





## Automated Web-Based Model for Youth Empowerment in Nigeria

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Abstract	Article History
<p>Unemployment is a major problem ravaging Nigeria's population today and youths are worst hit by it. Youth Empowerment is a medium to motivate young individuals to achieve personal excellence and effectuate significant contributions to their society. This study was aimed to develop an enhanced web-based automated model for youth empowerment and development. The method used in designing and analyzing the system is Object Oriented Analysis and Design Methodologies. A Vector Space Model with Cosine Similarity was implemented to select and rank the candidates according to their scores and the job was given to the most successful candidate through the recommendation system. Hypertext Preprocessor (PHP) and JavaScript were used as the scripting language together with MySQL which serves as the database for the proposed system. The results showed that the new system matches and provides screening models for job applicants and the job is given to the best qualified candidate. Thus, the implementation of this recommendation system will bring about great assistance to the nation and human resource personnel thereby helping to minimize the perils of unemployment and bring reduction in poverty if adopted.</p> <p><b>Keywords:</b> <i>Automated; Empowerment; Enhanced; Model and Youth</i></p>	<p>Received: 10 Aug 2025            Accepted: 22 Aug 2025            Published: 24 Aug 2025</p> <p>Scan QR code to view*</p>  <p>License: CC BY 4.0*</p>  <p>Open Access article</p>
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### 1. Introduction

The youth are the young and energetic people who mostly refer to the engine room of any society (Akubuilu, 2018); (Adebunmi, 2020). A youth is referred to as a period of life coming between childhood and maturity (Uba and Okeke, 2023). However, the definition of youth varies from one nation to the other. According to the United Nations Department of Economic and Social Affairs, youth are those people aged between 18 and 24 years. In Nigeria, the age classification of youth is between eighteen and thirty years as stipulated in the National Youth Development Policy (2019), this explains why NYSC is limited to graduates under the age of 30years. These groups of people are the able-bodied male and female who are intelligent and independently minded and can make an impact on every society by their will and independence of mind according to Unini (2020); Uba and Okeke (2023).

Youth empowerment is defined as a process where people are given the ability and power to make knowledgeable decisions and effect change in their own lives and other people respectively. Empowerment is seen as a socio-economic or political act by the state or its agencies, private individuals or corporate organization aimed at transforming the socio-economic well-being of the disempowered. The group includes the poor rural-urban people, minor farmers, the powerless and those without a job whose wages cannot pay for them the basic needs of life (Kalagbor and Harry, 2018). Over the years, successive governments in Nigeria have embarked on various youth empowerment/development policies, projects and programmes aimed at empowering the youths in the country to make them contribute meaningfully to the development of the nation. Some of the youth empowerment programmes include Graduate Internship Scheme (GIS), Youth Initiative for Sustainable Agriculture in Nigeria (YISA), Subsidy Reinvestment and Empowerment programme (SURE-P), Youth Enterprise with Innovation in

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Nigeria (YouWIN), National Directorate of Employment (NDE) scheme and N-power (FGN, 2017).

There is extensive literature on empowerment but there is limited literature that is specifically focused on youth empowerment and there is research gap regarding a framework or a general model upon which to map processes for youth empowerment and development. This model tends to describe, explain, and interpret youth empowerment and development as well as to plan and guide interventions intended to optimize it.

The main problems of the present system are: There is no enhanced computerized screening and matching of new job opportunity, no messenger appraisal from the system for new job advertisement, Unemployed youth with no Central database and Inability to select the best from the system. The aim of this study is to develop an enhanced web-based automated model for youth empowerment and development with the following objectives: to develop a computerized system for screening youth employment, to design an algorithm for youth notification of new jobs, to build a database for unemployed youth in the country and To select the best from the system using vectorization model.

The significance of this study is based on information dissemination as veritable tool for empowering the youth with the help of a central database system for employment and development. This system will help to increase job opportunities and reduce crime in the country. Also, the cost of traveling from one place to another in search of job will be taken care of. It will motivate the students to work hard with the intention of being absorbed after graduation from school. The study will be beneficial to young graduates, to Government, and any other organization that deals with youth empowerment.

## 2. Related Works

**Evanthia et al. (2015)** developed an integrated e-recruitment system for CV ranking based on AHP. They studied an integrated company-oriented e-recruitment system that programs the candidate appraisal. Their approach differs from conventional e-recruitment systems in that they mandate that applicant's fill-in predefined web forms without accepting CVs in a document format. Furthermore, it models the candidates' CVs using HR-XML representation and afterward provides grading of the candidates, also, scores their qualifications for the given position necessities. The scoring and grading process is based on Analytic Hierarchy Process (AHP). However, their system is limited to automate CVs only.

**Terzis and Economides (2015)** proposed a Job Site Evaluation Framework (JSEF), an easy to use and comprehensive evaluation framework for job sites. They evaluated the job sites across four categories: (a) job market, (b) technical, (c) usability, and (d) social. Each category has different weights. Each category is divided into subcategories.

**Akinwunmi et al. (2020)** in their study considered the prospects of using cloud computing as a tool for youth

empowerment. They made use of social action model and economic empowerment to formulate of the conceptual model. In their study, some opportunities were enlisted which is provided for empowerment by the cloud and presented cloud-based empowerment ideas. A proof of the conceptual model validation by the survey indicated that 92% of the respondents agreed that the cloud-based services gave them the opportunities to learn new ideas, explore them, create other new ideas and collaborate with your peers on these ideas while 8 % disagreed. Further statistical analysis of their model data from their survey showed that the R-squared value of 1 was realized for a polynomial regression of empowerment determinant as a function of user experience of cloud-based services and validated the fact that the model can aid youth empowerment. In conclusion, cloud computing can effectively aid the youth to acquire, discover, produce and cooperate on new services that can be valuable to them in every area of their life thereby attracting them to a useful and productive lifestyle that can make the society a better place.

**Udoh and Onuodu (2020)** in their study proposed an enhanced web-based model for youth empowerment and career development which is an automatic model which by design selects qualified and certified candidates into the suitable area of specialization. They made use of Object Oriented Analysis and Design Methodology to analyze their findings because of its usability nature and to organize the interaction of the objects within the new system. The MinHash recommendation algorithm was applied to classify candidates using content-based filtering approach with candidate's work experience, the behaviour-based approach was used to test candidates profile details to determine appropriateness to job allocation of a suitable position in candidate career prospect. Their results showed competence in Time Complexity especially in areas that involve speed in access validation of unemployed youths and speed in processing application of an unemployed youth, with values for the evaluated parameters to be 10 and 5 seconds respectively as compared to the Existing System values of 22 and 25 seconds respectively, which additional suggests that their proposed system overtakes the existing system. Furthermore, the new system by design matches and provide screening model to job applications for qualified candidates and the results showed that the rate of successful job testing and assignment can significantly be improved with the most qualified and suitable candidate being assigned the appropriate job which matches his/her course of study, thus streamlining the random selection and producing higher quality output thereby reducing unemployment in the labour market. They concluded that their work will be beneficial to young graduates, to Government, and any other organization that deals with youth empowerment.

**Satheesh et al. (2020)** made use of a field in Machine Learning to screen resumes called Advanced Natural Language Processing. The model designed by them enabled the recruiters to screen the resumes centered on job narrative within no time. Spacy NER model from the 5resumes was used to make the hiring process easy and effective by removing the required entities spontaneously and then generating a graph to display the score of each resume. The recruiters used the scores to choose the essential candidates without searching through

piles of resumes from unqualified applicants. Their application helps the recruiters to screen the resumes more competently and as well reducing the price of hiring. With this, promising candidate are provided to the organization and they are in turn placed efficaciously in an organization which appreciate his/her skill set and ability.

**Khamker et al. (2021)** proposed system and presented a set of practices that generates the whole enlisting method more applied and economical. The cosine similarity concept was used on the proposed system. An enforced system was gotten that matches the candidate’s resume with the job description and as a result, shows the share of similarity. It displays the similarity results of the candidates to the recruiter, which helps recruiter to evaluate the best scored candidates. This projected system, enforces a company-adjusted accomplishment system that will assist the human resource department in briefly listing the proper candidate for a particular job profile. The system would be employed in several business sectors which will need skilled candidates, therefore reducing the workload on the human resource department.

### 3. Methodology

#### 3.1 Object Oriented Analysis and Design Methodologies

The Proposed System adopted Object Oriented Analysis and Design Methodologies (OOADM) as its method as employed by Mgbike and Okeke (2020). Object-Oriented Analysis and Design (OOAD) is a practical method for analyzing and designing an application, system, or business by applying object-oriented programming, as well as using visual modeling all through the software development process to foster better product quality and even encouraging stakeholder participation and communication. This model used OOADM to locate the objects, organize the objects, describe how the objects will communicate and define the various behaviors of the objects. A technical approach was adopted in analyzing and designing the proposed system. This methodology was incorporated because of its ease of understanding, easy updating, upgrading and encouragement of planning and development of systems that are truly independent of one another.

#### 3.2 Analysis of the Existing System

The existing system obtains the record of jobless youths through their application of jobs via the internet and stores it in its database. From the database, the best candidate fit for the job is selected and notified. With the system, the youth can assess and apply for vacant jobs online. It notifies the user of the newest work accessible and gives details of what is required to have the job. The system enables the registered users to view his /her profile and makes necessary adjustment for future purposes. As the users register, the existing system stores the information of its user on their database thereby having a detailed list of all unemployed youths in diverse groups and session.

##### 3.2.1 Constituents of the Existing System

Figure 1 analyzed the constituents of the existing system modules that make up the system.

- a) **User:** this module is for the applicants that will access the system for empowerment. It allows creating of account and allow login into the system.
- b) **System database:** the module uses a relational database that allows storage of applicants’ profile, job categories, job requirements and also screening test questions and answers.
- c) **Automated Screening Test:** this module allows users to be examined after which their names will be enlisted for the employment based on their scores.
- d) **Success Credibility Module:** this module shows the result of each applicant’s performance that will lead to employing the candidate.
- e) **Employment:** this module issues employment position to the successful candidates.

##### 3.2.2 Weakness of Existing System

The following weaknesses were discovered from the existing system:

1. There is no automatic matching and screening of job opportunity.
2. There is no identification method to ascertain original bearers of the job.
3. Inability to screen out who has been employed on the cause of the scheme.

##### 3.3 Analysis of the Proposed System

The proposed system uses a centralized database and programmed matching methods to match the users to his or her respective job opportunity groups. The system is powerfully web-based interactive interface design and can be accessed at any time on different web applications with the help of internet connection. The researcher made use of object-oriented analysis and design methodology in gathering and analyzing facts with respect to system operation of features on job opportunities and development for efficient contribution and production screenings

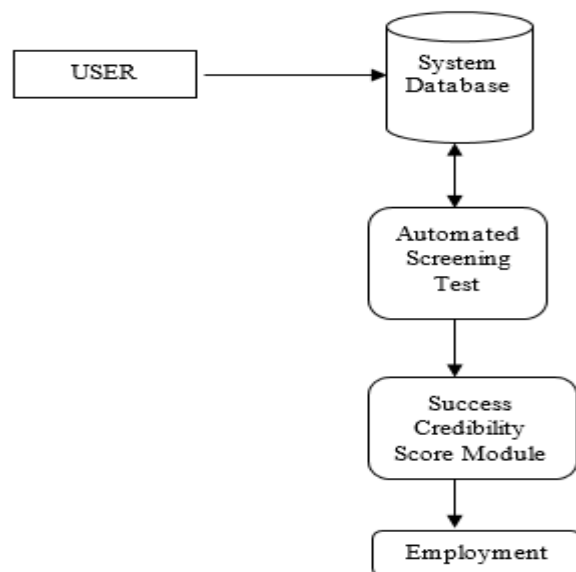


Figure 1: System Architecture of the existing system

Source: Akujuru and Enyioko (2019).

### 3.3.1 Components of the Proposed System

Figure 2 analyzed the added components to the existing system that forms the new system.

In the system architecture, several steps have been identified to perform the job matching analysis and recommendation.

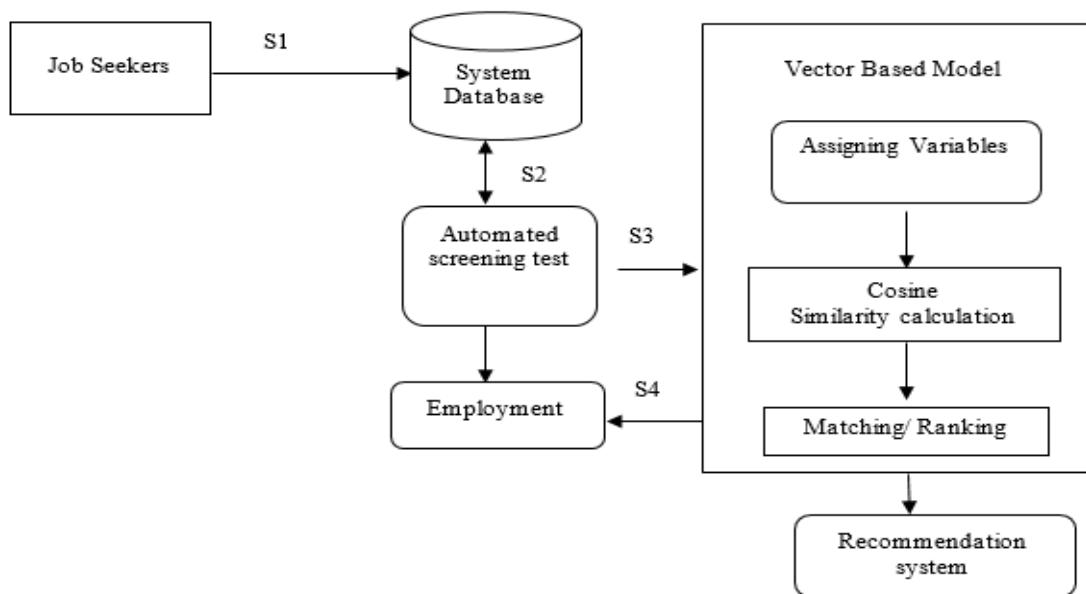


Figure 2: Proposed System Architecture

Step 1 (S1) indicates the extracted features (variables) from applicants' resumes and job description to build Job profiles and Job applicants profiles. In job case, the applicant's profile consists of some features that required for a specific job. Thus, the job's profile comprises of the job requirements that ought to be possessed by applicants.

Step 2 (S2) allows users/ job seekers to be examined after which their names will be enlisted for the employment based on their scores.

Step 3 (S3) specifies the vectorization process that includes assigning variables, similarity calculation, and matching/ranking, where the job profile along with the applicants' profile was denoted as vectors (Assigning variables). The model parameters by creating a rating matrix  $R_{x,y}$ , where  $x$  denotes the job and  $y$  denotes the Job seekers resumes explain as follows:

1 (TRUE = 'Exist') „If the target attribute is existed

$R_{x,y}$

0 (FALSE = "not Exist") „If the target attribute isn't existed

The ranking matrix  $R_{x,y}$  converted by considering the values of job seekers' features as ratings of all the features mined from the resumes utilizing any similarity measures.

Cosine Similarity measures is computed as follows:

$$\text{Cos}(x, y) = \frac{x \cdot y}{\|x\| \|y\|}$$

Moreover, in matching process, the result of the matching instrument is a level of entities by their match rates. The instrument likewise gives a complete detail of the matching process (i.e., similarity values for all clusters and for each single property within a cluster together with the information about matchers used, property values, and weights) which can

be used to generate explanations for the calculated object similarity.

Step 4 (S4) recommends the most qualified applicants to the recruiters and endorse occupations to the seeking applicants as per their matching profiles.

### 3.3.2 Advantages of the Proposed System

The Proposed System have the following advantages:

1. Collection of data from candidates that register for empowerment and archiving it through the use of a relation database.
2. Preventing duplicate registrations for users already benefiting from the scheme.
3. Accessing the students via online quiz.
4. Releasing the scores and the names of those that succeeded.

## 4. Results and Discussion

### 4.1 Choice of Programming Language Used

Hypertext Preprocessor (PHP) and MySQL were used in implementation as we shall briefly discuss them to shed more light on the discussed issue.

PHP is a broadly used open-source general-purpose scripting language especially suitable for web development and which can also be built into HTML. PHP code may be executed with a command line interface, embedded into HTML code, or combination of various web template systems with PHP to give a better outcome, web content management systems, and web frameworks. PHP code make use of PHP interpreter for its interpretation and is implemented as a segment (module) in a web server or as a Common Gateway Interface executable.

The web server in turn combines all the results of interpreted and executed PHP code, which can come in the form any type of data, inclusive of images and the generated web page. PHP can also be implemented in other programming tasks apart from web context, such as standalone graphical applications. MySQL is becoming the world's most popular open-source database. It has taken the lead in database choice for web-based applications because of its consistency, easy-to-use and verified performance. Facebook, Twitter, YouTube, Yahoo! and many more that have high profile web properties incorporate MySQL as their database.

#### 4.2 Discussion of Results

The program contains several modules which some of them are listed below. Figure 3 is the home page. This is the first page that pops up when the website is opened. From this page, the user navigates to other modules of the application. The Administrator Module allows the system to manage the user's account. The administrator also manages the exams by adding new exams questions and answers, new job opportunities and their specifications. The User Module gives new and already existing users access to create account in the system and those with existing accounts can login to apply for new jobs, also, to check for updates in the applied jobs. After authentication of the new user, he or she proceed to job application where they will be screened after taking examination. Those that scored highest is given the job. The user interfaces are shown in the following figures: Figure 3 describes the Home Page of the website. It connects to others pages of the site.

Figure 4 displays the Registration/ Login page which allows the user to register and receive authentication after a successful registration. Figure 5 shows the Job List page. This page is where new jobs are posted and users are allowed to select the type of job they want and apply for it. Figure 6 displays the Screening Questions page where the candidate that applied for the job can be screened to select the best candidate qualified for the job. Figure 7 shows the User Dashboard page. This page displays the information the user needs to know like alerts for jobs, applied jobs, notifications and messages from administrators. Figure 8 describes the candidate's detail page. This page displays the details of the candidate or user who has successfully registered and applied for a job. Figure 9 shows the user's flowchart which describes the graphical representation of the user's action in the program. Table 1 displays the Unit Test Plan. Unit test plan was used to develop a good and logically test plan to avoid bug.

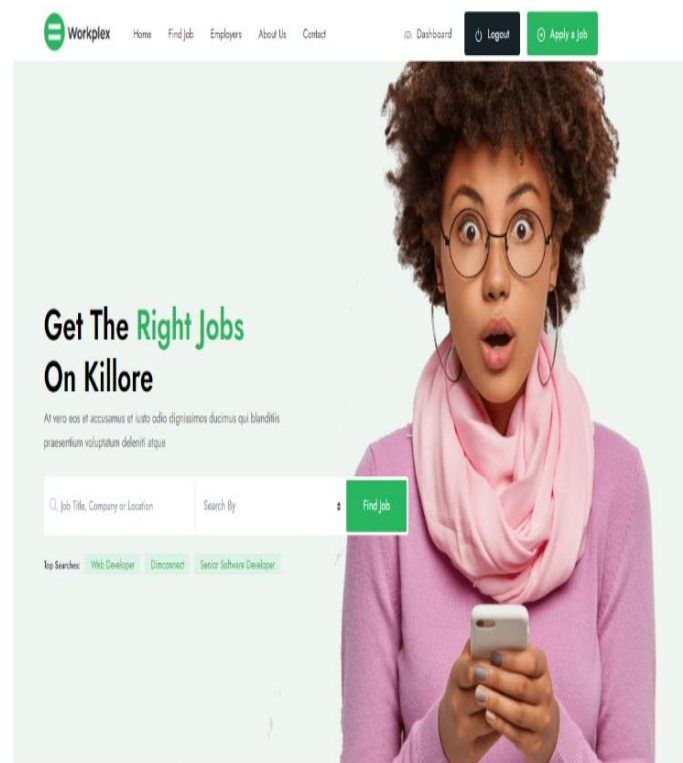


Figure 3: Home Page

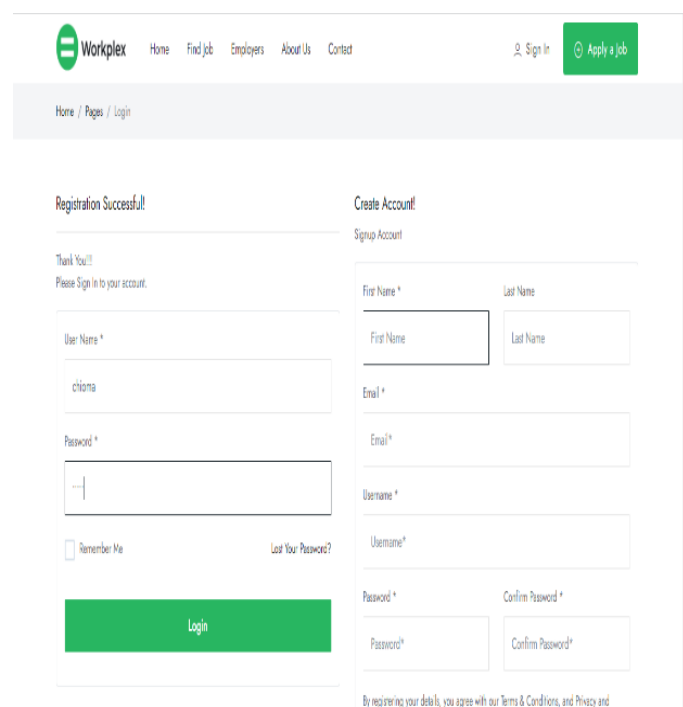


Figure 4: Registration/Login Page

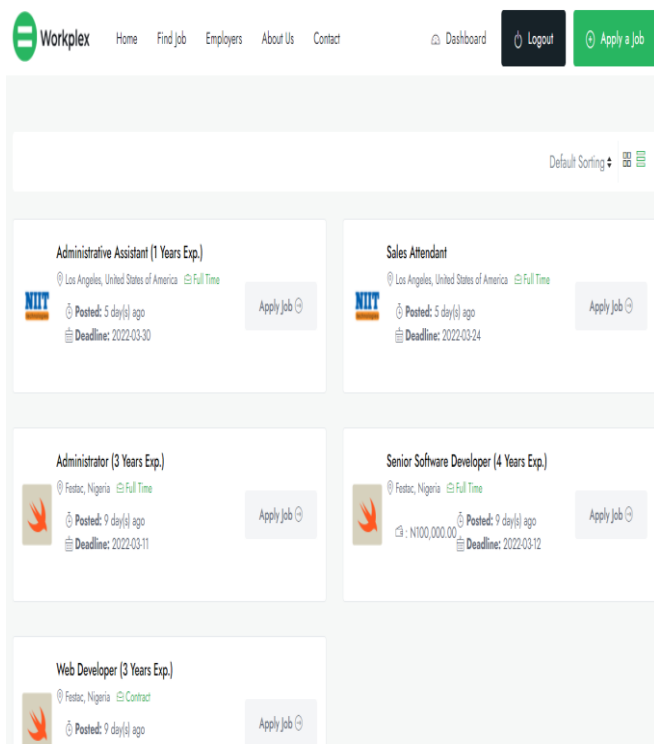


Figure 5: Job List Page

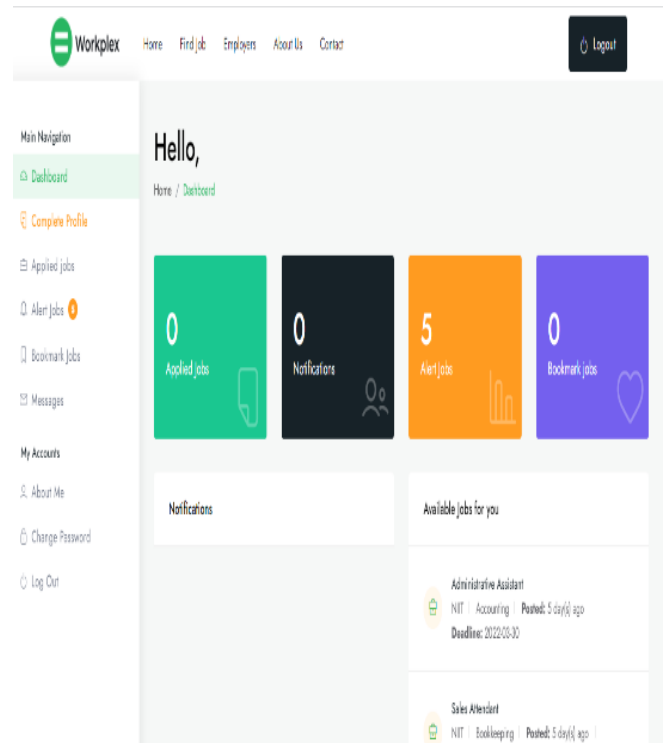


Figure 7: User Dashboard Page

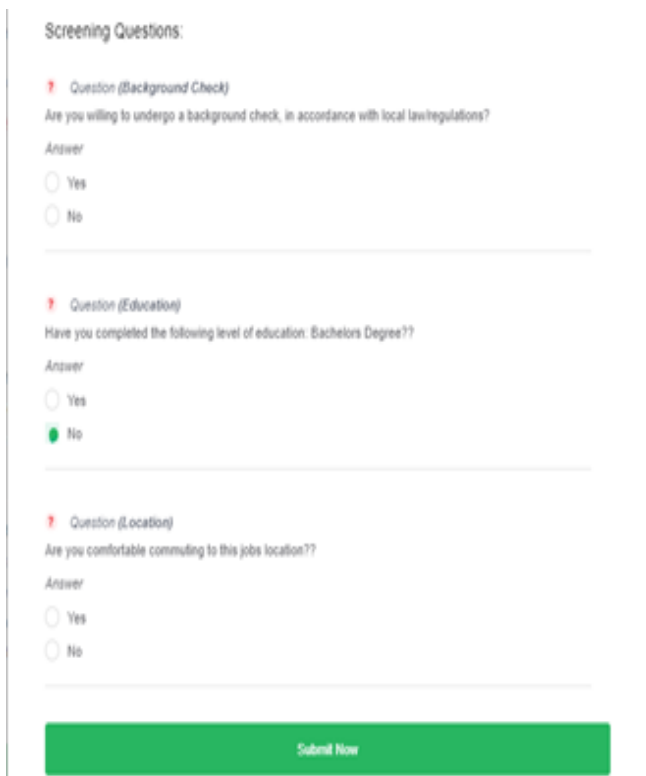


Figure 6: Apply Job/Screening Questions Page

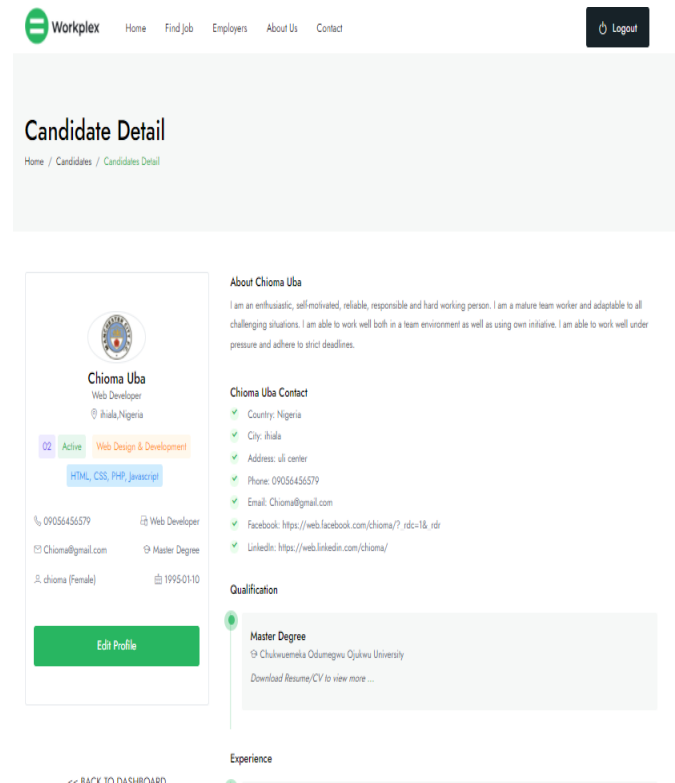


Figure 8: Candidate Details

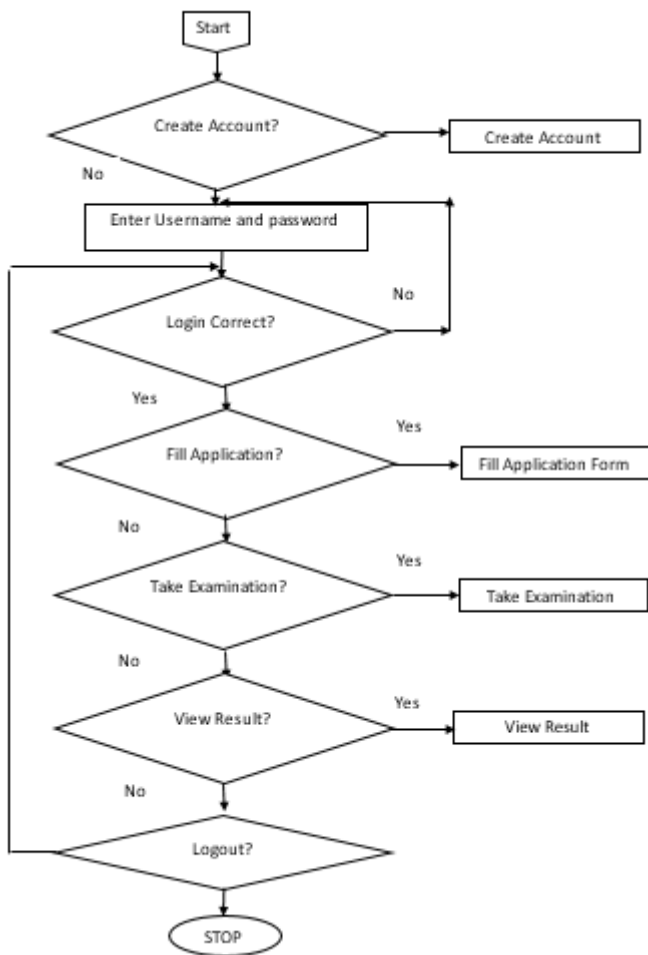


Figure 9: User Flowchart

Table 1: Unit Test Plan

S/N	Tested Data	Expected Result	Actual Result
1	Pin	To correspond with what is in database	It responded with the pin in the database and was validated
2	Username and password	Must be correct password given to the users	The password was correct and was able to display page for registration
3	Administrator login	Expected to login if and only it is the administrator	Login successful because of correct identity
4	Queries	To view users' information	Was successful
5	Data connections and linking buttons	To see if the interface is connecting to database and view other pages is possible	Connected to database and able to display other pages

**5. Conclusion**

In this study, an enhanced web-based automated model for youth empowerment and development has been developed. The system helps unemployed graduates and youth to view and check for the available job opportunities. The system used a testing and matching technology to select the most qualified candidate for the job and the best candidate that passed the exams. This was carried out using Vector Space Model and Cosine Similarity to select the best candidate that scored highest and automatically matching the job to the candidate. Lastly, the implementation of this system will bring about

great relief for the nation, human resource personnel's and it will help to curb the menace of unemployment and bring reduction in poverty if adopted.

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