

Original Article

# Web-based Campus Complaint Management System (WCCMS)

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**Abstract** - In any institution of learning, regardless of how effective the internal controls are, there will inevitably be staff and student complaints as they are major stakeholders in the education sector; hence, they deserve to be given fair treatment and adequate attention. Importantly, students' complaints are significant data that reflect students' opinions and are a key indicator of students' discontent. An important indicator of an institution's performance is how well they handle these complaints. Students can voice issues using an automated complaint management system without worrying about repercussions. The Waterfall Methodology was used as the research methodology for this investigation. The data flow was modelled as part of the system design to include the system's processes. The PHP programming language, JavaScript, HTML, Cascading Style Sheets (CSS), and MySQL are the tools utilized for development. The Integrated Development Environment (IDE) was provided by the Visual Studio Code application, while the Database Management System (DBMS) was provided by the MySQL server application (IDE). The culmination of this research is a user-friendly, highly effective, and efficient web-based student complaint management tool that meets the Research objectives. The effectiveness of the suggested system in terms of usability, dependability, and applicability was assessed based on the users' assessments. The system's performance was excellent, and the development team and user group used alpha and beta testing to assess the system's strength and acceptability. The evaluation's results are above 96%, which shows that the system will improve students' free and easy access to express their dissatisfaction, pain, unease, censure, resentment, or grief experienced in our higher institution of learning.

**Keywords** - Automated, Complain, Methodology, Students, System.

## 1. Introduction

An information system is a fairly well-known tool in the contemporary digital age. This tool is used by people worldwide to access and share information. Several obstacles and difficulties in the academic environment need to be appropriately addressed to have an efficient educational system, with student complaints as one example. Students' complaints are significant data that reflect students' opinions and are a key indicator of students' discontent. Any company that wants to guarantee the highest level of customer satisfaction must prioritize and implement complaint management Oguntosin et al., (2021).

An important indicator of an institution's performance is how well they handle these complaints. Students can voice issues using an automated complaint management system without worrying about repercussions. An efficient and effective educational system is the goal of every institution of learning (Alex & Uzoamaka, 2021). A web-based campus complaint management system (WCCMS) is a technique used to improve an organization's performance Alve et al. (2017). This technique aids in pinpointing organizational issue areas. It requires less effort than manual labor. It is a useful tool for resolving concerns within a set time frame. Tracking complaints can be easily done with a

WCCMS. It is a collection of company procedures to handle complaints and settle disagreements (Osman & Enayat, 2015). CMS is considered a contemporary productivity enhancement gear extensively using all companies and management. It provides an online way of solving the problems faced by the public by saving time and eradicating corruption Lovely et al. (2021). A platform-independent application accessible from anywhere in the system could be the complaint management system. It is frequently designed to lower communication costs between management and students so that they can provide effective services to their students and offer them the attention they need Oguntosin et al., (2021). Any firm that wants to guarantee the highest level of customer satisfaction must prioritize and implement complaint management. Complaint management systems must be one of the crucial tactics that educational institutions use to ensure the institution's smooth operation. It is impossible to overstate a system's value for managing college student complaints. No matter how renowned a school may be, staff and student complaints are a given in any educational setting Manuhutu & Uktolseja (2018). Another expression of displeasure with services or any professional activity is referred to as a complaint. Some grievances act as a form of feedback for the university community. It may be necessary for members of this community to express their thoughts and feelings on



pressing problems. Complaints become beneficial when such grumblings elicit a prompt and persuasive response from the university administration. Since they form the foundation of any university community, the university administration is supposed to hold their faculty, teaching and non-teaching, and students in the highest regard Ogbadu & Usman (2012). An online system enabling individuals to lodge complaints swiftly and receive a response is increasingly in demand in a world where speed and efficiency are always emphasized. Organizations would lag behind their competitors if complaints were not addressed properly, effectively, and efficiently. Complaint management refers to efforts to stimulate the expression of grievances via emails, toll-free numbers, or online surveys and measures for quality improvement based on the complaints expressed. A complaint is a remark made by a pupil expressing their displeasure with a specific circumstance (Salemme, 2020; Carlson et al., 2022). Many students, especially new ones, have numerous problems with which they are unhappy. Still, they keep these problems to themselves because they lack a way to voice their complaints, and even when do, it takes a very long time for them to hear back, and occasionally they never hear back. Most of the time, these problems turn into major difficulties for them. Academic concerns get increasingly complex as students proceed in their studies, including housing, information about lectures, course registration, and information gathering.

The growth of the situation complaints in the institutional environment can lead to various issues relating to their welfare to come up. There must be a proper way by which the issues are addressed. At the same time, face-to-face interaction may be used in the manual method of reporting and solving complaints; the online complaint management system will leverage upon the advancement in information and communication technologies as recorded in Nigeria. Presently, the institution only deals with the complaints of the student that appears physically to them, and perhaps a written letter, probably through the head of the department, is made to make their complaint. The complaint letter is later forwarded to the appropriate authority. However, many students may not have access to make their complaints because they do not have connection, opportunity, or direct access to see the higher authority, hence time wastage and long queues.

In some cases, students also fear harassment and intimidation (El-Aziz Abd El-Sadek Afify, 2011). Also, the manual approach could not allow the management to have a database of complaints from students probably to assess the performance of staff informed of their attitudes and behavior towards the students and also in terms of service delivery. The improvement of student care is the aim of the complaint management system. In a broad sense, it refers to the process by which the institution addresses student complaints. Management can grow and advance in its goals with the help of complaints. It enables them to understand better and serve the students, acquire

data and feedback, increase student dependability, and enhance the institution's reputation in the community (Kumar & Kaur, 202; Bulgacs, 2013). The contribution to the knowledge of WCCMS is that it will give administrators the tools to keep an eye on things, respond to issues, and track complaints. Additionally, it will give the investigative process the required documentation and enable administrators to connect complaints with remedial actions. According to Anshari et al. (2019), An organization can gain three key benefits from an efficient complaint-handling system:

- (i) It promptly and economically resolves issues brought up by dissatisfied customers;
- (ii) It provides information that can improve service delivery; and
- (iii) When complaints are handled properly, a good system can boost an organization's reputation and increase public trust in its administrative procedures.

## 2. Literature Review

Siddiqui & Tripathi (2020) described a complaint as a "statement of displeasure made to or about an organization, its goods, services, personnel, or complaint handling when a response or resolution is explicitly or tacitly expected or legally required. In addition to serving as key catalysts for reviews of organizational performance and employee behavior, complaints are a crucial means for the management of an organization to demonstrate its transparency to the general public (Ro & Wong, 2012). Alve et al. (2017), in their work titled "Web Application for Complaint Tracking and Resolving," developed a web application for managing various complaints in the hostel and college. The system reduced complaint processing time; improve user services and organization standards. This proposed system is very helpful in reducing the dissatisfaction of a person by handling complaints timely. However, the system could not generate a list of customers' complaints annually or monthly.

Manuhutu and Uktolseja (2018) developed an Online Students' Complaint; a prototype methodology was adopted in their design. The research aims to create a platform for the complaint of the English Study Program at Victory University, Sorong. The research provided a powerful and flexible system that students can use anytime and anywhere. It helped English Study Program manage and easily accommodate the complaints. The system fails to verify the user's authenticity, meaning that non-student can also log in to the system and lodge complaints.

Nasr and Alkhider (2015) suggested an Online Complaint Management System, which offers a time-saving and corruption-eradication online means of resolving issues presented by the public. The goal of the complaints management system is to make it simpler to organize, monitor, track, and resolve complaints. It also

gives the organization a useful tool to pinpoint problem areas, track the effectiveness of how complaints are handled, and improve operations. Adnan (2017) proposed a sample system to manage customer complaints. For citizens to express their displeasure with the services offered, they explain the Complaint Management System oriented by the Web application. The system managed complaints by documenting each one and providing feedback. The study's findings can be used as a useful guide to determine what users want from an e-complaint and how that complaint is handled within any company.

Ogbadu and Usman (2012) worked to develop a means to enhance the already established complaint management system, which required customers to go to the office building for assistance. They said the current framework was not user-friendly and had a lot of reputation. They created a new system that would make it easier to organize, monitor, and address complaints and give the business a valuable way to identify and acknowledge problem areas and prevent the filing of duplicate complaints (Harper & Dagnino., 2014). The system is set up so that users may file complaints, and employees can respond to customers based on those complaints. The handling and control of complaints made by complainants are made possible by complaint management. A collection of people working in the company and coordinating their efforts to achieve the

shared goals are guided by management (Surbhi, 2018). Aziz (2015) concentrated on the effects of complaint management procedures on delivering public services and the potential of such procedures concerning the growth and development of governmental services. Cho et al. (2002) emphasized that dealing with consumer disappointment was part of online complaint management alongside web customer complaint management. School/institution management can improve the academic standard and integrity of the system by devising an effective students complaint system (Laird, 2016; Dewnarain, 2019)

### 3. Materials and Methods

This section discusses the method and procedure adopted for the actualization of the research goal

#### 3.1. System Architecture

As the focus is being placed on integration with current systems, WCCMS is being created specifically for the Staff and Students with an open architecture suited for use in Federal Polytechnic Ede, Osun State, Nigeria. A system's structure, behavior, and other aspects are all defined by its conceptual model or system architecture. An architecture description is a formal description and representation of a system that is set up to facilitate analysis of its structures and behaviors. Figure 1 shows the architecture of WCCMS.

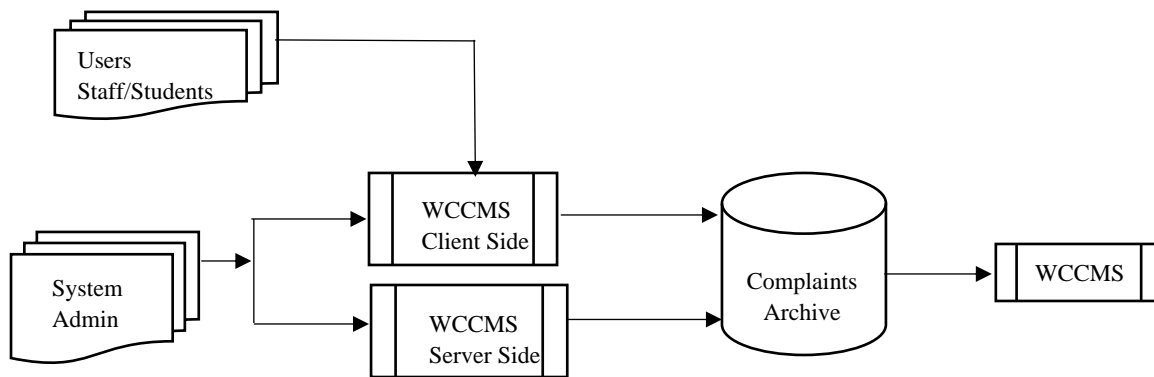


Fig. 1 WCCMS Architecture

#### 3.2. System Design

As shown in figure 1, the system has two major phases/sides; the administrator side and the students/staff (user) side. The administrator side may also be referred to as the backend of the software, while the users' side is also called the front end. The backend of the system is designed by PHP (Hypertext Processor), and the client side is designed with HTML (HyperText Markup Language), CSS (Cascaded Style Sheet), and Javascripts. The database was implemented on MySQL

#### 3.3. System Flowchart

A system flowchart demonstrates the route that data takes through a system and the choices that are made at various levels. Figure 2 shows how various modules in the system were linked and interacted.

### 4. Results and Discussion

Before this project research began, the observation approach rigorously examined the current system. It was noticed that the institution only responds to the complaints of the students and staff who physically approach them or may have sent them a letter specifically intended to express their issue. As a result, a suitable system is required to organize, monitor, and address complaints, periodically provide reports and track complaint progress.

#### 4.1. User Interface Design

User Interface (UI) Design focuses on anticipating what users might need to do and ensuring that the interface has elements that are easy to access, understand, and use to facilitate those actions. UI combines concepts from interaction design, visual design, and information architecture.

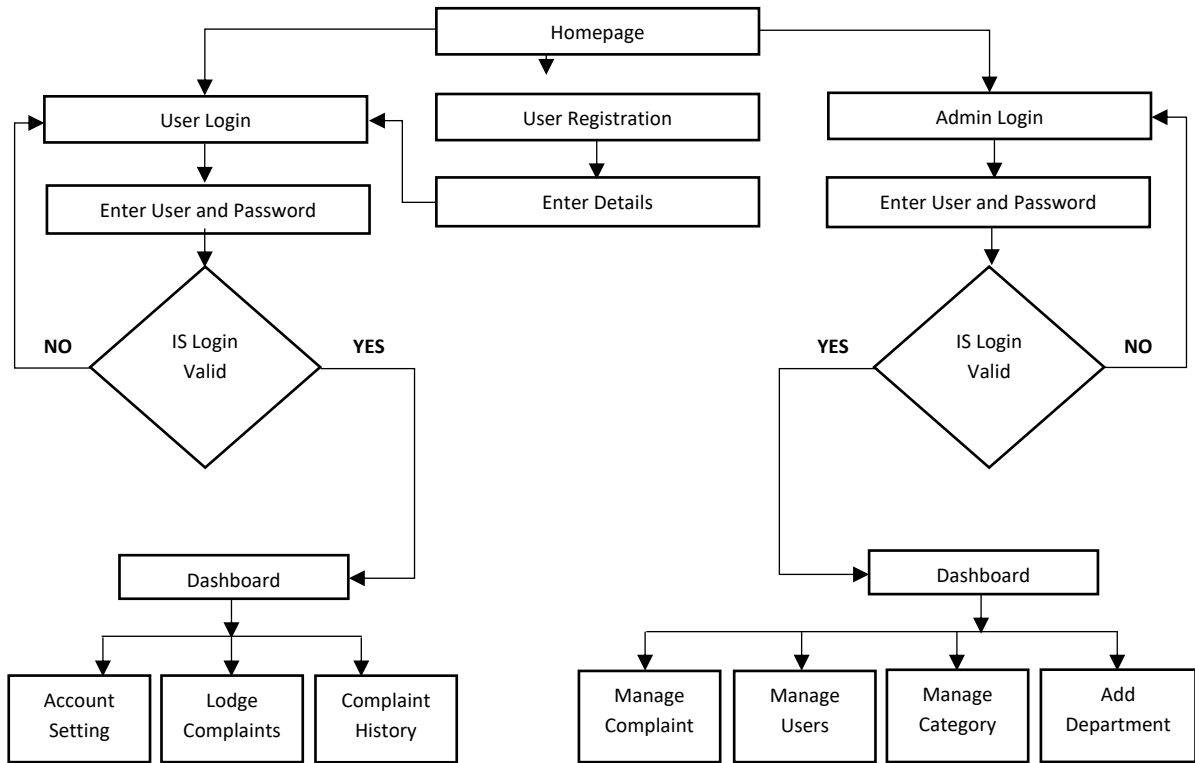


Fig. 2 System Flowchart

4.2. New User Registration page

The new system user registers by providing all information needed. The information submitted here, such as matric number, password, and mobile number, will be subsequently used to lo-in into the system.

4.2.1. User login page

The system user logs in with a unique username and password.

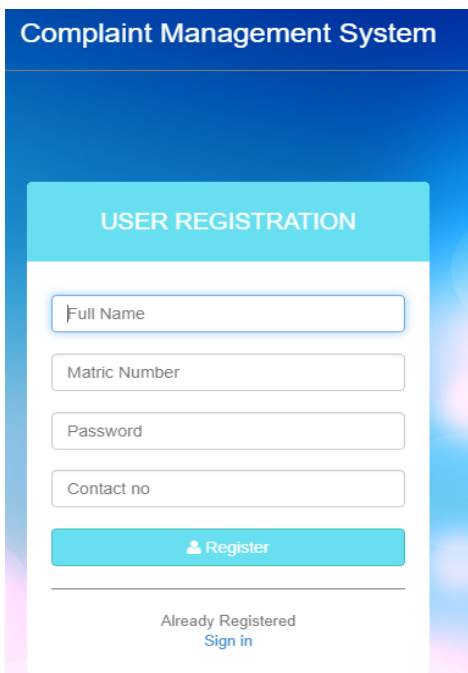


Fig. 3 New User Registration page

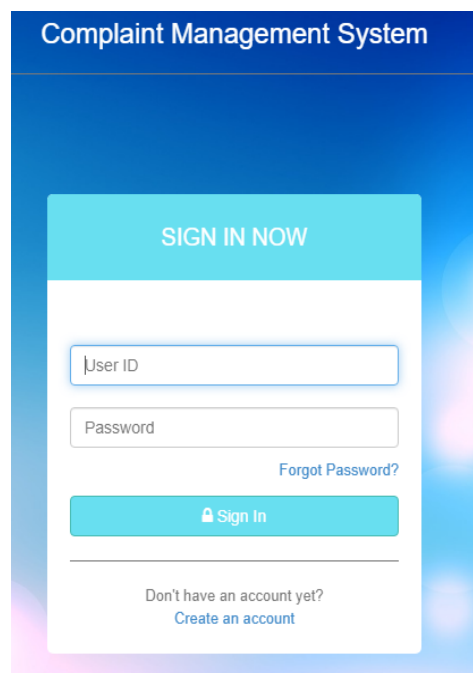


Fig. 4 Login page

#### 4.2.2. System User Dashboard

The user can perform various operations through the dashboard and conveniently interact with the program's modules. Here, the user can lodge complaints and check complaint history to have the complaint list lodged before.

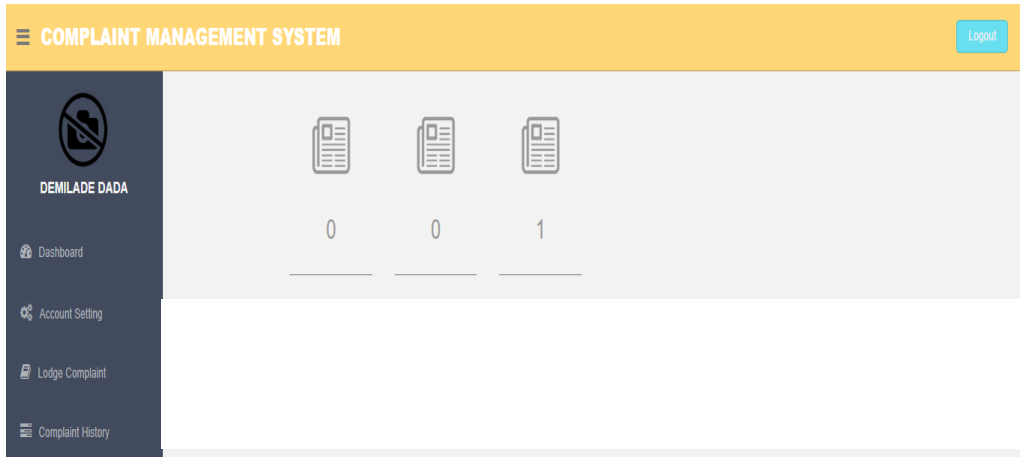


Fig. 5 User Dashboard

#### 4.2.3. Complaints Page

This is the page where the users (students/staff) lodge their complaints.

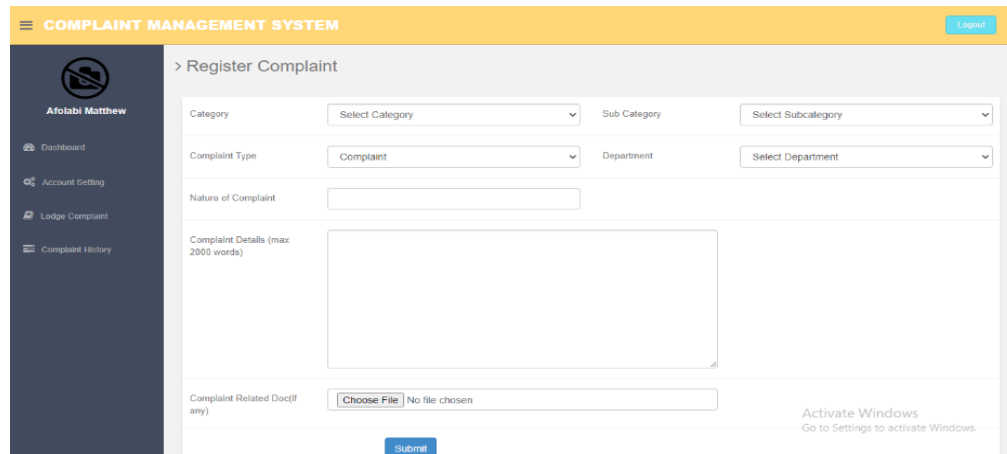


Fig. 6 User Complaint Page

#### 4.2.4. User Complaint Details Page

This is the page where the users view their complaint status.

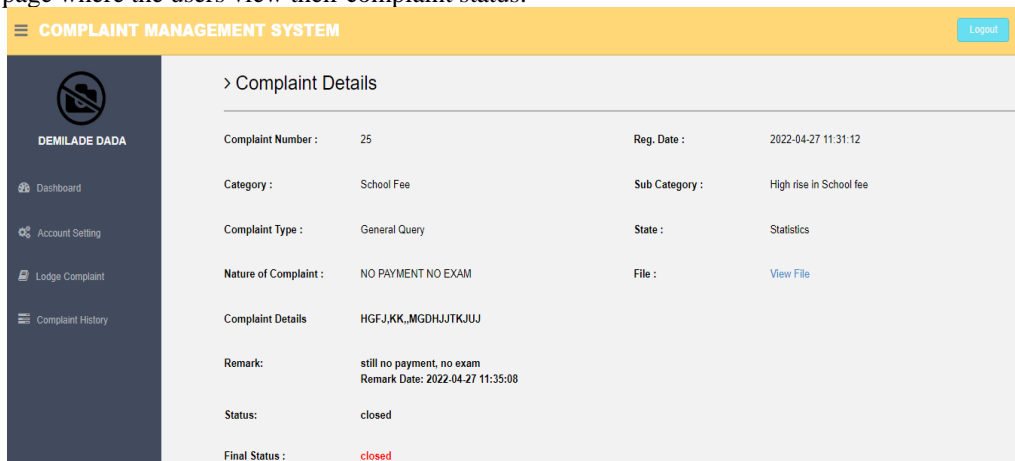
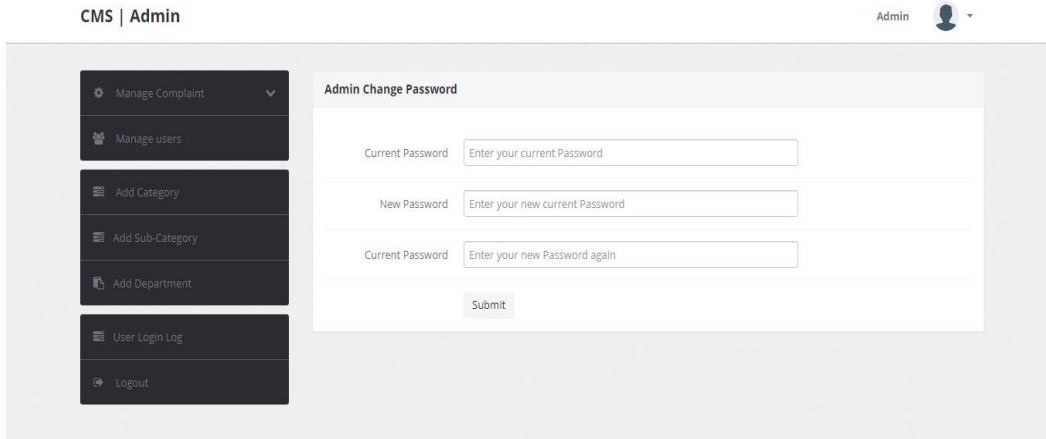


Fig. 7 User Complaint Details Page

**4.2.5. Admin Dashboard**

The output design here shows the admin dashboard to perform all necessary operations. Admin can view and download various complaints lodged by the users and subsequently send feedback to the system users.



**Fig. 8 Admin Dashboard**

**4.3. System Evaluation**

MOS is the average value on a predefined scale that a subject assigns to his opinion of the performance of a system (Streijl et al., 2016; Vranješ et al., 2013). From our discussion in the methodology, the research work aims to develop a system and not to investigate or compare a system. Therefore, the mean opinion score (MOS) is used to test the outcome of the system. The program testing follows two distinct stages:

**4.3.1. External Quality Testing**

This involves testing that is visible to end users player, such as; Clarity, User interface, Usability, Economy, Timeliness, and Validity (McCall et al., 1977).

**4.3.2. Internal Quality Testing**

This involves the testing that is concerned with internal technical issues of the software, such are; Efficiency, Modularity, Correctness, Documentation, Modularity, and Maintainability (Boëhm B., 1978).

The mean opinion score (MOS) was recorded after several attempts by the player (i.e., selected staff and students of Federal Polytechnic Ede) and other researchers in the field. The software was put into use for about 14 days. After several attempts by the player, questionnaires were distributed among the players who were purposely selected to interact with the developed system and were required to give a rating based on the software as mentioned above quality rating. The result shows that the system performed above average (Very Good) (i.e., rating from 1-bad to 5-excellent).

**4.4. Evaluation Results**

The selected players were engaged for about 14 days, as stated earlier, and a questionnaire was administered to fifty (50) respondents (Students) and fifteen (15) (Staffs) respondents from various departments to rate the system based on the parameter mentioned above stated above. First, the table 1, 2, 3, and 4. shows the External and Internal Quality Testing ratings of WCCMS, respectively. Here, the tables give the cumulative weighted percentage against the rating parameters.

**Table 1. External Software Quality Rating for Player (Students) Federal Polytechnic Ede (ESQR Student)**

Parameter	Excellent (5)	Good (4)	Fair (3)	Poor (2)	Bad (1)	Sum of Respondent	Sum of points	Average	MOS Percentage
Clarity	46.00	3.00	1.00			50.00	245.00	4.90	98.00
User interface	40.00	8.00	2.00			50.00	238.00	4.76	95.20
Usability	48.00	1.00	1.00			50.00	247.00	4.94	98.80
Economy	49.00	1.00	0.00			50.00	249.00	4.98	99.60
Validity	50.00	0.00	0.00			50.00	250.00	5.00	100.00
Timeliness	42.00	6.00	2.00			50.00	240.00	4.80	96.00
<b>Average</b>	<b>45.83</b>	<b>3.17</b>	<b>1.00</b>	<b>0.00</b>	<b>0.00</b>	<b>50.00</b>	<b>244.83</b>	<b>4.90</b>	<b>97.93</b>

**Table 2. External Software Quality Rating for Player (Staff) Federal Polytechnic Ede (ESQR Staff)**

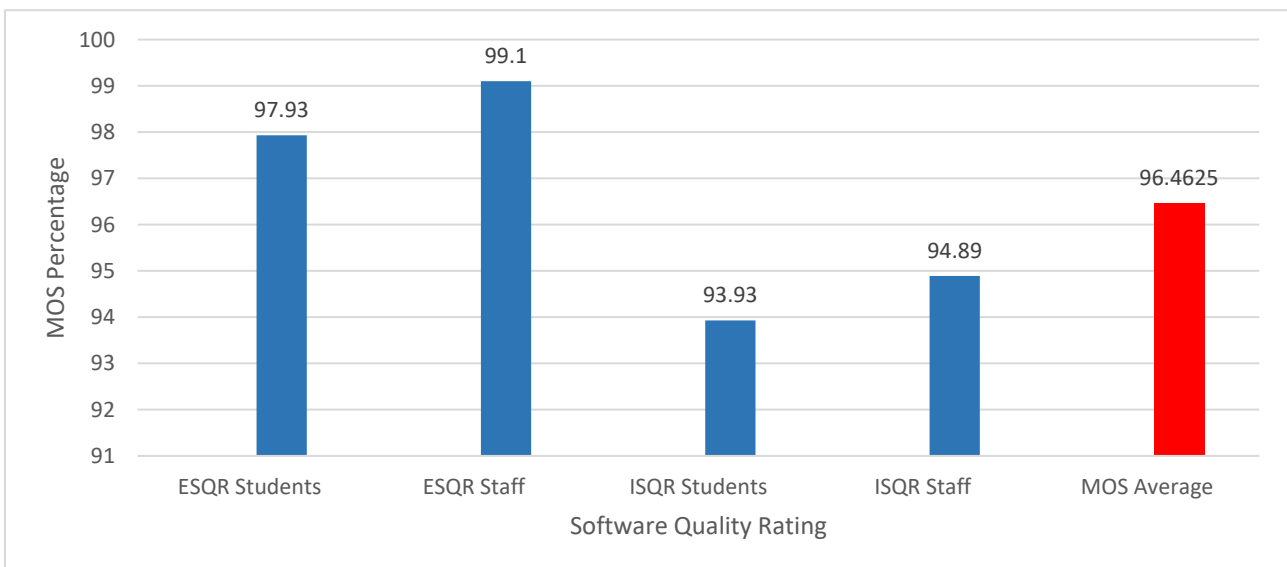
Parameter	Excellent (5)	Good (4)	Fair (3)	Poor (2)	Bad (1)	Sum of Respondent	Sum of points	Average	MOS Percentage
Clarity	14.00	1.00	0.00			15.00	74.00	4.93	98.67
User interface	15.00	0.00	0.00			15.00	75.00	5.00	100.00
Usability	15.00	0.00	0.00			15.00	75.00	5.00	100.00
Economy	13.00	1.00	1.00			15.00	72.00	4.80	96.00
Validity	15.00	0.00	0.00			15.00	75.00	5.00	100.00
Timeliness	15.00	0.00	0.00			15.00	75.00	5.00	100.00
<b>Average</b>	<b>14.50</b>	<b>0.33</b>	<b>0.17</b>	<b>0.00</b>	<b>0.00</b>	<b>15.00</b>	<b>74.33</b>	<b>4.96</b>	<b>99.11</b>

**Table 3. Internal Software Quality Rating for Player (Students) Federal Polytechnic Ede (ISQR Student)**

Parameter	Excellent (5)	Good (4)	Fair (3)	Poor (2)	Bad (1)	Sum of Respondent	Sum of points	Average	MOS Percentage
Correctness	46.00	2.00	2.00			50.00	244.00	4.88	97.60
Efficiency	37.00	7.00	6.00			50.00	231.00	4.62	92.40
Modularity	28.00	18.00	4.00			50.00	224.00	4.48	89.60
Documentation	41.00	4.00	5.00			50.00	236.00	4.72	94.40
Accuracy	35.00	10.00	5.00			50.00	230.00	4.60	92.00
Maintainability	45.00	4.00	1.00			50.00	244.00	4.88	97.60
<b>Average</b>	<b>39.00</b>	<b>7.75</b>	<b>3.25</b>	<b>0.00</b>	<b>0.00</b>	<b>50.00</b>	<b>234.83</b>	<b>4.70</b>	<b>93.93</b>

**Table 4. Internal Software Quality Rating for Player (Staff) Federal Polytechnic Ede (ISQR Staff)**

Parameter	Excellent (5)	Good (4)	Fair (3)	Poor (2)	Bad (1)	Sum of Respondent	Sum of points	Average	MOS Percentage
Correctness	14.00	1.00	0.00			15.00	74.00	4.93	98.67
Efficiency	15.00	0.00	0.00			15.00	75.00	5.00	100.00
Modularity	7.00	7.00	1.00			15.00	66.00	4.40	88.00
Documentation	14.00	1.00	0.00			15.00	74.00	4.93	98.67
Accuracy	15.00	0.00	0.00			15.00	75.00	5.00	100.00
Maintainability	5.00	8.00	2.00			15.00	63.00	4.20	84.00
<b>Average</b>	<b>12.25</b>	<b>2.25</b>	<b>0.50</b>	<b>0.00</b>	<b>0.00</b>	<b>15.00</b>	<b>71.17</b>	<b>4.74</b>	<b>94.89</b>



**Fig. 9 Software Rating Using MOS**

It is noted from Figure 9 that the four MOS evaluation metrics (ESQR students, ESQR staff, ISQR students, and ISQR Staff) adopted in the research show that the system performed excellently and that the average MOS is 96.46% which proved that the system has met the designed goal and widely accepted and can be adopted by management for managing the complaint both from staff and students.

## 5. Conclusion

The evaluation result shows that WCCMS has met the designed goal and reduces paperwork, improves problem-solving abilities, makes it simple to track complaints, finds

organizational trouble spots, makes efficient use of resources, speeds up processing, manages records, makes information easily accessible, and demonstrates the organization's interest for its users. We have constructed a simple graphical user interface UI for user registration, complaint registration, and database connectivity. Any educational institution that adopts WCCMS will benefit from improved operations for processing and handling student complaints. The construction of the system used various ideas, instruments, and programming languages for the frontend and backend logic, as well as a database storage service. Future research may include the implementation of this system using an android application

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