

E-Memo Management System for Organizational Internal Communication

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ABSTRACT - A *memorandum (memo)* is a short message or record that is used for internal *communication* in a business environment. The penetration of Information and Communication Technology (ICT) has made many organizations to adopt electronic means of communication. The current trends of internal communication in organizations are the Electronic Memorandum (E-Memo). In the paper, E- Memo management system was designed and implemented to automate the entire process of lettering and filing in Federal Polytechnic, Ile-Oluji. The designed system is intended to erase the manual process of information exchange within the organization. Implementing E- Memo, makes it easy to send and receive official information outside the office environment. The system enhances effective, timely and reliable communication of information within the organization.

Index Terms - Document Management System, Internet, Memo, Portal, Website

1. INTRODUCTION

One of the goals of Information Technology (IT) is to create a paperless community that engender efficiency in organizational operations. Many challenges have been identified with paper means of communication which include slow in processing, information leakage, loss in transit, environmental unfriendliness among others. Document Management System (DMS) has been proposed in literature to solve many of these identified challenges. [1] defined DMS as the electronic structuring of data, storage, retrieval and archiving over electronic devices that support data communication. It can also be referred to as computer software that can store electronic documents for businesses/organizations for improved efficiency. The key features of all DM systems are information integrity and document security, document integration and sharing, and scalability. There are many DMS available in the market place. However, there is a need for educational organizations to design and implement specific DMS that can handle their specific needs. In its broad term, electronic memo offers many benefits which include reduced retrieval costs of documents, timely search of existing memos, reduced data entry time, security of access and storage, simultaneous access to single document and remote access to records [2].

Memos that are dispatched manually sometimes might be routed through third-parties for comments

before it get delivered to the intended recipients. The manual process of moving documents from office to office can be very cumbersome, slow and might be compromised in some cases.

Electronic memo has its roles in the realisation of office automation processes which make use of computer machinery and software to digitally create, collect, store, manipulate, and relay office information needed for accomplishing basic business tasks. The term office automation refers to all tools and methods that are applied to office activities which make it possible to process written, visual, and sound data in a computer-aided manner. Office automation helps in optimizing or automating existing office procedures [3].

Document Management System (DMS) refers to computer software that can store electronic documents for businesses/organizations. Some educational institutions have adopted DMS to handle application processes, admission processes, recruitment processes and appraisal processes. Digitalising of operations in many organizations has increased the productivity level in their operations.

The rest of the paper is organized as follows: section 2 reports the related works to the topic of discussion, the design of the proposed system is carried out in section 3, the implementation and results discussion is carried out in section 4 and the conclusion is reported in section 5.

2 RELATED WORKS

The shift toward internal communication being strategically aligned with organizational goals is in response to the contemporary changing work environment. It brings new ways of reaching employees to ensure organizational success. There has been a shift in the way businesses must communicate with the workforce of today in order to see results, however not a lot has been done about how organizations can strategically communicate to shift employee engagement for maximum productivity.

2.1 Internet

The Internet is a global collection of many types of computers and computer related devices that are connected together for data exchange [4]. With the advent of Internet, the world all over has become connected hence, global village. The Internet introduced the era of accessing information globally without any geographical barriers. There is no end to how organizations can harness the resources on the Internet to enhance their productivity.

2.2 E-mail

Electronic mail (E-mail) is the exchange of text messages and digital files transmitted over communications networks infrastructure such as the Internet. The electronic mail functions like the traditional postal services with additional features like timeliness of information delivery, security and higher coverage of message recipients. It has been widely adopted as official communication platform in current workspace.

Memo offers a bunch of modelling languages that is joined by an interaction model, which is planned to direct the development and analysis of conceptual enterprise models.

[5] developed a system that runs on Local Area Network (LAN) for users of the system to send and receive memos. The system was intended to minimise paper memo system which is subject to information theft. However, the visibility of the system is limited to the nodes that are active on the LAN. [6] highlighted E-MEMO as a multi-perspective enterprise modelling

method for processes and technologies in electronic commerce industry. It serves to analyse and design corporate information systems that are balanced with a company's E-Commerce strategy and its organization. E-Memo offers a library of reference models for business processes.

[7] reported E-memo system for organizational internal communication. However, in the logical design of the system, the administrator can view all the received and sent messages which does not make it confidential or secured from a third party theft.

[8] designed an electronic document management system. The system was specifically designed for document storage, document retrieval and sharing. However, the document management system only works on a standalone machine which makes it unavailable on a network.

[9] noted that communication is an important requirement of educational system at any level especially in the administration of examinations. The flow of information from the top management level through other line managers down to the least entity on the network determines the satisfactory execution of the task. Strategies must continually be redefined to deliver improved return on investment in human capital [10].

2.3 Benefits of E-Memo to Organizations

Electronic memo system offers a lot of benefits to any organization that has adopted this technology to support its operations. The system facilitates the sending and receiving of office memorandum to replace the paper method of sending memo. The objectives of the system include:

- (i) quick and timely delivery of office memorandum.
- (ii) reliable and accurate decision making through instant memorandum delivery.
- (iii) opportunity to initiate memo outside working environment.
- (iv) less chances of third party theft as only the intended recipients have the right to access the information contained in the memo.

It is discovered that the rate at which the manual system is being used for organizational internal communication waste a lot of time and cost. Conventional method of cooperate communication via memo exposes confidential information to third parties. It is therefore imperative to design a system that guarantees effective communication in an organization without the interference of clerical officers. Introducing an electronic memo management system will help to create or improve the productivity of workers within the Polytechnic community.

E-memo is the most popular way to exchange information in organizations and is an indispensable productivity tool. Implementation of a Mail Management System (MMS) for storing and searching of mails using different criteria is taking centre discussion in research community.

The proposed system is less exposed to security breaches since it runs on the institutional website compared to conventional electronic mails

exchanges which is always flooded with unsubscribed messages and unwanted ads.

3 SYSTEM DESIGN

At the preliminary stage of the design, an extensive review of related works in published literature and comprehensive interaction with relevant authorities within the institution was carried out.

In the system architecture as shown in Figure 1, there are five portals that make up the system which include Admin Portal, HOD Portal, Office Portal, Office2 Portal, and Secretary Portal.

Those who are in Office Portal such as the Rector, Bursar, Registrar, and Librarian can send a memo and also receive memo or letters, while the Office2 Portal cannot send any memo to the top management level except letters.

The Secretary Portal can create a group and also distribute memo to the staffs. While the staffs receive memo from the top (Office Portal).

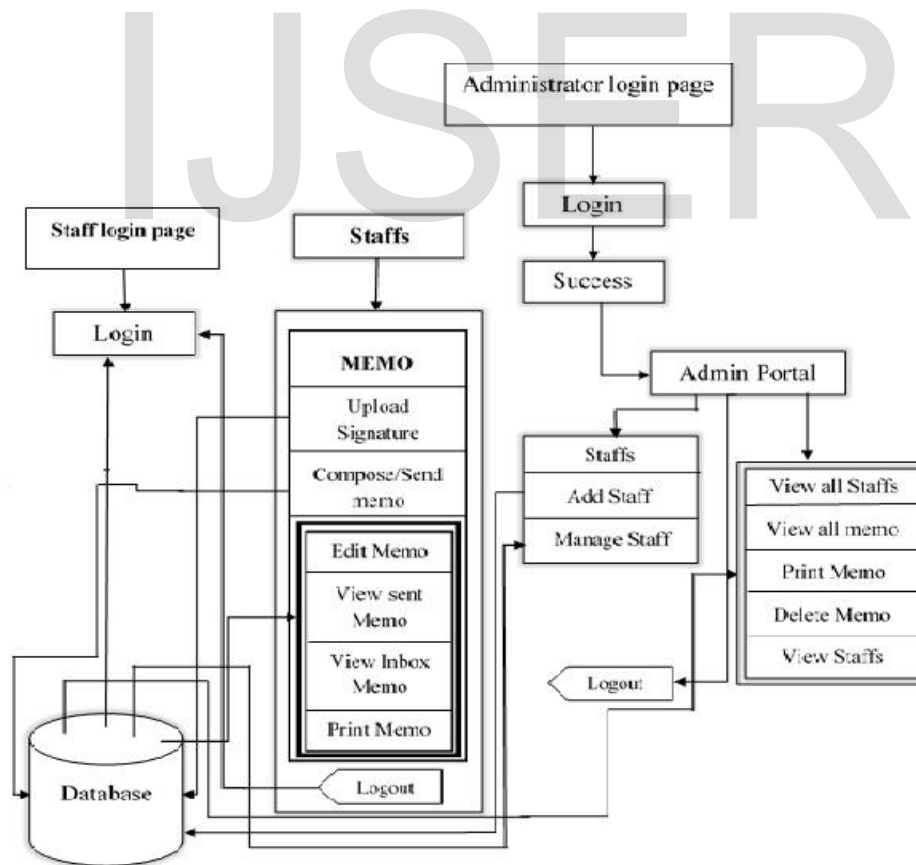


Figure 1: The Proposed System Architecture

3.1 Descriptions of the System Modules

3.1.1 Login Page

The Login Page is Multi-User Login that allows different portals to login using one login page.

The login page is meant for the Principal's Office, Office, HOD, Departmental Secretaries, and staffs in the Institution. Each user will be authenticated that is; the login form only requires their Email Address and the Password that has been registered into the database by the administrator, after a particular user have provided the information needed and the login button is clicked, there will be a query that will hit the Table "Signup" in the database to check if truly the user has been registered already.

3.1.2 The Office

After logging in successfully, the user will be directed to the Office portal where he/ she can perform many activities such as Composing of memo, viewing of letter, updating profile, viewing sent memo and printing of memo.

3.1.3 The Office2

After logging in successfully, the user will be directed to the Office2 portal where they can compose a memo that will be sent to departments, and viewing letters. Memo composed in Office2 Portal can't be sent to the top i.e. the Office Portal which consist of the Rector, Registrar, Librarian, and Bursar but can be sent to other department in the Office2 Portal, and to departments in the institution.

3.1.4 The HOD's Portal

The Head of Department (HOD) Portal, if any information is to be sent to the Rector, Registrar, Bursar, and Librarian, the HOD will have to compose a letter that will be received by the dean before getting to the Top.

3.1.5 The Secretary Portal

This portal deals with each departmental secretary, when a memo is sent from the Rector, Registrar, Bursar, Librarian or the Dean to the staffs, the duty of the secretary is to forward the memo to the group created by the secretary for the staffs to view and print.

3.1.6 The Staff Portal

This portal is meant for the staffs in the institution in other to send a letter, and also read and print from the sent memo forwarded by each departmental secretaries.

3.1.7 The Staff Portal

The Admin Portal manage all the activities on the system, by adding the Office, HOD, Staff, and Secretary. The Admin upload the staff signature, and passport during the course of registration.

3.1.8 Office Panel Design

In Office's panel design as shown in Figure 2, here we provide facility about Electronic Memo where the user will have to login, if the login is valid then the user can compose a memo and view letters.

4 IMPLEMENTATION AND RESULTS DISCUSSION

The project is implemented on a computer system with the following minimum configuration. Intel(R) Core(TM) i3-2330M CPU @ 2.20GHz 2.20 GHz Processor, 4GB RAM and 500GB HDD. The programming tools include Hypertext Markup Language (HTML) for the structuring of the Electronic Memo Management System (EMMS) website and for documents formatting and organization. Hypertext Pre-Processor (PHP) for server side scripting and back-end development. JQUERY was used to animate some of the components in the system while XAMPP served as the database engine.

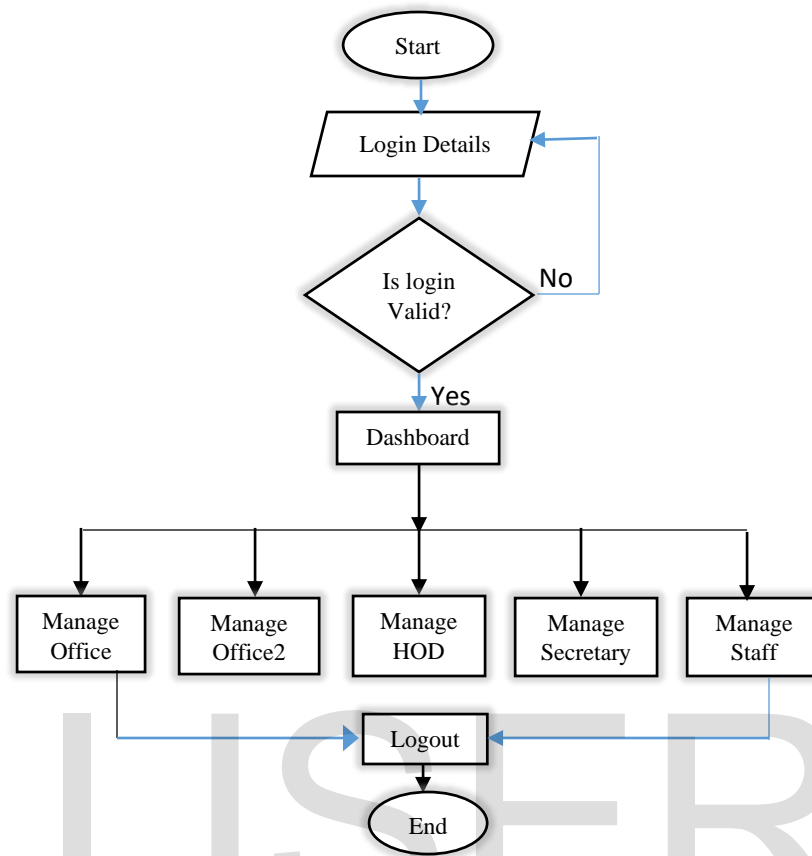


Figure 2: Office Panel Design Flowchart

4.1 The admin dashboard

The Administrative Dashboard as shown in the Figure 3 provides administrators direct access to important Encompass tools for faster and more convenient community management. The Dashboard serves as an administrative home page with access to key components of the system.

4.2 Add office

The Admin Add the Offices as shown in the Figure 4 such as the Rector, Registrar, Bursar, and Librarian to the system, without the admin adding them, they without have access to the system. If the admin user is trying to add an existing record of the Office into database, there will an alert that will pop up telling the admin user "Office already exist" and the record will not be added.

This Page view the record of office as shown in the Figure 5 and total number of registered office by the admin, the admin user can filter the office record by searching by their Email address, Office Category, Office Name, Surname, Phone number, and Gender. The admin user can also view each record by clicking on the "View all Button" to view the remaining record of staff selected. Each office can be edited by clicking on the "Edit Button" to edit the selected office record and also the "Delete Button", once it is clicked on a particular office, the office will be automatically deleted and the office user will not have access to the system again. The screenshot of view office record dashboard is shown below:

4.4 Compose/Send Memo

This is the main page for composing memo as shown in Figure 6. Before a memo can be sent to another

recipient, the user would have supplied all the required information such as the memo content, the intended recipient, the sender/source of the memo, there is also a provision for document attachment (though optional), other recipients of the memo where applicable, the title of the memo and the reference number of the memo.

4.5 Generated Memo

This is a memo created by the user. This interface gives the user opportunity to display the memo as

shown in the Figure 7 in a defined format and the user can also print the hard copy of the memo.

4.6 Compose Letter

This is the main page for composing a letter as shown in the Figure 8. Before a letter can be sent to the Top (Rector, Registrar, Dean) the letter must pass through the departmental HOD, when it gets the HOD the HOD will have to make a comment and approved it, then it moves to the Dean of that school, the Dean will have to make a comment and approved it before its finally approved by the Rector or the Registrar.

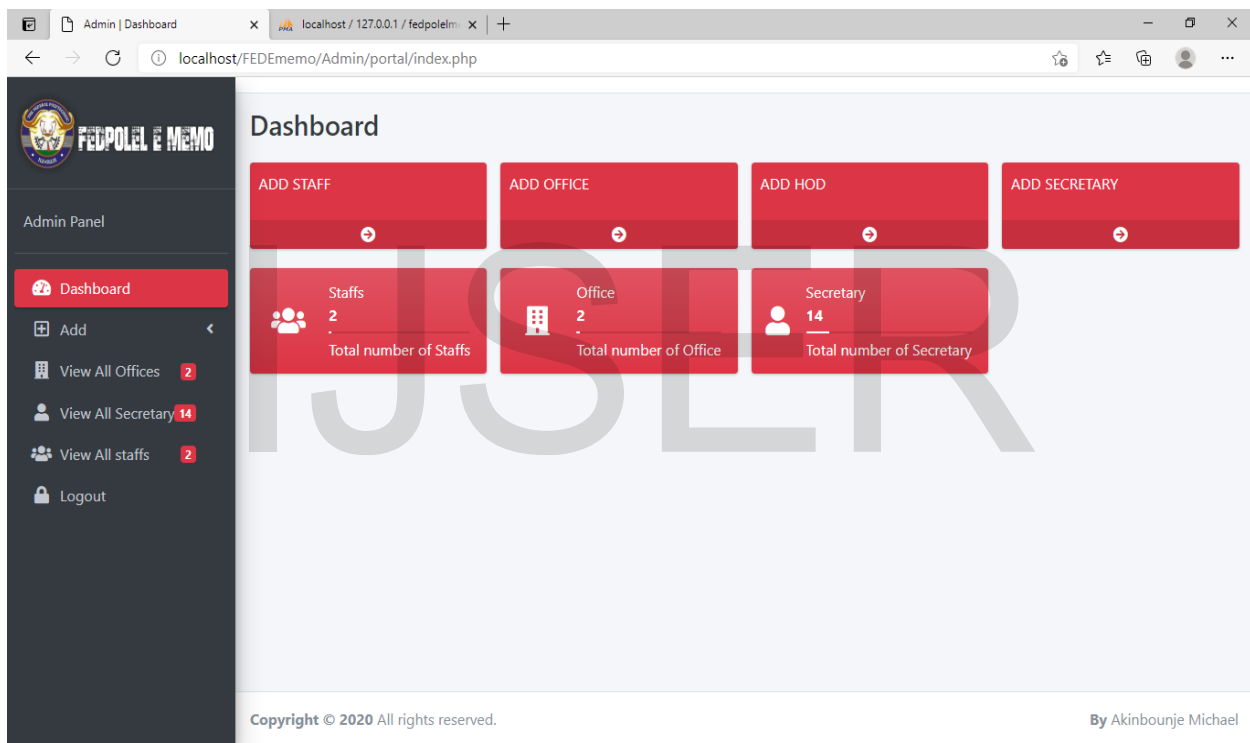


Figure 3: Admin Dashboard

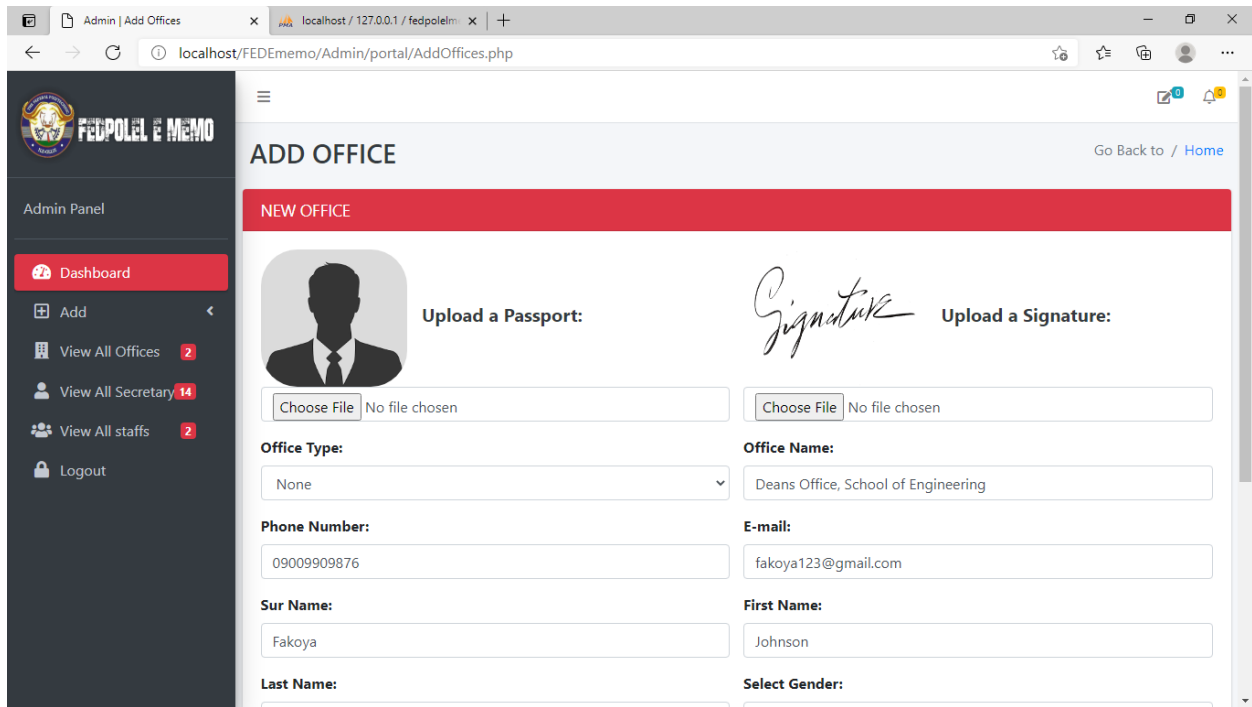


Figure 4: Add Office

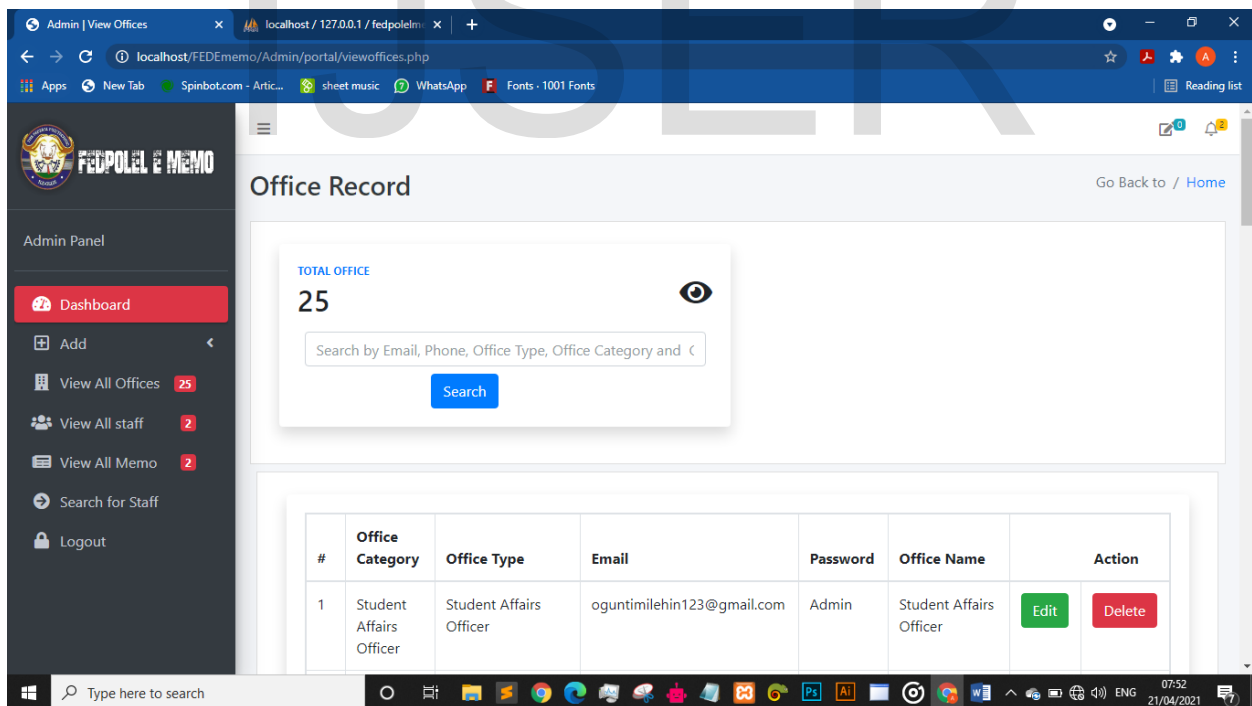


Figure 5: Office Record

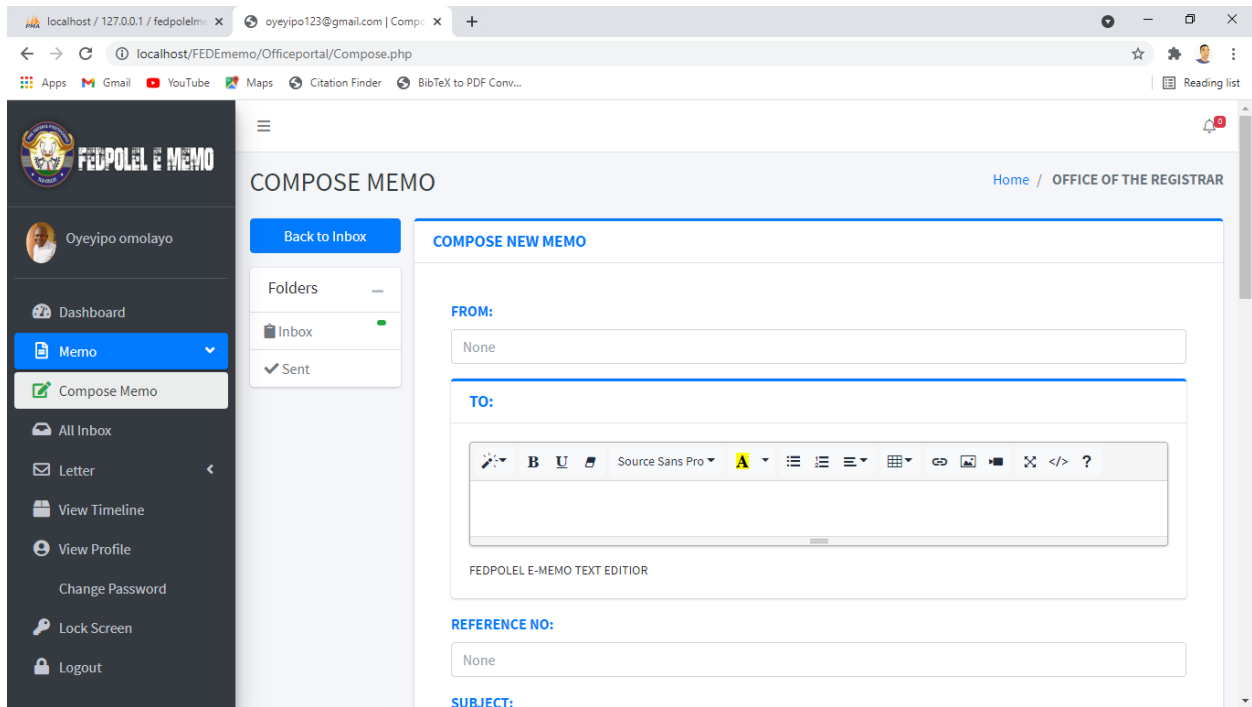


Figure 6: Compose/send Memo

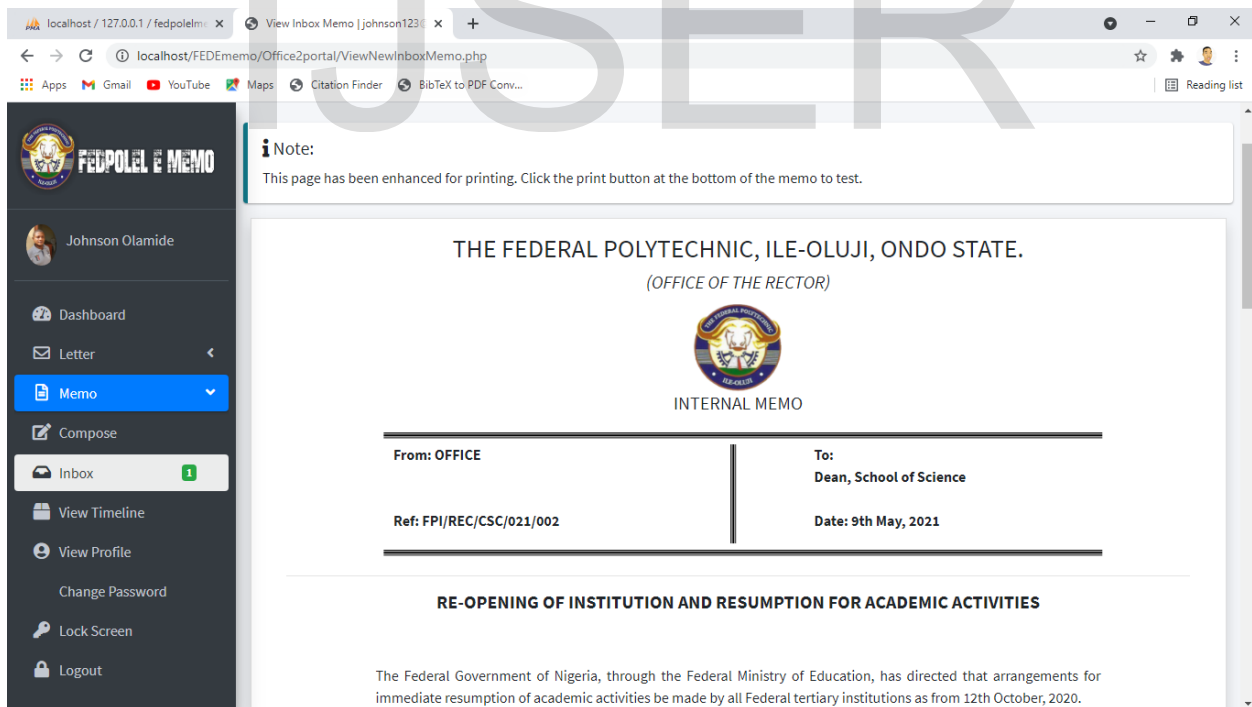


Figure 7: Generated memo by a user.

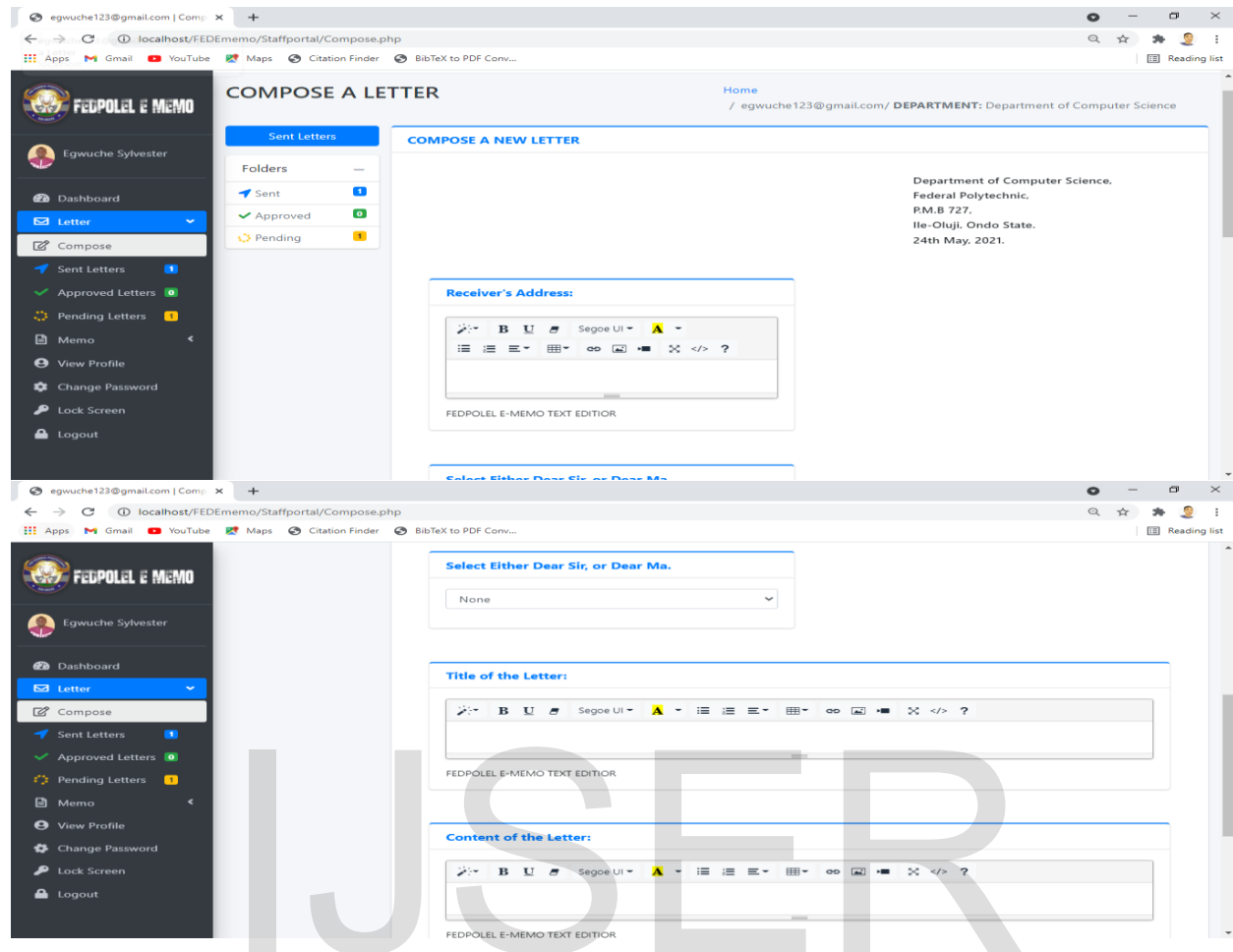


Figure 8: Letter Composition Menu

5. CONCLUSION

E-memorandum processing offers a very important requirement to enhance efficiency in various organizations considering the volume of activities that are carried out on daily basis. In the system, data about received and sent memos will be stored in an electronic form (digital) which makes searching of memos/file services faster and easier. With the developed system, an employee or employer does not need to be physically present in the working place before sending or receiving memo on important official matters. This system is highly recommended for deployment in most government and corporate formations since Covid-19 has engendered the era of working away from office in order to reduce physical contacts. In the

future work, users' feedback would be carried out to ascertain the level of users' satisfaction with the developed system.

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