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## A Web-Based Promotion Qualifications Assessment System for Academic Staff in Nigerian Federal Polytechnics

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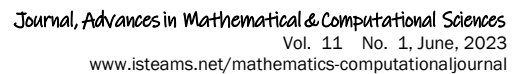
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### ABSTRACT

The promotion documents and qualifications assessment of academic staff in Nigerian higher institutions of learning (University, Polytechnics, and Colleges of Education) is one of the most important procedures for preserving and increasing the quality and efficiency of higher education in the country. It is observed that there is ineffectiveness in the manual methods in the promotion documents and qualifications assessment of academic staff in Nigerian higher institutions of learning, specifically the Federal Polytechnics, that have resulted in an unjust, inequitable, biased and delay in the system of promotion documents and qualifications assessment. The Nigerian Federal Polytechnics are observed to be facing the challenges mentioned above. This research therefore developed a computer-based/solution-based system which aims at providing a web-enabled flexible platform with the use of Information and Communication Technology (ICT) infrastructures and Web tools that automatically assists and supports in the internal and external assessment of promotion documents submitted by the academic staffs in the Nigerian Federal Polytechnics, and by extension reduces to the barest minimum if not totally eradicated the aforementioned problems. It is a system with flexibility in assessing the promotion documents of academic staffs by all stakeholders (internal assessors and external assessors) that are involved in the promotion documents and qualifications assessment. This research was developed with WordPress a Content Management System (CMS) which comprises of html, MySql for a working functional database, CSS for the frontend, and Php as a scripting language for the backend. At the end, if fully implemented, the system would solve the problem of ineffectiveness in relation to the manual system of promotion documents and qualifications assessment in the Nigerian Federal Polytechnics.

**Keywords:** Academic Staff, Assessment, Automated, Promotions, Qualification



Promotion of academic staffs in the Nigerian Federal Polytechnics are meant to recognize and reward hardworking and dedicated members of staff as at when due. As a result of this scenario, all academic staff appointment, assessment, and promotion activities are carried out in accordance with the institution's standard (Teymouri, Tootoonchi, Salehi, & Hassanzadeh, 2007).

This manual approach has been observed to be ineffective because it takes a long time to complete due to different stages of meetings and contacts, argument and counter-argument in form of favoritism and biasness, high cost and risk involves in the transmission of promotion documents to external assessors in different parts of the country.

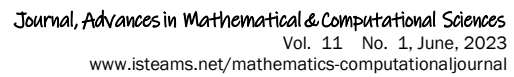
These factors, thereby contribute to the delay in the release of promotion letters. This research therefore develops an automated approach, with the use of web development tools, that provides a flexible platform for the assessment of promotion qualifications to be carried out within a very short time, which at the long run eradicates the delay in the completion of the processes that are involved in the assessment of promotion qualification of academic staffs in the Nigerian Federal Polytechnics.

The aim of the research is to develop a web-based staff promotion documents and qualifications assessment system for the Nigerian Federal Polytechnics, and the objectives are to:

- (i) create a database that would store all the relevant data of the academic staffs and criteria for the assessment of promotion documents and qualifications.
- (ii) use web development tools for implementation of a flexible platform for the assessment of promotion documents and qualifications.

**(a) Promotion**

A promotion can take place in different ways ranging from careers, business and marketing. When career promotion occurs, usually not only a title changes even the salary is being increased. In fact, the term promotion can have different meaning depending on the contexts. Promotions are classified into different types which are job promotion, stock promotion, product and sales promotion and so on. Job promotion is given to an employee who has shown remarkable achievement or has acquired the necessary skills required to carry-out a new job task. In terms of career, promotion refers to increasing a staff's position.

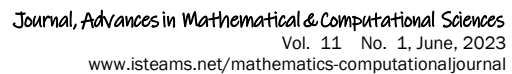


Assessment or appraisal is a systematic process through which employees are given feedback on their achievement. Staff assessment are achievement appraisals or reviews used to measure employee's achievement and productivity. generally human resource management are responsible for conducting employee's assessment in order to improve their performance and monitor what the employee is doing according to what they are expected to do. According to the glossary education reform by great school's partnership, 2015, in education, the term assessment refers to the wide range of technique or approach educators use to appraise, determine or check the learning progress, student's educational requirements and skill acquisition. Assessment is one of the ways through which rewards can be given to employees.

Promotion assessment is a common activity that goes on in every organization, it is seen as a form of reward or appreciation given to staffs for a work well done. Promotion assessment practices in Nigeria higher institutions are common in all the institutions ranging from the appointment of staffs, appraisal and promotion practices. In develop countries, student can take part in evaluating teachers. University teachers are expected to possess content competence; pedagogical competence; the capacity to handle sensitive topics in an open, honest, and respectful way; the capacity to contribute to student intellectual improvement; the ability to know the grades of the students, different records of academics, valid appraisal of students and giving respect to the institutions.

Many reviews have been made on promotion in different higher institutions and by different researchers. A promotion is an advancement from one position to another which involves a drastic rise in both wages and status. Promotion is a change from one position to another which brings about a higher status and responsibility. In various institutions in Nigeria recommendations for promotion must be supported with reckonable evidence of supplementary contribution in the institution. The primary role of the universities and polytechnics encompasses three key functions namely, evolution of knowledge through research, distribution of knowledge through teaching and community service. These key functions wish to bring about national advancement and competitive edge to the country at the global level. The accomplishment of these objectives, to a large extent, depends on the academic staffs because of the vital role they play in the educational process.

35



Promotion assessment is a common aim or agenda in all higher institutions in Nigeria whereby almost all institutions have been using the same methods in promoting academic staffs. The Promotions assessment of academics at Higher institutions in Nigeria are carried out by a committee consisting of the institutional management members, academic professionals in the discipline area, and labor representatives, across all institutions. Promotion is said to be efficient only if the promotion activities completely achieve its set of goals (Kotler & Keller, 2012). Anything contradictory will result in conflicts and disputes, and non-achievement of proposed institutional goals (Cochran, 2003; Koch & Emrey, 2001). Promotion consolidate and interweaves various practices conveyed with the academic staff in terms of personal and experts requests to coordinate interest and willingness (Alonderiene & Klimavičiene, 2013). Decision-making during promotions is the means of reaching the goal with no conflict. It was discovered that most of the institutions in Nigeria request for a set of criteria which should be provided by the academic staffs before they can be promoted.

A manual system of promotion documents assessment is like a bookkeeping system in which the maintenance of records is done by hand, without the use of any computer system or any automatic system. In this type of system, data are manually written therefore the information is also manually retrieved which is used to carry-out an assessment. This system of promotion documents assessment suffers from an increase rate of inaccuracy, and they are much slower.

Loft, Tjajadi, Thuy and Wong (2016) in their work Lecturers Promotion Assessment System Based On Fussy Logic, it was reviewed that Fuzzy logic is rule-based system calculated based on the degree of truth rather than using true or false which is Boolean logic which has been usually used. The system assists the assessors for a primary evaluation of a lecturer who is applying for the promotion. Due to the implementation of this system, the evaluator has to perform a manual evaluation using an estimated percentage of qualification for each criterion. It made use of Fuzzy set, membership function, logical operation and the if-then rules to carry-out the methodology. This takes up a longer time for promotion selection which already consists of several steps of procedures. The steps involve in promotion selection using the fuzzy logic is too long, so it cannot be used to save time.

36

### 3. RESEARCH METHODOLOGY

Data was collected from primary and secondary sources and analyzed to investigate the working of the current system. To develop the new system, the method used to generate data for the study are largely primary sourced data that were generated through a face-to-face interviews and observations with the members of academic staff and establishment unit of the Federal Polytechnic, Bida which is responsible for the promotion processes.

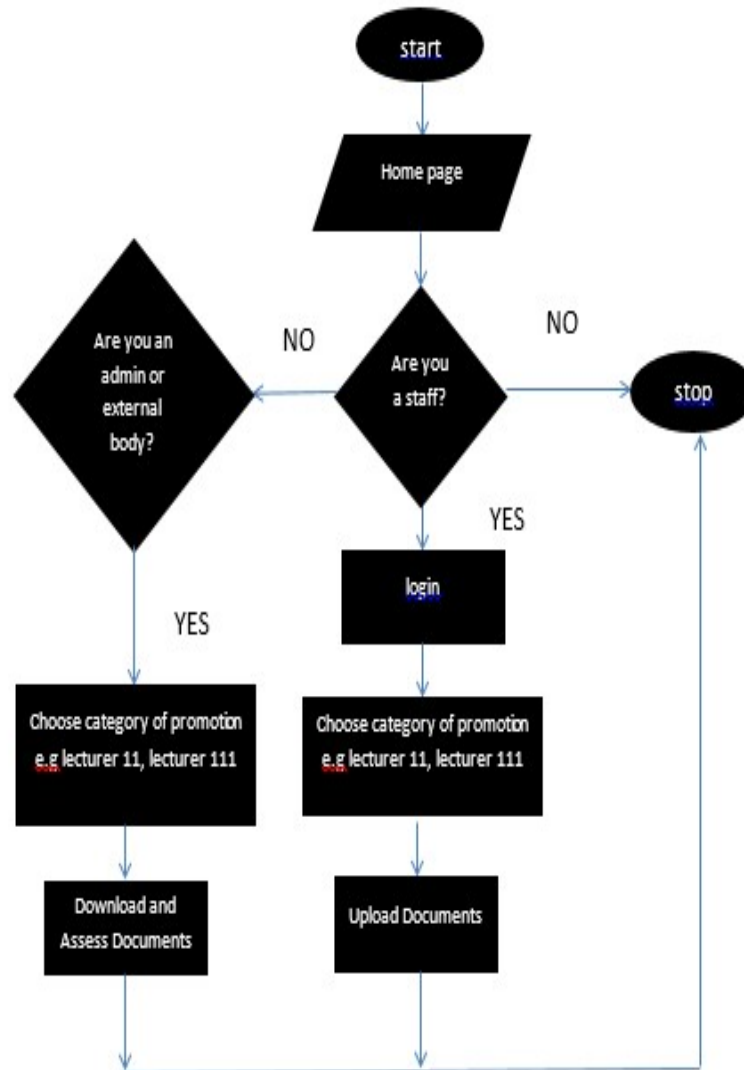
The waterfall model approach was adopted in the development of the automated system for promotion documents and qualifications assessment of academic staffs in Nigerian Polytechnics. The waterfall model is a sequential design model process, often used in dividing software development processes into phases (requirements specification, software design, testing, and implementation) of which each phase must be complete before starting a new phase with each phase performing a specific role.

The Use-Case diagram in figure 1 below shows the various stakeholders in the propose system,also the activities to be performed by each stakeholder are also depicted.





## System Operational Flow Diagram



**Figure 2: System Operational Flow Diagram**

The operational flow diagram in figure 2 above illustrates how the proposed system would work, when the users (Stakeholders) intend to log into the website on the home page, they will be required to log in either as an academic staff (lecturers), as an internal assessor or an external assessor. They will have a unique login detail that will enable them to login which includes user name and password. As an academic staff you will check for your category of promotion and download/upload the promotion criteria/documents. The internal and external assessors will also login to download/upload these criteria/documents for assessment.

An input design and specification is the interface design that captures data into the working database, they are raw data that are being processed. The input data are made available for maintaining, establishing and creating outputs records. Some of the inputs formats are:

S/NO	FIELD NAME	TYPE
1	NAMES	Varchar (60)
2	USER-NAME	Varchar (20)
3	PASSWORD	Varchar (20)
4	EMAIL ADDRESS	Varchar (30)

S/NO	FIELD NAME	TYPE
1	FIRST NAME	Varchar (20)
2	LAST NAME	Varchar (30)
3	USERNAME	Varchar (20)
4	PASSWORD	Varchar (20)

The outputs design and specification show how the results (outputs) are used and the ways it could be made simple and easier for users to understand them. Some forms were designed to serve as an output interface to the database. It can be achieved by querying the database. An example of the outputs format is the lecturer's submission output as shown in figure 3 below.

39

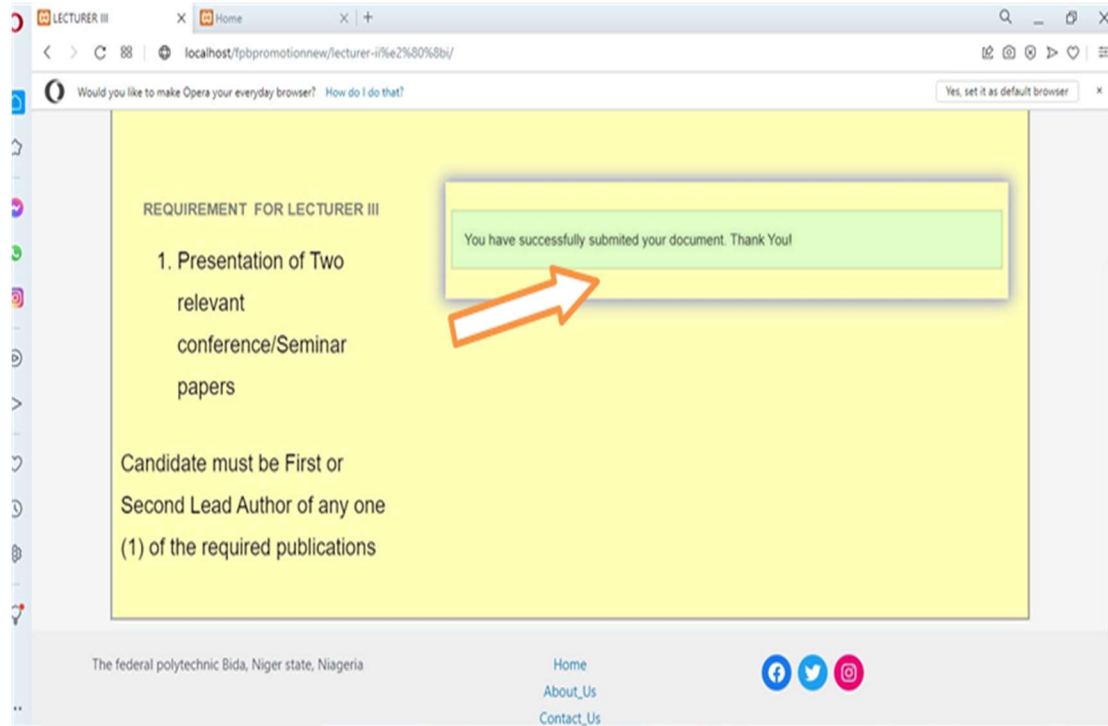


Figure 3: Showing the Lecturer's Submission Output

### The System Implementation Tools

The proposed system architecture is divided into frontend and backend.

**CMS:** This system would be designed using Content Management System (CMS). The tool called CMS contains various web development languages and it abstracts it into a friendly interface. Word-Press would be used to design the system due to some of its functional features such as the creating and editing of content, security, flexibility, user and role-based administration.

**CSS:** Cascading Style Sheets (CSS) is a language used for describing presentation and separation of web pages which includes the fonts, the colors, and the layout. This separation can provide more flexibility, improve content accessibility, and enable multiple web pages.

**PHP:** Hypertext Preprocessor is a general purpose or open-source server-side scripting language that can be used to develop or design static, interactive and dynamic websites.

**MYSQL:** This is a relational database management system based on SQL (structured query language). This application is used for so many purposes which are managing of data that are kept inside the database, logging applications and it is use for adding, accessing and managing contents of the database. It is reliable, flexible and easy to use.

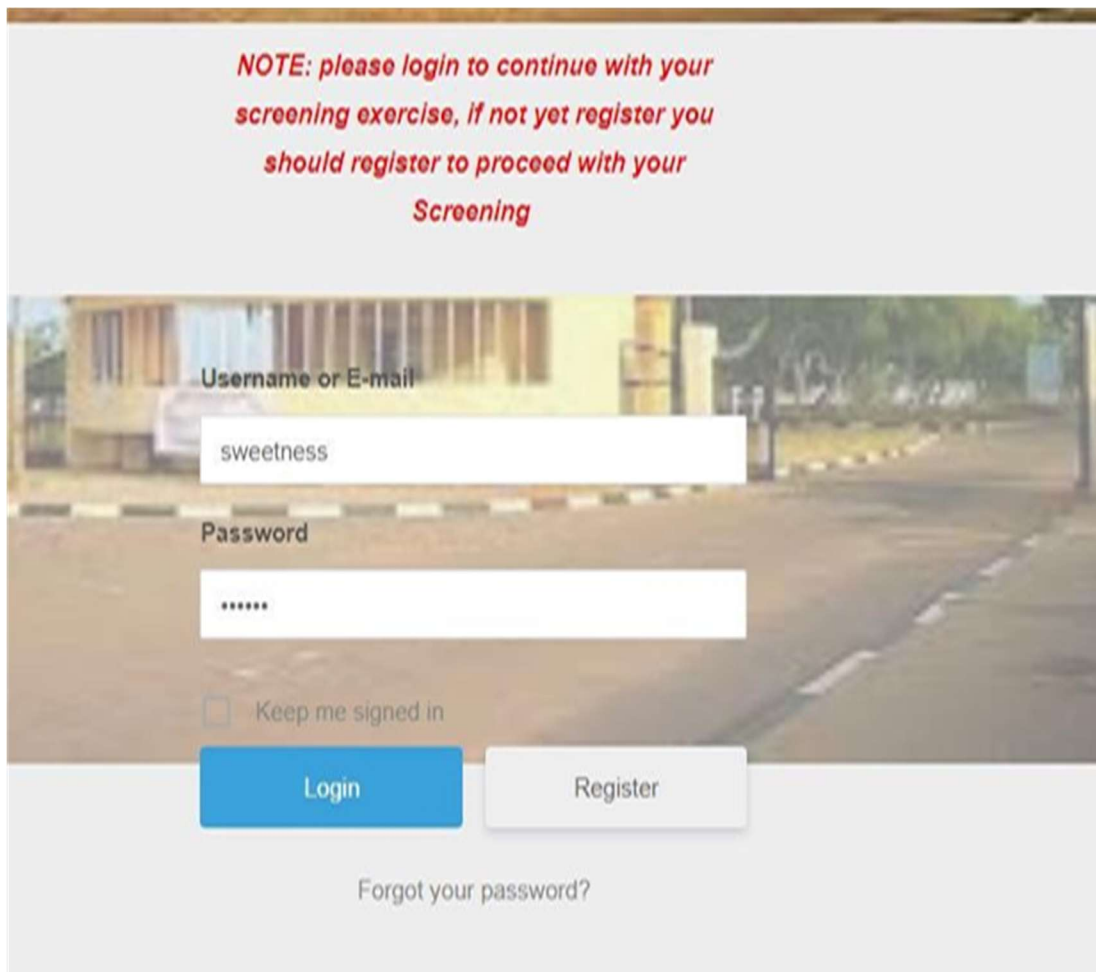


#### 4. SYSTEM MODULES

The system is designed in various modules with each having its own set of buttons and links to navigate through the entire system. The major operational modules of the system are explained below.

##### Lecturer's Login Form

This form enables the lecturers to login with their login details (user name and password) so that they can be able to upload their promotion document. This is shown in figure 4 below.



**NOTE: please login to continue with your screening exercise, if not yet register you should register to proceed with your Screening**

Username or E-mail

Password

☐ Keep me signed in

[Login](#) [Register](#)

[Forgot your password?](#)

Figure 4: Showing the Lecturer's Login Form

**(a) Lecturer's Registration Form**

This registration form enables lecturer who does not have login details to be able to register by providing their name, email address and password. This is shown in figure 5 below.

**Figure 5: Showing the lecturer's Registration Page**

**(b) Lecturer's Promotion Document Form**

This form enables the lecturers to upload their promotion documents. The lectures will have to select the position they want to apply for and then fill the promotion form. This is shown in figures 6a and 6b below.

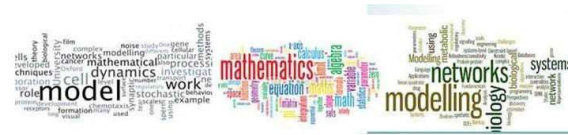
**Figure 6a: Showing Lecturer's Promotion Documents Form**

Figure 6b: Showing Lecturer's Promotion Documents Form

### (c) Administration Login Page

This is the login page of the general admin, it enables the admin to be able to login to access the details of both the lectures, internal and external assessors. This is displayed in figure 7.

Figure 7: The Administration Login Page



## 5. CONCLUSION AND RECOMMENDATIONS

This study is to ensure that promotion policies formulated should make documents and qualifications assessment and procedures in promotion fair and equitable and as well as save cost and time, for the purpose of timely completion of promotion exercise. The web-based system provides a flexible platform that can be accessed by the lecturers, the internal and external assessors so that there will be no need for the promotion committee to hold meetings to carryout assessment, the assessment document which will be uploaded by the academic staffs would be stored on a database and it can also be accessed easily by the internal and external assessors without wasting time and cost.

Security is the predominant issue in software operations therefore in a system like this that uses password authentication, unauthorized person(s) should not be allowed access to the system so as to maintain the reliability and integrity of the system. It is recommended that if this solution based software is implemented, it will surely reduce the bottlenecks currently faced in the current approach of promotion documents and qualifications assessment. It is recommended that further research work should be carried out to improve the level of security of the system, like the use of biometric for access control to the system. Also, the software can be enhanced to accommodate the other cadre of academic staff like the technologist and the instructors.

## 6. ACKNOWLEDGEMENT

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