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Development of a Web-Based Reservation Systems for Federal Polytechnic Kaltungo

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Abstract: Purpose: *The purpose of this paper is to present the development of a reservation system designed for teaching students of the Tourism Department in Federal Polytechnic Kaltungo the practical skills in carrying out online reservations of hotel rooms, airline tickets, and food ordering.* ***Methodology:*** *The methodology used for this research includes; a literature review, observations, and interviews with students and instructors of the Tourism Department in Federal Polytechnic Kaltungo. The reservation system was designed using the Unified Modelling Language (UML) and developed using the PHP programming language, HTML, CSS, and JavaScript, as well as modern developmental frameworks and libraries.* ***Findings:*** *The developed system provides a user-friendly interface that enables students to make reservations easily and efficiently. The results of the study also show that the developed reservation system is an effective tool for teaching students practical reservation management skills. The findings of this research could also be beneficial to other institutions seeking to develop reservation systems for teaching purposes.* ***Unique contribution to theory, practice and policy:*** *The system provides an interactive learning experience that enables students to understand the processes involved in making reservations, while also acquiring practical skills that are relevant to the tourism industry. In conclusion, the development of a reservation system for teaching students of the Tourism Department in Federal Polytechnic Kaltungo, the practical skills in reservation management has been shown to be an effective way to improve their learning experience.*

Keywords: Tourism, Hotel, Air ticket, Food Ordering Systems

1.0 INTRODUCTION

Education is often regarded the most suitable tool for national development. This helps and assists citizens in developing the skills and attitudes required for nation building. It is no longer news that many Nigerian university graduates and other higher educational institutions fall short of employer or industry standards [1]. Concerns have been raised over the years about Nigeria's hospitality/tourism education and training system as a source of skilled labor for the tourism industry.

According to the Nigerian Tourism Development Corporation (NTDC), the tourism industry contributed 4.8% to the country's Gross Domestic Product (GDP) in 2019, with an estimated revenue of approximately 2.8 billion US dollars. Several studies have emphasized the important skills required for hospitality/tourism students to work in the tourism industry. In [2] work, they proposed that tourism curricula and courses must include both strong practical skills and soft people management abilities. Furthermore, as cited in [3] researchers such as; Kang, Wu, & Gould, (2005); Petrova & Mason, (2004); Ladkin, (2005) has criticized tourism and hospitality instructors for not effectively educating students for employment in the industry. They asserted that what educators teach in the classroom does not correspond to current industry trends. This may impede limited employment opportunities for hospitality/tourism graduates [2], [3], [4].

With respect to this, the National Board for Technical Education (NBTE) Curriculum has mandated that each tourism department across all higher institutions in the country should have a mechanism for making reservations and booking flights and hotels to enable its students to have practical knowledge, thus standardizing the department to follow best global practices [7]. The department is responsible for training students who will be equipped with the necessary skills and knowledge to meet the demands of the tourism industry. However, the department faces the challenge of providing practical training to students, particularly in the area of online reservation systems. This has led to a gap in students' practical skills when they eventually graduate and enter the workforce.

To bridge this gap, this research report presents the development of an online reservation system that will be used to teach students of the Department of Tourism at Federal Polytechnic Kaltungo how to carry out online reservations of hotel rooms, airline tickets, and food ordering. The system was designed to provide students with hands-on experience and practical skills in online reservation, which is an important aspect of the tourism industry.

This report is organized into sections. The next section presents a review of related literature on online reservation systems in the tourism industry. This is followed by a description of the methodology used to develop the system. The system overview and results

of the system development and performance evaluation are presented, followed by a discussion of the implications of the findings. The report concludes with recommendations for the effective use of the developed system in teaching and learning online reservations in the Department of Tourism at the Federal Polytechnic Kaltungo.

2.0 LITERATURE REVIEW

2.1 Online Reservation Systems

Online reservation systems are web-based reservation management systems that allow customers to book and pay for online activities such as hotel rooms, tickets, and restaurant tables or related services through the website. This service is operated online, minimizing the personnel workload and the possibility of multiple reservations [5]. Online reservation systems have become increasingly popular in recent years, and many businesses in the travel industry have adopted them to facilitate booking processes. Several Studies show that, online reservation systems were designed and developed to improve customer service, expedite the reservation process, and boost operational efficiency for merchants [6] [7]. Online reservation systems are used in a variety of businesses such as hospitality, transportation, and entertainment.

In hotels, an online reservation system according to [8] was created to replace the manual method of reservations for a hotel room or any other hotel amenity. The old approach, rather than serving the consumer better, left their data insecure. The new system maintains accurate consumer records for security and emergency purposes. Online reservation system hotels have been previous designed based on Macromedia Dreamweaver and evaluated for it efficiency as reported by [8]. Similarly, [9] worked on an online reservation and management system for Tourism industry in Malaysia. The system was intended to understand and make use of the computer to solve some of the problems that are usually encountered during manual operations of reservation management. [9] also found that the online reservation system improved the efficiency of the reservation process and reduced the workload of hotel staff.

A study by [10], contributed in the airline industry by developing a mobile airline seat reservation system. The system was developed to assist airline passengers and operators by offering a system that is affordable and will enable seat reservations, regardless of the location of the user while using a mobile device. In contrast, [11] developed a Wireless Application Protocol (WAP) application that allows users to use a mobile handheld device to access flight information from an airline operator and book any flight. The simulated mobile application is a two-tier client–server application designed specifically for Nigerian airline flight operations. The back-end server has all the business logic coordinating the interactions between the client end and the back-end.

In the restaurant industry, [12] proposed the design an automated food ordering system for the restaurant business that will intelligently keep track of user orders smartly. They basically design and implement a food ordering system for different types of restaurants, allowing users to place orders or create custom food using only one click. This technique was developed using an Android application for tablet computers.

2.2 Online Reservation Systems in Tourism Education

Technology in education has grown in popularity over the past few years, and recent studies have indicated the relevance of online reservation systems in the tourism industry [10]. Building a knowledge chain can help students better understand the relationship between relevant knowledge points through online tourism education [14]. The COVID-19 pandemic has hastened the adoption of online learning in tourism education. It has become necessary for educators to embrace and creatively employ various technological tools, software, and platforms to enhance online learning [11]. To enhance front desk operation instruction and provide students with hands-on experience, the development of an online hotel reservation and management system is essential for tourism education. Overall, the combination of an online reservation system and tourism education can help improve the competitiveness of the travel and tourist sectors and provide students with access to important skills and information.

A study by [14] conducted a study on the use of an online reservation system in a tourism and hospitality program. The study found that the system can improve students' technical and practical skills, enhance their understanding of the importance of customer service, and increase their confidence in their ability to work in the industry.

Another study by [16]), conducted a pilot study on the use of virtual tourism in higher education institutions to improve the education system of students. The study found that the system improved students' understanding of the importance of reservation management, enhanced their organizational and time management skills, increased their ability to work effectively, and also prepare them for the industry.

Overall, the literature review highlights the benefits of online reservation systems in the tourism industry, and the importance of integrating technology into tourism education. However, there is limited research on the development and implementation of online reservation systems in Nigerian academic institutions.

3.0 METHODOLOGY

The online reservation system was developed using Agile software development methodology. This methodology is iterative and involves collaboration between developers and end users in the software development process [12]. The project was conducted in three phases: design and development, usability testing, and feedback.

Phase one: The first phase involved designing and developing an online reservation system based on the requirements of the Department of Tourism at the Federal Polytechnic Kaltungo.

Phase Two: The second phase involved usability testing of the system by lecturers, facilitators, and a group of students enrolled in the department. The usability testing is aimed at evaluating the system's ease of use, functionality, and performance. Students were asked to complete a set of tasks using the system while being observed by the researchers. The researchers collected data on the time taken to complete the tasks, the number of errors made, and students' feedback on the system.

Phase three: The third phase involved collecting feedback from students and instructors who participated in usability testing. The students were asked to provide feedback on their experiences using the system, including their strengths and weaknesses. Feedback was collected through a questionnaire.

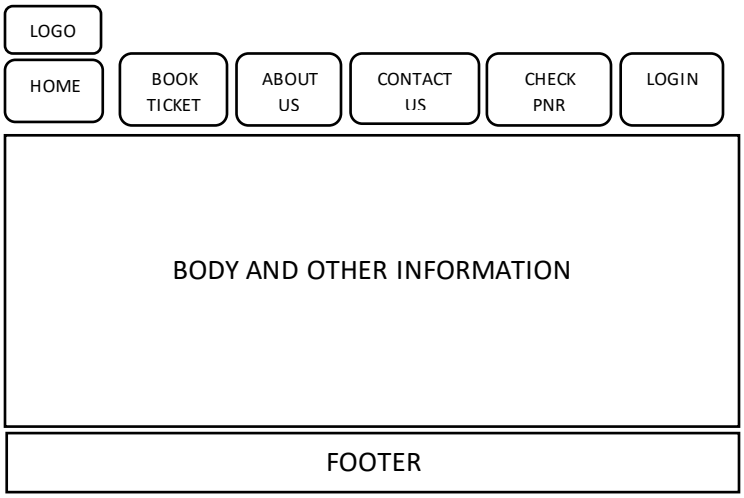
Figure 1. Agile Methodology in System Development. [13]

Based on Functionalities, web-based systems are divided into three categories. Where each system has its own modules. The systems has a user-friendly front-end interface that allows users to interact with the system. The next subsection explains better on each system and its module

4.0 SYSTEM OVERVIEW

4.1.0 User Interface Design for Airline Booking System

Webpage design helps users gain access to the information presented on the Airline website. Before development, users are given greater priority, and it is important to consider the size of the system and the overall vision. The airline booking interface for the user and administrator is as follows:



4.1.1 Administrator Interface Design

The figure below shows the administrator interface where he can perform the following functions: add a flight, add airlines, view booked flight, and delete scheduled flight. These functions can only be performed when the user provides the administrators' usernames and passwords for authentication.

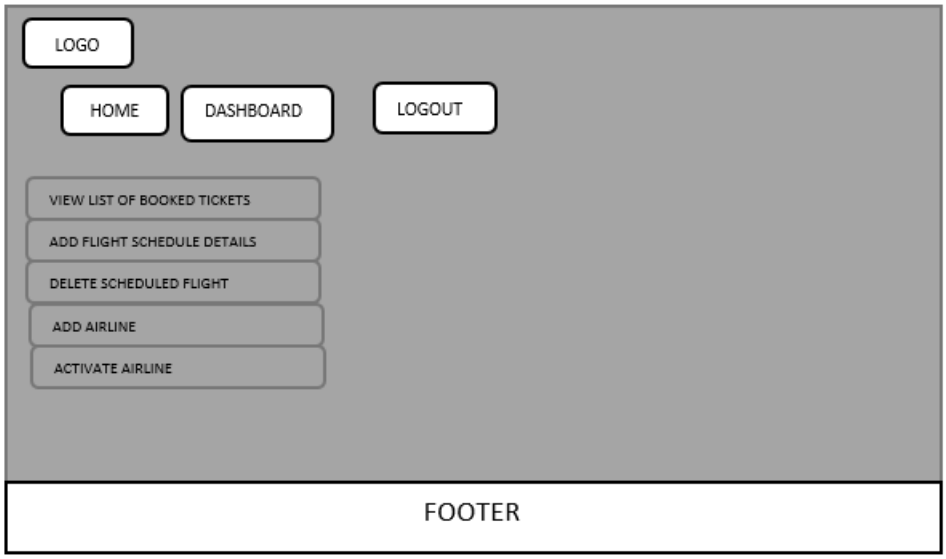


Fig 3: Admin interface design

4.1.2 Use Case Diagram

The use case diagram summarizes the activities of the users and their interactions with the Airline Booking system.

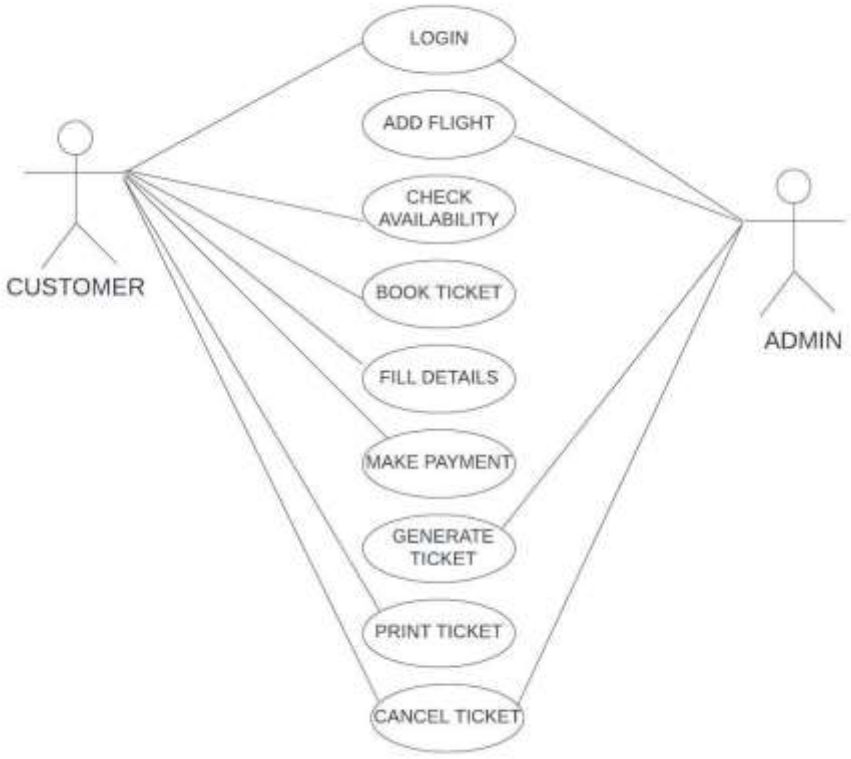


Fig 4: Use case diagram

Fig 5: Home page

4.1.3 Development of The Proposed System

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Fig 6: Login Page

Fig 7: User Dashboard

Fig 8: Admin Dashboard

Fig 9: Admin Scheduling flight

4.2 User Interface Design for Hotel Reservation System

Similar to the Airline System, the webpage design for Hotel Reservation also helps users gain access to the information presented by the Hotel Reservation System. The diagram below also shows the user and administrator interfaces for hotel reservations.

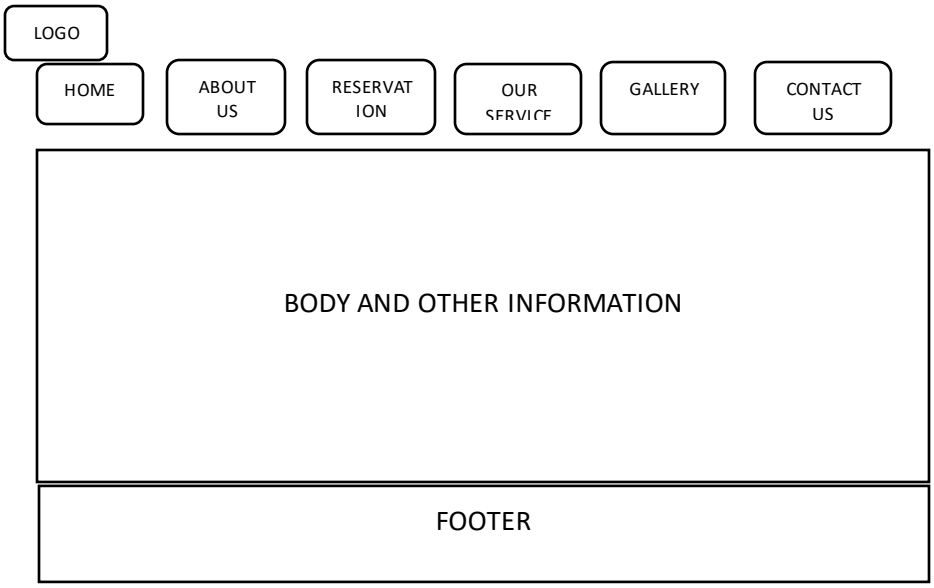

Fig 10: User interface design

4.2.2 Administrator Interface Design

As shown in the figure below, is the administrator/reception interface where the following functions can be performed: add ro oms, add room types, view reservation, view report, and manage users. These functionalities are only accessible if the user enters the administrators' username and password for authentication.

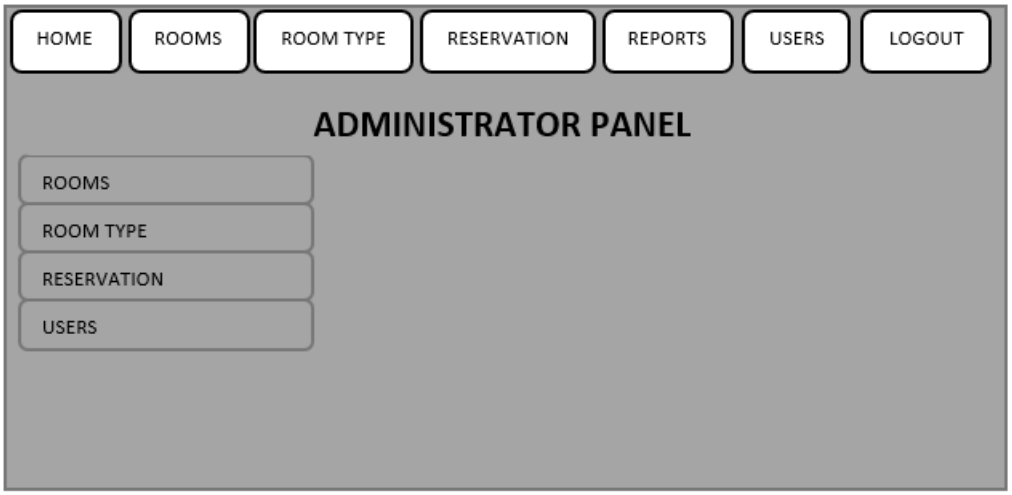

Fig 11: Admin interface design

4.2.3 Use Case Diagram

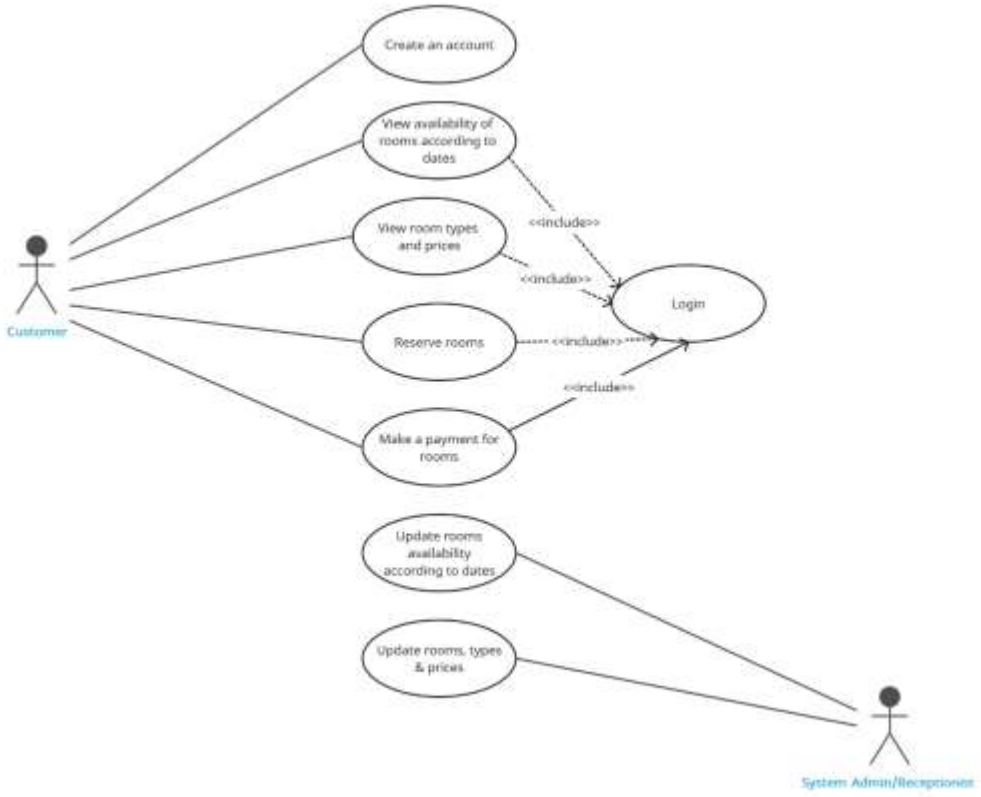

Fig 12: Use case diagram

4.2.4 Development of The Proposed System

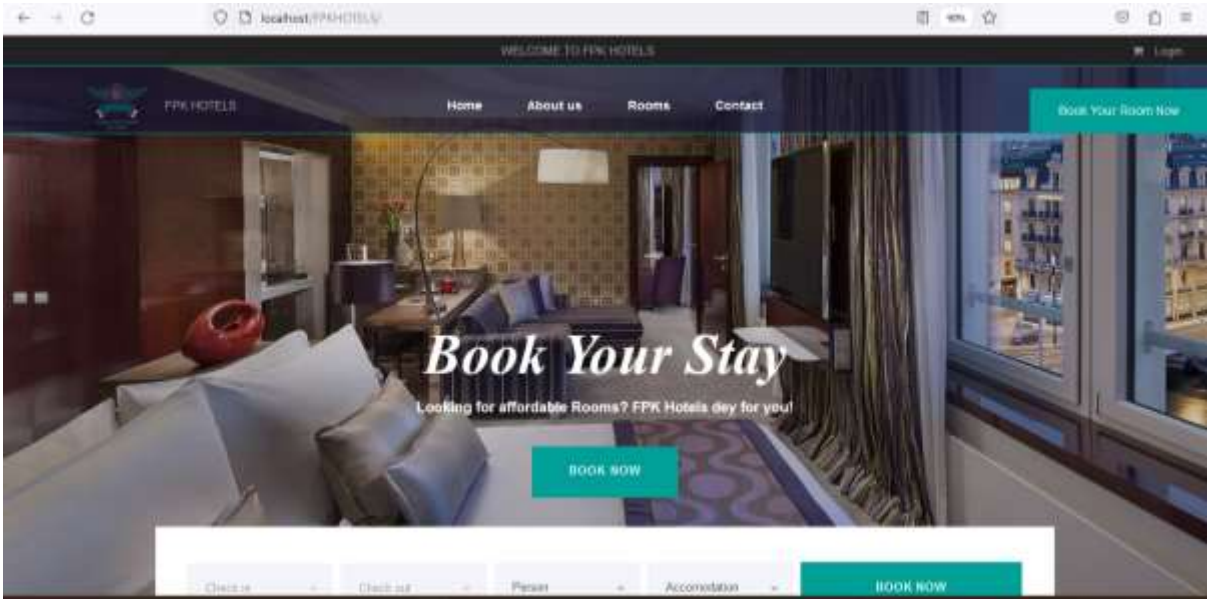

Fig 13: Home Page

Fig 14: Room Booking Page

Fig 15: Login Page

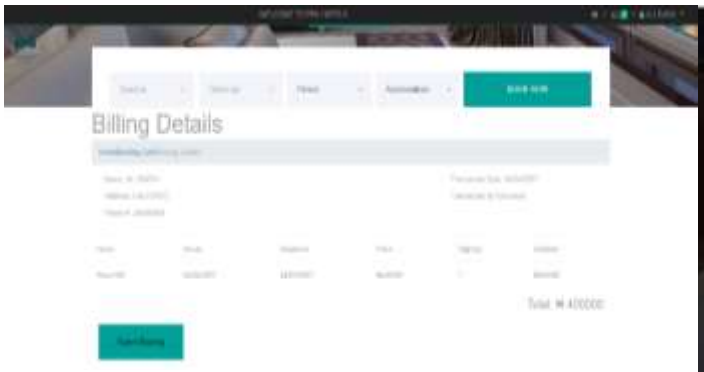

Fig 16: Payment Page

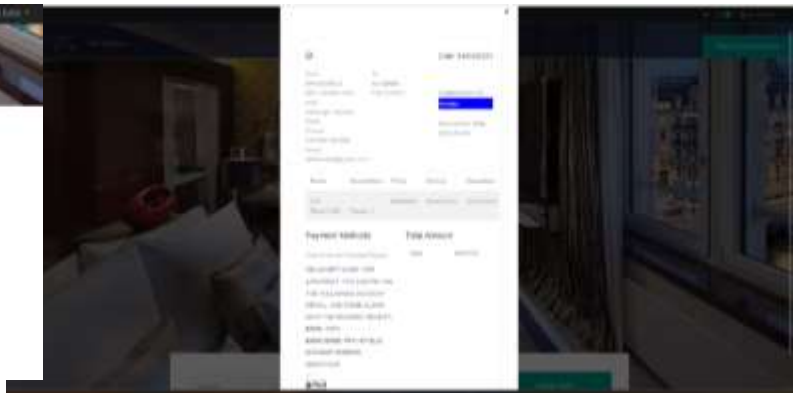

Fig 17: Receipt

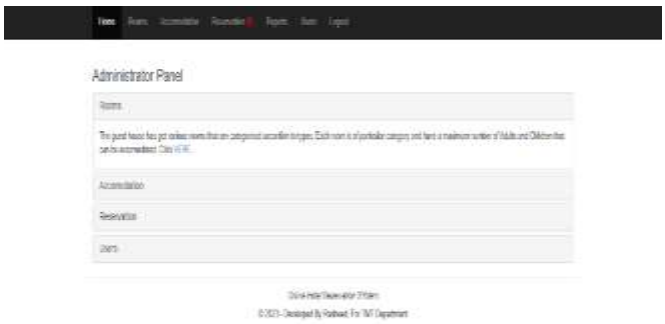

Fig 18: Admin Dashboard

Fig 19: Reservations Page

4.3.1 User Interface Design for Food Ordering System

The diagram below also shows the user and administrator interfaces for the food ordering system. Webpage design for food ordering systems includes features that help users gain access to the information presented by the system.

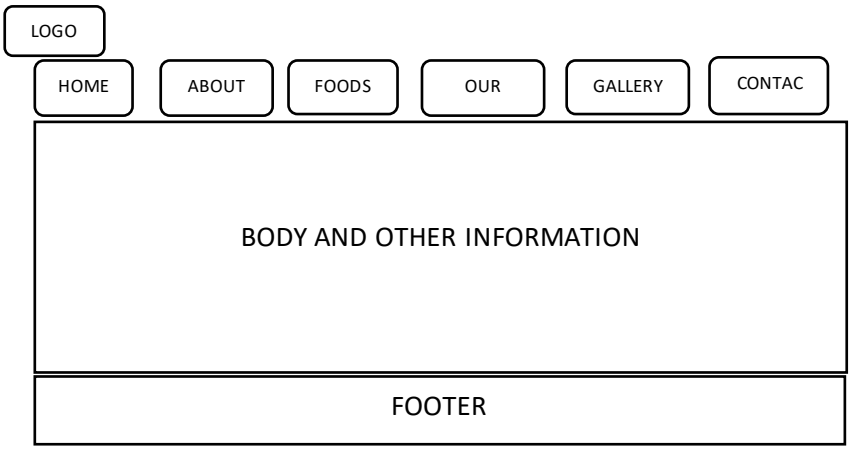

Fig 20: User interface design and its feature

4.3.2 Administrator Interface Design

The figure below shows the interface design of the administrator, where the administrator can add food, view food items, edit food items, delete food items, and manage orders. Functionalities are also accessible only if the user enters the administrators' usernames and passwords for authentication. The administrator interface is designed to be intuitive and user friendly, and administrators can quickly and easily manage the system.

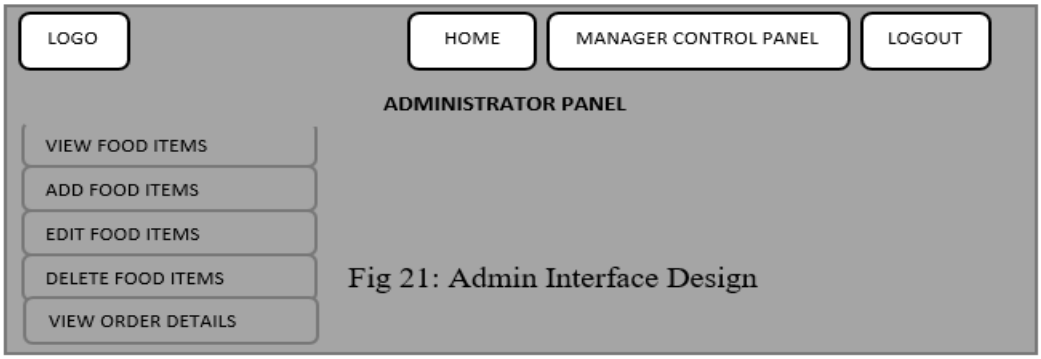

Fig 21: Admin Dashboard

4.3.3 Use Case Diagram

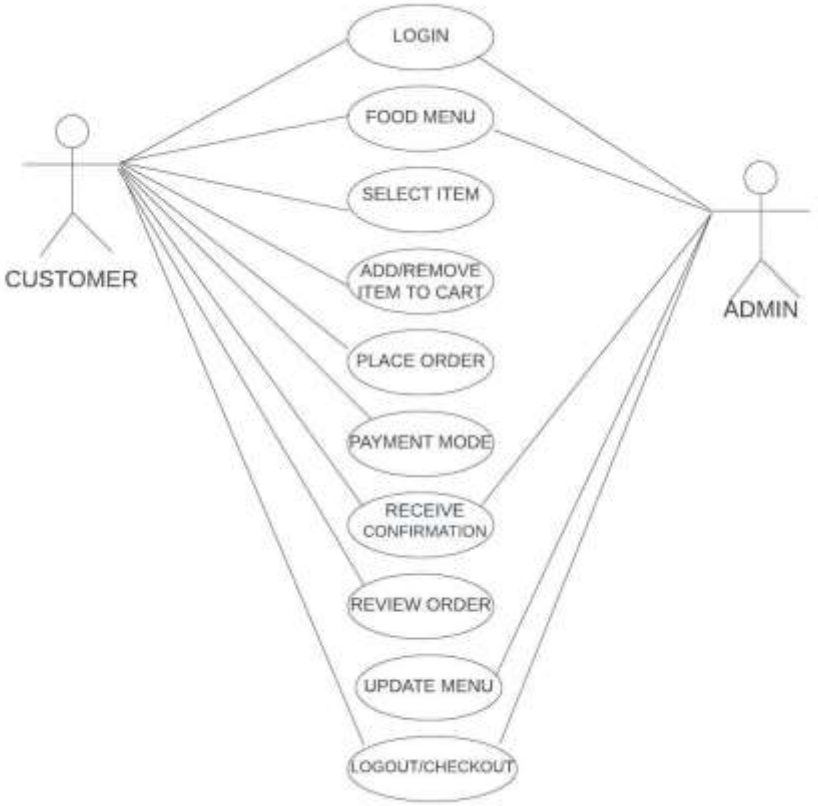

Fig 22: Use case Diagram

Fig 23: Home page

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Fig 24: Login Page

Fig 25: Food Menu Page

Fig 26: Cart Menu Page

Fig 27: Order confirmation Page

4.3.4 Development of The Proposed System

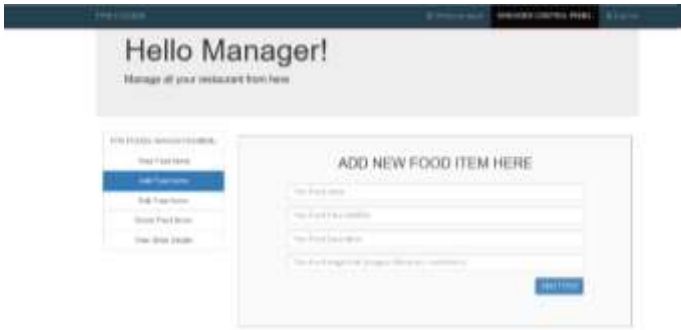

Fig 28: Admin Panel

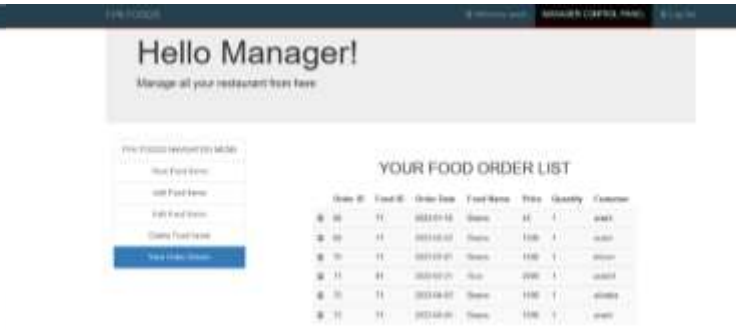

Fig 28: Admin Panel

5. 0 RESULTS

The results of the system development showed that the online reservation system developed for the Department of Tourism at Federal Polytechnic Kaltungo is effective in teaching students how to make online reservations for hotel rooms, airline tickets, and food ordering. The system was found to be user-friendly, with clear instructions that were easy to understand. The system interface was also found to be visually appealing, with features that enhanced user experience.

To measure the quality, strength, and usability of the system, a preliminary study was conducted by interviewing the Dean School of Science, Head of the Department, five instructors, and 13 students. They were asked to try using all the modules of the systems and then complete a questionnaire form after the trial. The questions included yes or no. Below are some questions and responses.

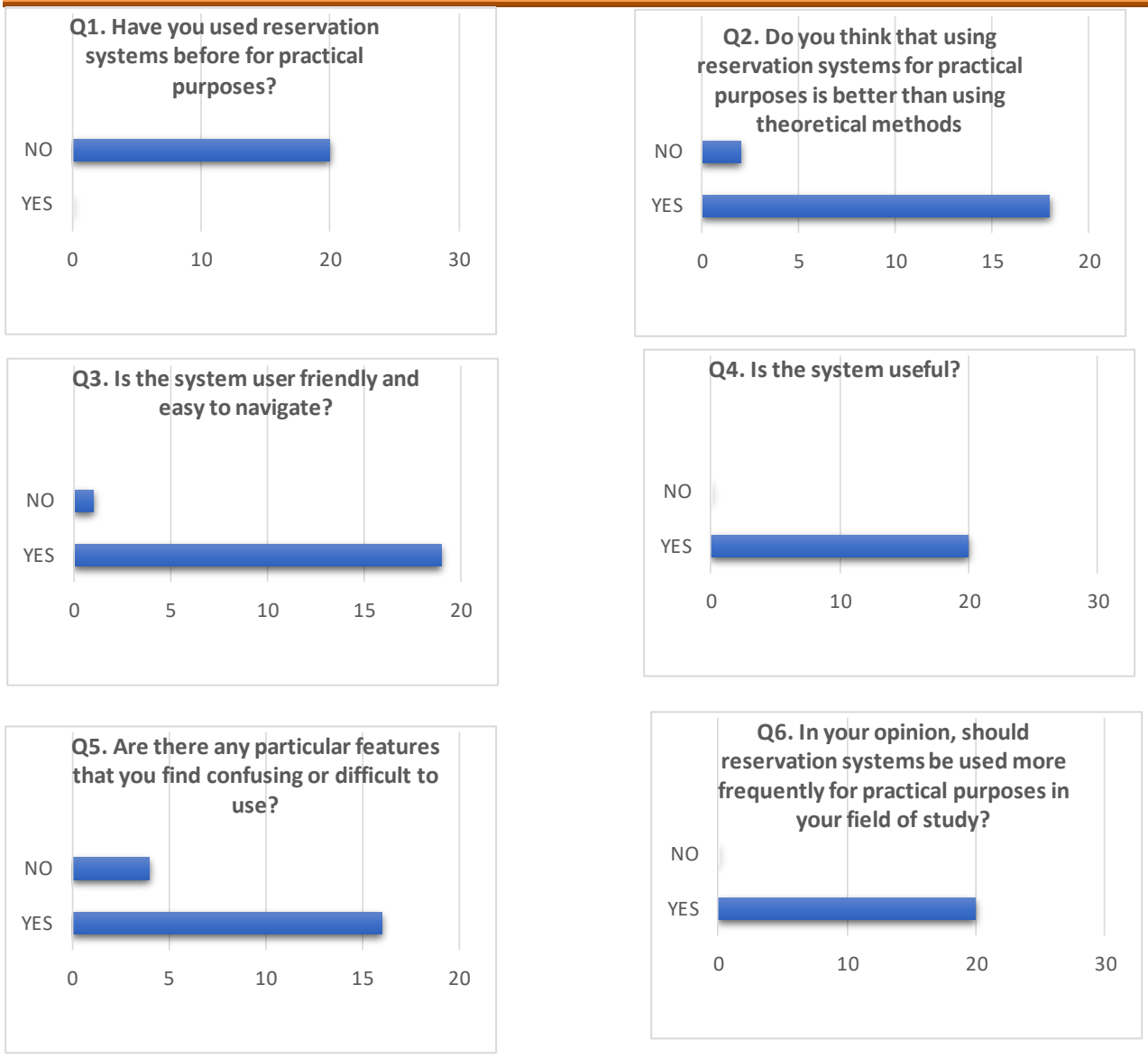

Figure 30: Questionnaire Result Bar chart

The usability testing results showed that students who used the system had a higher level of satisfaction and confidence in making online reservations than those who did not use the system. The system was effective in bridging the skills gap and providing students with practical skills in online reservation, which is a critical aspect of the tourism industry.

5.1 Discussion

The development of an online reservation system for the Department of Tourism at Federal Polytechnic Kaltungo has significant implications for teaching and learning in this department. This system provides students with practical skills in online reservations, which is an important aspect of the tourism industry. The system's user-friendly interface and clear instructions made it easy for students to learn how to make online reservations for hotel rooms, airline tickets, and food orderings.

The development of the system is also timely given the impact of the COVID-19 pandemic on the tourism industry. The pandemic has accelerated the need for online reservation systems in the tourism industry, and the development of this system will equip students with the necessary skills to meet the demands of the industry in the post-COVID-19 world.

6.0 CONCLUSION AND RECOMMENDATIONS

In conclusion, the development of an online reservation system for the Department of Tourism at Federal Polytechnic Kaltungo is a significant step towards providing students with practical skills in online reservation, which is an important aspect of the tourism industry. The system's user-friendly interface, clear instructions, and effectiveness in teaching online reservation skills make it a valuable tool for teaching and learning in the department.

Based on the findings of this research report, it is recommended that the Department of Tourism at Federal Polytechnic Kaltungo integrate the online reservation system into the curriculum for teaching online reservation skills. The system should be regularly updated and maintained to ensure its effectiveness and usability. Finally, further research is needed to investigate the impact of the system on students' employability and overall development of the tourism industry in Nigeria.

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