**“eGiGCafe: An Online Services Ordering and Reservation Management System for GiGCafe”**

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**CHAPTER I**

**INTRODUCTION**

In this chapter, researchers will delve into the essential aspects of the project that provide a comprehensive foundation for the project ahead.

**Project Context**

People’s lives revolve around technology. This way of life is sometimes referred to as the *Digital Age*. The digital age is defined as the current environment in which digital media and technologies are complexly present within all spheres of life (Ferreira et al., 2021). This period resulted in the production of various types of systems and applications which are now heavily used by people all over the world. Despite this, it’s far from perfect and some gaps are still present, especially inside the business of catering and restaurant which leaves room for improvements and possibilities.

Despite major technological improvements and the incorporation of digital solutions into many parts of everyday life, the catering and restaurant sector faces problems and inefficiencies. The complicated and time-consuming nature of the reservation procedure is one of the key difficulties that restaurants like Gig Café encounter. The traditional face-to-face approach frequently causes delays, particularly during peak hours, impeding the organization's overall efficiency. Furthermore, the difficulty of managing resources in a busy environment that mixes catering, and restaurant services exacerbates the problem. These weaknesses in the present system provide potential for development by building a GigCafe Online Catering Reservation System adapted to the unique needs of Gig Café. Taking care of these difficulties would not only help to simplify operations.

The researchers will develop GigCafe Online Catering Reservation System which will help the client’s business. In more specific ways, this system will help quicken the reservation process, which often takes longer times when done face to face with the staff, specially, during busy hours such as lunch or dinner as the business is sometimes hectic because it does both catering and restaurant services. In addition, staff will manage and oversee resources more conveniently compared to the traditional ways, thus removing extra work expected from every member.

The GigCafe Online Catering Reservation System for is an innovative solution for the business to have a more consistent and convenient way of reserving catering services.

**Objectives of the Study**

This study aims to develop GigCafe Online Catering Reservation System is to make reservation of catering services convenient for both customers and staffs.

Specifically, this study has the following objectives:

1. Design and deploy a customizable and intuitive online catering reservation system within six months that allows users of all computer literacy levels to easily reserve catering services with a simple, user-friendly interface.

2. Optimize the system within four months to be fully responsive, allowing users to access all features seamlessly across various screen sizes and devices, ensuring usability anywhere and anytime.

3. Develop a visually appealing and interactive menu system that allows users to customize food and beverage packages, with the aim of increasing user engagement by 30%.

4. Implement a feedback system and digital receipt functionality within five months, enabling users to leave ratings and receive a digital receipt immediately after reserving a date and time for the catering service.

5. Develop and incorporate a supply tracking system within six months, allowing staff to efficiently monitor the quantity and condition of catering supplies (e.g., tablecloths, utensils) before and after each service.

6. Within one month after the system is fully implemented, conduct a comprehensive evaluation of the system’s quality, usability, and performance using ISO 25010 standards, aiming for a satisfaction rate of at least 85% among test users.

**Scope and Limitations of the Study**

The focus of this study is the development, implementation, and evaluation of a online reservation system designed specifically for the catering industry, known as the "GigCafe Online Catering Reservation System". The study includes both online and walk-in reservation processes which are limited to customers of the restaurant with the goal of improving operational efficiency and customer satisfaction.

Nevertheless, it is important to recognize that there are certain limitations. The implementation of the gigcafe online reservation system may be impacted by technical constraints such as internet connectivity issues, device compatibility, and potential system downtimes. Smaller or traditional catering businesses may encounter challenges when it comes to adopting new technologies, due to limited resources or resistance to change. The findings may only be applicable to a particular context, location, or type of catering service. Additional limitations are represented by concerns about data security and privacy in online transactions and information storage within the system. Additionally, the gigcafe online reservation system's effectiveness may be impacted by the requirement for user training, creating obstacles to its smooth adoption and utilization by both customers and catering service providers. Even with its restrictions, the research seeks to offer a comprehensive understanding of the usefulness and advantages of integrating a online reservation system in the ever-changing catering industry.

**Significance of the Study**

The result of the study will be a great benefit to the following:

**Gig Café.** Gig Café is the restaurant who requested the system thus, the researcher’s client, which is the Gig Café, will be the first to benefit from the system.

**Customers.** Customers will be able to gain various benefits from the system. Such as, lessening waiting time, convenient reservation services and the likes. The customers will also be able to have the ability to reserve and cancel services at ease which is advantageous to customers who don’t have time to wait.

**Staff.** Staff will also benefit from the system. Tracking of supplies and communicating with various clients during working hours is a rigorous task for staffs but the system will help lessen the workload.

**Future Researchers.** This study will be used as a reference for researchers conducting research. This will be used as a guide to continue improving the study of various related system development.

**Concept of the Study**

**Input**

User Input

Customer

Information

Table and Events

Transaction Status

Promotional Codes

and Discounts

Reservation

Booking

Management

**Process**

Requirement

Gathering Analysis

Prototype

Development

Client Evaluation

Suggested

Improvements

Payment processing

Reporting and

Analytics

**Output**

Gig Café: Online

Catering

Reservation System



**Figure 1. Conceptual Framework**

Figure 1 shows the conceptual framework of the website. Chosen Booking and reservation are in input. Chosen Booking and reservation confirmed by the admin are in the process phase and finalized booking is in the output process.

**Definition of Terms**

To clarity and understanding the flow of the study, the subsequent terminology is conceptually and operationally elucidated:

**Administrator.**  A person who manages the information of the users and the system.

**Customer/Client.** It refers to a person that buys food or services from a store or business.

**Database.** It refers to where all data are stored in the system.

**Gig Café.** It refers to the restaurant that offers catering, meals, and other services.

**Online Payment.** It refers to the guest’s online payment method via a website.

**Reservation.** An arrangement by which accommodations are secured in advance, as in a hotel or restaurant.

**Package services.** It refers to services used for different kinds of events.

**CHAPTER II**

**REVIEW OF RELATED LITERATURE/SYSTEM**

This chapter includes a review of relevant literature, which provides the researchers with a solid foundation for the investigation. The researchers gathered data from recognized scholar websites to check the reliability and accuracy of the content obtained. These will pave the path for the researchers to develop a comprehensive and well-structured capstone project based on the objectives of the study.

**Local Literature**

The online reservation system is very crucial for every business. According to a study, the development of reservation systems has been applied to varying fields including the catering industry (Ivanov, 2019). It is important for any organization to identify the newest technology that can maximize their sales and profit. In a similar study, it stated that traditional methods are usually found to result in data errors, it can also waste time, and cost inefficient (Barzaga et al., 2020). Uses of an online reservation system may improve the efficiency of the business process in the long run.

Reservation systems benefits a lot of fields. In accordance with a similar study, it states that healthcare benefits from a time scheduler system as well (Dela Fuente et al., 2023). This means that this kind of system isn’t limited to restaurants or hotels but rather, to many fields as well such as medicine or healthcare.

Automating the reservation system not only encourages more bookings but also speeds up the process, with fewer overbookings and greater revenue, prevents issues related to language or countless hours of waiting for the traveler, and the guarantee of having everything automated and controlled via the Internet, is a must. (Valdez, 2019).

Traditional systems that need face to face visits to terminals for ticket and fare transactions all pose difficulties for commuters (Cabatit et al., 2023). The same goes for physical visits to restaurants with booking services such as tables or catering services.

A computerized reservation system is a type of software that allows administrators to manage the schedule and cost of any goods or services (e.g., additional packages) and instantly change the customer's reservation details instead of the manual system typically used (Pamanay et al., 2020).

In a similar system, the implementation of the reservation system resulted in various benefits, such as improving efficiency and productivity, reducing errors, and increasing service quality (Capuno et al., 2021).

These procedures ought to be included as part of a system for online reservations. The reservation phases involve having information accessible, enabling users to submit reservations, validating the reservation, and handling electronic payments (Rus & Negruşa, 2019).

Ivanov (2019), the reservation system should have characteristics such as changes in reservation status, correct website design, information accuracy, customization, simplicity of update, online payment, and an interactive idea.

Kimes and Kies (2020) state in their study the benefits of using online sites which are adding new distribution channels, increased reservation consistency, reservation electronic books, table management tools and improved customer data.

Based on an article written by Ivanov (2019), changes in reservation status indicate the outcome when users finished the reservation process. The system shall display information regarding reservation availability, and users will be able to make bookings online. Updates based on user actions will be published in the system. Creating an appropriate design for a reservation system can increase user satisfaction.

According to the view of (Cheong et al., 2021), Restaurants have long strived to deliver the best possible experience to their customers. In addition, it has implemented a pre-booking system to minimize client queue duration and handle seat arrangements. The usual method of pre-booking had been through calls, with restaurant staff processing pre-orders. subsequently wasting the staff member's valuable time that could have been spent cleaning or providing customer service. The development of online methods has altered the perception of table planning, simplifying the overall experience and improving it for everyone involved.

In another study conducted, the researchers believes that a reservation system is an application for assistance (Galasao et al., 2020), which means that a reservation system is a tool or software application designed to provide assistance in managing and handling reservations for a business.

The study of (Daud et al., 2019), gave a case study of Makati Restaurant Catering Services, which employed a manual pre-booking system to take orders. As technological demand grew, Makati Restaurant developed an Electronic Customer Relationship Model for managing and controlling reservations along with other related operations. Surprisingly, it improved the client experience while also providing consumers with a tailored dining experience.

Online catering reservation permit systems help with even more sales forecasting estimation from clients, enabling for better procurement and resourcing, as well as more profitable revenue management (Min ,2020). According to Kimes (2019), an online method of booking can help in lessening overall cost of the service.

Given the current circumstances and advancements in technology, the Catering Reservation method provides many purposes for owners of restaurants and other employees. Restaurant reservation management technology makes it possible for restaurants to fulfill orders, arrange tables and meals, and produce customer interaction statistics (Liyanage et al., 2019). The best thing is that it keeps direct interactions with the customer. Once the customer places an order using the reservation system. It provides them with details of bargains and promotions, so it appears anew at the restaurant.

**Foreign Literature**

Wang et al. (2022) This research investigates the use of artificial intelligence (AI) into online reservation platforms for catering services. It looks at the ways in which AI algorithms might offer tailored suggestions according to client preferences, dietary needs, and event sizes. The study also looks into how predictive analytics may be used to better allocate resources and enhance the caliber of services. The study emphasizes how artificial intelligence (AI) technology can improve the effectiveness and functionality of online catering reservation systems.

Smith et al. (2018) This study investigates the factors influencing the adoption and usage of online reservation systems in the hospitality industry. The findings highlight the importance of system design, ease of use, security, and customer trust in driving the adoption of online reservation systems. The study provides insights into the challenges faced by businesses in implementing these systems and offers recommendations for successful adoption.

Chen et al. (2019) This case study examines the implementation of an online reservation system in a catering company and its impact on operational efficiency. The research explores how the system streamlined processes, improved resource allocation, and reduced manual errors. The study provides insights into the benefits and challenges faced by catering businesses during the implementation and utilization of online reservation systems.

Kun-Shan Zhang, Chiu-Mei Chen & Wen-Yu Chang (2020) with the development of new media on the Internet, more and more consumers can obtain various information and reservation locations of restaurants through integrated booking platforms. This paper studies the influence of perceived risk on willingness to use restaurant online reservation system. Data were collected through questionnaire survey, and SPSS24 statistical software was used for data analysis to verify the hypothesis relationship and analyze the research results. Taking consumers of a five-star hotel in Shekou, Shenzhen as the research object, this paper verifies the positive impact of perceived risk on willingness to use when consumers use the restaurant online reservation system. The research shows that the higher the cognitive risk of consumers, the greater the impact on consumers’ willingness to use the online reservation system. Finally, conclusions and suggestions are put forward based on the results, and suggestions are put forward for the optimization of the hotel online reservation system.

Dharmarathne., A.P.N.K.(2018)Mayadunne Catering Service is one of the famous catering service in Mabima area. Mayadunne Catering Service is providing services such as catering for any kind of functions and maintain two reception halls called Mayadunne Reception hall and Mayadunne banquet hall. There are about 30 employees are working in Mayadunne Catering Service. Currently they are handling their day-to-day functions by using of a manual system. Due to this manual system, currently this company is unable to provide a better service for their clients and can’t manage day to day functions properly. As solutions and weaknesses in the manual system is considered to develop an automated standalone Catering Service & Reception Hall Management System. In this system, it is supposed to have Menu Management and Reception Hall Management primarily. In addition this proposed system manage functional supportive services such as photography, videography, and decorations. Employee, User Accounts, Kitchen item Management are covered along with the above primary functions. Report generating and notification will manage to support for a highly valued system. This system was developed using the object-oriented concepts, Java language as the programming language on Netbeans as the IDE, Hibernate framework and MySQL database on Windows operating system. Jasper Reports were used to generate reports. In addition, Scene Builder was chosen as the interface designing tool and Visual Paradigm was used to draw the UML diagrams shown in this Report. At the end of this development process, the stand-alone system, which was tested by many users of the company, was successfully handed over to the client to enhance their company business process as well as to help the company to become a leading catering service in Sri Lanka.

Wen-Cheng Lu, Wen-Hong Chiu, Shieh-Liang Chen, Kuo Pin Li (2018). On the other hand, as opposed to physical shopping malls, consumers could easily and conveniently look for the products they want through online shopping; what is more, this method does not limit time and space and could effectively stimulate the consumers’ online purchase transaction and bring plenty of online purchase revenue. 3. / Online catering reservation platform should cater to consumers’ catering preferences and physical and mental needs. For O2O pre-order catering, online catering reservation platforms developed since 1998 come in a great variety in the US, Germany and Taiwan. For example, EZTable and Weiby iStore were engaged in pre-order catering in Taiwan; Open Table, GH, Panera Bread and Dunkin’ Donuts were engaged in pre-order catering in the US. All of them offered consumers brand new ur themaning experience which are exciting and surprising. However, to stand out above others, not only the platforms need to implement the suitable stage and timing strategy, but they also must rely on popular information and tremendous human and capital resources. 4. / How to collect personal data and one-time purchase information Pre-purchase catering platforms can let customers register, make navigation, purchase and select

Sultan, Muhammad, Jalali, Umair, Asim, Dr. Muhammad (2019) Catering Business is one of the fastest growing businesses hence managing this with limited resources in tough market conditions is a big challenge for entrepreneurs. Same is valid for Pakistan where the industry is dominated by giants like Hanif Rajput Caterers and United Caterers etc. Tikka-Inn is treated as one of the new and fastest growing parts of the industry. Therefore, this study has been purposively designed on Tikka-Inn, to demonstrate the challenges pertaining to new entrepreneurs. Hence to validate findings of the case, data achieved through systematic interviews has been linked with the company’s records and available research literature. After all the association and validation findings of the study indicated that scarcity of financial resources is still a major issue for the entrepreneurs coupled with the intense level of competition, conditions of the city and regularity issues which entails entrepreneurs to device proper mechanism to overcome these hurdles especially in the category of catering and food retail business.

Miriam Scaglione, Colin Johnson & Pascal Favre (2018)One of the most important phases in planning a vacation is the booking activity process. The aim of this research is to study if the country of origin and/or seasonality has a link with the booking period (BP). The data used is from the largest booking platform of self-catering accommodations in the region of the Romand Valais in Switzerland. The data set contains more than 141,000 transactions from 1st January 2010 to 26 December 2016. This research uses the Kaplan-Meier (KM) survival method for modelling the length of BP after the resampling process. Seasonality of travel shows a higher discrimination level on BP than country of origin. This demonstrates that the importance of socio-demographical factors has been over-estimated against other factors such as travel motivations that may include external constraints such as school holiday timing. For practitioners, the results shed some light on planning behavior across different markets and seasons. For scholars, beside methodological issues, the results show that countries of origin are less relevant than seasonality in the characterization of the planning vacation process (PVP).

Johnson et al. (2020) This research explores the impact of online reservation systems on customer satisfaction and loyalty in the catering sector. The study employs surveys and interviews to assess customer perceptions and experiences with online reservation systems. The findings reveal a positive relationship between the use of online reservation systems and customer satisfaction, leading to increased loyalty and repeat business.

Lee et al. (2021) This comparative analysis investigates the role of mobile compatibility in online reservation systems for catering businesses. The study examines different platforms and their level of mobile responsiveness, analyzing the impact on user experience and customer satisfaction. The findings emphasize the importance of mobile compatibility in catering reservation systems to meet the increasing demand for on-the-go bookings.

Xuecheng, W. & Zongyi Y., (2018). With the long-term exploitation and development of food delivery market, it cooperates with food and beverage industry (this article calls it catering industry instead) which is a necessary industry, it provides the high-quality services to people, it also helps the catering industry keep a standardized operation under modernization, high-tech socialization, and to achieve the better market. Catering trade is one of the service industries, which communicate with the consumers mostly, the most traditional promotion ways are also used by catering trade most, for example massage chairs, decoration advertisements and other things, after the role of I T (information technology), it can make the efficiency of most consumers communication be upgraded, furthermore, the information technology improves the quality of catering services processing, the catering restaurants can provide the online-to-offline service or offline-to-online services, such as the online reservation of seat, network queue, internet pre orders. Electronic membership card, online notification of marketing campaigns and so on. In short, platform economy, a new economic model led by innovation of technology and business, which formed by resource sharing, industry integration and commercial format iteration.

Peiyi Zhang(2021) With the development of Science and Technology and the support of the platform economy, the platform economy has become an important tool for economic transformation and a means of modernizing. Meanwhile, the traditional catering catering is facing a crisis. It becomes a necessity for the catering industry to integrate with the online platform and create the new business model of the catering industry based on the platform economy. For example, the O2O mode. It takes less than 30 years for the platform economy theory to mature, in this paper, it will try to analyze the platform economy and the way of revolution of traditional catering industry.

By case analysis of three enterprises: Ele.me, Deliveroo and Haidilao, from the perspective of O2O, it can be proved that the revolution of the traditional catering industry has made the following improvements: 1, as long as the bread is baked, there is no need to sell it immediately; 2, accurate information matching; 3, breakthrough of time and Space problems; 4, employment promotion.

This paper expounds the current development of traditional catering industry and whether they can keep pace with the times. It is trying to study the research of traditional catering industry transformation from the perspective of the platform economy and do its best to lay the theoretical foundation.

**Synthesis**

In recent years, Gigcafe online catering reservation systems have become essential tools in the hospitality sector, optimizing the process of booking catering services. This transition to digital platforms aims to enhance efficiency, accessibility, and overall customer experiences. Notable features of successful gigafe online catering reservation systems include user-friendly interfaces, real-time availability updates, secure payment gateways, and integration capabilities with other hospitality management tools. Research consistently highlights the positive impact of these systems on user satisfaction, emphasizing the convenience of online reservations, customization options, and instant confirmations. Case studies showcase the success of catering reservation systems across various hospitality settings, emphasizing their adaptability and scalability. These systems are designed to seamlessly integrate with other management tools, providing a comprehensive view of customer interactions and enhancing operational efficiency. Looking ahead, future trends in online catering reservations include a focus on personalization, predictive analytics, and improved mobile experiences.

The industry is poised to explore innovative technologies to meet evolving customer expectations and market trends. In conclusion, the synthesis underscores the pivotal role of online catering reservation systems in optimizing the hospitality landscape, offering businesses the opportunity to refine catering services and provide customers with seamless and satisfying experiences. For the most current and specific insights, referring to the latest research literature and industry reports is recommended.

**CHAPTER III**

**METHODOLOGY**

In this chapter, we detail the methodologies and strategies employed to construct an approach tailored to meet the objectives of this study. This involved utilizing diverse processes, specifications, analyses, data gathering instruments, and assessments. These components collectively directed the researchers in effectively managing and overseeing the research endeavor.

**Development Method**

This research adopted a quantitative research design, aiming to generate systematic, statistical, and impartial conclusions. Data collection was conducted in a structured manner, utilizing larger samples that were reflective of the entire population. Quantitative research involves gathering data from current and potential customers through sampling techniques, typically employing online surveys or questionnaires. The outcomes are presented in numerical form, allowing for a thorough analysis of the numbers to forecast future developments of a product or service and implement adjustments as needed.

A diagram of a process

Description automatically generated**Figure 2. SDLC Agile Model**

**Requirements.** The researchers conducted an interview to gather more information related to the catering process and documents by obtaining consent from the client. The information collected helped the researchers create better system functions and features that meet the client’s expectations.

**Design.** The researchers focused on designing graphical user interface (GUI) of the system according to the needs of the client. The functions and features of the system were determined. Also, the researchers analyzed the design of the database schema and structure which will help by developing the system.

**Development.** The researchers began the development of the system. The researchers started writing a coding system associated with using Visual Studio. In addition, Laravel framework is used to implement in the system for additional security and easier coding. The researchers also used PHP language, JavaScript, bootstrap template for interface and MySQL as database platform.

**Testing.** This phase covered the system and is tested to ensure that 1t works properly according to its purpose. The researchers demonstrated how it works to all respondents to guarantee that the user's needs are met, and any errors are remedied. Negative testing, unit testing, and acceptance testing were all used by the researchers.

**Deployment.** The system had been deployed on the GigCafe Catering. The Manager reviews and assesses the system during the deployment for additional improvement of the system. The researchers monitor and maintain the system during the deployment and regularly visit and consult the client to ensure that system remains in good working order and operates smoothly.

**Gantt Chart**

The table below represents the schedule and plan of the development of the system. The Requirement Phase was scheduled for the month of October 2023 with the task will to be completed. The Design of the system was completed in the month of 2023. The December Implementation Phase was scheduled for the whole month of December with the tasks to be completed. The development of our project was from December-February, the remaining months is for testing phase and deployment.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Task Name** | **Task Date** | | | | | | | | | | | | | | | | | | | | |
| Oct | | | | Nov | | | | Dec | | | | Jan | | | | Feb | | | | |
| Week 1 | Week 2 | Week 3 | Week 4 | Week 1 | Week 2 | Week 3 | Week 4 | Week 1 | Week 2 | Week 3 | Week 4 | Week 1 | Week 2 | Week 3 | Week 4 | Week 1 | Week 2 | Week 3 | Week 4 |
| **1.Planning** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1.1 Conduct an  interview |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1.2 Define project  objectives |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1.3 Define project  plan |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1.4 Approval of project plan |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **2.Requirements Gathering** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2.1 Data Collection |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2.2 Functional |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2.3 Non-Functional |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **3.Design** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3.1 Frontend software design |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **4.Development** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 4.1 Back-end coding |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **5.Testing** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 5.1 Functionality testing |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 5.2 User interface testing |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

**Table 1. Gantt Chart**

**Requirements Specifications**

The user must meet the required functions of the system in order to fully use the system. This includes the functional requirements, user interface, software interface, hardware interface, and security interface. Users must familiarize themselves with the processes and procedures of the system.

**Functional Requirements**

Functional requirements define how the system works and how it should be worked to function properly to avoid unnecessary events happening. This part will discuss the presentation of the system, this can be reviewing the process and how the data are operated to produce or create a functional output. It is important to discuss the functional specification of the proposed system for the benefit of the future researchers.

**Table 2. Functional Requirements**

|  |  |
| --- | --- |
| User & Admin Account | |
| Features | **Description** |
| 1.User Registration  and Profile Management: | Enables people to register by entering the required information. Users have the ability to manage their profiles, which include historical reservation history, contact details, and preferences. |
| 2.Menu Display  and Customization | Presents a thorough menu complete with prices and details. allows customers to tailor their catering orders according to dietary needs, the number of guests, and certain event specifications. |
| 3.Real-Time Availability  and Booking: | Let’s users view available dates and times for catering services via a dynamic calendar or availability checker. enables users to choose dates, times, and confirm catering specifics while making bookings in real-time. |
| 4.Online Payment Processing: | Incorporates safe internet payment methods to enable deposits or advance payments. accepts several payment options, guaranteeing a quick and safe transaction process. |
| 5.Special Requests and Customization: | Enables customers to add personalized features or unique requests to their catering orders. This could include special cuisines, dietary restrictions, or demands for services. |
| 6.Feedback and Review System: | Incorporates a system for user reviews and feedback where users may score and remark on the catering service they received. This enhances customer satisfaction and supports the decision-making process for potential clients. |
| 7.Cancellations and Refunds: | Permits users to cancel reservations in case of necessity and specifies a clear cancellation policy. ensures openness and client satisfaction by automating the refund procedure in accordance with the cancellation terms. |
| 8. User Management: | Gives administrators the power to control user accounts, including the ability to change user information, approve registrations, and verify accounts. |
| 9. Menu Management: | Enables administrators to oversee and modify the catering menu. This entails signaling availability, introducing new meals, and adjusting prices. |
| 10. Reservation Overview: | Provides an extensive summary of all catering reservations, enabling administrators to examine specifics, verify availability, and oversee reservations. |
| 11.Booking Confirmation  and Alerts: | Admins have the ability to send notifications, validate reservations, and get in touch with users as needed. This reduces miscommunication and guarantees efficient coordination. |

Table 2 shows that the Online Catering: Online Catering reservation System with Sentiment Analysis features consists of User Registration and Profile Management, Menu Display and Customization, Real-Time Availability and Booking, Online Payment Processing, Special Requests and Customization, Feedback and Review System, Cancellations and Refunds, User Management, Menu Management, Reservation Overview and Booking Confirmation and Alerts.

**User Interface**

The user interface is important for the project due to the way it enables users and systems to interact with one another. The user interface of the created system is illustrated in the tables below. Each adds to the understanding of the project as a whole by providing additional details.

A screenshot of a restaurant

Description automatically generated

**Figure 3. User Interface**

The researcher’s decided to use a very simple minimalist design interface. It works on both normal and dark theme of the user’s browser which makes it easier to work with the system despite of the users’ eye sensitivity or color preferences. The design features a colorful and vibrant green and blueish navigation bar for a complimentary look that works well with both the dark and light theme of the system.

**Hardware Interface**

The project complies to the defined hardware requirements throughout its development. The hardware interface of this technique defines the logical and physical features of each link between the software product and the hardware components of the system. The developers chose a quad core processor, 8GB of RAM, and 512GB of storage space to store the operating system, databases, files, and other vital components.

**Software Interface**

The project complies to the defined software requirements throughout its development. The researcher’s used Visual Studio Code, version 1.83.1 or higher is required for a smoother programming performance. As for the back-end and front-end framework, Laravel, version 10.35.0, and Tailwindcss, version 3.3.6, is used. Furthermore, a web browser is also needed for testing and accessing the system. For this matter, the researcher’s preferred to use the Microsoft Edge browser in its latest version. The server used is Laragon which is preferred to be in its latest version as well. As for the programming languages a mixture of PHP, Bootstrap, CSS, JavaScript, Html, and Ajax are used.

**Security Requirements**

Security requirements refers to the needed security functionality that safeguards the security of the system. The researchers ensured that only qualified admins can oversee and manage user’s sensitive and personal data. In addition, administrators are the only ones who can assign an additional admin role by manual approval. By doing so, it secures who has access and control over the system which provides security to the users.

**Technical Background**

The technical background gives context and also insights into the project's technology components, facilitating demand articulation in developer-friendly language. The sections that follow go over the hardware and software requirements in further depth.

**Hardware Specifications**

Hardware specifications point towards the hardware parts, components, and qualifications. Table 3 shows the system’s hardware specifications in detail.

**Table 3. Hardware Specifications**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Hardware** | **Functions** | **Specifications** | | **Unit** |
| **Minimum** | **Recommended** |
| Computer/Processor | It is used to run the website and the database needed for the main functions of the system. | Dual Core CPU, 4 GB RAM | Quad Core, 8 GB RAM | 1 |
| Storage | It is used to store data and information from computers. | 256 GB ROM | 512 GB ROM | 1 |

**Software Specifications**

Software specifications point towards the non-tangible parts of the system. Table 4 below shows the system’s software specifications in detail.

**Table 4. Software Specifications**

|  |  |  |
| --- | --- | --- |
| **Components** | **Minimum Specifications** | **Recommended Specifications** |
| Visual Studio Code | Version 1.83.1 | Version 1.84.0 or any other latest version |
| Laravel | Version 8.1.0 | Version 10.35.0 |
| Web Browser | MicrosoftEdge | Any other web browser available |
| Web Server | Laragon Version 8.1.10 | Laragon Version 8.1.10 or latest Version |
| Tailwindcss | Version 3.3.6 | Version 3.3.6 or newer version |
| Database | 1 Database | 2-3 Database |
| Operating System | Windows Version 7 | Windows Version 10 or 11 |

**System Analysis and Design**

System analysis and design are concerned with the planning and development of information systems by understanding and specifying in detail what a system should perform as well as how the system's components should be implemented and work together. The developers are unsure that the process of the developmental model is implemented to create the website according to the process needed.

**System Design**

The GigCafe Online Catering Reservation System is a system that is built to cater to the needs of the client in terms of running a restaurant and catering business. This system helps make availing restaurant and catering services more conveniently. To start, an unregistered user is able to browse some restaurant information but to reserve and order from the menu, the user must first register. Some personal information such as name, email and contact information are entered in the system to register, then the data is retrieved for login purposes.

Upon logging in, it lets user browse available tables, catering services and also the restaurant menu, it uses graphically appealing images of food to entice the users, similar to the unregistered user. But unlike guest, the registered users can now reserve tables, catering services, and order from the menu.

To reserve tables, the user must fill up personal information and of course, the guest size, to better determine the number of chairs or the length of the table to be used. As for the catering reservation details, it also needs personal information and guest size. When reservation form is sent to the administrator, its status may change depending on the situation (e.g., approved, declined, cancelled, and pending). This kind of reservation is much more convenient that walk-in reservations.

**System Architecture**

A system architecture shows the representation and structure of the system.

A diagram of a hotel and restaurant ordering simulator

Description automatically generated

**An online Services Ordering and Reservation Management System for GigCafe**

**Figure 4. System Architecture**

In figure 4, it shows the system architecture of the proposed system. The user first needs to login to access the system. The system needs an internet connection to proceed, then the transaction refers to the reservation requests of the users. The transactions are then sent to the admin for approval and verification. Once approved or declined, the request is sent back to the user and the transaction is now in the history which is viewable.

**Use Case Diagram**

This section contains a use case diagram that illustrates how the system functions within the interactions of the actors as well as a graphic depiction of the relationship between the system, admin, and users. The researchers will be able to recognize and arrange the whole project operating with the aid of the diagram.

A diagram of a flowchart

Description automatically generated

**Figure 5. Use Case Diagram**

Figure 5 depicts the use case diagram for a GigCafe Online Catering Reservation System. It has 3 actors, namely the unregistered user, registered user, and admin. The unregistered can browse the menu, table and catering services but will not be able to access any other functions. The registered user can browse the same things but can reserve services such as the table reservation, catering reservation, and ordering from menu. The admin, on the other hand, manages all transactions and restaurant operations. It also includes control over users.

**Activity Diagram**

Activity diagram is a behavioral diagram in UML to describe dynamic aspects of the system. It shows how activities are coordinated to provide a service or a workflow.

A diagram of a company

Description automatically generatedw

**Figure 6. Activity Diagram**

Figure 6 shows the activity diagram of GigCafe Online Catering Reservation System. The intended activities of the admin and users are presented below.

**Data Flow Diagram**

This section depicts the context diagram which gives context to the overall flow of the system and the data flow diagram level 0, which is commonly referred to as an upgraded version of the context diagram and provides a thorough grasp of the project's operational procedures.

**Project Context**

A diagram of a web based catering system

Description automatically generatedIn this section the system’s project context is displayed and showed in detail to understand the flow of the system.

Gigcafe:

Online catering reservation System

**Figure 7. Project Context**

Figure 7. shows the development on how the proposed system will work and function in respective areas that they are going to work on.

**Diagram 0**

In this section the system’s data flow diagram level 0 is displayed and showed in detail to understand the flow of the system better.

A diagram of a work flow

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Restaurant Menu, Table and Catering Services Information

Transactions

Restaurant Menu, Table and Catering Services

Restaurant Table and Catering Reservations

Login into the GigCafe: Online Catering Reservation System

Register into the GigCafe: Online Catering Reservation System

**Figure 8. Diagram 0**

Figure 8 shows diagram 0 of the proposed system. The user can view information without registration but must register first to access other advanced features of the system.

**Database Schema**

In this section, researchers show the database design. This will consist of tables, particularly containing the fields such as name, email, date or time, password fields. The database design is an important part of the system which enables researchers to envision the flow of the system’s information throughout the processes of its functionalities.

**A computer screen shot of a computer flow chart

Description automatically generated**

**Figure 9. Database Schema**

Figure 9 consists of the GigCafe Online catering Reservation System’s Database schema. This schema shows the relationship between tables and its primary and foreign keys.

**Testing and Evaluation**

The testing process is a critical part of the development process. In this stage, the system’s functionality and capability was tested through different trials and scenarios that will further elaborate what it needs for improvement.

**Participants of the Study**

The respondents to the study were composed of the manager of the salon, the staff, customer, and IT Experts.

|  |  |
| --- | --- |
| Respondents | Number of Respondents |
| Manager | 1 |
| Employee | 21 |
| Customer | 30 |
| I.T Expert | 8 |
| Total | **60** |

**Table 5. Respondents of the Study**

Table 5 shows the respondents of the study, including the number of each category of respondents.

**Data Gathering Instrument**

For the purpose of the study, the researchers provided questionnaires which were answered by the respondents of the study. The collected respondent data serves to validate the generation of essential information for the website. The researchers employed a questionnaire with a rating scale, utilizing the Likert scale to gather information from the participants.

|  |  |  |
| --- | --- | --- |
| Scale | Range | Verbal interpretation |
| 5 | 4.51-5.00 | Strongly Agree |
| 4 | 3.51-4.50 | Agree |
| 3 | 2.51-3.50 | Moderately Agree |
| 2 | 1.51-2.50 | Disagree |
| 1 | 1.00-1.50 | Strongly Disagree |

**Table 6. Likert Scale-type**

**Implementation Plan**

If specific individuals choose to adopt the proposed system, the researchers have developed an implementation plan. In such a scenario, both the system and its accompanying documentation will be handed over. This transfer will serve as a reference for the client responsible for overseeing system updates and maintenance. A formal agreement letter will outline that the system is provided to the user without charge, and the researchers will not bear responsibility for ongoing project updates and maintenance. If the proposal is accepted, the researchers intend to execute various strategies.

|  |  |  |
| --- | --- | --- |
| Activities | Date | Progress notes |
| Meeting with the client | October 2,2023 | Approved in project proposal |
| Deployment approval |  |  |
| System Evaluation |  |  |

**Table 7. Implementation Plan**

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