

Alumni Portal System for Nigerian Universities (A Case Study)

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Abstract: *The aim of this study is to develop an alumni management system for Nigerian universities that addresses the current difficulties and deficiencies in maintaining relationships with alumni. The literature review showed that current systems in Nigerian universities were lacking in terms of functionality and data management. The suggested system would have included features such as monitoring alumni contact information, managing communication, arranging events and reunions, and managing donations and fundraising efforts. Additionally, the system was intended to enhance communication and engagement with alumni, raise more funds and support from donors, and provide more opportunities for networking between current students and alumni. The study employed a combination of design science research methodology, data collection and analysis of existing systems and best practices in alumni management. The ultimate aim was to enhance the relationship between the universities and its alumni and increase the support the alumni give to their alma maters.*

Keywords: Alumni, Portal, University, Development, System

1. Introduction

Alumni are one of a university's most valuable assets. They are the face of the institution in the outside world. University alumni systems exist to encourage graduates to have active and interactive links with their former university. Interactions between the University and students begin when the student enrolls as a freshman and continues throughout the student's time on campus. From the time of admission until graduation, there has been collaboration between the university and the students. When students graduate and begin working, the Alumni Association is the sole thing that can keep them engaged as alumni.

The term "alumni" is intrinsically tied to institutions and individuals who have either attended and/or graduated from the institution. An alumni association is an organization whose members have attended the same institution and whose shared educational experience is the foundation of the mission, vision, and set of goals of the association (Lyn Rodriguez Maata et al., 2020).

Different universities and schools have different names for their alumni leadership bodies. For some, it is the Alumni Governing Board or the Alumni Volunteer Board. Others call theirs the Alumni Executive Council; still others, the Alumni Board of Governors or Alumni Governing Council. The Alumni association is independent of the school in funding and administrative support. The Association administration is run through the efforts of volunteers and part-time hires.

Alumni Associations are a way for universities to maintain connections with their graduates and serve as a link between the school and its alumni. However, many Alumni Associations struggle due to ineffective efforts, lack of commitment, and outdated record-keeping methods. Automating the process through a web-based database

management system can improve accuracy, efficiency, and accessibility of alumni information, while also increasing productivity for both alumni management and university staff. Additionally, this technology allows for easy communication and networking between alumni, making the Alumni Association a more effective and valuable institution.

Alumni play a vital role in the university system, it gives the university support in terms of giving feedback on the programs of the university regarding the improvements of the program, supporting the university in most of the activities that require alumni's participation. Ultimately, the Alumni Association will act as a link between the University and its graduates helping the university to keep tracks of its numerous graduates. In this study, the importance of an alumni organization and its impact in the university growth is presented. Furthermore, an alumni portal for Nigerian universities is developed using Veritas University Abuja as a case study.

Past methods of managing alumni information have proven to be inflexible, inefficient, and unproductive. Keeping track of all past students is a challenging task as records may have been lost, damaged, or forgotten. Additionally, manually locating physical reports can be difficult. Furthermore, the limited use of computers in the past has led to vulnerabilities in the system, as there is no monitoring or control over the information accessible in the department and no security measures in place. These issues make it difficult to effectively manage alumni data through traditional means. Therefore, there is a need for a computer software, a web-based automated system, and a centralized database to manage alumni information more efficiently. An Alumni Management System is a web-based software application that is designed to help educational institutions manage their alumni data and communication. It allows schools, colleges, and universities to organize and maintain information about

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their alumni, including contact information, career information, and donations. The system also provides a platform for alumni to connect with each other and with their alma mater. This project aims to develop a comprehensive Alumni Management System that will streamline the process of managing alumni data and communication for educational institutions. The system will allow administrators to easily track and update alumni information, while also providing alumni with a convenient way to stay connected with their alma mater. The project will also include a feature for alumni to make donations to their alma mater and check the history of their donations. This project will demonstrate the benefits of using a dedicated Alumni Management System for educational institutions and will serve as a valuable tool for maintaining connections between alumni and their alma mater.

The significance of our proposed system includes:

- Save time and cost.
- Help keep track of students' progress.
- Automate the mechanism for search and retrieval of information.

Problem Statement

Traditional techniques of managing alumni information have been used in the past, and this strategy is not adaptable, efficient, or productive. Keeping track of all students who have attended the university since its inception is a difficult endeavour, as files with information and details about these students may have been misplaced, damaged, or even forgotten. Also, due to the fact that reports are physical copies, locating them can be difficult.

More so, the few computers in use have led to several vulnerabilities in the system because there is no tracking, monitoring, or control over the system for the information accessible in the department, and there are no security measures in place.

Such sophisticated scenarios were often difficult to meet manually because the process of managing data was stressful due to multiple file handling, slow due to non-automation, inflexible due to discrepancy in data provided, and most likely repetition of records; thus, the need for computer software, a web-based automated system, and a highly centralized database.

2. Literature Review

Recent studies have shown that many universities are still relying on manual methods for alumni management, with little investment in technology. However, there is a growing trend of universities implementing automated systems, such as web-based databases and social media platforms, to improve alumni management. These systems can provide real-time access to alumni information, as well as allow for easy communication and networking between alumni. Additionally, some universities have implemented alumni portals, which provide online resources and services for alumni, such as career development and networking opportunities.

(Li et al., 2015) investigates how the relationship between alumni faculty members and their alma mater, impacts the collaborative behavior of returnee scholars. The study showed that, alumni faculty tend to engage in less intra-institutional collaboration than non-alumni faculty, and the effect of alumni ties on a scholar's likelihood to engage in international collaboration is not statistically significant. This result seems to deviate from expected results as alumni should be more propelled to conduct research with their alumni.

Goncalves et al., (2014) developed a novel technique to assist teaching staffs of undergraduate programs in semi-automatically gathering information on the desired alumni population from the Web. It is seen that, the proposed method was able to collect data on a number of alumni twice as large as adopted conventional methods, all from a small collection of sample pages consisting of a few graduates.

In their study, (Babu et al., 2021) actively engaged new and former graduate students in registering, looking for, and managing alumni data in order to get updates. The Alumni portal's preferred Dynamic design facilitates interaction amongst all alumni and students. The Portal is used to provide information on colleges, special events, careers, and placements after graduation.

Cravioto et al., (2020) employed data mining techniques and a machine learning model to predict alumni's post-graduate degree attainment after graduation. The study compares the outcomes of utilizing three distinct decision tree algorithms (REPTree, J48, and Random Forest) to address this challenge. WEKA studied revealed that the Random Forest algorithm had the highest classification accuracy, leading to the conclusion that this is the optimal method for the dataset. The study can be utilized to provide a deeper understanding of patterns in alumni's propensity to pursue a postgraduate degree and to provide higher education system decision-makers with information that can aid in the improvement of educational initiatives.

The authors in (Luo et al., 2016) conducted in-depth surveys at three of China's top universities in order to explore the elements influencing the transformation of their social capital based on the established framework for alumni relations.. The research promotes the upkeep and development of good alumni relations across the three dimensions of cognition (value-oriented, identity construction), relationships (alumni relation building), and structures (building of organizations, platforms, and access), which allows for the transformation of vast untapped resources into public and multiplying alumni relation social capital. The writers argued that the job of universities' alumni relations offices should begin and conclude with the creating and sharing. In addition, with the help of relevant groups, platforms, and sufficient access, a thriving alumni relations infrastructure should be established.

Dai & Lan, (2017) analyzed and designed an intelligent integrated alumni information management system framework based on the combination of online and offline to address issues such data fragmentation, latency of information transmission, and simplicity of management

system function. There are three subsystems that make up this framework: the "Alumni Social Network," "Intelligent Data Acquisition and Storage," and the "Data Mining and Decision-Making Support." By leveraging intelligent technology to gather and store vast amounts of alumni data and data mining technology to enhance talent training program decision-making, the system intends to construct social platforms to solid alumni networks.

Furthermore, to address the issue of difficulties in getting jobs by alumni, Azis et al., (2019) developed an android based mobile application for Syarif Hidayatullah State Islamic University Jakarta. The proposed solution is made up of native Android Mobile apps that can be readily accessible on mobile devices and dashboard apps that will manage the content. This mobile application involves activities for obtaining job vacancies, scholarships, training, IT projects, and tracer studies. The system will provide information that has been processed from data submitted by alumni, allowing the department's head of information systems to simply and immediately contact alumni to gather data for accreditation.

(Mijic & Jankovic,(2012) proposed a remedy for the information system for keeping track of data on alumni. Alumni-provided employment data is helpful for assessing the value of academic programs and defending their continued existence. The country's other economic characteristics also affect employment rates, which can be utilized to determine which study programs produce graduates who are more or less in demand on the job market. The authors emphasized the necessity for institutions to create alumni associations and offer a variety of incentives to registered alumni in order to encourage them to participate more actively in activities related to enhancing the quality of curriculums.

(Olowolayemo et al., (2019) presented a system that allows universities to monitor the employment information of their graduate students using a mobile application. It also allowed students who have not secured employment or who wish to change jobs to apply for available job opportunities after graduation. This application has the potential to assist colleges in obtaining information about the employability of their graduates and help graduates in seeking employment. There is need to foster social networking among alumnus after graduation. This will help strengthen collaboration. Several works have been published in this regards.

For example, (Pooja Patil et al., 2019) proposed an alumni system that will enable students share ideas and bond. The proposed system will be able to handle an institution's alumni data and give easy access to secure information on both ends. The portal emphasizes the communication element, which will allow current students to communicate with college graduates in order to receive various updates about job chances, such as industrial trends and events. The system was design allows alumni information, including their graduation and status, to be instantly transferred from the student section to the alumni module.

Lyn Rodriguez Maata et al., (2020) presented a theoretical framework for an alumni tracking information system that

would aid in establishing an online communication between higher education institutions (HEIs) and their alumni. Thus, a web-based alumni tracking information system was developed for Omani educational institutions to meet the requirements of Standard 5 of the Oman Academic Accreditation Authority (OAAA) and other stakeholders. Utilizing the data provided by the alumni, the system will easily generate employment rates.

An Alumni information portal was developed by (Dattatray et al., 2019) the web platform was developed using Java and MYSQL as the programming language and database respectively. The goal of the proposed system is to allow students communicate among themselves and share ideas. It is to also allow school management track their graduated students.

The construction of a college alumni web site was reported on the thesis work of (Ansori, 2015). The major goal of the project is to create a web-based application that will allow former students of the College to stay in touch with one another and will replace the manual alumni office system with an automated one.

(Afolabi et al., 2019) developed an alumni feedback system for curricular development in Building Technology courses. The study emphasized the advantages of an alumni feedback system over manual questionnaires and other techniques for curriculum enhancement. The proposed alumni feedback system includes a test of alumni's perceptions of the course's impact and an evaluation of the course's content to enhance the curriculum, as well as information about the alumni's history. The web-based system was designed utilizing use case diagrams and system block diagrams. The web-based system was then developed using HTML, CSS, MySQL, and PHP.

The importance of Alumni Association in higher level of learning was emphasized in a survey carried out by Fatima Shakil & Un Nisa Faizi (2012). One hundred and twenty (120) respondents from five universities were selected, where Alumni Associations exists. These includes teachers and students. Data was collected from the respondents by means of a questionnaire. The majority of respondents said that in order to grow and prosper, all other aspects, including the Alumni Association, play an essential role in terms of both academics and administrations.

(Rattanamethawong et al., 2015) looked into an innovative framework for responding to the demands of students and alumni, as well as the alumni relationship management system that will support it. According to the results of the poll carried out by the authors, the university need student and alumni cooperation. Students and alumni, on the other hand, require information from the university. The author posits that eight factors are required to drive alumni participation. These factors include; Demographics, 2) communications, 3) Value creation, 4) Awareness, 5) Motivation, 6) collaboration, 7) Engagement, and 8) Alumni satisfaction.

Mukherjee et al., (2019) proposed a prototype for an institution-independent centralized alumni management

system. The proposed system contains a mentoring component that effectively helps students to look for people who attended that specific college as mentors. Furthermore, the system can be coupled with a capability for acquiring Letters of Recommendation from an alumnus in the same vertical in an organization.

Kailanto et al., (2012) investigated how alumni narratives can motivate and engage students in their studies. They utilized the university-specific social media portal TUT Circle to collect and distribute alumni stories. The observed results provide useful insight into the students' perspectives on alumni stories and alumni activities. From the study, it was seen that students were interested in finding out what courses alumni had completed and how these courses related to their present job requirements.

To improve mentoring between alumni and students, this article proposes incorporating chosen characteristics of social networking and data mining into alumni systems. A framework for smart alumni systems (SAS) and a proof-of-concept prototype implementation of an SAS subset are the work's two key contributions. Stakeholder roles in the SAS framework are expanded to include current students, teachers, staff, and visitors, in addition to alumni. ASP.net and C# were used to develop the proposed Smart Alumni System. The infrastructure in place allows for active communication and interaction with alumni, current students, faculty, and other university officials. Each stakeholder is divided into user sub-groups of a given type, each with its own set of permissions and capabilities. Users of various types are able to interact with one another as well as with users from other sub-groups in order to achieve common goals or tasks that are mutually beneficial. The suggested Smart Alumni System has been shown to benefit from data mining concepts in order to provide users with an enhanced experience and interactive functionalities.

3. Materials and Method

Method of Research

The methodology adopted for the researcher is Design Science Research (DSR). It is seen as a research activity that build new or invents, innovate artifacts for problems solving or improvement attainment such new innovative artifact creates a new reality, rather than the existing reality been explain or trying to make sense from it, it creates, and evaluates IT artifact which is intended to solve some identified organizational problems. (Al Turki, 2013).

The Design Science Research Methodology is relatively a new approach in the field of Information Systems, and Computer Science because of its prominence rapid growth in the discipline (Pirainen, 2014)

System Design

The developed platform comprises two major sections. The admin section and the alumni section.

The admin section of the system is designed for use by authorized staff members, who are granted access by the association body of the school. The admin section allows the administrator to manage the platform, including managing user accounts and other aspects of the system.

The alumni section is designed for use by alumni of the school. Users in the alumni section can access information and resources specific to alumni, such as updates on events and activities, as well as connect with other alumni.

Both sections of the system require a valid username and password for login, in order to ensure that only authorized users have access to the platform.

The core features of the platform are:

Admins of the platform can

- Add new fresh alumni to the portal.
- View Alumni for various departments and years.
- Verify the validity of job opportunities posted by alumni.
- Post special announcements.

While Alumni can

- Update academic details
- Update work details.
- Post and view job opportunities.
- View course mates profile.
- Edit their social profile.
- Post, and comment on forums.

The interaction of the different sections of the system is depicted in the system design flowcharts (which comprises of the admin flowchart and user flowchart) shown below:

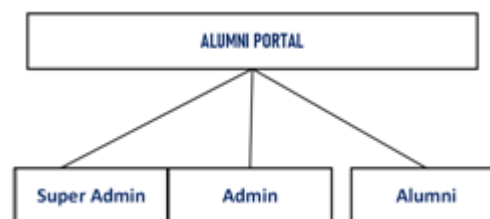


Figure 11: Principal Actors in the system

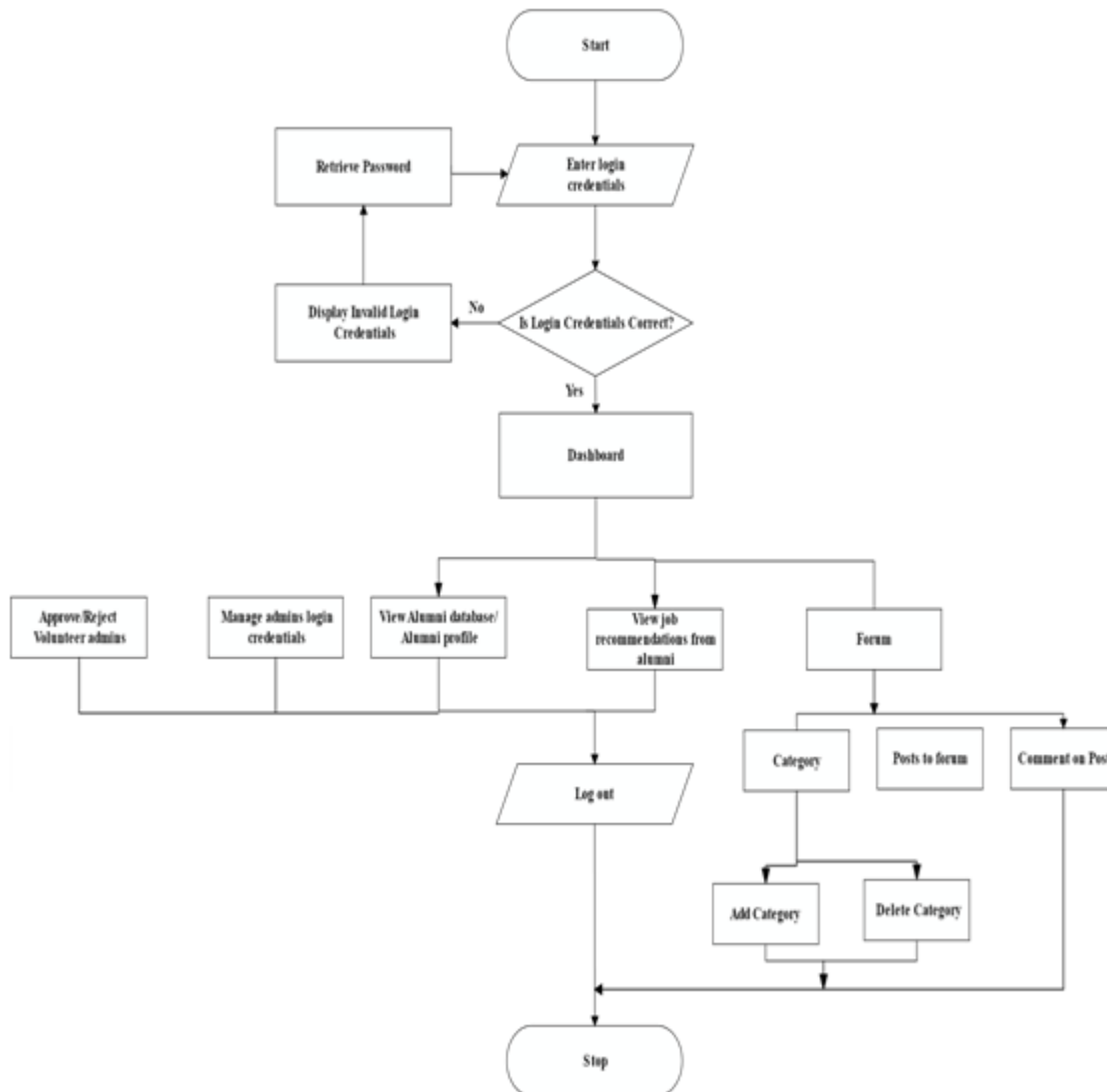


Figure 12: Super admin use case diagram

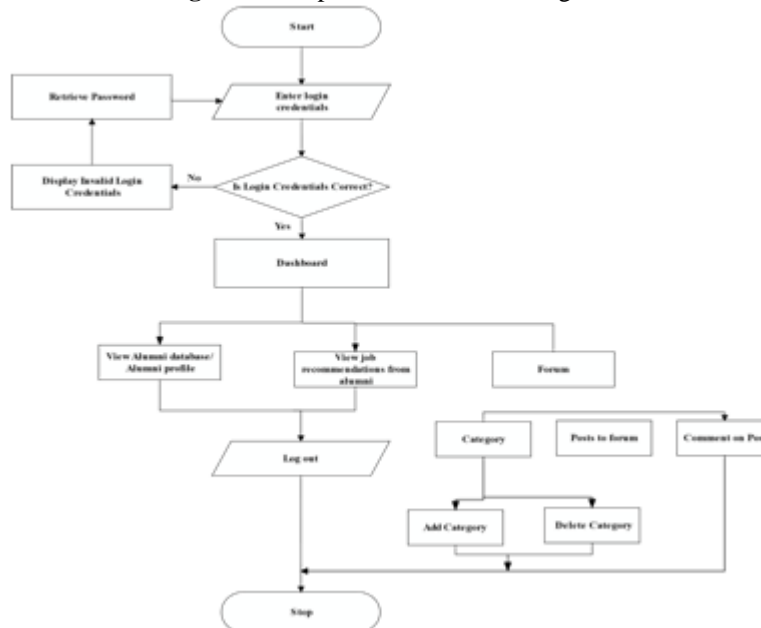


Figure 13: Admin use case diagram

4. Implementation Procedure

The developed system utilizes MySQL 8.2 as a backend database, PHP 8.2 as a scripting language, Bootstrap CSS framework, and JavaScript as front-end. The system is designed to provide an efficient way for alumni association management and interaction.

- User registration and login: Alumni can register for an account on the platform using their matric number and login using a valid username and password.
- Data management: The system allows the administrator to manage alumni data such as alumni accounts, alumni information, and other data relevant to the platform.
- Search and retrieval of information: Users can search and retrieve information from the platform using different parameters such as student's name, and matric number.
- Communication and networking: The alumni section of the system allows alumni to connect with other alumni and stay updated on events and activities on.
- Data security: The system is designed to ensure that sensitive data is protected and only accessible to authorized users.
- Robustness: The system was tested using both valid and invalid data to ensure it can handle different inputs and prevent errors.
- Scalability: The system is built to be scalable and can handle an increased number of users and data.

5. Results and Discussions

The results of the system have shown that the developed system can handle errors, updates, and modifications more

efficiently, as changes can be made quickly and easily through the user interface. Furthermore, the system is accessible from anywhere and at any time, as long as the user has an internet connection. This allows alumni to access the portal and stay updated on events and activities.

The developed system has been implemented and tested and some of the interfaces of the developed system are shown below.

The developed system has been implemented and tested and results are show in the appendix section. The alumni login screen is shown in figure 1, whereas figure 2 to 4 shows the alumni dashboard. Figure 5 shows the forum interface. Figure 6 and7

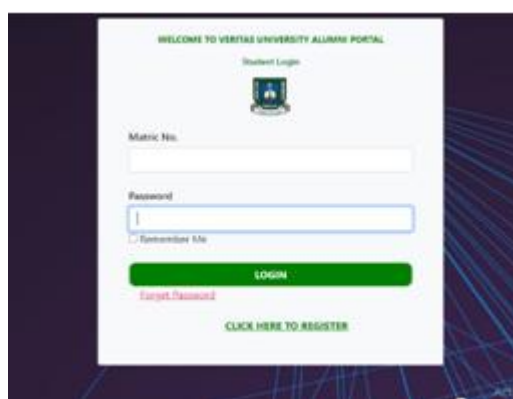


Figure 1: Alumni Login Interface

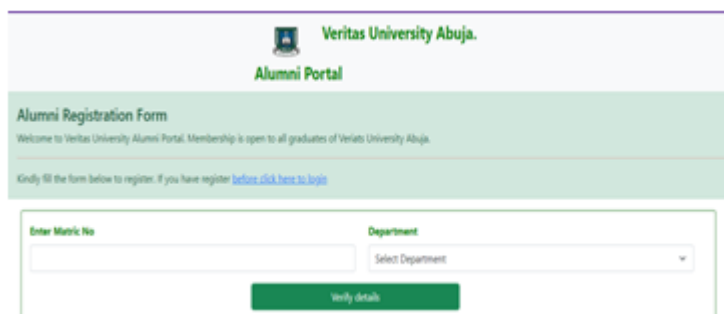


Figure 2: Alumni Account Activation Interface

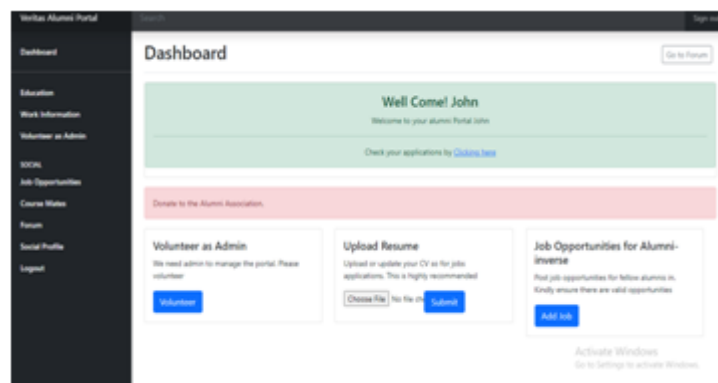


Figure 3: Alumni Dashboard

#	Name of School/Institution	Degree Obtained	Year	Action
1	Veritas University Abuja	Bsc. Computer and Information Technology	2018	Edit Details Delete
2	Federal University of Technology Akure	Msc. Computer Science	2020	Edit Details Delete

[Add Educational Details](#)

Figure 4: Educational Qualifications Interface

0 minutes 0 seconds

Categories

- Politics (14) [Go to topic](#)
- Academics (14) [Go to topic](#)
- Sports (14) [Go to topic](#)
- Jobs (14) [Go to topic](#)
- Others (14) [Go to topic](#)

Latest Posts

Show 10 entries

#	Posts	Category	No. of Comments	Action
1	keyword selects all rows from both tables as long as there is a ...	Academics	5	Go to post
2	In the following example, initially the div section consists of onl...	Academics	5	Go to post
3	Dembele to Chelsea	Sports	5	Go to post
4	Nothing to see.	Others	5	Go to post
5	hjnjjn.nj	Jobs	5	Go to post

Showing 1 to 5 of 5 entries

Previous 1 Next

[POST TO FORUM](#)

Figure 5: Alumni Chat Forum

Veritas Alumni Portal

Search

Sign out

Dashboard

WELCOME BACK ADMIN

Add Alumni [Add Alumni](#)

View Alumni [View Jobs](#)

Jobs Posts [Jobs Posts](#)

JOBS OPPORTUNITIES

Show 10 entries

Search:

Figure 6: Admin Dashboard Interface

DEPARTMENT OF COMPUTER AND INFORMATION TECHNOLOGY ALUMNI

Show 10 entries

Search:

SN	Alumni Name	Matric No	Email	phone	View Dashboard
1	John James Adekunle	VUC/1/001	james.adekunle@yahoo.com	09043211321	Alumni Dashboard
2	Adama Barrow Omega	VUC/1/008	adam.600@gmail.com	9056443211	Alumni Dashboard
3	Inaki John Doe	VUC/1/009	inaki@yahoo.com	8067554321	Alumni Dashboard

Showing 1 to 3 of 3 entries

Previous 1 Next

Figure 7: View Alumni Interface.

Deployment and Installation

The system is hosted on a shared hosting platform. User can access the platform through the registered domain name.

Server Requirements

The web-based Alumni Based System makes use of web server hardware and software that is industry standard. The minimum requirements needed for development are:

- Apache Server
- MySQL
- Windows
- Minimum of 2GB RAM and 160GB HDD ROM.

6. Conclusion and Recommendations

The importance of alumni association cannot be overemphasized. A strong alumni system will not only create a bond between the school and her former system, it will also create an avenue for graduates to network with their former course mates and colleagues, open doors for opportunities, and help the university to track her graduates. Also, it will help universities to develop better curriculum based on feedback from the alumni. Hence the development of a University alumni portal. The key modules of the developed platform include the Alumni portal where the alumni, view, and manage their information. Also, it consists of the admin dashboard, and social forum. The proposed system will meet foster better collaboration between alumni and their alma mater. In subsequent work, a payment gateway will be included to enable simplify donations to the platform. Also a chat box section will be developed to enable private chat among alumni.

Alumni management is an important aspect of universities and colleges, but many institutions struggle with managing their alumni effectively. The use of an automated web-based database management system can improve the efficiency and accuracy of managing alumni information, as well as increase productivity for both alumni management and university staff. Additionally, the developed platform allows for easy communication and networking between alumni, making the Alumni Association a more effective and valuable institution. However, more research is needed to fully understand the potential benefits and implementation of automated alumni management systems.

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