International Journal of Engineering and Management Research e-ISSN: 2250-0758 | p-ISSN: 2394-6962
Volume-12, Issue-5 (October 2022)
www.ijemr.net https://doi.org/10.31033/ijemr.12.5.48

Effectiveness of Cutting-Edge Technology for Motel Management System

Thanushi Perera[1], Shehan Liyanage[2], Hirusha Ravishan[3], Thisara Kavinda[4], Dulanji Cooray[5], Dilshan De Silva[6]
[1]Department of Software Engineering, Faculty of Computing, Sri Lanka Institute of Information Technology, SRI LANKA
[2]Department of Software Engineering, Faculty of Computing, Sri Lanka Institute of Information Technology, SRI LANKA
[3]Department of Software Engineering, Faculty of Computing, Sri Lanka Institute of Information Technology, SRI LANKA
[4]Department of Software Engineering, Faculty of Computing, Sri Lanka Institute of Information Technology, SRI LANKA
[5]Department of Software Engineering, Faculty of Computing, Sri Lanka Institute of Information Technology, SRI LANKA
[6]Department of Software Engineering, Faculty of Computing, Sri Lanka Institute of Information Technology, SRI LANKA

[2]Corresponding Author: 34shehan@gmail.com

ABSTRACT

The online motel management system was designed regarding the client Delicacy Inn, Galle, Sri Lanka. In the present, the client is using a manual system to manage their large amount of data which is having several issues. The proposed system allows users to store and manipulate all the data in the database while making the data handling process in to a very effective manner. The proposed system is developed to cover the process of the motel such as employee management, customer & room management, food & beverages management and transportation management. Human Resource manager is responsible of adding, updating, and deleting employee details. Human Resource manager is able to mark the leave consideration and the salary details of the employees. Human Resource manager can search relevant employee details. Customer Resource manager is responsible of adding, updating, and deleting customer details the customers can register and log in to the system. Customers can order foods, order vehicle for transportation and view bills through their online login. Transportation manager is able to manage the vehicle details and managing the process of that. Food and beverages manager are responsible of managing food items and orders given by the customers. A web application was mainly developed to ensure that the internal procedures in the motel management system are processing well. The system is developed with the intention of reducing data manipulation errors in the current manual process, resulting in considerable development in human resource utilization. The system is designed in a user-friendly manner, with a reliability, in an efficient way and its statistics all the client requirements.

***Keywords*--** Motel, Management System, Online, Order

I. INTRODUCTION

The project is mainly focused on the basic internal procedures in the motel. There two main aims of this project where one of them is to handle the motel system in an effective way without critical issues and the other one is to facilitate the customer with an online login which the user can manage his foods and transportation manners through an online system without any hardness.

In order to handle the motel's present manual system for both local and distant customers, the suggested computerized online Motel Management System is designed to be more practical, well-organized, quick, dependable, and accurate.

The Motel Management platform is developed using technologies such as Express JS, Nodejs for server side, Rest API and ReactJS for client side and mongo dB as the database. This system allows Admins to add, update, and delete Motel managers and respective manager is responsible of managing Foods, Rooms, Employees, Transportation and Customers.

Customer is given a login when they are checked-in to the motel. After successful login, the user will be able to get the service in the application. The customers will redirect to a page where they could order foods, vehicles and view the current bill as well. If a customer wants to have food, they can go through the food section available and they can select the food they like and after selecting the food, Food will be delivered to your room.

Human Resource manager is responsible of adding and maintaining employees in the system. The leave consideration and the salary consideration are managed through the system. Each employee can be considered and managed separately through this. Employee details can be taken in to a report according to the department they belong.
Transportation manager is responsible of the vehicles and the transportation procedures of the motel. The vehicles can be registered through the system and the current status of the vehicle and transportation booking is handed through this. A report is generated regarding the vehicle details.
Food and beverages manager is responsible of the food and beverages of the motel where he is able to add, delete and edit items in it. The orders given by the customer is manage in here. And also, the available rooms are managed in this system.

e-ISSN: 2250-0758 | p-ISSN: 2394-6962
Volume-12, Issue-5 (October 2022)
https://doi.org/10.31033/ijemr.12.5.48

II. RELATED WORK

Today computer technology has substantially influenced on hospitality management sector in the last decades and increased the utilization of computer and information management according to the Rob law and others. This affects in the Motel management system. For bookings, orders, and view bills, they used more computer programs. Olga Jovanovic and others highlighted that systems are considered as outdated if hospitality organizations do not use advanced technology in every function. In present all the hospitality organizations are trying to move to an automated system where they could provide an effective and reliable service. On the organizational side, the workload of employee become easy to handle, operational cost is low and timesaving. Therefore, they need to use advanced technology to maintain luxury service and exacting standards.

Automating the system has more benefits for employees as well as their clients. For example, clients can easily manage their routines while staying in the motel in an online mode without a direct constant interact with employees which helps the customer to spend his vacation in a peaceful way. And also, they get benefits when they are staying in the motel because it has an advanced communication system.

On other hand, when it is considered to the previous motel management system, they used the traditional client-server mode. Johnson O. Victor and others pointed out that the users had to install client software and used it. But it increased the maintenance and upgrade costs. Due to this situation, browser server mode has been introduced. User interfaces can be accessed through browser, and transaction logic implemented in server side. In B / S architecture and C / S architecture mentioned that will help to reduce cost, maintenance, upgrade and reduce total cost of clients.

III. METHODOLOGY

These four functions customer management, employee management, Transportation management, food and beverages management, are the main ones the system focuses on. Database will be used by the customer management system to register, login, and view user information. All user interactions with the react app occur through the API.

Each registered customer can manage their bookings and payments in accordance with the diagram. and the administrator of this system can handle the driver and vehicle control portions.

The scrum methodology under agile software development was primarily used in this system. This system was built with the MERN stack. Then we put it into vs code. For testing, SonarQube and Selenium were used. The project management tool was Azure Boards. Researchers used GitHub to manage our source code.

First, the user interfaces were created. Then, in Azure Board, researchers created backlog items for Sprint 1. Researchers needed to make a chart for the work we were doing, so we linked the azure board to the git hub. With us program's work was simple to manage. The GitHub repository was then branched and committed. Sprint 1 was completed successfully. Researchers also integrated the system we built separately. Following that, backlog items.

When referencing the technologies that researchers used are,

A. React JS

• ReactJS is a component-based JavaScript UI library that is simple and feature-rich. It can be used to create small as well as large, complex applications. ReactJS offers a minimal but solid feature set for launching a web application. The React community supplements the React library by offering a large set of ready-made components for developing web applications in a short period of time. On top of the React library, the React community also provides advanced concepts such as state management, routing, and so on.

B. Node JS

• Node.js is a powerful JavaScript-based platform built on the JavaScript V8 Engine in Google Chrome. It is used to generate I/O-heavy web applications such as video streaming sites, single-page applications, and other web applications. Node.js is open source and completely free, and it is used by thousands of developers worldwide.

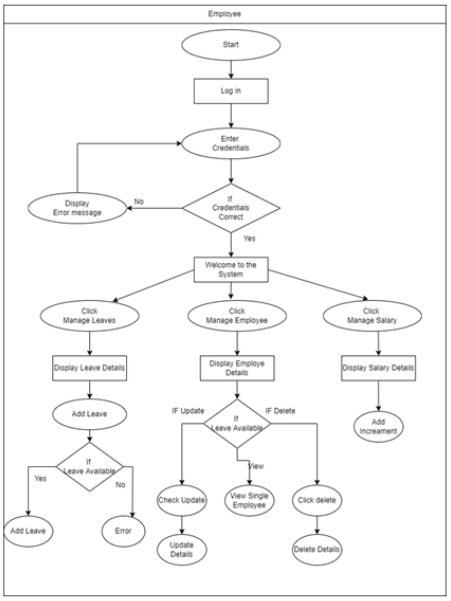
C. Express

• Express is a Node.js web application framework that offers a variety of features for developing web and mobile applications. It can be used to create a single-page, multi-page, or hybrid web application.

D. MongoDB

• MongoDB is a popularly used, open source, scale-out NoSQL database that offers high throughput for data-driven applications. In contrast to relational databases such as SQL Server, Oracle, and MySQL, which store data in tables with a rigid schema, MongoDB stores data in documents with a flexible schema. There are numerous non-relational databases available, such as CouchDB, Raven DB, and Couchbase. However, I prefer MongoDB for its scalability, speed, and dynamic querying capabilities.

e-ISSN: 2250-0758 | p-ISSN: 2394-6962
Volume-12, Issue-5 (October 2022)
https://doi.org/10.31033/ijemr.12.5.48



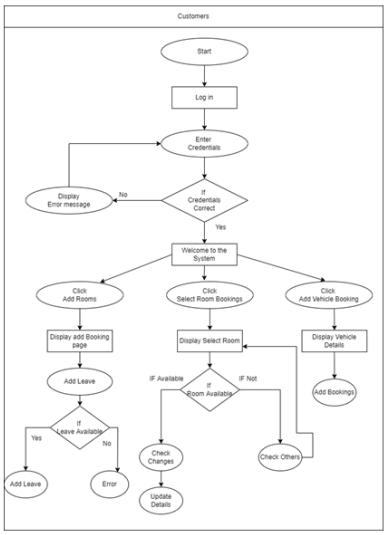
E. Axios

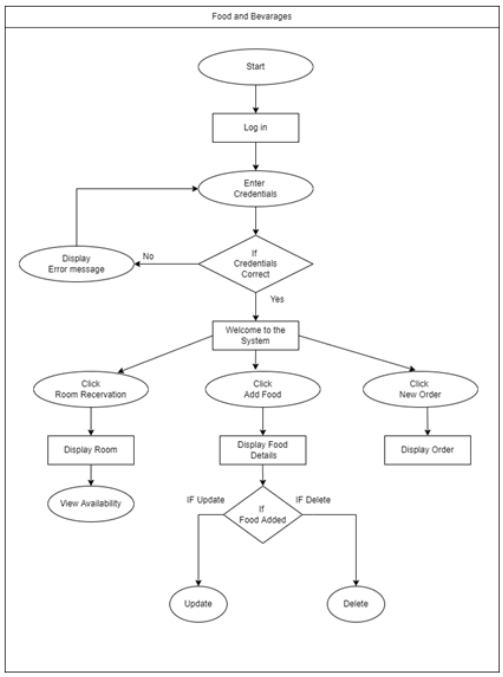
• Axios is a Node.js and browser-based promise-based HTTP client. Axios POST and GET requests make it simple to send asynchronous HTTP queries to REST endpoints and perform CRUD operations.

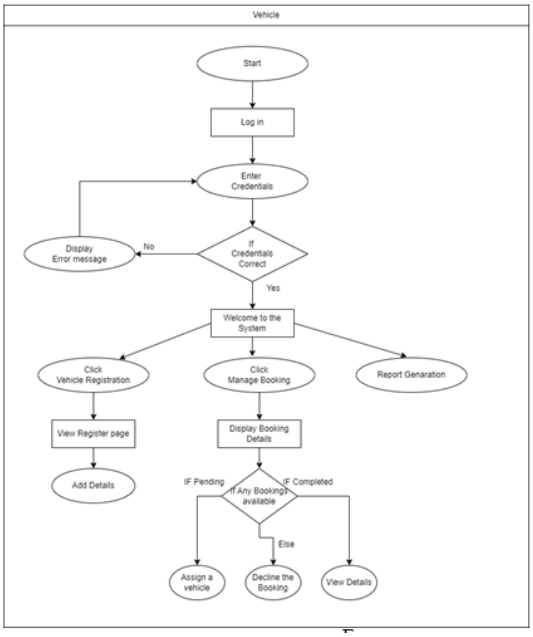
F. JWT

• A JWT is a mechanism for determining who owns some JSON data. It's a URL-safe encoded string that can hold an infinite amount of data and is cryptographically signed

The flow charts below show the back-end process of the system. Chart 01 shows the back-end process of Employee Management, Chart 02 shows the back-end process of Customer Management Chart 03 shows the back-end process of Food And Beverages Management, and Chart 04 shows the back-end process of Vehicle Management.







***B.* Proposed System**

This system will follow the browser server model to implement the system. The system mainly focuses on room management, room reservation, food management and ordering, employee management, and customer management.

e-ISSN: 2250-0758 | p-ISSN: 2394-6962
Volume-12, Issue-5 (October 2022)
https://doi.org/10.31033/ijemr.12.5.48

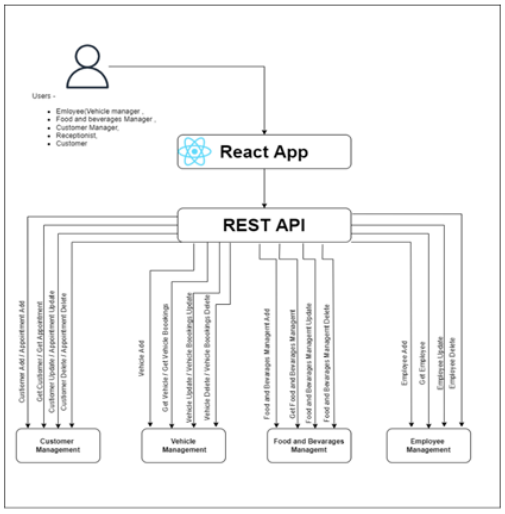


Figure 1: System Overview

This function focuses on managing the employees in the motel. This is mainly contained of

1. Employee registration
2. Employee details management
3. Employee salary consideration
4. Employee leave consideration
5. Employee report generation

HR manager is responsible of employee management. He can register the employees using the employee registration form (figure 2) and registered employees can be viewed in manage employees page (figure 3). In there HR manager is able to delete, edit and view single employee details. In here each employee's leaves are managed where each employee is assigned 21 days of leaves and incrementally deducting leaves. And also, employee salary is managed from this system where the HR can add increments to the employee's basic salary. A report can be generated according to the department of the employees.

1. Employee Management

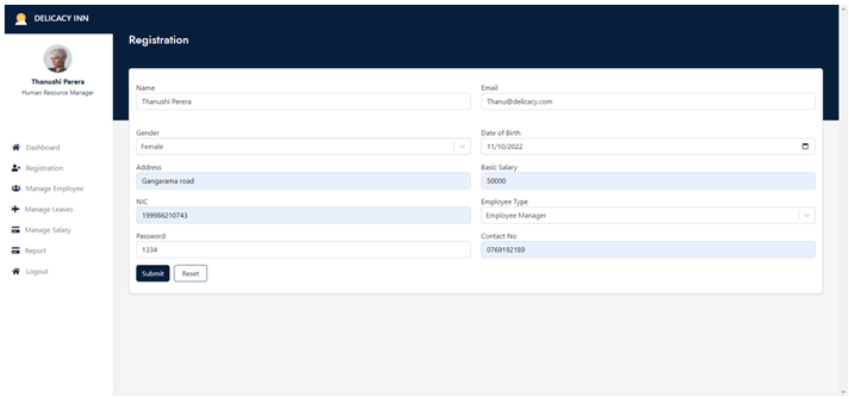


Figure 2: Employee Registration

2. Customer Management

This function focuses on managing the employees in the motel. This is mainly contained of

1. Customer registration
2. Customer details management
3. Appointment consideration
4. Booking consideration
5. Customer report generation

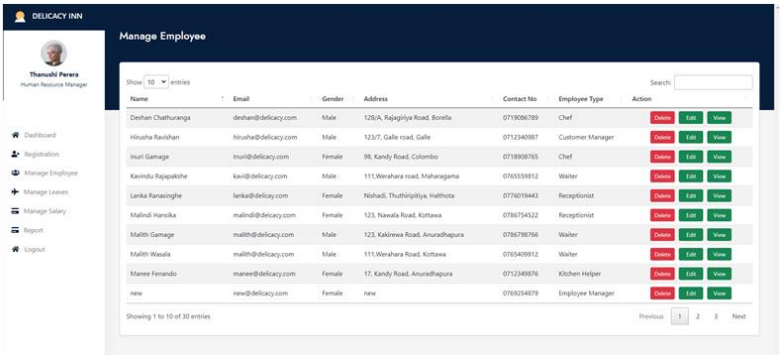


Figure 3: Customer Manage

e-ISSN: 2250-0758 | p-ISSN: 2394-6962
Volume-12, Issue-5 (October 2022)
https://doi.org/10.31033/ijemr.12.5.48

Customer manager is responsible of Customer management. He can register the Customer using the Customer registration form (figure 5) and registered Customers can be viewed in view Customers page (figure 4). In there, Customer manager is able to delete and edit customer details. In here customer manager can add appointments and view those appointments. And also, customers can request for a vehicle booking where the customer manager can add the booking and view the booking details. A report can be generated according to the customer bill according to the time period that the customer has stayed in the motel. And also, the customer is given a page to view his billing details as well.

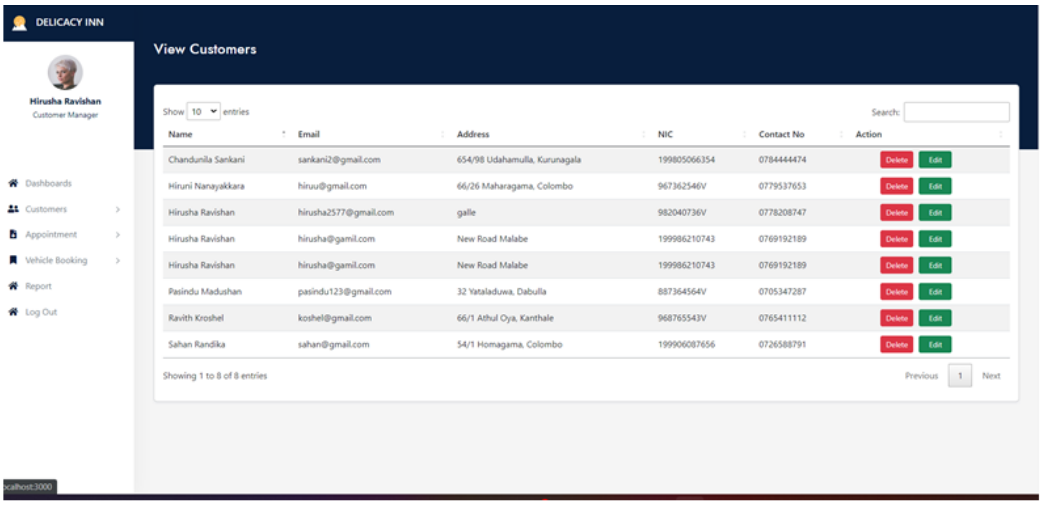


Figure 4: Customer View

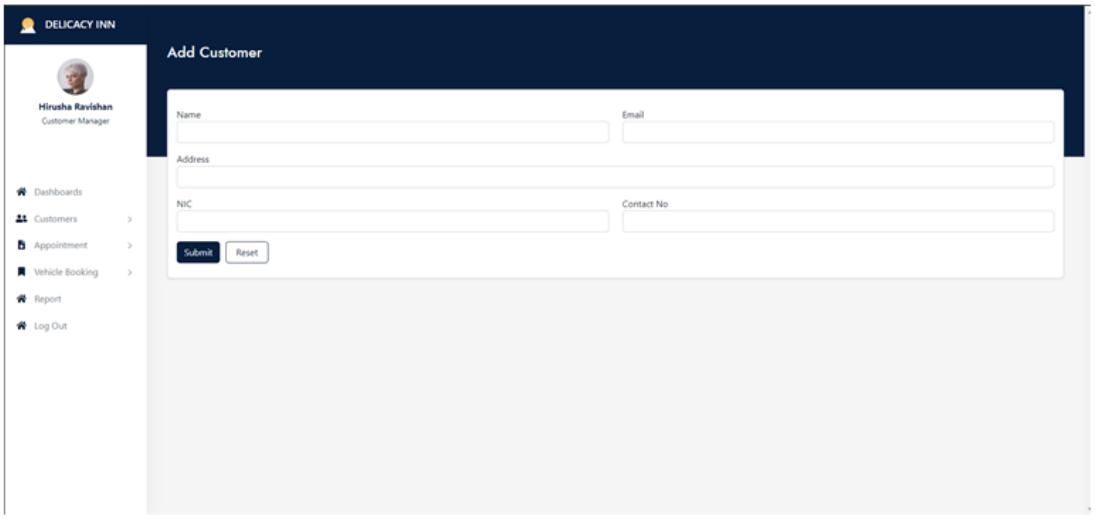


Figure 5: Customer Add

3. Vehicle Management

This function focuses on managing the vehicles in the motel. This is mainly contained of

1. Vehicle registration
2. Vehicle details management
3. Customer request management
4. Vehicle report generation

e-ISSN: 2250-0758 | p-ISSN: 2394-6962
Volume-12, Issue-5 (October 2022)
https://doi.org/10.31033/ijemr.12.5.48

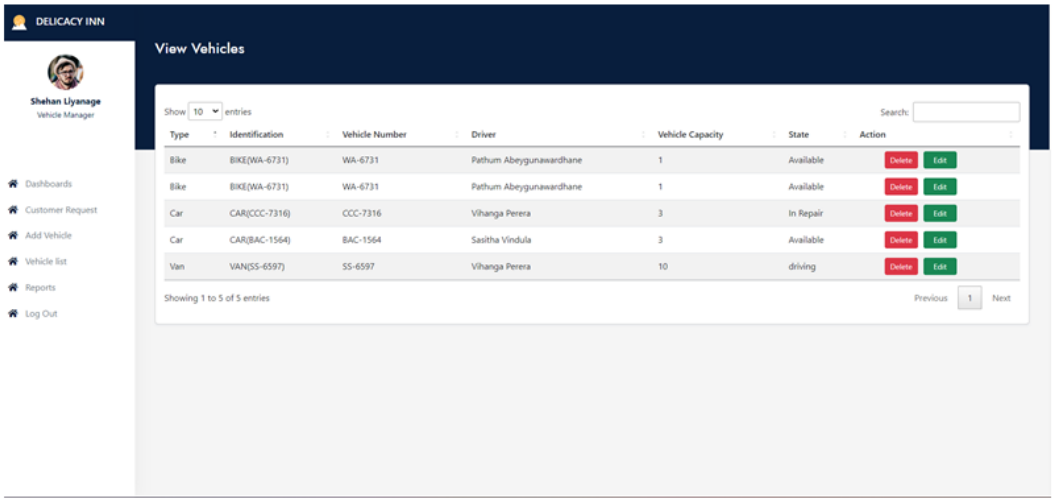


Figure 6: Vehicle View

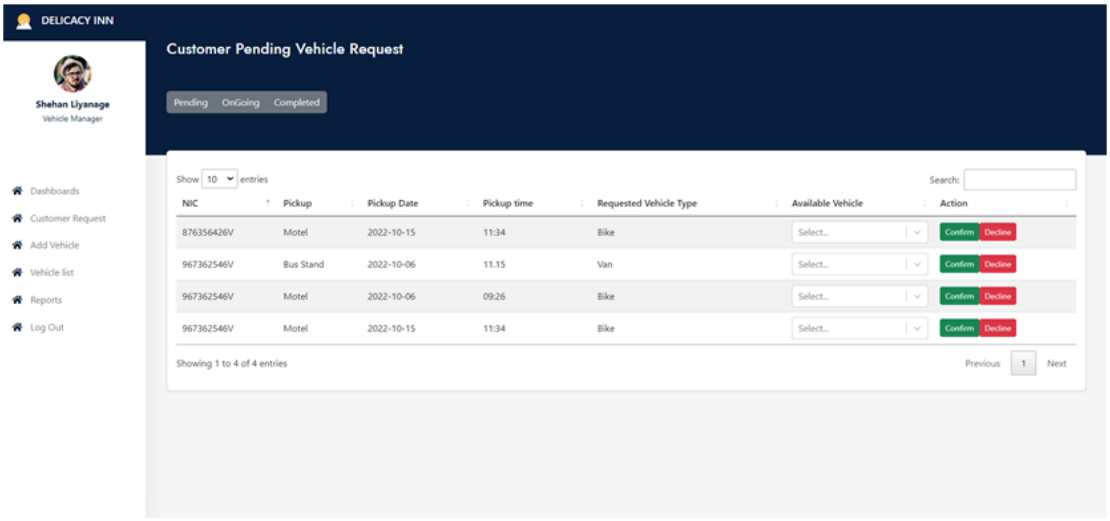


Figure 7: Vehicle Customer Request

Vehicle manager is responsible of vehicle management. He can register the vehicles using the vehicle registration form and registered vehicles can be viewed in vehicle list page (figure 6). In there, Vehicle manager is able to delete and edit vehicle details. In here vehicle manager is responsible of managing customer requests where he can view pending, ongoing and completed requests and manage them (figure 7). Vehicle manager is able to generate a report according to each vehicle trip count as well.

4. Food and Beverages management

This function focuses on managing the food and beverages in the motel. This is mainly contained of

1. Add food items
2. Manage food items
3. Add orders
4. Food report generation

e-ISSN: 2250-0758 | p-ISSN: 2394-6962
Volume-12, Issue-5 (October 2022)
https://doi.org/10.31033/ijemr.12.5.48

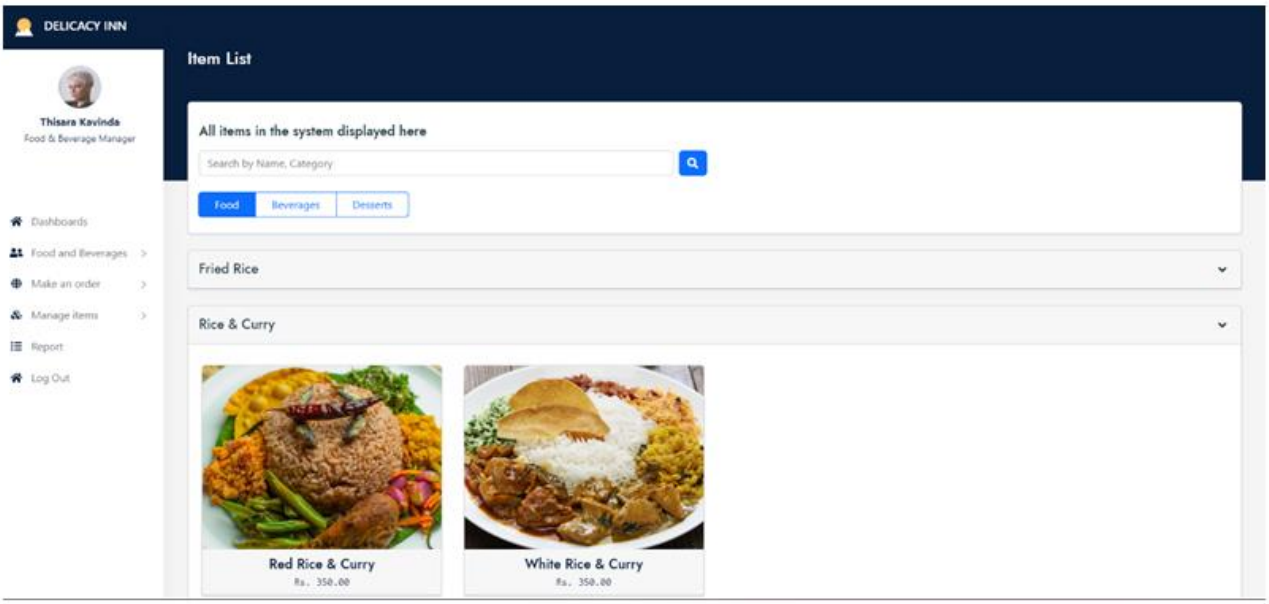


Figure 8: Food List

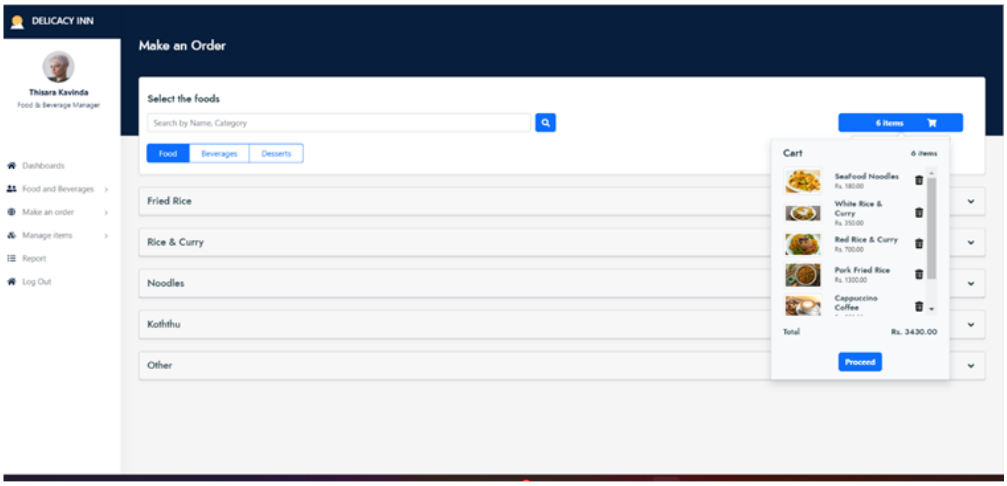


Figure 9: Make an Order

Food manager is responsible of food management. He can add the foods using the interface given and dded foods can be viewed in view food items page (figure 8). In there, food manager is able to handle orders given by the customers according to their room and selected food item (figure 9). Food manager is able to generate a report according to each item count as well.

IV. DISCUSSION

This motel system is developed to reduce the main problems that motel management faces. Motel industry remarkably busy in the holiday season, especially the economic crisis and the highly increasing living cost people are much more concerned on motels than hotels. hence if they could not give good customer service customer satisfaction reduce and those customers will not back to those motels. This system has nailed the easy management of the motel and to customer interaction in online mode. Mainly identified problems are room booking, food ordering customer handling, transportation booking and employee handling. Hence this system mainly focusses to create solutions for those primitive areas in order to reduce this motel complexity. This system developed leave consideration where the total leaves are assigned as 21 and if an employee reaches up to the limit, he is unable to take leaves. If one customer reserve any room it will display as

an unavailable room, hence that room cannot reserve any other customer. Customer is given a temporary login to use while staying in the motel where he should not worry on registering and creating logins himself. And also, it facilitates with vehicle booking, food ordering and view bill functions as well.

For this system developed, used React as our frontend framework and express used as a backend framework. All the data store in the mongo DB cloud database as a collection. Some libraries are used to develop our system, like Axios, React-from-validation, jQuery, mongoose, multer and express. Interfaces developed are very user friendly and use icons to easily understand. Bootstrap and external CSS used to stylize the interface and icons got from the Google Icon

V. CONCLUSION

Sri Lanka is one of the main tourist destinations in the entire world. Specially in vacation seasons, the tourism and hospitality industry can take the best advantage of all. So, in order to nail it with these highly advancing technologies available in the world hospitality organizations should take necessary steps to moving with the automated systems. If it is not, it will occur greater issues as the customer has to face a lot of consequences regarding that. As well the increasing amount of data which can be caused to anomalies can be deducted through this. And also, the working efficiency, time consumed and the operational cost is reduced by moving to this automated systems. The Motel industry is particularly important to country's economy. For this system, used high technology to improve efficiency and customer satisfaction.

REFERENCES

[1] Rob Law, Rosanna Leung & Dimitrios Buhalis. (2009). Information technology applications in hospitality and tourism. *Journal of Travel & Tourism Marketing*.
[2] Olga ć, Gheorghe Savoiu & Euro Fineks Broker. (2016). Use of modern technology in hotel organisation: The. *SYMORG*.
[3] Johnson O. Victor, John Emmanuel & Ajayi Olusola. (2014). ICT application in higher education: design of auto-response. *Journal of Emerging Trends in Engineering and Applied Sciences (JETEAS)*.
[4] B / S architecture and C / S architecture. (2021). Available at: https://developpaper.com/b-s-architecture-and-c-s-architecture/.
[5]https://codeinstitute.net/global/blog/what-is-react-js/#:~:text=js%3F. (Accessed Sep. 08, 2022).
[6] https://www.simplilearn.com/tutorials/nodejs-tutorial/what-is-express-js#:~:text=Express%20is%20a%20node%20js. (Accessed Sep. 08, 2022).
[7]https://www.techtarget.com/searchdatamanagement/definition/MongoDB.
[8] https://www.slideshare.net/Kkushum/hotel-management-system-70024067.
[9]https://www.kresttechnology.com/krest-major-projects/IT/Java%20Mini%20Projects%202017/abstracts/Non%20-%20IEEE/83.%20management.docx.