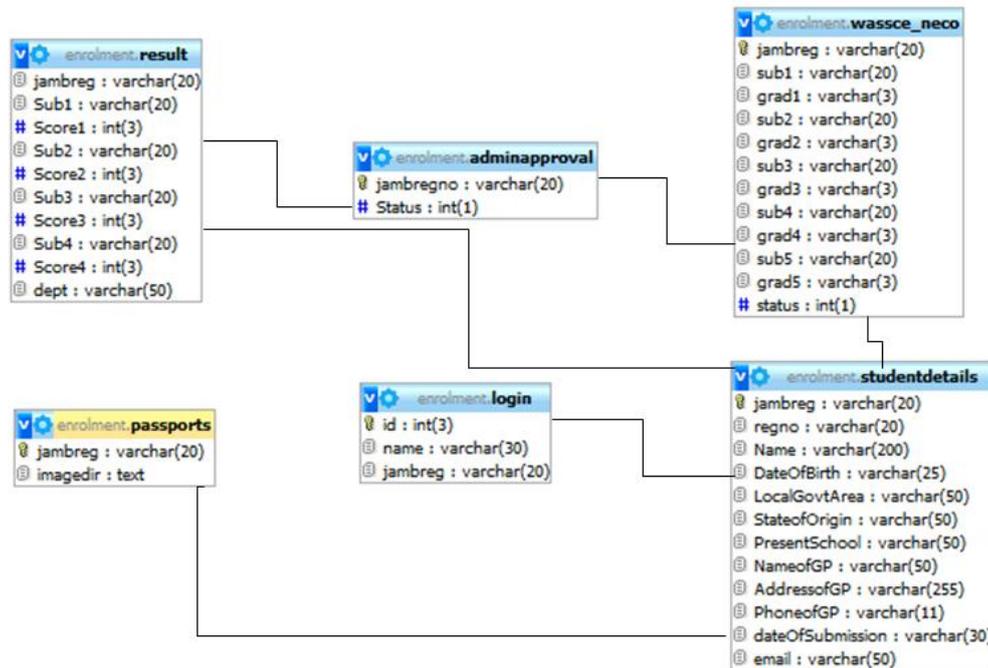


Figure 7: Database table design and relationships

VII. Implementation Tools

The development tools used for the implementation of this research work are CSS5.5 for mobile as IDE, PHP as a scripting language, HTML5 as mark-up language, it enable cross-platform development of mobile applications and manages screen sizes, and MYSQL (structured query language) as database[9][10][11].

VIII. Implementation architecture

This focuses on how the system is built, which technological elements are needed to implement the system such as software packages, libraries, frameworks, classes etc.

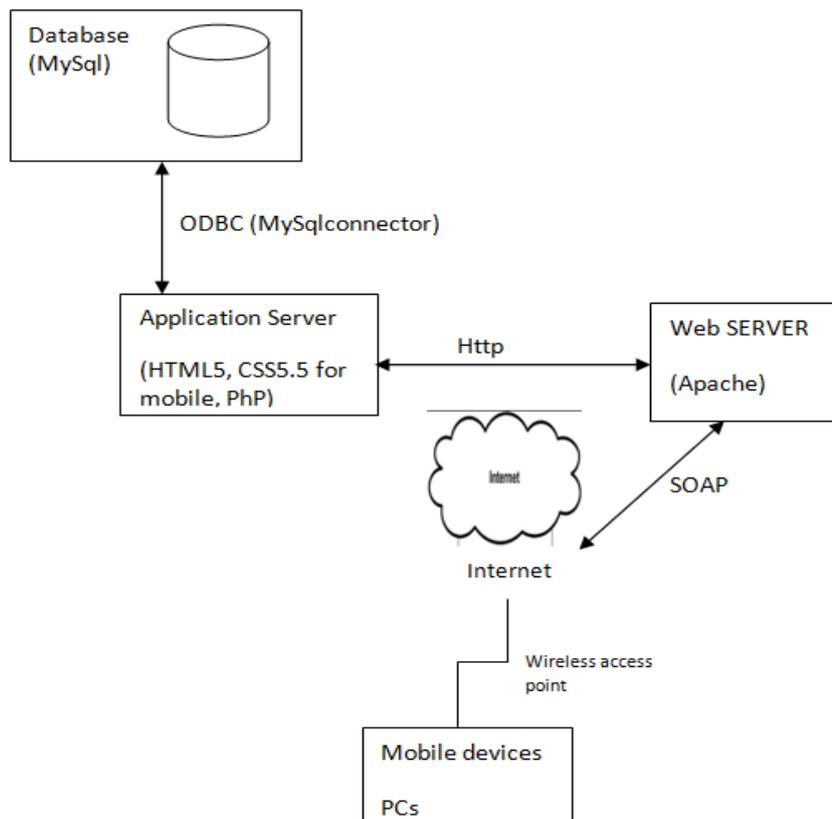


Figure 7: Implementation architecture of mobile university enrollment system

IX. Results

Below are some of the screen shots of the output showing the display on a mobile phone.

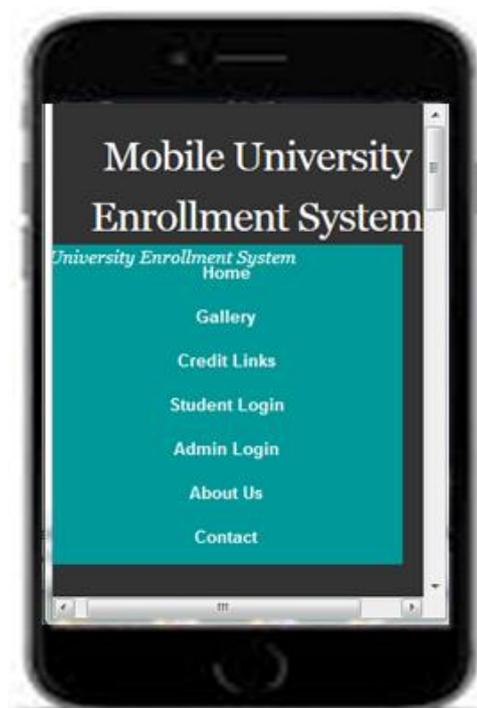


Figure 8: home page display

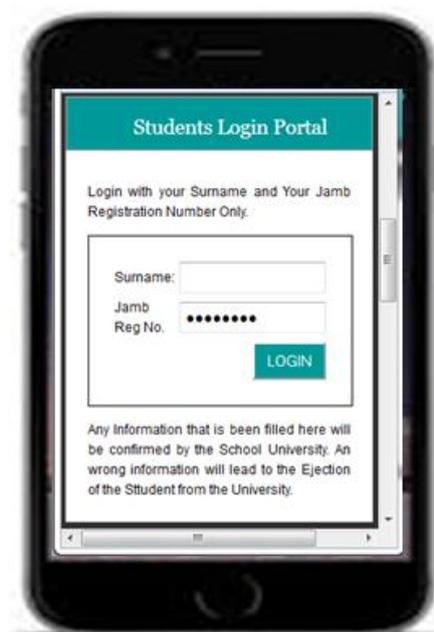


Figure 9: students' login display

X. Summary

Online and mobile enrollment processes in relation to the university has been thoroughly explored. The research is focused on the mobility of enrollment system and processes which is where many university in the world is tilting to. Related literature were also considered and reviewed to deal with and or solve the problems identified. A most preferable design method (Object Oriented Analysis and Design) was used to design the solution and the design was also modelled using Unified modelling language (UML). This design when implemented could be deployed on any mobile smart devices irrespective of the operating system and screen size. Top down Approach was adopted as the implementation approach for this project research.

Most importantly, the solution is in two parts, the admin and the user. The admin does the authorization and verification, while the user does the enrolment and supplies the data needed.

XI. Conclusion

The main challenge of researchers in most developing countries is to actually implement the objective of their research. Happy to know, that, the researcher has successfully developed a mobile application for university enrollment system and created a robust and centralized database for information and data storage. This will go a long way in reducing cost and time in admission enrolment processes. In tandem with the technology age, user applications should go mobile. Therefore, more efforts should be devoted to improving and or making online user applications mobile. Also, higher institutions need to commit more resources into the development of its human capital, address the internal digital divide among its staff members.

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