(RESEARCH ARTICLE)

Design and implementation of an android base system for job recruitment

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Abstract

The benefit of computerisation in the organisation, either public or private, is essential to make the organisation's activities run effectively and efficiently. lt simplifies the complexities in getting data, analysing it and producing the output in a specified format based on the result of the program analysis of the data used. Despite the complexities of both entries and analysis of vast data of the applicant records, this project is aimed at simplifying it by designing a computer-based program that will manage part of the activities taking place at the Nigerian Institute Of Leather And Science Technology and also will perform all necessary tasks of analysing those that will yield the correct and meaningful result (output) format in the required by the Institute recruitment. The program produces a room for using an entry form as an interface between the database and the data, which will then be analysed and the desired result produced. The development of the analysed data is then presented in a specific format using the report designed to suit the usual request by the Nigerian police recruitment on such report or data. This includes the applicant's Name, qualifications and other things the applicant records. Therefore the computer program developed in this project work. Serve as a considerable improvement over this existing system and as a tool for technology development for Nigerian police recruitment.

Keywords: Computerisation; Efficiency; Data Analysis; Recruitment; Technology Development

1. Introduction

Android application provides functionalities of e-recruitment on portable devices like Android-based intelligent phones/tablets. A portal enhances functionality and flexibility to cater to various user classes (Gadegaonkar, 2023). Many companies have realised the need to change the employment or recruitment process to cope with the increasingly changing technology and a large number of job seekers (Avinash, 2012, Boswell et al., 2003, Barber, 2006). The Internet, therefore, has become a popular way to recruit people. The Human Resource Information System (HRIS) is a system which has been used previously to manage employees. The efficiency and effectiveness of the Human Resource Information System enable staff to format their profile, their strengths and weaknesses (Barber, 2006). When such a system is used, it is easy to have qualified personnel in the right place. It is clear that from an HRIS, more advancements can be made to do the recruitment process online. From there, the User will continue updating their resumes online even after employment, and companies can download the summaries. Technology constantly changes; society depends on this (Boswell et al., 2003).

What we take for granted today would have been the stuff of science fiction as little as fifty years ago. In the early years of the twenty-first century, computers and the Internet captured the public imagination. They found their way into the working environments and increasingly into the domestic spaces. In this modern society, if we cannot cope with these

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changes, we will not stand or survive anywhere in this technical world (Mulay, 2022). Today there is no place for errors, so to make a system more effective and efficient, we need such technology where error-prone chances must be negligible. In the scenario of this project, we are required to develop a web-based application for Job Portal Management System. In this time of recession, everyone, either experienced or fresher, is searching for a job. This job portal can be beneficial since it allows users of different profiles to upload their CVs and search for a position based on their qualifications (Matthews, 2006). A well-developed Android application is a maximum cost-reducing strategy to be applied or used by organisations because efficiency is improved within the organisation (Avinash, 2012, Boswell et al., 2003, Barber, 2006). Cloud computing " makes it easy to maintain data and applications using remote servers and the Internet (Barber, 2006).

Companies in Kenya must realise the efficiency and competitive nature of the global economy concerning online recruitment. (Holm, 2012) argues that an organisation that does not use any system consumes a lot of time to update and retrieve employee information (Maurer, 2007). It saves employers hours sorting many applications because only qualified applicants can apply for a specific job. (Holm, 2012). Posting a position on the online portal costs nothing compared to advertising on print media; therefore, online recruitment is cost-effective. The recruitment process becomes quick simply because a job can be posted in the morning, and applicants are found and interviewed by the end of the day (Haroon, 2010).

The problem involves using files, especially if the activities are extensive and might lead to a mismatch of files. It uses many terms and needs documents, making the job cumbersome. Security for the confidential records of the management can be easily compromised; hence, it is manual and can be accessed illegally by anyone (Kalpana, 2022). But with the mobile application, only the authorised person can access the management information system. This can be achieved using an in-built application security password, which the authorised User only knows. Information cannot be easily retrieved since it is kept in files. They must go through all the files to search for the data or information they need to recover. The manual system has stopped a lot of qualified job seekers who are supposed to have the job but only allows many unqualified to get the job just because they know someone on high ground; this project will relatively address the who-know-who syndrome in our society during job recruitment. This project aims to design an Android-based Job Recruitment (Reeve, 2006). This research will ease the work of the personnel department of any organisation; It will reduce the workload for the workers in the organisation, giving them more time to render quality services to the applicant. It will create more employment opportunities for qualified youth (Mohamed et al., 2002). The government and private individuals can find this interesting. It will benefit the User responsible for compiling the recruitment result by reducing the bulkiness of files and processing the work faster. It helps the applicant; hence: the computerised system is done more quickly. It saves time by making it more convenient when processing data (Hadass, 2004, Mohamed et al., 2002).

2. Material and methods

2.1. System study

There is various method by which this project or research can gather information for research purpose. Data are often collected in the normal course of administration and not specification for statistical purposes. The combination of the method chosen and used depends on the method research design. Below are some of the possible techniques that can be used.

- **Interview method**: This is a face-to-face conversation between the researchers, also called the interviewer, and the respondent, who ask questions and get an answer from the respondent.
- **Observation method**: This method entails the researchers going to the police station to get or record what has happened, is happening, and when it is happening.
- **Questioner method**: this is a tool for information gathering where the researchers share the form with the respondent requiring the analysed questions.
- **Telephone**: This is an avenue where the researchers ask the respondent question(s) through their phone.

2.2. Analysis of the existing system

Presently recruitment is done manually. If a company or organisation needs employees, they announce the newspaper. People who are eligible send the application to the organisation or company. From these applications, they are called for interviews or tests. After tests, the company has to do shortlisting manually; these shortlisted candidates are called for interviews. After the interview, shortlisted candidates are employed. So it's all a time-consuming procedure.

2.3. Problems with the existing system

- Users outside the environment need to travel to apply for the job.
- Applicants do not get notified in time if they have been employed.
- Application is made manually, which can misplace applicants' files.

2.3.1. Solution to the Problems

The solution proffered is to develop an Android application that can perform the following:

- Enable the User to apply for the job from anywhere.
- An email has been sent to successful applicants.
- Admin accesses the applicants without any intersections or mistakes.

2.4. Proposed new system

Android base Job Recruitment is aimed at developing a mobile application for recruitment in

The Institute of Nigerian Institute of Leather and science technology (NILEST). Some features of this system will be creating vacancies and storing application data. This project, *Android Base Job Recruitment,* is an online website where jobseekers can register themselves. It has made the process easy. People all around the world can apply and register.

2.5. Feasibility study

A feasibility analysis usually involves a thorough assessment of a proposal's operational (need), Financial and technical aspects. The feasibility study is the test of the system proposal made to identify whether the User needs may be satisfied using the current software and Hardware technologies and whether the system will be cost-effective from a business point of view. A feasibility study should be relatively cheap and done as soon as possible. And whether it can be developed with the given budgetary constraints. Depending on the study, the decision is made whether to proceed with a more detailed analysis. When a new project is proposed, it usually goes through a feasibility assessment. A feasibility study is carried out to determine whether the proposed system can develop with available resources and what the cost consideration should be. Facts considered in the

The feasibility analysis were:

- Technical Feasibility
- Operational Feasibility
- Behavioral Feasibility
- Economic Feasibility

2.6. System architecture

This deals with the conceptual models that define the structural components and inter-relationship among the system element. It denotes the high-level structure of software which comprises the software elements (entities), the relationship between them, and in some cases, the attributes of both entities and relationships.
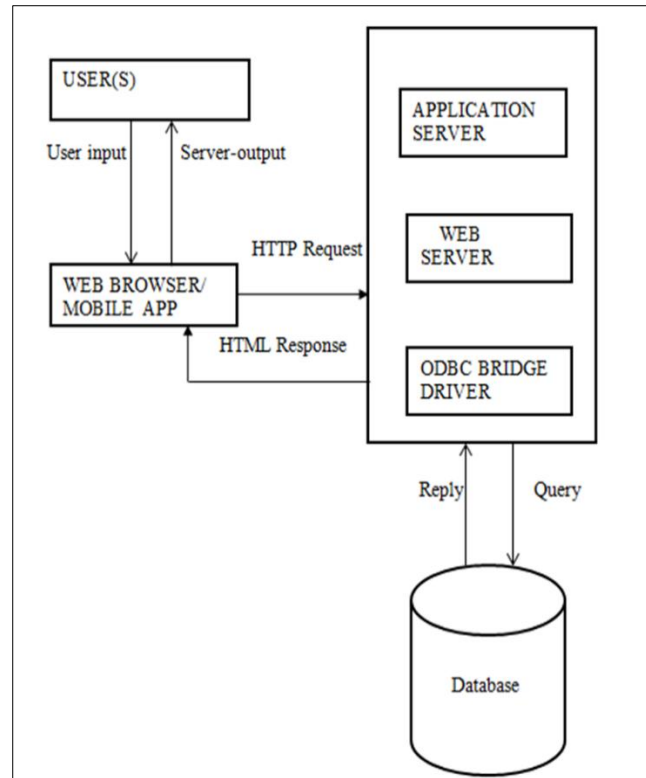
Figure 1 System Architecture
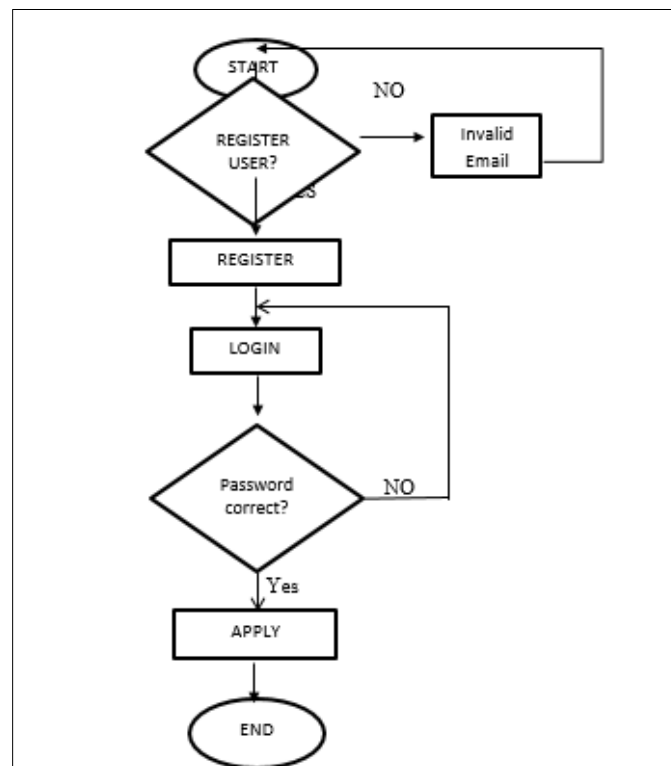
2.7. Program flowchart

Figure 2 Program flowchart
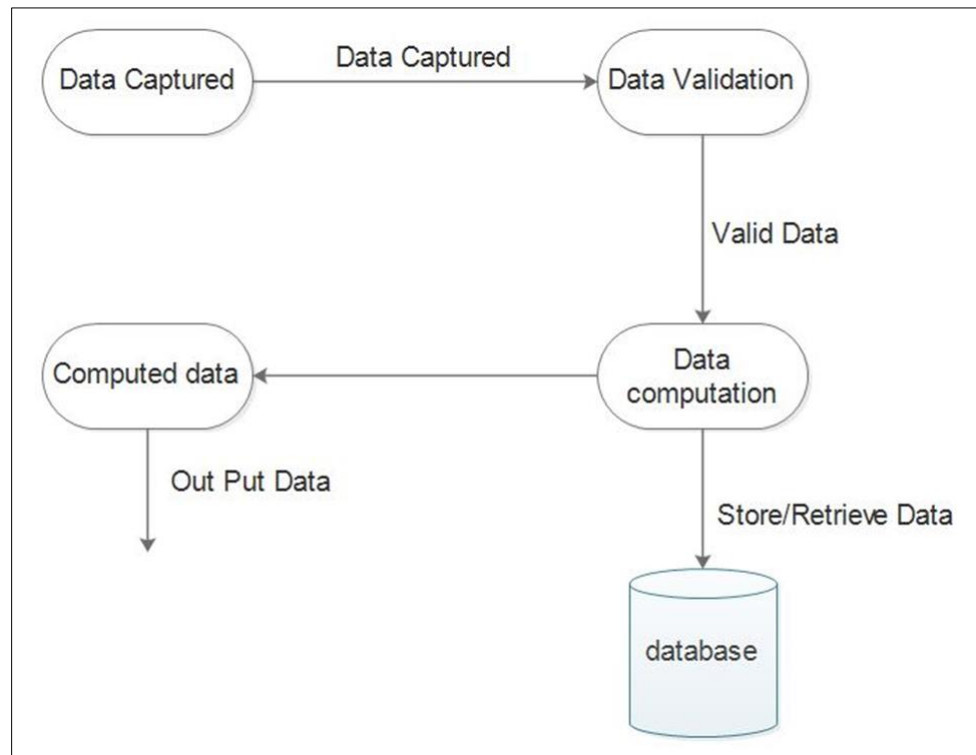
2.8. Dataflow diagram

Figure 3 Data flow diagram

2.9. System requirements

The system requirement needed for the newly proposed system is as follows:

- Software requirement
- Hardware requirement

2.10. Software requirement

The software mentioned below will be installed on a computer system and will be used to develop the program; they are as follow:

- Window operating system version 7 or above
- Wamp server
- CSS (Cascade Style Sheets)
- JavaScript
- HTML (Hypertext Markup Language)
- MySQL (Standard Query Language)
- PHP (Hypertext Preprocessor)

View, adding, updating, and deleting data from the database can be done through the interface forms to find out and retrieve data wanted by using selected queries and analysing or printing data in a specific layout using reports.

2.11. Hardware requirement

The following basic hardware is required for the newly developed system to perform maximally:

- Internet browser
- Internet access
- Phone (Android version 7.0 and above)
- Power supply

2.12. Database design

Table 1 User login

Field name	Datatype	Length	Description
Username	Text	20	User login username
Password	Varchar	20	User login password

Table 2 Admin login

Field name	Datatype	Length	Description
Username	Text	20	Admin login username
Password	Varchar	20	Admin login password

Table 3 Register

Field	Datatype	Length
Name	Text	20
Surname	Text	20
Email	Varchar	45
Password	Varchar	15

Table 4 Applicant Registration

Field	Datatype	Length
Surname	Text	15
First Name	Text	15
Gender	Text	10
Marital Status	Text	10
Date of Birth	Varchar	10
Post	Text	10
Qualification	Text	20

3. Results and discussion

3.1. System development

System development is a conceptual model used in project management describing the stages of an information system development project. System development comprises several Cleary defined and distinct work phases that System Engineers and System developers use to plan for, design, build, test and deliver information systems. System development aims to produce a high-quality system that meets or exceeds customer expectations based on customer requirements by providing a system that moves through each clearly defined phase within scheduled time frames and cost estimates.

3.2. System implementation

System implementation is the carrying out, execution or practice of a plan, a method, or a design for doing something. Implementation is an action that must follow any preliminary thinking for something to happen. In an information technology context, implementation encompasses all the processes involved in getting new software or hardware operating properly in its environment, including installation, configuration, running, testing and making necessary change

- Registration form
- Applicant login form
- Admin login form
- Job creation form
- View Applicant form

Applicant's information: this is the menu where the applicant fills in their complete information, e.g. Name, surname, date of birth, gender etc. But after the data is sent, the admin can only view it for the applicant to get employed.

Figure 4 applicant's information

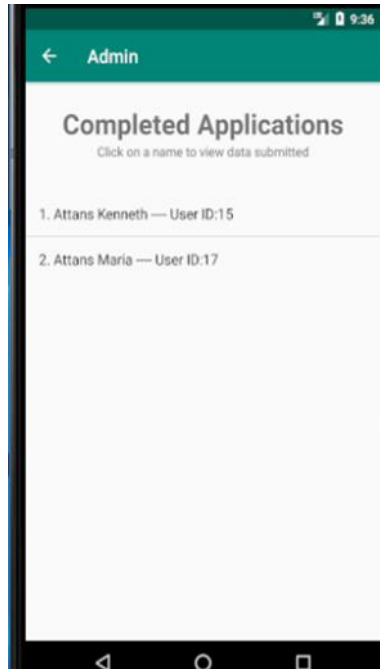**Completed application:** the menu where the admin views the successful applicant list.

Figure 5 Completed application

4.2.3 Login page: The login page is where the applicant login to send their information.
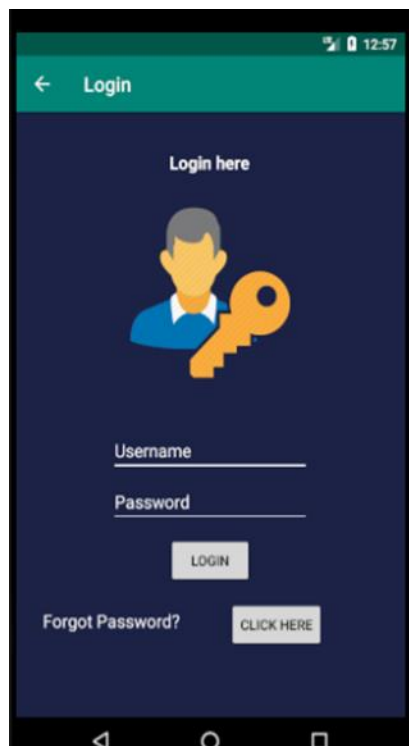

Figure 6 login page

Register form: the menu where the applicant registers by sending their surname, Name, email address, and password before applying.
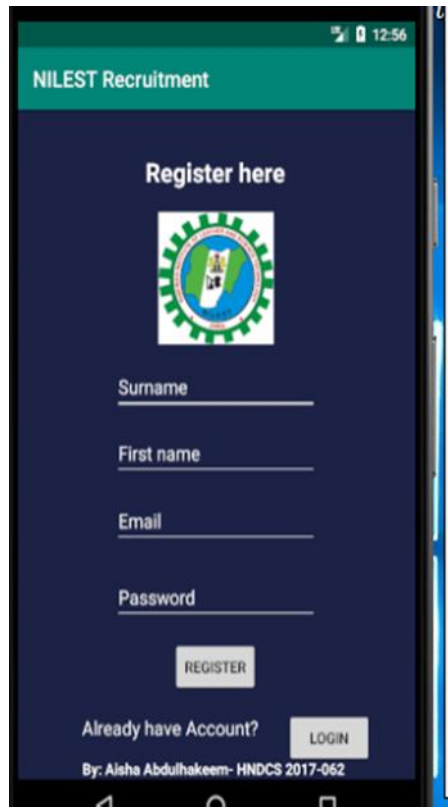

Figure 7 Register form

Email confirmation interface: this is the notification you received for confirming your email before logging in.
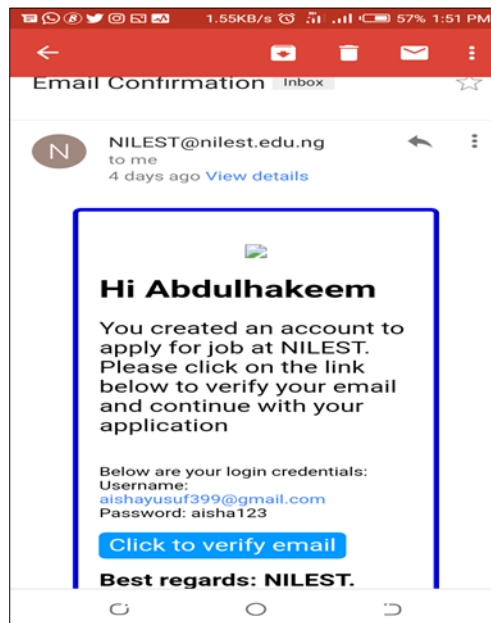

Figure 8 Email confirmation

Application successful: This message pops up after completing your application.
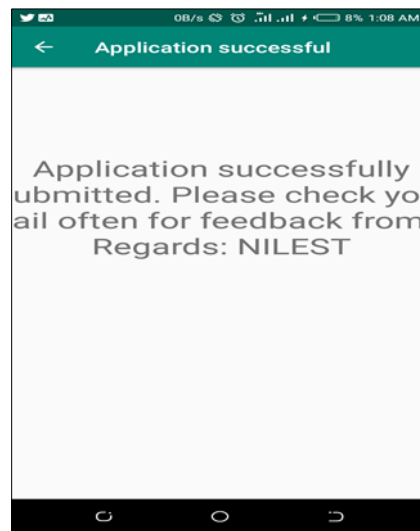

Figure 9 Application Successful

Employment Notification: This email notification you receive when you are employed in the Institution.
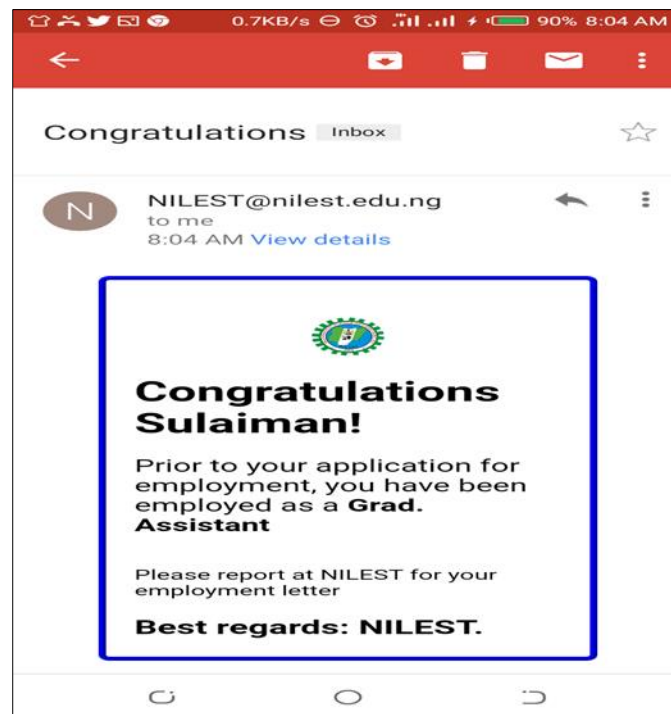

Figure 10 Employment notification

3.3. System testing strategies

Testing an Android-based job recruitment system is essential to a system's life cycle. Because after implementing the testing of a new system, we can ensure that the new system made it requires functionality and is free of errors. There are many reasons to conduct the testing for the developed system because it is only through testing that we can be able to analyse any problem in the new system and provide solutions to these problems and incorporate them in the design of the proposed Android-based job recruitment system alongside improving and modifications required by the new system. This project employed both Unit and Integral tests to ensure the new system's effectiveness and efficiency.

3.4. Unit testing

In this phase, individual units or a single page of the system are tested independently to ensure that separate steps are working effectively without errors.

3.5. Integration testing

In this phase, all the various components of the system are tested together using the actual data, which will be submitted to the management for approval/acceptance. A component, in this sense, refers to an integrated aggregate of more than one unit. In a realistic scenario, many units are combined into components, which are aggregated into even more significant parts of the program. The idea is to test a combination of pieces and expand the process to test your modules with those of other groups. Integration testing can be done in various ways, including the top-down, bottom-up, and umbrella approaches. In the integration testing of the software, satisfactory results were obtained using the bottom-up approach.

3.6. System testing

System testing of software or hardware is a test conducted on a completed, integrated system to evaluate the system's compliance with its specified requirements. System testing falls within the scope of black box testing and should require no knowledge of the inner design of the code or logic (Sommerville, 2007).

The purpose of integration testing is to detect any inconsistencies between the software units that are combined together or between any of the assemblage and the hardware. System testing is a more limiting type of testing; it seeks to detect defects within the "inter-assemblage" and the whole system. As a rule, system testing takes, as its input, all of the "integrated" software components that have successfully passed integration testing and also the software system itself integrated with any applicable hardware system(s).

3.7. User acceptance test

This is the phase at which a user is introduced to the system and allowed to surf, browse, and even use the contents or components of the system to get accurate and valid feedback on the system's excellent performance. Therefore, a user was introduced to the design and allowed to browse through the system, where wonderful and good feedback was gotten.

3.8. System documentation

- Program Author: AISHA ABDULHAKEEM
- Reg.No: HNDCS-2017-062
- Department: **Computer Science**
- Program Title: Design and Implementation of an Android Base Job Recruitment Portal
- Program purpose: To computerise the job recruitment of the Nigerian Institute of Leather and Science Technology
- Program year: February 2020

4. Conclusion

In conclusion, this project work was a real learning experience and tried the present objective of using the computer to boast the smooth running of activities in the Institution. The project was developed by me using HTML, PHP, and CSS; the overall purpose of this system is to computerise the process and prevent all errors. Based on this research work, several factors limited the scope of the project work. Hence, it would be necessary to make suggestions, and the recommendation is as follows.

- The institution "Nigerian Institute Of Leather And Science Technology" should use the project. It will make the recruitment process faster and easier
- in other for this institute to grow, it has to work hand in hand with the Internet to meet up with the 21st century

Compliance with ethical standards

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Disclosure of conflict of interest

The manuscript was collaboratively developed by Daniel Aliu and Suleiman Ibrahim Abubakar, with both contributing equally to the research and development of the project. They affirm that they have no conflicts of interest. Additionally, neither of them are connected to any organization that could have a financial interest, whether direct or indirect, in the topics discussed in the manuscript.

Statement of informed consent

For the study titled "Design and Implementation of an Android Base System for Job Recruitment," all individuals involved, primarily those implementing our system and indirectly the job applicants using it, gave their informed consent willingly. Before the study kicked off, we took the time to ensure that everyone involved had a clear understanding of the study's purpose, its procedures, as well as how their data would be handled and kept confidential. We also made it clear that they had the option to withdraw from the study at any time, without facing any repercussions. After these detailed briefings, we obtained written consent from all participants. In the case of applicants under the legal age, consent was obtained from their parents or guardians.

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