ShotsOnUs: A WEB-BASED BOOKING SYSTEM FOR WACKY SHOTS PHOTO AND PRINTING SHOP

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"And he is before all things, and in him all things hold together." – 1 Colossians 1:17

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DEDICATION

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ABSTRACT

The project addresses the operational challenges faced by Wacky Shots Photo and Printing Shop through the creation of a web-based booking system. The client's primary issues included overlapping bookings and physical record loss. To accomplish this, a mixed methodology was employed. The study adopted a descriptive approach, involving an extensive review of related literature and systems, along with data collection to thoroughly analyze the existing issues and propose effective solutions. Additionally, a developmental research method was utilized, given the aim to create and assess the quality and effectiveness of the system. The project utilized both expert and random sampling methods with a total of 92 respondents, comprising 20 IT experts and 72 potential end-users of the system. The research instrument employed was a survey based on ISO/IEC 25010. The resulting system successfully integrated important features such as service, appointment, and payment management. According to survey results, the system achieved an overall mean of 3.35, interpreted as "agree," indicating a general agreement among respondents that the system meets necessary criteria and requirements. Deploying this system is expected to enhance Wacky Shots' operations, improving service quality and user satisfaction.

TABLE OF CONTENTS

Page

TITLE PAGE ……..... i

APPROVAL SHEET …….. ii

ACKNOWLEDGEMENT …….. iii

DEDICATION ……. iv

ABSTRACT ……. vi

TABLE OF CONTENTS …… vii

LIST OF TABLES ……... ix

LIST OF FIGURES …… x

LIST OF APPENDICES …… xii

CHAPTER

I. INTRODUCTION

Project Context …… 1

Purpose and Description …….. 4

Project Objectives …… 5

Scope and Limitations ……. 6

II. REVIEW OF RELATED LITERATURES/SYSTEMS

Related Literatures ……. 8

Related Systems …… 12

III. TECHNICAL BACKGROUND

Research Methodology ……...…….. 17

Software Development Methodology …..……. 17

Conceptual Framework……. 20

Requirement Analysis and Documentation…….……..... 21

Design of Software, System, Product, and/or Processes…….……. 23

Testing……...…… 28

Description of Prototype…… 32

IV. RESULT AND DISCUSSION

To determine the processes and difficulty experienced by Wacky Shots in their shop operation in order to create an effective system…… 41

To create a Web-Based Booking System that includes the following features …….. 41

To evaluate the system's acceptability using the ISO/IEC 25010:2011 software quality evaluation criteria……..... 47

V. CONCLUSIONS AND RECOMMENDATIONS

Summary of Findings …… 56

Conclusions …….. 57

Recommendations ……. 58

Research Implications…… 59

BIBLIOGRAPHY …… 59

APPENDICES ….…… 65

LIST OF TABLES

Table		Page
1	Software Requirements	22
2	Hardware Requirements	22
3	Respondents of the Study	30
4	Four-point Likert Scale	31
5	Review of Summary Metrics for Respondents Evaluations of the Booking System in Terms of Functional Suitability	47
6	Review of Summary Metrics for Respondents Evaluations of the Booking System in Terms of Performance Efficiency	48
7	Review of Summary Metrics for Respondents Evaluations of the Booking System in Terms of Compatibility	49
8	Review of Summary Metrics for Respondents Evaluations of the Booking System in Terms of Usability	50
9	Review of Summary Metrics for Respondents Evaluations of the Booking System in Terms of Reliability	51
10	Review of Summary Metrics for Respondents Evaluations of the Booking System in Terms of Security	52
11	Review of Summary Metrics for Respondents Evaluations of the Booking System in Terms of Maintainability	53
12	Review of Summary Metrics for Respondents Evaluations of the Booking System in Terms of Portability	54
13	Summary of the Evaluation using ISO/IEC 25010	55

LIST OF FIGURES

Figure		Page
1	SDLC using Agile Methodology ……..…….	18
2	Paradigm of the Study……..……..	20
3	Context Diagram of the System…….……..	24
4	Entity-Relationship Diagram of the system…….....	25
5	System Flowchart……..…….	26
6	Admin VTOC ……..……..	28
7	User VTOC ……...{	28
8	Sign Up Page ……..……..	32
9	Log In Page ……	32
10	Change Password Page ……..	33
11	Services Page ….……	33
12	Services Information Page ……	34
13	Samples Page…….....	34
14	User Home Page……	35
15	Customer Profile …….……...	36
16	Order Fill Up ……..…….....	36
17	Order List ……...……	37
18	Calendar …….	37
19	Payment ..……...……	38
20	Admin Dashboard……	38
21	Admin Booking Management ..……..……	39

22 Admin Accounts Management …….. 39

23 Admin Services Category Management……..... 40

24 Admin Dashboard Page…….……. 42

25 Admin Account Management Page …….…….. 42

26 Customer Account Management Page…… 43

27 Appointment Management Page…….…… 43

28 Customer Payment Management Page…….……. 44

29 Admin Payment Management Page…….…….……. 45

30 Service Management Page….……..... 45

31 Comprehensive Report Generation Page …….……. 46

LIST OF APPENDICES

Appendix		Page
A	Communication Papers ……..……..……	64
B	Relevant Source Code …….……..……	66
C	Research Instruments …….……..……	71
D	Plagiarism Check Certificate …….……..…….	75
E	IMRaD Format …….……..…….	78
F	Open Access Permission and Confidentiality Agreement Forms …….	84
G	Curriculum Vitae …….……..……	88

CHAPTER I

INTRODUCTION

This chapter introduces ShotsOnUs, a web-based Booking System that allows the customer and administrator to manage and store their data. It gives a general summary of the project setting, the customer profile, the goal of the research, and the system development. It also contains details on the project's goals, restrictions, and parties who stand to gain from it.

Project Context

The emergence of the web and internet has evidently changed business processes and procedures. Information Technology had a great impact on various aspects of our daily lives, including workplaces, transportation, production, communication, entertainment, socialization, and institutions like hospitals and banks. Its primary applications include decision-making, record-keeping, efficient processing, and facilitating paperless transactions. “It has made it possible for businesses to perform new tasks including controlling operations from anywhere outside of an office or organization, using secure payment methods, and using web-based business processes” (Laudon & Laudon, 2019).

A photo and printing firm can profit greatly from implementing a Web System. First, by automating the process of taking orders, tracking their status, and ensuring prompt delivery, it provides effective order management. This raises recurring business and increases client satisfaction. Moreover, production tracking is crucial for the shop to enhance resource allocation, monitor production timelines, and ensure quality control. A well-designed Web System can provide real-time visibility into the production process,

allowing managers to identify holdups, address issues promptly, and deliver service on time. (Atieh et al.s, 2016).

An example of this innovation is implementing a trihelix information system system (TIS). Trihelix supports three indications in a public school system: the Learner's Information Profile, The Guidance Corner, and The Reports Generation. The study created an alternative system using a developmental research technique as a useful tool for basic education. During the initial phase of the project study, a system for Databank Entries was established to input and retrieve stakeholder information as needed. The study found that developing a file management system to support daily school operations was feasible. (Martin et al., 2023).

Aside from TIS, there is also an innovation in Customer Relationship Management (CRM). The goal of utilizing this system is to manage data arriving from different channels, presenting it cohesively, sorted properly by customers. “Such cumulated customer history may improve the effectiveness of the company in the field of customer management and product development. It may define customer value and therefore it could further improve the effectiveness of handling important customers.” (Reicher & Szeghegyi, 2015).

Wacky Shots, a freelance photography venture, was founded back in 2012 with a vision to capture unique and unusual shots. Over the years, the shop's reputation grew steadily as they produced excellent work and satisfied numerous clients.

As the demand for their services soared, Wacky Shots realized the need for expansion to better serve their ever-increasing customer base. Hence, on July 1, 2023, they proudly unveiled their brand-new location and building in Pulilan, known as RMM

Building, Pulilan. This move was a strategic decision made to accommodate the continuously growing volume of customers looking for their service. After moving to this new location from the Academia De Pulilan in Cutcot, Wacky Shots can now offer a more luxurious and bigger environment for its clients, guaranteeing that they will receive the best possible care and attention. This change allows Wacky Shots to be confident in continuing their service and give excellent photography experiences and quality to all their valued client.

In their current situation, the shop experiences various challenges and issues during their operations. This is because they are currently using only a manual system to keep and track their operation records. Without a proper system, it is difficult for the shop to offer specific service and keep good client communication because the customer information is scattered in different physical records. In addition to this, because they are only relying on physical records, it is hard to identify sales patterns and monitor profits. Overall, the absence of a system leads to operational inefficiencies, faulty customer service, and missed growth opportunities for the photo and printing shop.

Thus, developing a Web-Based Photo and Printing Booking System is timely significant to this growing business of Wacky Shots. By switching to online appointment scheduling, the researchers believes that it will offer numerous benefits and will be highly useful to Wacky Shots. With the problems previously stated, the researchers realize that with the implementation of the digitalized system, they can minimize the time, effort, and loss of any items, and tally of records due to having a manual transaction. This will improve the shop's operation, making way for good service quality and outstanding user satisfaction.

Purpose and Description

The overall goal of the study is to create a web-based booking system for Wacky Shots, replacing their manually-handled system, offering high quality services and gives satisfaction to its customers.

For the employee. If the system is implemented, it can boost the productivity of the shop. It can also create easy communication and improve operations. These positive improvements will encourage the employees to work better and give a better customer experience that is good for the success of the business.

For Wacky Shots. If the system is implemented, it will give the owner a complete insight into how the shop is running, letting them keep an eye on the operation and manage several important things like sales, resources, and customer information. Because the system creates reports and analytics, it makes decision-making easier and enables the owner to see trends, improve works, and make appropriate business decisions. A booking system also improves the client satisfaction by guaranteeing efficient operations, quick delivery, and accurate tracking of order.

For Wacky Shots' clients. If the system is implemented, it will give convenience to the customers by allowing them to book their appointments, place orders, and track their appointments online. This will save a great amount of time and effort for the customers. Customers can get real-time updates on the status of their orders and the the completion of it because o the transparency of the system. It also guarantees and accurate appointment processing to limit mistakes and lower the amount of redoing. This ensures a good service quality for the customer.

Future researchers. This study will help future researchers by using this as a related topic for their research, and contemporary may serve as a purpose for evidence of assessing the impact on the status of the said shop service.

Project Objectives

This section outlines the overall and specific goals that the researchers aims to accomplish.

General Objective

This research strives for the development of a Web-Based booking System for "Wacky Shots". Addressing operational challenges and enhancing service delivery.

Specific Objectives

Specifically, the researchers aim to consider the following objectives:

1. To determine the processes and difficulty experienced by Wacky Shots in their shop operation in order to create an effective system;

2. To create a Web-Based Booking System that includes following features:

    2.1. Login and Registration;

    2.2. Admin Dashboard;

    2.3. Admin Account Management;

    2.4 Customer Account Management;

    2.5. Appointment Management;

2.6 Payment Management;

2.7. Services Management; and

2.8. Comprehensive Report Generation;

3. To evaluate the system's acceptability using ISO 25010 Software Quality Standards in terms of:

3.1. Functional Suitability;

3.2. Performance Efficiency;

3.3. Compatibility;

3.4. Usability;

3.5. Reliability;

3.6. Security;

3.7. Maintainability; and

3.8. Portability.

Scope and Delimitations

The research is mainly directed towards the development and implementation of a web-based photo and printing appointment booking system essentially for Wacky Shots.

The developed system is consisting of two user levels, the administrator and the customer. These two levels of users have different credentials provided in order for the user to have different access levels in utilizing the system's features. The admin will have the overall authority in terms of managing the system, whereas the customer level will have

restrictions. The web-based photo and printing appointment booking system for wacky shots have a wide range of features, including a) user management, this enables the users to manage and customize their information. b) service selection, the users will be able to view and select from the available services that can be provided by wacky shots. c) appointment scheduling, the system will enable users to schedule appointments based on their preferred date and time. d) payment processing, users will have the option to make payments for their bookings through the web-based system. e) customer management, the system will store customer information, including their contact details and booking history.

Even though the system features can significantly improve the wacky shots' goal, there are still things that the system features can provide or limited only to do, such as. a) modification of bookings, the system will not provide a self-service feature for users to modify their bookings once they are confirmed, any cancellation should be done through direct communication with wacky shots staff. b) inventory management, the system does not include real-time inventory management for props or equipment used by wacky shots. It will focus solely on managing appointment scheduling and online bookings.

CHAPTER II

REVIEW OF RELATED LITERATURE/SYSTEMS

The section examines and explores interconnected ideas, principles, and research conducted in the past that are pertinent to analyzing the subject matter. It acts as a reference for evaluating the connections between different factors that impact the study. It encompasses the fundamental concepts, research framework, and definitions of terms used in the study. Various sources such as books, papers, and online platforms were utilized to gather relevant information for the research.

Related Literature

Determining the Processes and Difficulty in the operation of a Photo and Printing Service Shop that uses manual system

Ishak et al. (2020) emphasized that relying on a manual information management system in day-to-day business operations poses a significant risk of data loss, ultimately resulting in suboptimal performance. This is primarily due to the inherent challenges associated with manual record-keeping, which can lead to data inaccuracies and inefficiencies. As a result, implementing automated data management solutions is crucial to mitigate these risks and ensure smooth business operations. By embracing modern technology and digital record-keeping, organizations can enhance their efficiency and data security, thereby fostering better decision-making and overall performance.

Outdated business practices, like hiring office assistant to write event information for record keeping. They may need to do this approach multiple times to schedule an appointment. This manual approach is vulnerable to human errors, introducing considerable inefficiencies into standard business procedures. While modern software

scheduling tools have been introduced to reduce errors, they still closely resemble traditional methods. “It's worth noting that the manual registration process can lead to data redundancy and place additional workload on medical personnel” (Akinode, 2017).

Albino and Acebedo (2021) stated out that implementing a manual system that is for businesses demands a great investment of time and effort. This approach can lead to inconvenience and potentially damage the overall productivity of the busines.

Akinode (2017) also stated the continuing large impact of information and communication technologies (ICT) in improving business operations and services. In particular, appointment systems have become a popular way to reduce the amount of time customers must wait. This strategy powered by technology has greatly changed how businesses handle their calendars and communicate with customers, which has increased good productivity and satisfied customers. Businesses can improve their procedures and provide their customers with more updated and convenient services by using ICT solutions for appointment booking.

Quimba and Calizo (2018) stated two significant advantages of utilizing digitalized platforms in business operations. First off, digitalized platforms make it possible to convert manual record keeping into a controlled, effective data management system that allows for easy sharing of information with clients and quick information retrieval. Secondly, automation in record keeping empowers owners to accurately calculate, identify, and correct errors in inventory calculations and provide refunds when necessary. As per German et al. (2021), transitioning to a digital system not only reduces the effort and time needed for making reservations but also offers users the convenience of seamless access

and information exchange. This digital shift streamlines the reservation process and fosters easy accessibility, enhancing user experiences in the process.

Development of a Web-Based Booking System

A common challenge in appointment scheduling is prolonged waiting times, resulting in crowded waiting areas. This issue predominantly stems from the conventional practice of queuing in lines and manual booking systems. Furthermore, delays may arise when customers arrive late or when certain appointments demand more time than anticipated. Consequently, customers frequently arrive early in the morning in the quest for expedited service, leading to congestion even before the official service hours commence (De Guzman et al., 2021).

In the past, appointment scheduling was a manual process, leading to various issues such as frequent overbookings, double bookings, or the failure to remove unnecessary appointments to accommodate replacements. These challenges stemmed from the manual nature of the scheduling system. Errors in managing reservations, including double-booking and neglecting to cancel unneeded appointments, were common occurrences under the manual approach (Bello et al., 2016).

Online scheduling offers a valuable option for vulnerable individuals, such as senior citizens and infants, to avoid exposure to crowded waiting areas, reducing their risk of exposure. Moreover, it simplifies the reservation process, saving time and effort that would otherwise be spent on in-person bookings. Research indicates that computer simulation-based appointment scheduling techniques have effectively decreased waiting times, further enhancing the overall experience for service users. This technological

approach not only safeguards health but also optimizes efficiency in the scheduling process (Dave et al, 2018).

In the age of rapid globalization and advanced technology, entrepreneurs are taking various steps to promote their products. In-store commerce has become more convenient than direct commerce, and social media platforms like Facebook, Twitter, Instagram, and blogs play a mediating role in connecting sellers with customers. One such business endeavor involves Sweet8Bakery, which specializes in cakes, cupcakes, muffins, and chocolates for events like weddings, engagements, birthdays, and banquets. The owner, Mrs. Ruzila, seeks to promote her business through Facebook, but faces challenges due to an excessive number of cake album uploads, making it difficult for customers to view all options at once. Additionally, time constraints hinder regular product updates. Bookings can be made through Facebook or phone calls, with customer information recorded manually, making it inefficient to generate accurate earnings reports for cake sales each month (Basir et al., 2017).

With this being stated, an effective system should be implemented. According to Kitsios et al. (2019), the widespread adoption of the Internet and web-based systems has ushered in numerous benefits by facilitating seamless connections between service/product providers and their customers. The utilization of Information and Communication Technology (ICT) has introduced a fresh set of challenges across various industries, with healthcare sector managers acknowledging the importance of strategizing and executing web-based information systems. Within any business or organization, the primary focus should be on alleviating staff workload while concurrently elevating efficiency and service quality. In this context, leveraging ICT and the Internet can prove to be immensely

valuable. These technologies offer a pathway to not only streamline operations but also enhance the overall customer experience.

Computer Information Technology pertains to the creation, administration, and utilization of computer-driven information systems. It encompasses the application of computers and software to oversee data. Its functions encompass data storage, information processing, data transmission, and the retrieval of information when required (Danlog et al., 2017).

Related Systems

Features of Online Hospital Appointment Systems in Taiwan: A Nationwide Survey

The purpose of the study by Yang (2019) is to examine and emphasize the functionalities of hospital online appointment system in Taiwan, specifically focusing on outpatient departments allowing the patients to visit without the need of referral. The study aimed to evaluate the existing online appointment systems and analyze the features offered by different hospitals based on their accreditation levels. The researchers surveyed all online appointment systems for hospitals in Taiwan and assessed the functionalities related to first-visit registrations. “The study aimed to identify areas where online appointment systems could be improved to enhance efficiency, such as gathering information about patients' medical history or reasons for making the appointment.” The findings revealed that while a majority of hospitals in Taiwan utilized online appointment systems, majority primarily serve the purpose of registration and lack additional features that could optimize the system's efficiency.

The researchers find this study relevant because due the fact that finding the difficulty experience by Wacky Shots is one of the objectives of this study. This will show

relevance to the study because of the different ways that can be use in order for the researchers to enhance and improve the current paper-based booking system that the Wacky Shots have as of now.

The use of various appointment systems among patients visiting academic outpatient centers in Kerman and the evaluation of patients' perspective and satisfaction

The purpose of the study by Bagheri et al. (2022) "is to optimize appointment systems, it is crucial to assess the perspectives of users. This study aims to examine the utilization of different appointment systems among patients in academic outpatient centers and explore their perspectives and levels of satisfaction." By gathering insights directly from patients, the research seeks to identify areas for improvement and enhance the overall user experience of appointment systems in academic outpatient settings.

The researchers find this study relevant due to the fact that finding and developing the best appointment system for Wacky Shots will make a good change to the shop itself. By determining and utilizing different appointment methods and system will set a good measurement if doing this study really help the shop.

A simulation study of appointment scheduling in outpatient clinics: Open access and overbooking

The purpose of the study by Zheng et al. (2015) focuses on patient appointment scheduling (AS) in outpatient clinics, which is a topic of "significant interest due to its role in optimizing clinical resources and ensuring timely access to quality care for patients. The paper specifically examines two appointment scheduling systems: open access (OA) and overbooking (OB)." Clinics face systematic decisions when choosing an AS system regarding its optimal and effecient utilization. "The study aims to propose guidelines for

strategically choosing an AS system by conducting a discrete-event simulation to compare the performance of OA and OB systems in various environments."

The researchers find this study relevant because having an overbooking might cause a big problem in the shop especially due to human errors and unwanted event. By developing the system the researchers can avoid or lessen the booking problem. Implying this system can also help the shop to improve their current booking system which is the paper-based one.

An Implementation and Evaluation of Web-Based Appointment System for the Mindanao State University – Main Campus

The purpose of the study by Ampuan and Delena (2022) "aims to address the lack of an efficient appointment system at the Office of the University President of Mindanao State University in Marawi City, which has resulted in wasted time, delayed tasks, and undone responsibilities." The complications arising from the pandemic and subsequent lockdowns have further emphasized the need for an improved system that can handle appointments effectively, particularly when employees are working remotely or from home.

The researchers find this study relevant to the system due to the fact that lack of web-based appointment system in the shop might be a problem to the shop itself. Since the shop stated that they experience some difficulties in terms of appointment and bookings with their paper-based system. Developing this system might be a solution or a improvement to their basic system. Introducing this developed addresses existing issues and enhancing the overall efficiency of appointment and booking processes.

Web-Based Information and Monitoring System of Cagayan de Oro City Academy for International Education

The purpose of this research by Tubongbanua et al. (2017) aimed "to develop and implement a web-based information and monitoring system for the Cagayan de Oro Academy for International Education, specifically designed to handle school transactions efficiently." The researchers recognized the complexity and flexibility required in an online information and monitoring system to address the distinct needs of the academy. The proposed system was developed using the Prototyping Life Cycle Model, which allowed for iterative design and refinement.

The researchers find this relevant to the system due to the fact that they wanted to have develop a web-based appointing system which includes the clean transaction and hassle less booking system. This will help the shop to lessen the paper-based system and improve the traditional system that they currently have.

Online Hotel Reservation and Management System for The College of International Tourism And Hospitality Management (CITHM)

The purpose of the research by Lien et al. (2015) "aims to develop and design an online hotel reservation and management system specifically for the College of International Tourism and Hospitality Management (CITHM) at the Lyceum of the Philippines University, Batangas Campus." The primary objective is to create a user-friendly system that familiarizes The students of CITHM with digital hotel reservation systems, evaluates its effectiveness, and highlights the upsides it can provide to the staff and college. Additionally, the study intends to supplement the front desk operation course

by providing relevant material on the digital system. The proponents utilized the SDLC and Microsoft Web Developer 2008 as the programming language for system development.

The researchers find this study relevant due to the fact that they also aims to develop and design a management system specifically for photo and printing shop, It is also stated as one of the specific objectives of the researchers. Lastly they also wanted to upgrade the traditional base system that the shop currently have with this web-based system.

CHAPTER III

TECHNICAL BACKGROUND

This chapter provides a comprehensive overview of the system development process, covering key elements such as research methodology, software development methodology, conceptual framework, requirements analysis, documentation, system requirements, processes, and the system's prototype

Research Methodology

The study used developmental and descriptive research approaches. The descriptive approach was utilized to look for explanations, answers, and fixes for the problems that had been found. The researchers obtained key data for the analysis of the issue and the formulation of feasible solutions through the use of observation and interviews. Additionally, a web-based application created to address the issue was developed using the developmental research methodology. Experts evaluated the system to determine its technical viability and agreement with development requirements.

Utilizing a mixed methods approach enables researchers to obtain comprehensive data that offers insights into both the objective and subjective aspects of the research problem. This approach guarantees that the system being developed is well-versed by a thorough understanding of the research problem and effectively addresses the users' requirements.

Software Development Methodology

Sypnosys (2023) stated that the Software Development Life Cycle (SDLC) guides software development and includes various methodologies. “The Waterfall model follows

a linear process, while Agile methodologies like Scrum and Kanban emphasize iterative development, flexibility, and collaboration." Spiral, Lean, and RAD are other methodologies chosen based on project requirements, team dynamics, and organizational needs. The amount of detail of the project, the duration, the size of the team, the participation of the client, and the requirement for adaptability or likelihood all have a role in the SDLC methodology decision.

The researchers utilized Agile methodology as it actively encourages customer collaboration. By involving customers in the development process, Agile ensures that their needs and preferences are consistently considered, leading to a solution that better aligns with their requirements. Agile also promotes quick feedback loops, facilitating continuous improvement.

Figure 1 illustrates the software development life cycle – agile model that the proponents utilized in order to maintain a systematic and well-organized development process.

Figure 1. SDLC using Agile Methodology (Javapoint, 2022)

The agile methodology consists of five phases including requirement phase, designing phase, development phase, testing phase, and deployment phase.

Requirements Phase. The researchers collected essential data by conducting interviews, questionnaires, and observations. The primary objective of the interviews was to initially identify the needs and challenges faced by Wacky Shots photo and printing shop.

Designing Phase. After gathering the requirements, the researchers analyzed them and move forward with the system design phase. In this step, user stories and thorough design documents that give a thorough explanation of the features and functionalities of the system are developed.

Development phase. This stage involves developing and coding the software, which turns the conceptual idea into a working system. The product backlog's user sectioning is carried out and divided into doable tasks that may be finished in a sprint. The required code is written by the developers in accordance with the given specifications and design guidelines.

Testing phase. The system is put through thorough testing after development to guarantee functionality and quality. Throughout the Agile development lifecycle, careful testing is done, including unit testing, system testing, integration testing, and user acceptance testing (UAT). Testing validates functionality and reliability, improving the system's quality and user experience. Continuous testing allows for quick feedback and iterative improvements, ensuring high performance and effective fulfillment of user requirements. Additionally, the integration of automated testing methodologies accelerates the identification of issues, contributing to a more efficient and effective system.

Deployment phase. After testing and approval, the software moves to the deployment phase, where it is released into the production environment. This involves deploying it to a staging environment for user acceptance testing (UAT) to ensure it meets requirements. Upon successful completion of UAT, the software is released into the live environment for end-user access.

Conceptual Framework

Figure 2 illustrates the project's conceptual framework which was utilized to identify and also understand the overall flow of the study.

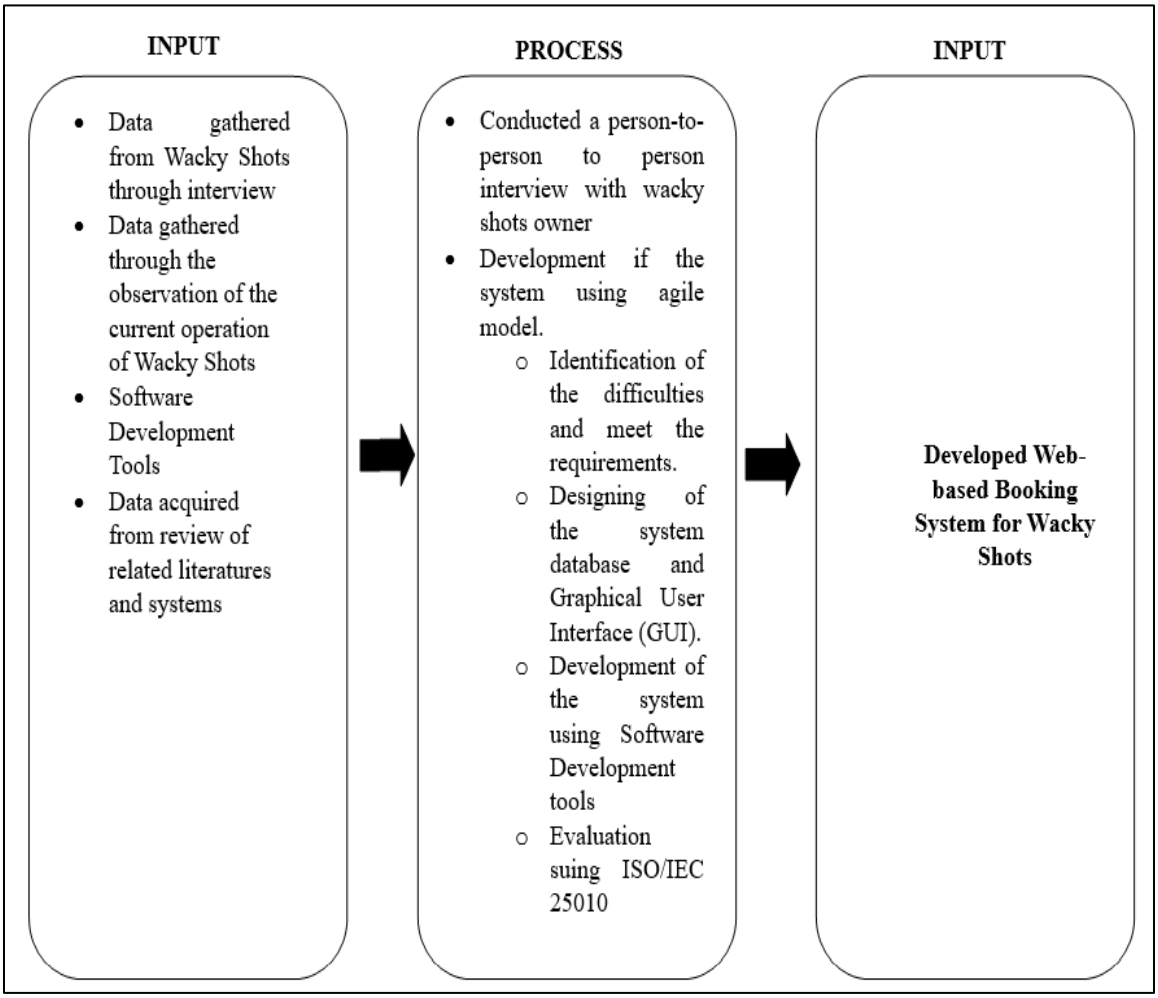

Figure 2. Paradigm of the Study

During the input phase, the study starts, involving data gathering, requirement analysis, and relevant literature presentation. The researchers observed transactions at Wacky Shots Photo and Printing Shop, identified initial difficulties, and confirmed them through interviews. This led to the development of a web-based booking system. In addition to this, gathering information on web technologies guided the system's development, and related literature and studies assessed its feasibility and potential outcomes.

During the process phase, the system's development is showcased through the utilization of the System Development Life Cycle (SDLC) methodology and also the integration of Agile method. This combination empowers the developer to revisit and refine processes or modules as needed. By embracing this approach, system development becomes swifter and more effective, as it eliminates the requirement to complete the entire life cycle to implement necessary changes. To ensure high quality, the developed system underwent evaluation and testing, employing test questions derived from ISO/IEC 25010 software quality acceptance model, with the active involvement of end-users and a team of IT professionals.

Lastly, the output phase which is the developed Web-based Photo and Printing Appointment Booking System for Wacky Shots.

Requirements Analysis and Documentation

The researchers conducted a thorough analysis and documentation of the client's requirements for the capstone project. These requirements were then used to identify the specific features and functionalities that would be incorporated into the developed system. This features and functions will improve the overall performance of the system.

System Requirements

Developing an efficient system is crucial for enhancing user performance and adoption. Careful selection of specifications, informed by thorough analysis of system requirements, is paramount. This holds true for Wacky Shots, where precise specifications are being meticulously aligned with identified needs to optimize user experience and functionality. This approach ensures user satisfaction, long-term success, and usability of the system. By closely aligning the specifications with identified needs, Wacky Shots can anticipate a system that not only meets current demands but also accommodates future scalability, fostering sustained growth and adaptability.

Table 1

Software Requirements

	Minimum Requirements	**Recommended Requirements**
Web Server	Apache	Apache
Programming Languages	HTML, CSS, JavaScript, and one server-side language like PHP or Python	HTML5, CSS3, JavaScript and one server-side language (PHP7 or Python3 or Node.js)
Database	MySQL	MySQL 8
Browser	Stable browser excluding old ones (internet explorer)	Chrome-based browser or Brave browser

Table 2

Hardware Requirements

	Minimum Requirements	**Recommended Requirements**
Operating System	Windows7, macOS 10.12 Sierra, or Linux	Windows 10, or macOS 10.15 Catalina, or Linux
Processor	Dual-core 2 GHz	Quad-core 3 GHz
RAM	4 GB	8 GB
Hard Drive	100 GB	500 GB (SSD preferred)
Network	1 Gbps	10 Gbps

Table 1 of the system requirements for the web application include specific components and hardware specifications. The web server chosen for this project is Apache, which will handle the hosting and serving of web content. The programming languages that are used are JavaScript, CSS, HTML, and one server-side language, such as PHP or Python, providing the necessary functionality and interactivity. The database management system identified is MySQL, which will handle data storage and retrieval. In terms of browser compatibility, stable browsers excluding older versions of Internet Explorer will be supported.

Table 2 presents that in addition to software requirements, the system has hardware specifications that need to be met. The operating systems compatible with the application are Linux, macOS 10.12 or Sierra, or Windows 7. The recommended processor should be dual-core, running at a minimum speed of 2GHz or higher, to handle the processing demands of the application. A minimum of 4GB RAM is required to ensure smooth operation, and the system should have at least 100GB of hard drive space for storage purposes. A network connection capable of 1Gbps is also necessary to support efficient data transfer and communication. Meeting these hardware requirements will play a role in the system's overall performance and reliability.

Design of Software, System, Product, and/or Processes

The study includes Context Diagram, Entity-Relationship Diagram (ERD), and Flowchart diagrams that were created during the design phase of the software development methodology. For system analysis and architecture, flowcharts, DFDs, and ERDs serve as essential visual aids. While ERD shows entity relationships, Flowchart visualizes process sequences, while DFD shows data flow.

Data Flow Diagram (DFD)

According to LaBello and Shwarz (2021), a Data Flow Diagram (DFD) provides an accurate representation of how your data flows. Figure 3 illustrates the Context Diagram or level 0 of the system's DFD.

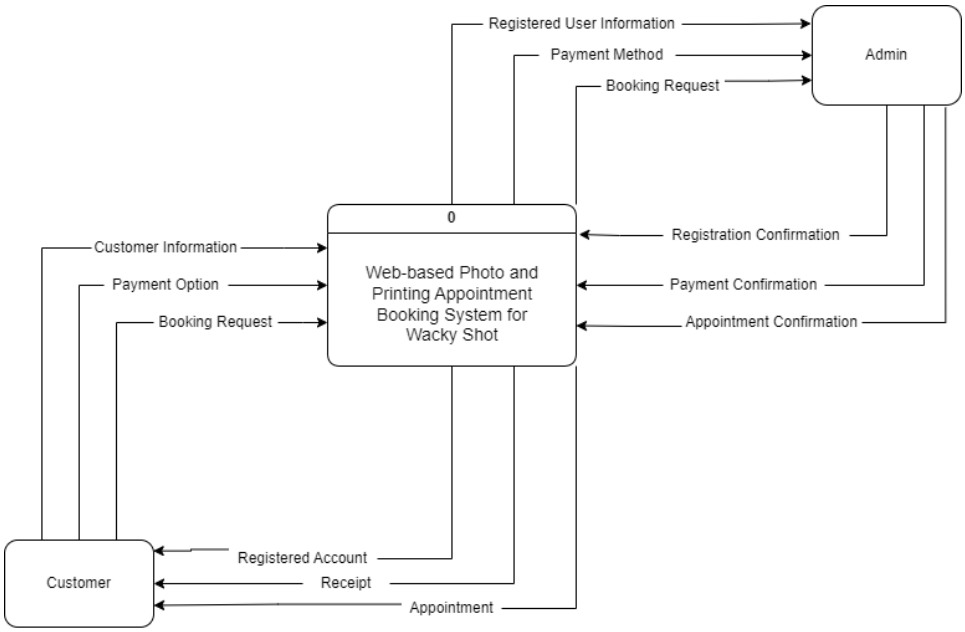

Figure 3. Context Diagram of the system

The diagram shows that there are two entities that will interact with the system. The customer and shop administrator. The customer will provide the necessary data for a booking request and the admin will verify the acquired data and will return a confirmed appointment.

Entity Relationship Diagram (ERD)

According to Vakaliuk et al. (2021), an Entity-Relationship (ER) diagram enables the visual representation of a database by utilizing graphical objects to define and illustrate a particular subject domain.

Figure 4 illustrates the entity-relationship diagram that was utilized in modeling the system's database.

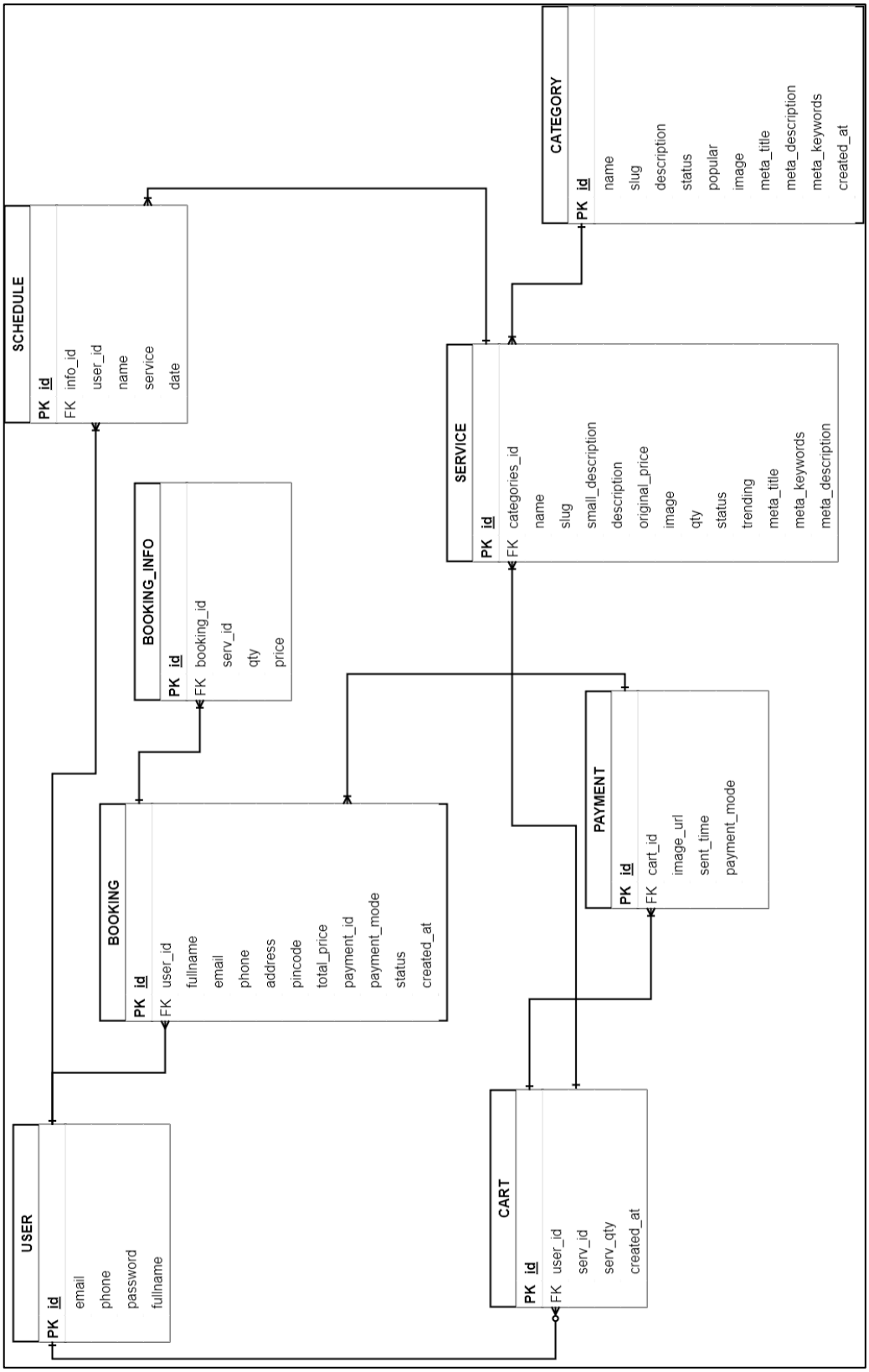

Figure 4. Entity Relationship Diagram of the System

The ERD exhibits entities that represent each table on the database and how it is related to another table using a notation called crow's foot. The whole ERD displays a total of 8 different tables namely users, booking, booking info, schedule, carts, payment, services, and categories. The ERD presents the major table of the database which is the Users table that will contain the basic information about a user. This depicts the importance of each table for the system.

Flowchart

According to Rila (2021), flowcharts are valuable tools as they aid in identifying the essential steps while providing a view of the overall process. In Figure 5, we are presented with a comprehensive flowchart that illustrates the step-by-step processes within the web-based system.

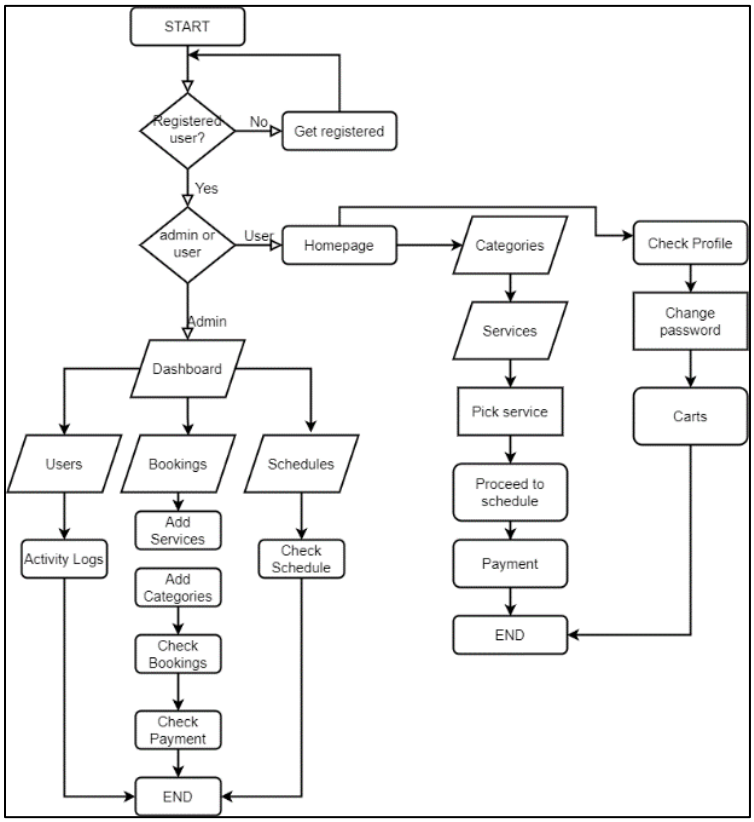

Figure 5. System Flowchart

The process commences with the user's registration, followed by the login. At this stage, the system distinguishes whether the logged-in user is the administrator or a customer. If the user is identified as a customer, the system seamlessly redirects them to the system's home page. This acts as the primary location where clients may browse the services offered and schedule the times they'd like, making the process simple and easy to use. On the other hand, the interface directs the user to the dashboard if they are identified by the system as administrators upon login. They can access several management options such as Activity Log Management, Booking Management, and Dashboard Management using the administrative interface. The administrator may effectively monitor and manage all parts of the web-based system with the help of these significant functions, which guarantee smooth operation and enable quick correction of any difficulties.

Visual Table of Contents

Carrier (2023) stated that Visual Table of Contents (VTOC) diagrams are important because they give a clear picture of how a storage volume, like a disk or tape, is organized and structured. It allows comprehension of the volume's layout, including its division of data areas for both users and system administrators.

Figure 6 and 7 illustrates the VTOC that is created in relation to the flow of the system that is developed.

The VTOC displays different type of menus or features that are available in the system presented. These menus include different functions and features such as user management, services, admin, calendar, and appointment. These are accessible to the system users and it will improve the performance of the system, allowing a better service quality and good user satisfaction.

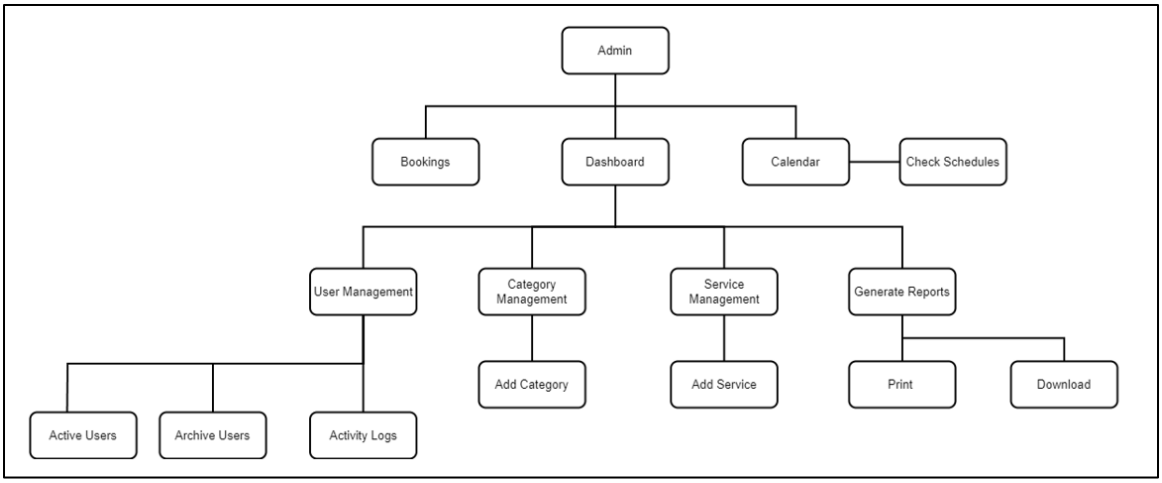

Figure 6. Admin VTOC

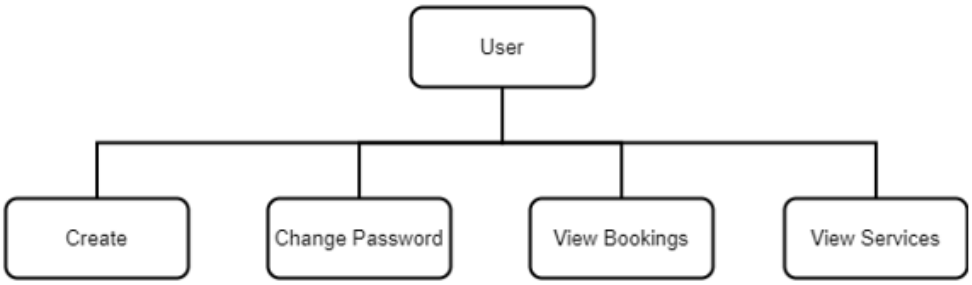

Figure 7. User VTOC

In Figure 6, it's apparent that the administrator possesses a considerably wider range of access to system functions compared to the user, as depicted in Figure 7. The contrast in function access between the administrator and user is clearly illustrated in these figures.

Testing

In order to assess the quality of the developed system, the researchers utilized the ISOIEC 25010, a well-known standard for the evaluation of the quality of software

products. This standard establishes the specific criteria that measure the system's capacity and also functionality, ensuring its overall performance meets the industry standards. The researchers have a full set of tools to evaluate and to validate the system's quality, and improving its reliability and its effectiveness through using ISO IEC 25010. A number of established criteria are used for this assessment, but not limited to: a) Functional Sustainability, b) Performance Efficiency, c) Compatibility, d) Usability, e) Security, f) Reliability, g) Maintainability, and h) Portability.

The total population size of the study is 120 people, and researchers are aiming for a high level of confidence at 95%. The researchers applied the Slovin's formula with a 0.05 margin of error in order to achieve this. After all of the calculations, formula indicates that sample size of 92 is required for the study. This means that the researchers must collect data from 92 individuals within the population to draw reliable and accurate conclusions about the entire group with 95% confidence and a margin of error of 0.05. A larger sample size would increase the precision of the results, but it may also increase the costs and time required for data collection. On the other hand, a smaller sample size could lead to reduced accuracy and statistical power, making the findings less generalizable to the entire population. Therefore, the selected sample size of 92 strikes a balance between obtaining meaningful results and practical considerations in the research process.

In the search of respondent selection, the researchers have thoughtfully opted for a dual approach that combines random sampling and expert sampling to improve the study's comprehensiveness. In the first phase, random sampling will be employed to select a diverse group of 72 beneficiaries and potential end-users of the system. This extends the study's reach and offers insights from the system's target demographic.

A type of purposive sampling called expert sampling will be used in the second stage. Here, the researchers will carefully choose 20 people with specific knowledge and experience in the IT and system development fields. These IT professionals will be important in providing thorough evaluations and suggestions based on their wide knowledge. This careful selection of respondents demonstrates the dedication to carrying out a detailed assessment of the system that has been designed, ensuring that it not only satisfies user needs but also gains from the knowledge of experienced professionals in the industry. This combination of approaches enhances the scope and level of the research.

Table 3 displays a representation of the study's total respondents. This table provides a summary of the research participants and can be used as an immediate guide to understand the demographic information and study sample size.

Table 3

Respondents of the Study

Respondents	Frequency (N)	Percentage (%)
Customers	62	45%
Staffs	10	25%
IT Experts	20	30%
Total	**92**	**100%**

Table 3 displays the research's number of responses, emphasizing the participants in the system's evaluation. A total of 92 respondents participated in the evaluation process. It will include 10 staffs from Wacky Shots including the owners. 62 out of 100 respondents will be randomly picked individuals which are potential customers of Wacky Shots. Lastly, 20 out of 92 respondents which has the second to the highest frequency are the IT Experts which may include developers, testers, and professors/faculty members from relevant

fields such as Information and Communication Technology, Computer Engineering, and Computer Science.

The researchers use a 4-point Likert scale in their survey questionnaire to assess their proposed web-based method. Using a scale from 1 to 4, this questionnaire will evaluate the system's performance in relation to the ISO/IEC 25010 standards. A rating of 1 on this scale implies major disagreement, whereas a rating of 4 indicates great agreement. This methodology is expected to provide significant insights on the effectiveness of the system and how it complies to established standards.

Table 4

Four-point Likert Scale

Scale	Range	Descriptive Rating
4	4.00-3.00	Strongly Agree
3	2.99-2.00	Agree
2	1.99-1.00	Disagree
1	1.00-0.99	Strongly Disagree

Researchers have formulated strategic approach in their testing methodology, going for the use of the black box testing. This is a specialized technique for testing and also software development, which aims at comprehensively evaluating the system's functioning without going through into its complex internal code or operations. The researchers recognizes that a user assessment of the system is important, focusing in particular on its inputs, the anticipated outputs and also the actual behavior, by using black box testing. In doing so, the overall effectiveness of the system will be improved. By prioritizing assessments centered around user experience through black box testing, the researchers aim to enhance not only the system's functionality but also its alignment with user expectations, ensuring a more robust and user-friendly end product.

Description of Prototype

The researchers explain in this section the initial prototype they created for Wacky Shots online photo and printing appointment booking system.

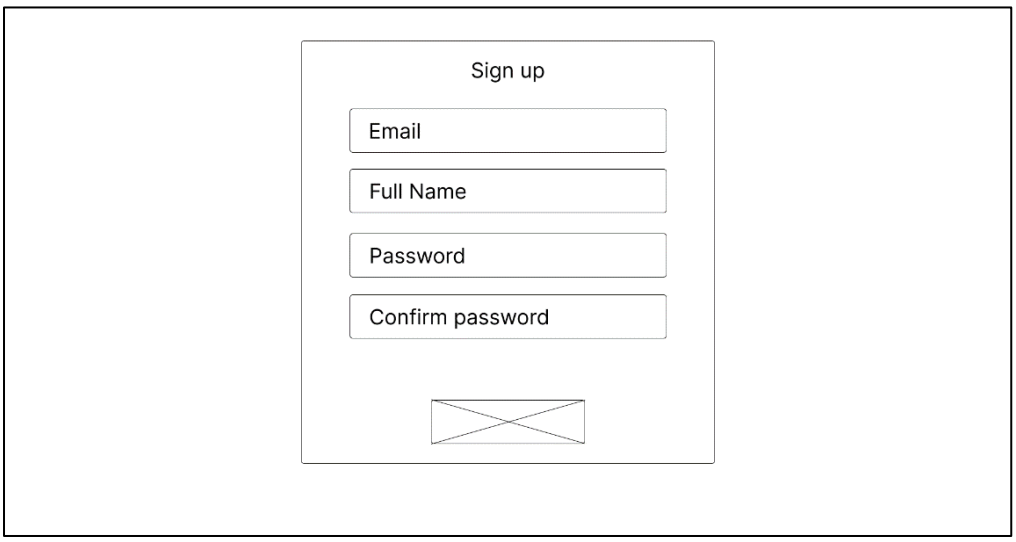

Figure 8. Sign up Page

The sign-up page for the system, shown in Figure 8, is where users submit their personal information to create accounts on the website.

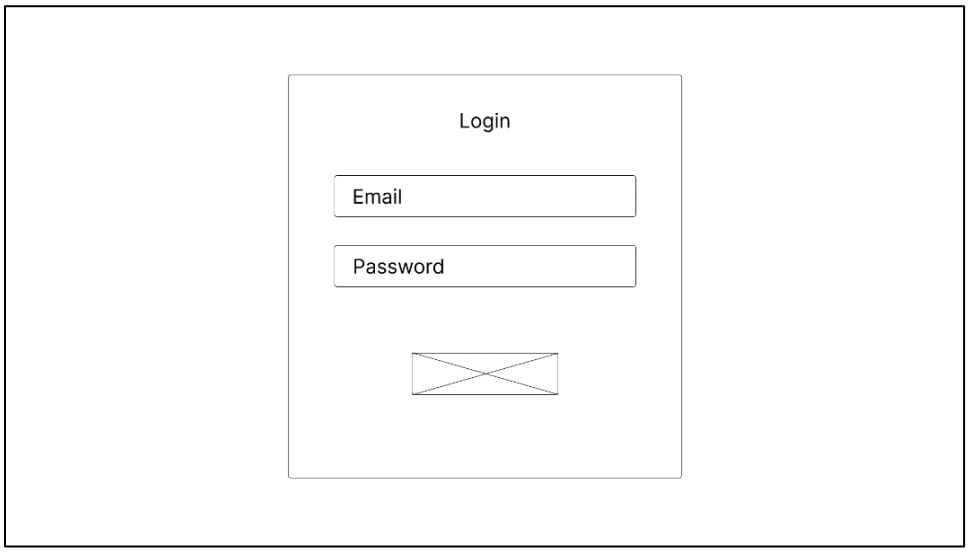

Figure 9. Log in Page

Figure 9 illustrates the system's login page, where the user can explore and have access to the content that is available inside the website.

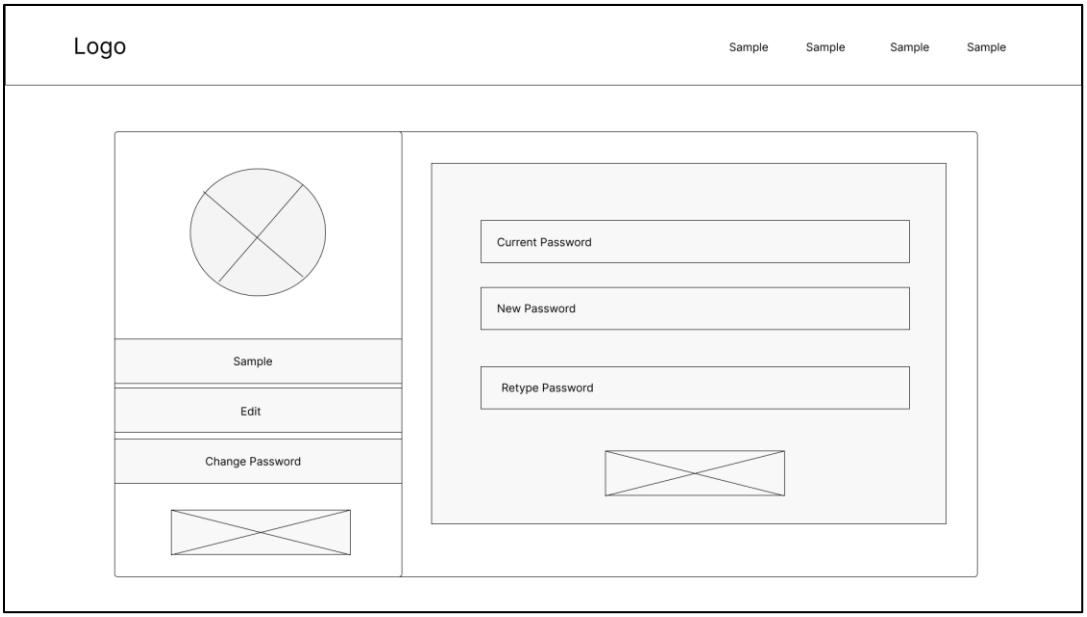

Figure 10. Change Password Page

Figure 10 illustrates the forgot password page of the system. Allows the user to edit the password of their existing accounts.

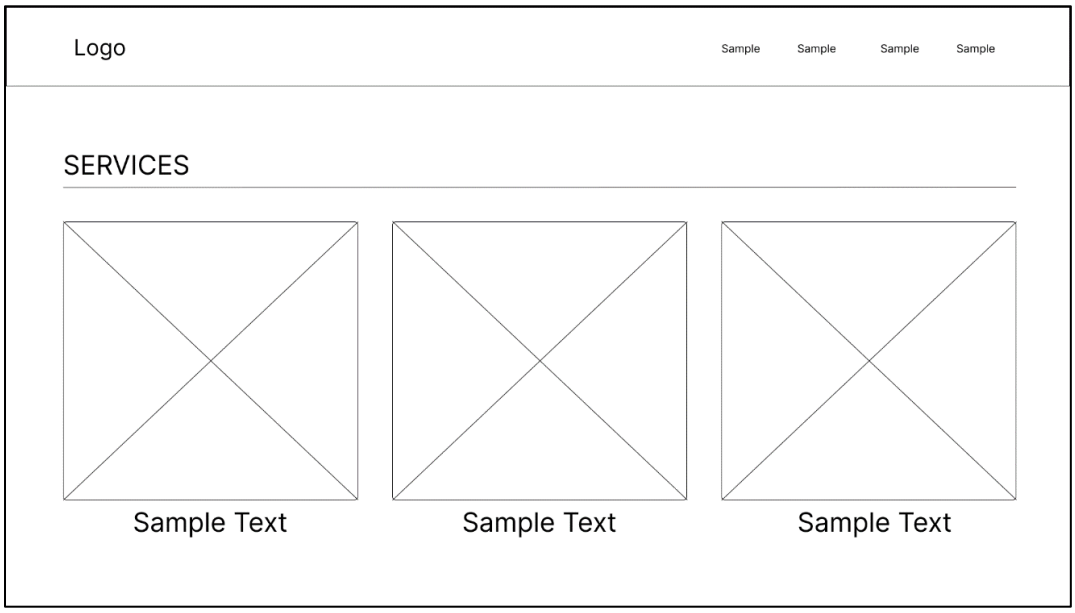

Figure 11. Services Page

Figure 11 illustrates the services page of the system. The page allows the user to browse and choose from the given services that wacky shots can provide

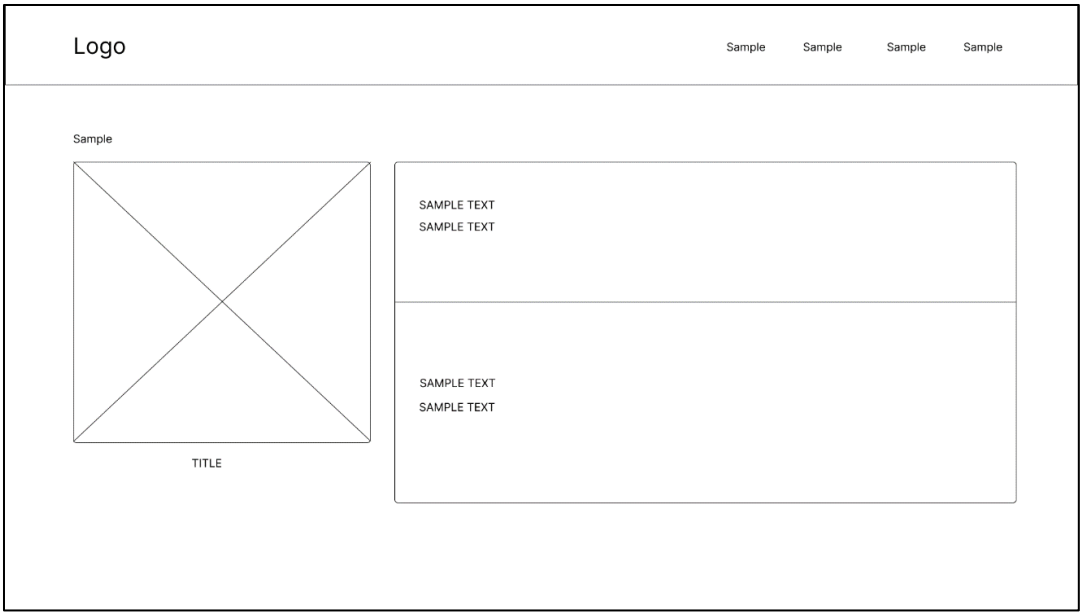

Figure 12. Services Information Page

Figure 12 illustrates the services information of the system. It shows the user the different information about the service and package available inside of it.

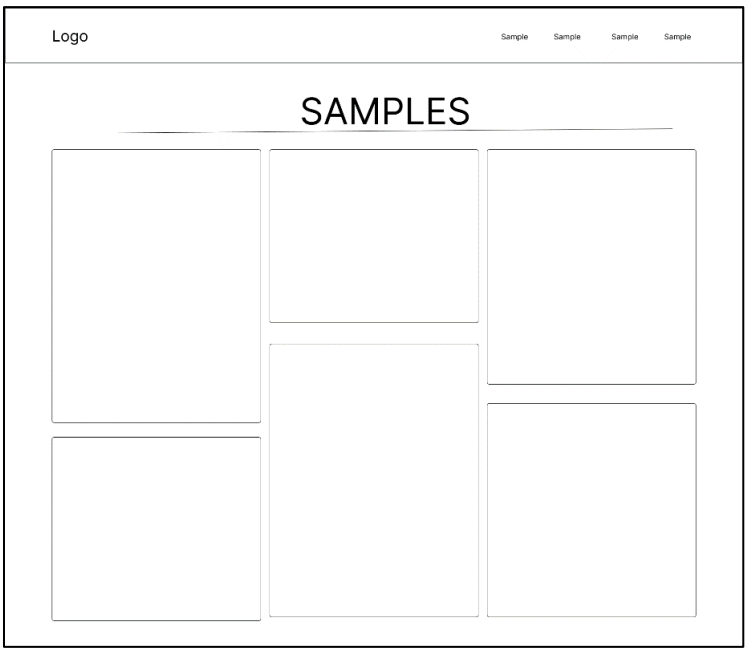

Figure 13. Samples Page

Figure 13 illustrates the samples page of the system. It allows the customer to browse the shop’s sample photos

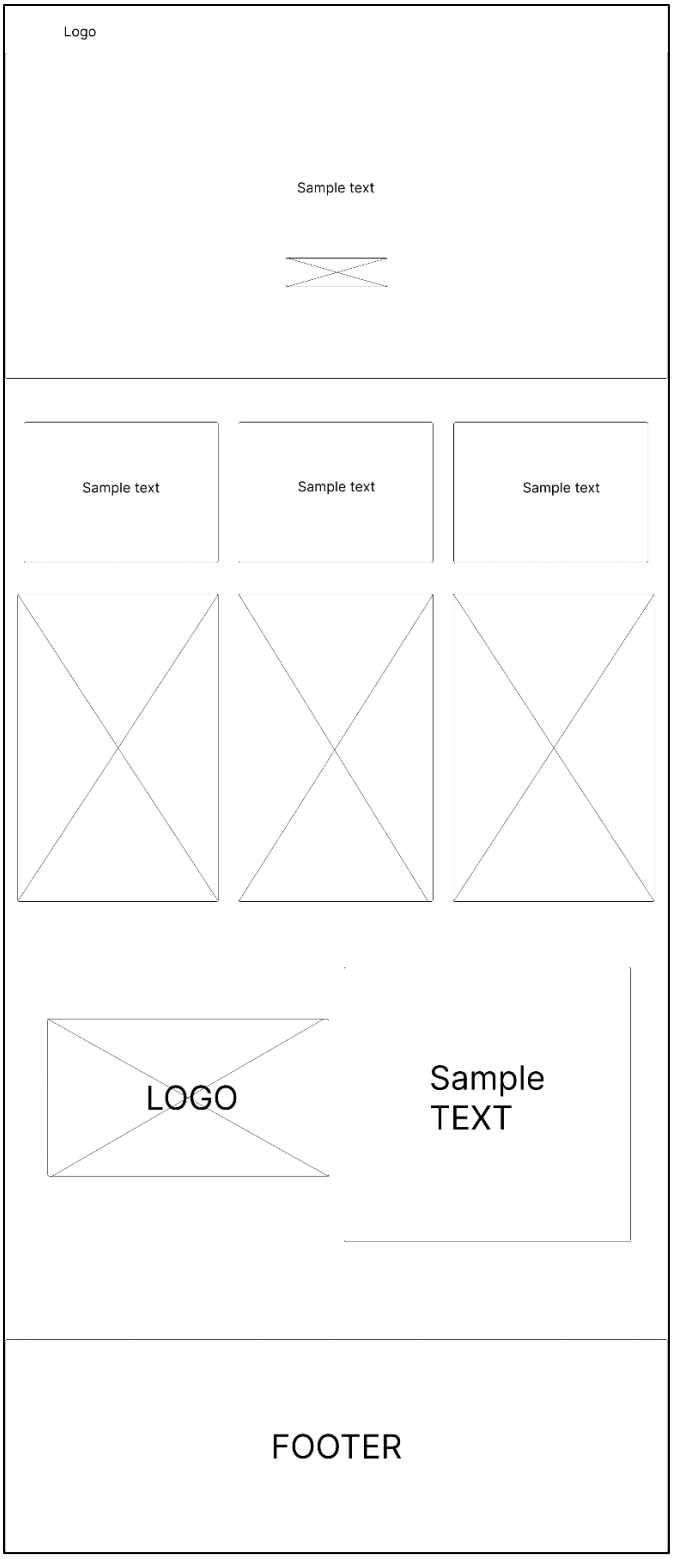

Figure 14. User Home Page

Figure 14 illustrates the system's home page. It allows the user to browse and have access to the content inside the website.

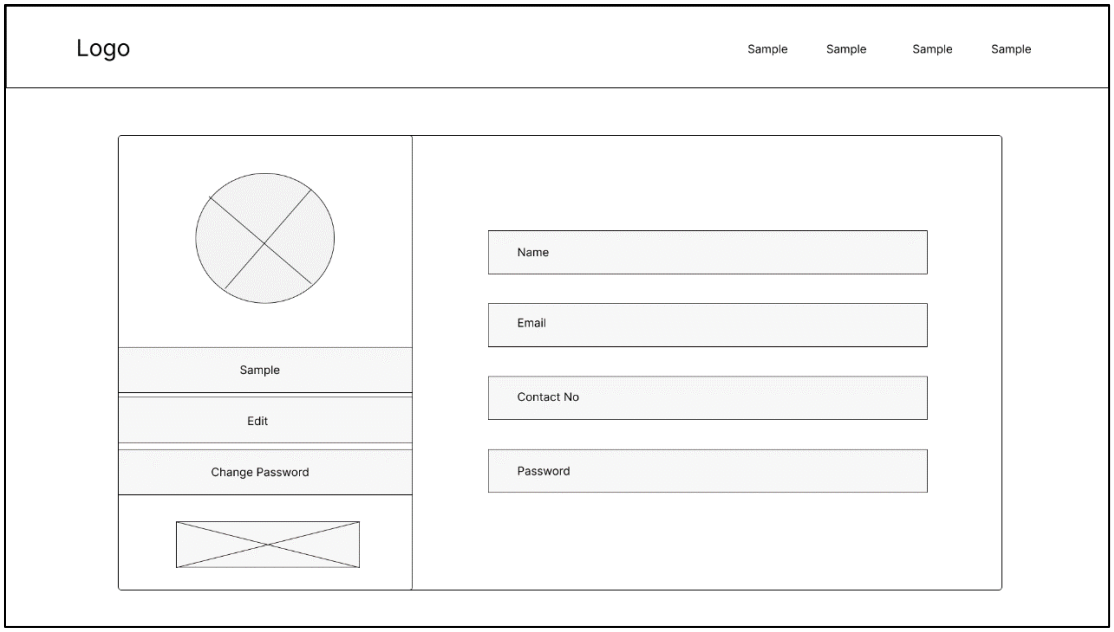

Figure 15. Customer Profile

Figure 15 illustrates the profile page of the system. It provides the personal information of the user which are the following. Name, email and contact number

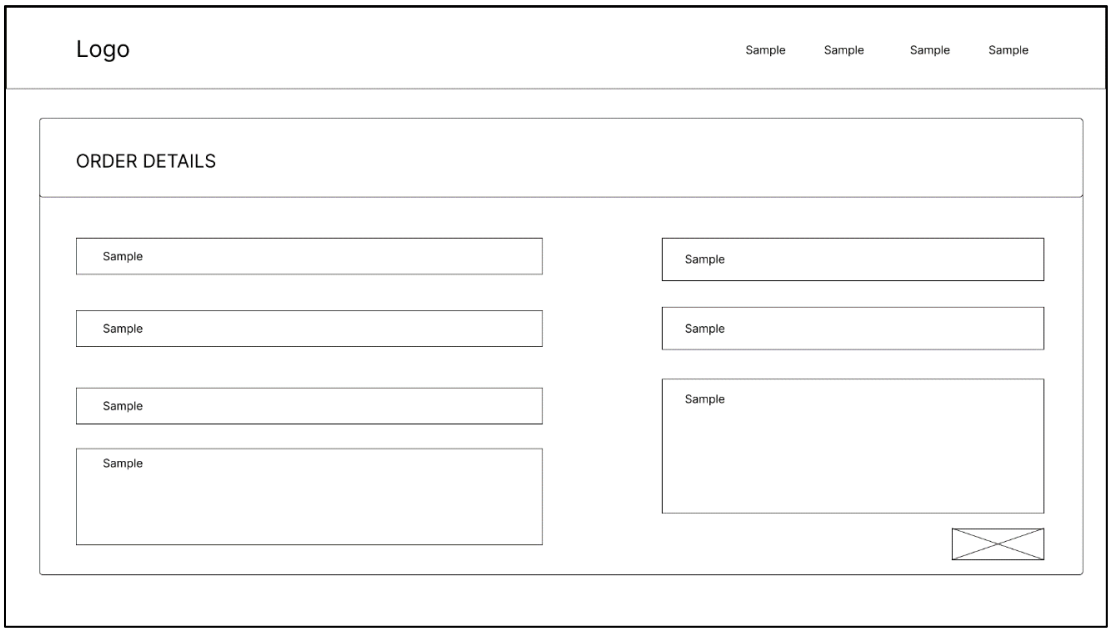

Figure 16. Order Fill Up

Figure 16 illustrates the booking form page of the system. The page provides a form where the user is need to fill a form in order to proceed on the payment page.

Figure 17. Order List

Figure 17 illustrates the customer booking page system. It provides the information about the status of the booking that they avail to the website.

Figure 18. Calendar

Figure 18 illustrates the booking calendar page of the system. It allows the user to check the days and dates that are available using the calendar inside the form.

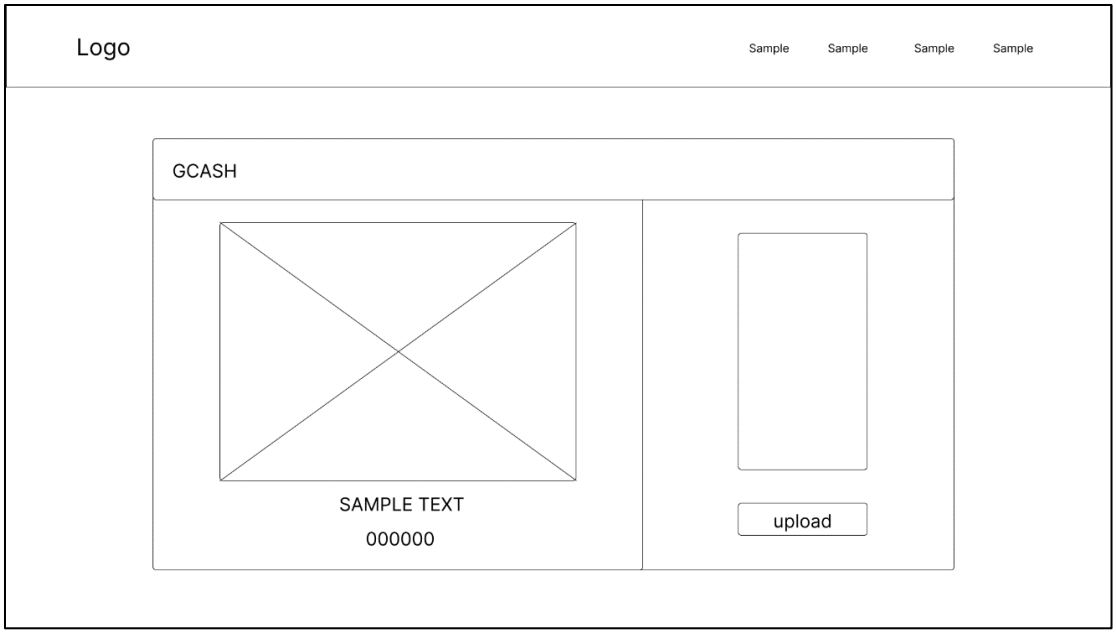

Figure 19. Payment

Figure 19 illustrates the payment page of the system. It allows the user to choose a payment method for the chosen service or package that they got.

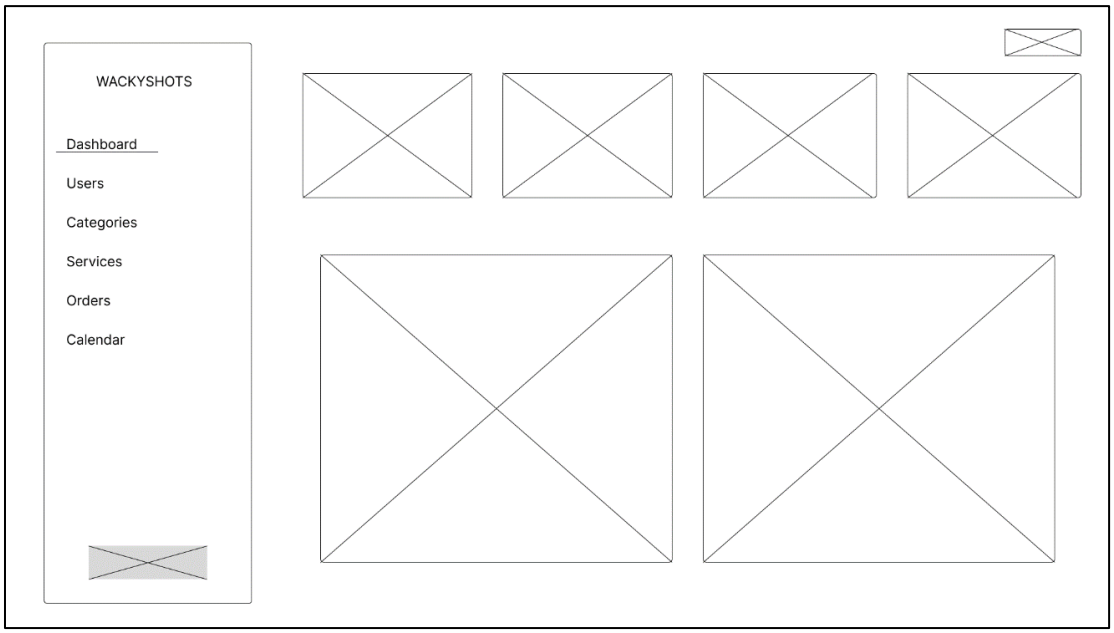

Figure 20. Admin Dashboard

Figure 20 illustrates the admin dashboard of the system. It presents to the admin the different information that they currently have about the website.

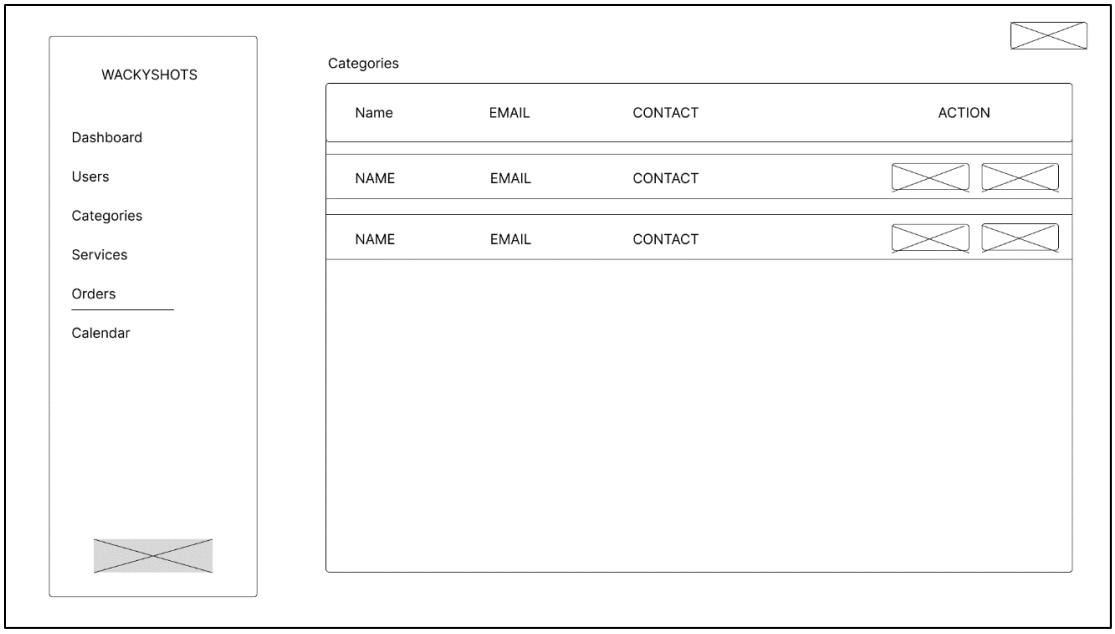

Figure 21. Admin Booking Management

Figure 21 illustrates the admin booking management page of the system. It presents the information about the client bookings in order for the admin to track the client itself.

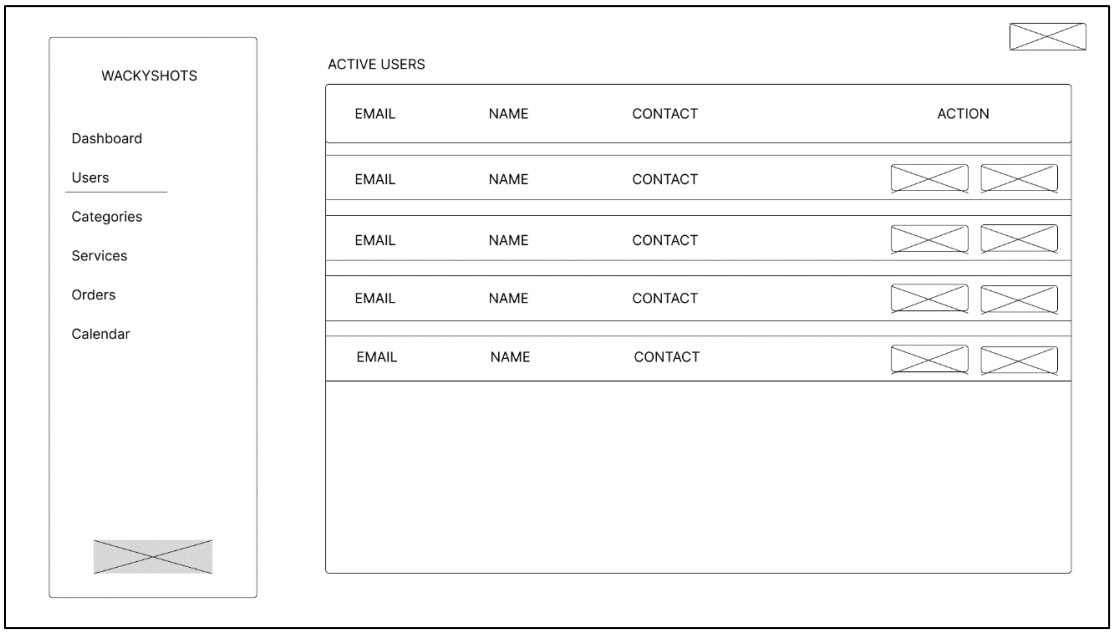

Figure 22. Admin Accounts Management

Figure 22 illustrates the admin accounts management of the system. It presents the registered accounts in the system.

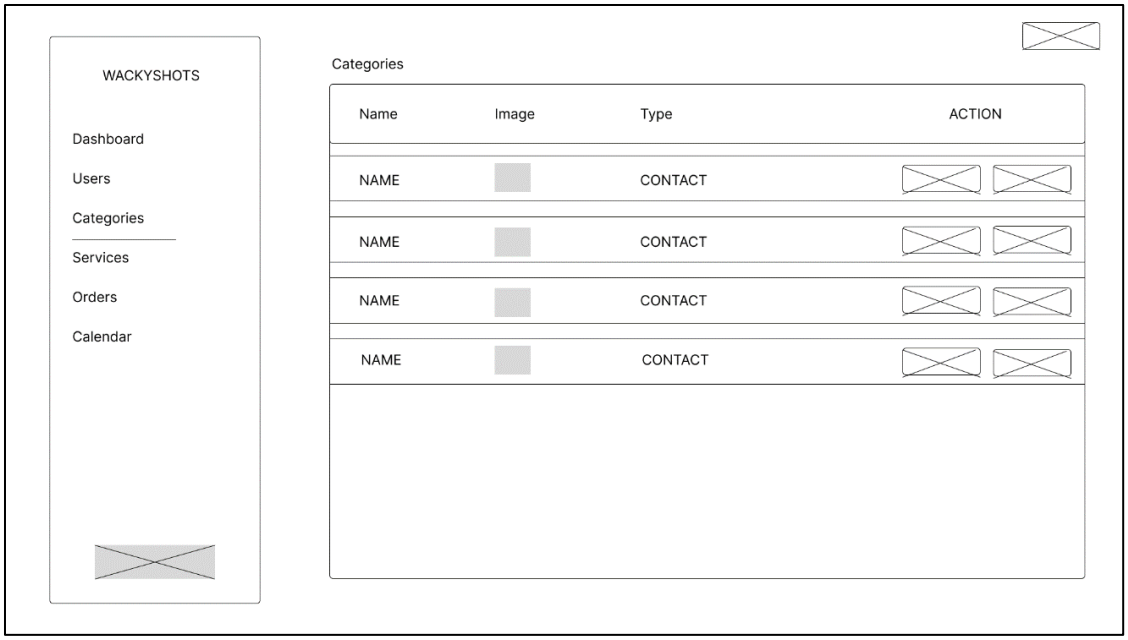

Figure 23. Admin Services Category Management

Figure 23 illustrates the admin services category management of the system. It allows the admin to manage the services uploaded in the system.

CHAPTER IV

RESULTS AND DISCUSSIONS

This section addresses a crucial aspect of the study, focusing on the interpretation and discussion of the data and findings. It serves as the platform to present the outcomes of the survey conducted by the researchers, playing a defining role in establishing the system's validity.

1. To determine the processes and difficulty experienced by Wacky Shots in their shop operation in order to create an effective system;

After conducting an interview with the shop owner, the proponents gathered valuable insights. With an increasing customer base, averaging around 40 bookings per month and surging to 50-70 during peak seasons like December to February, several operational challenges have surfaced. The primary issues arising from their current manual booking system, which involve the loss of physical records and the occurrence of overlapping bookings. In response to these challenges, the proponents have proposed to develop a web-based booking system to enhance and manage all bookings for Wacky Shots.

2. To create a Web-Based Booking System that includes the following features:

To create an efficient booking system, it is crucial to meet specific requirements. Taking these requirements into careful consideration, the proponents suggests that the incorporation of essential and impactful features is necessary for enhancing the system's quality and improving the business operation. ensuring swift and efficient reservations. In the light of this, the following sections will highlight the key features of the web-based system.

2.1 Admin Dashboard Feature

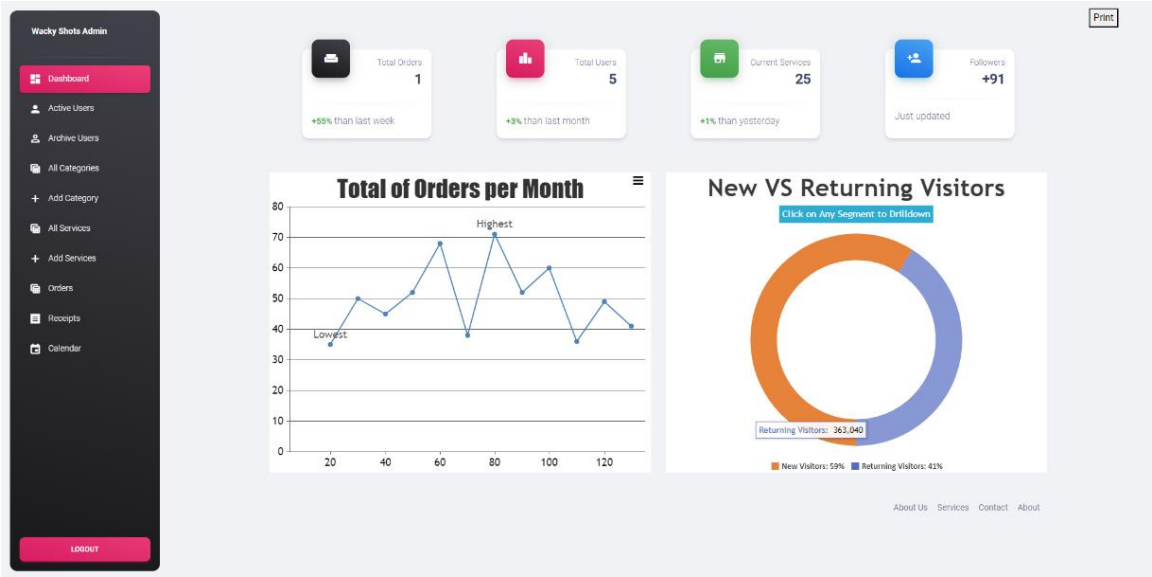

Figure 24. Admin Dashboard Page

Figure 24 showcases the Admin Dashboard page. This page allows the admin to navigate through the whole function of the system.

2.2 Admin Account Management

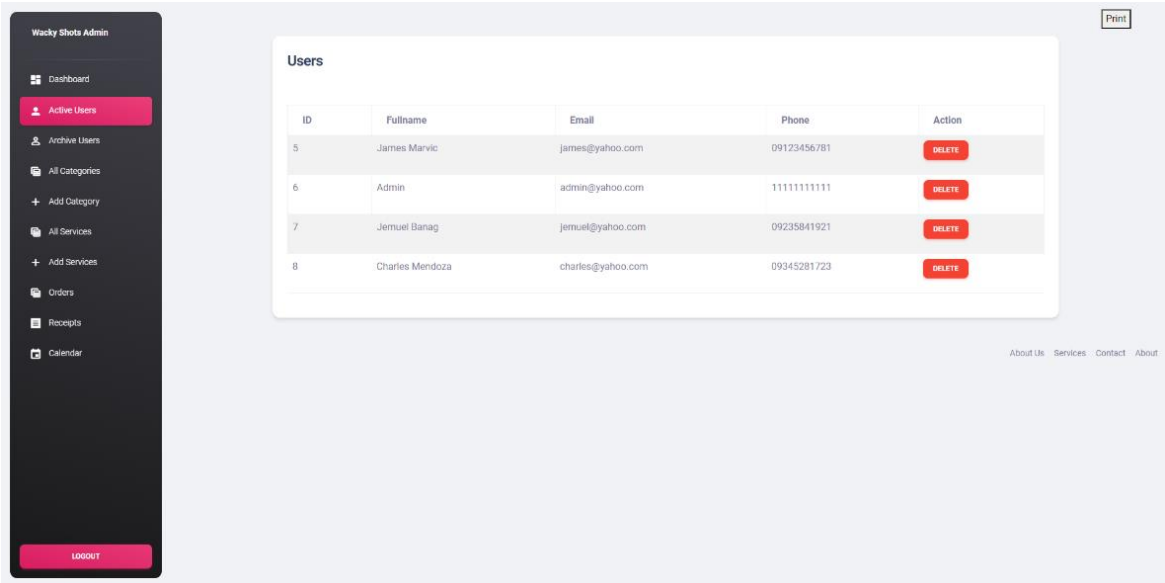

Figure 25. Admin Account Management Page

Figure 25 showcases the Admin Account Management page. In this page the admin is able to view and manage all the registered accounts in the system. They can select weather they would archive or recover an account.

2.3 Customer Account Management

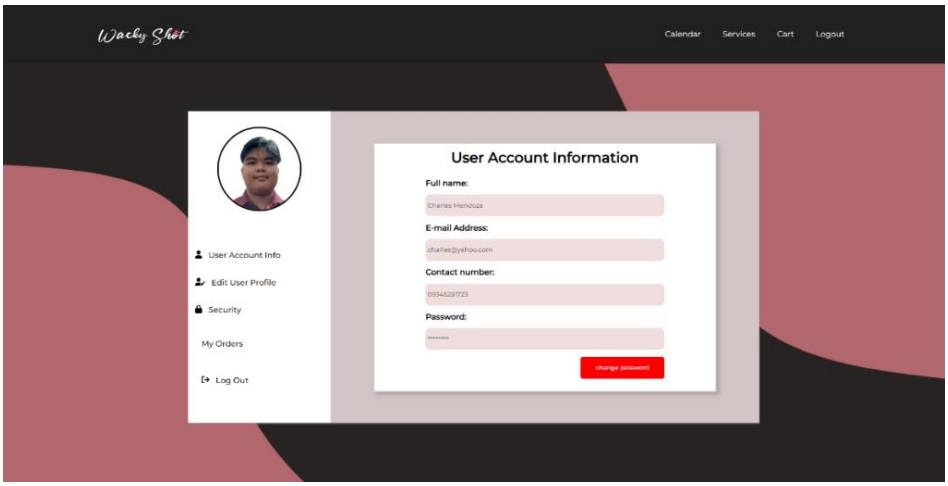

Figure 26. Customer Account Management Page

Figure 26 showcases the Customer Account Management page. This page allows the customer to edit details such as password and upload display picture.

2.4 Appointment Management

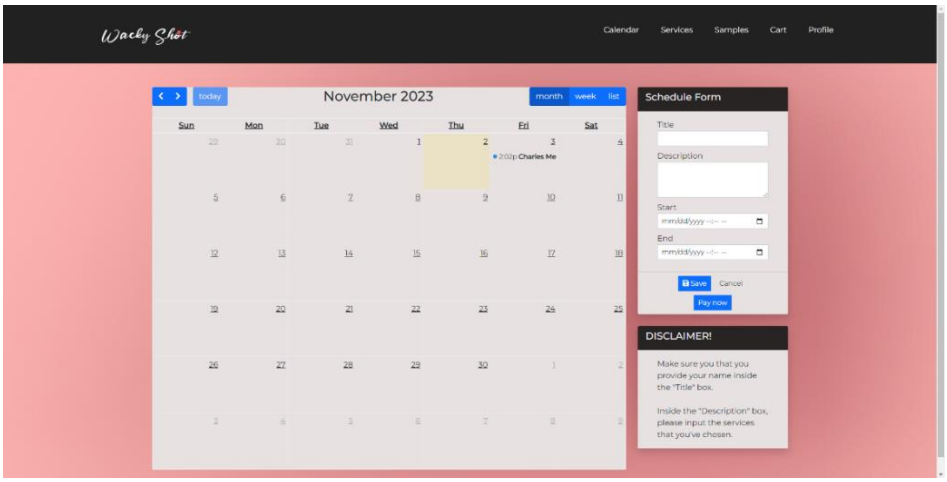

Figure 27. Appointment Management Page

Figure 27 showcases the Appointment Management page. This page enables customers to take control of their appointments. From choosing the type of service they desire to scheduling it on their preferred date allowing them to make an appointment that is convenient for them. This ensures a good user satisfaction. The Appointment Management page also provides a comprehensive view of available slots, empowering customers with flexibility and convenience in managing their schedules effortlessly.

2.5 Customer Payment Management

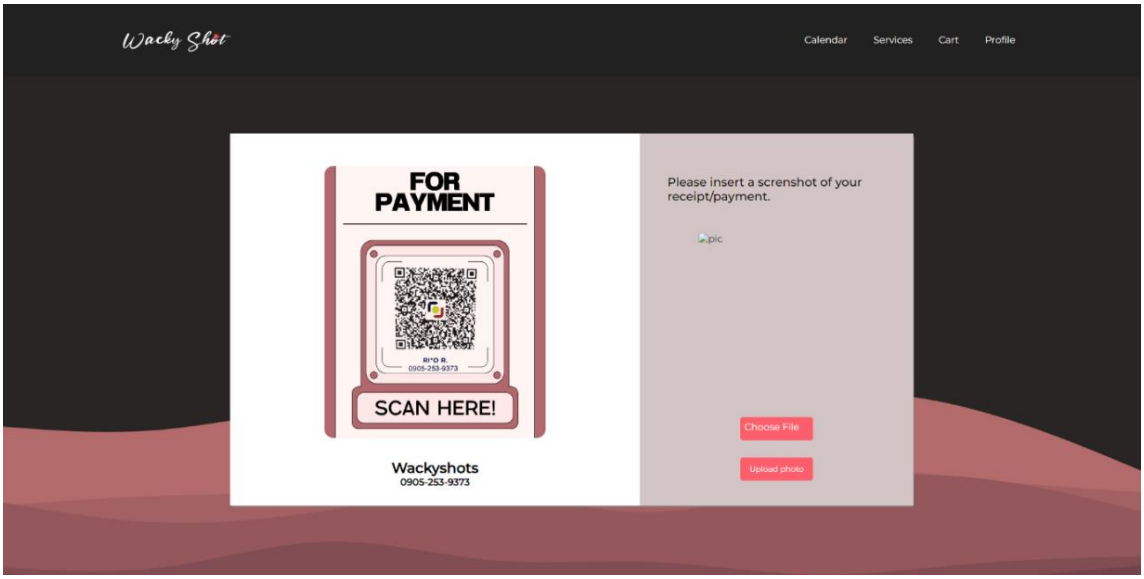

Figure 28. Customer Payment Management Page

Figure 28 showcases the Customer Payment Management page. Once an appointment is successfully booked, users will be redirected to the Payment Management page. Here, customers can conveniently complete their payments by scanning a provided QR code and uploading their payment receipts. This efficient process simplifies financial transactions and ensures a seamless experience for users. Additionally, the Customer Payment Management page includes secure encryption protocols, prioritizing user data protection and fostering trust in the payment process.

2.6 Admin Payment Management

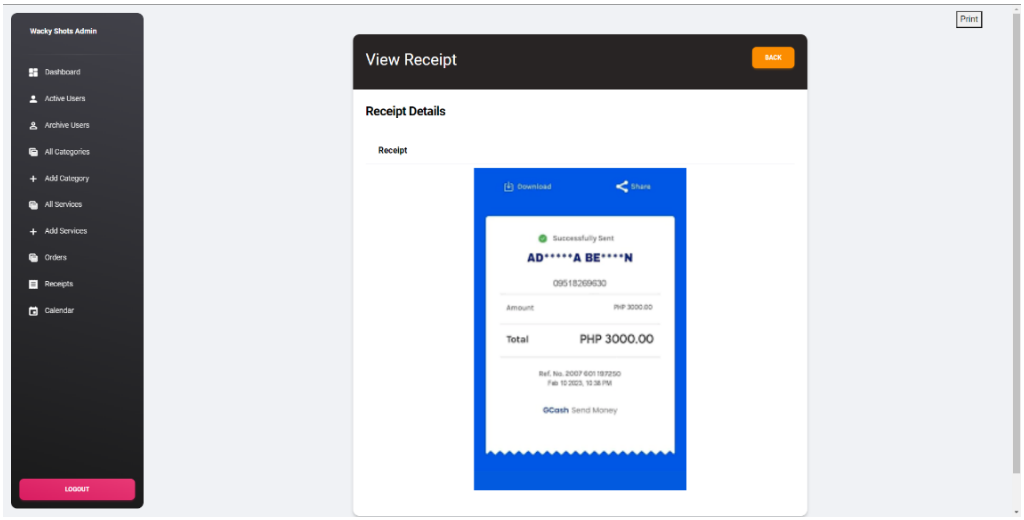

Figure 29. Admin Payment Management Page

Figure 29 showcases the Admin Payment Management page. Administrators are able to review the payments made by the clients through this page, enabling verification of uploaded receipts for its authenticity. This will be easier for the administrative process and it will ensure that financial transactions are accurate, improving the overall system security and reliability.

2.7 Service Management

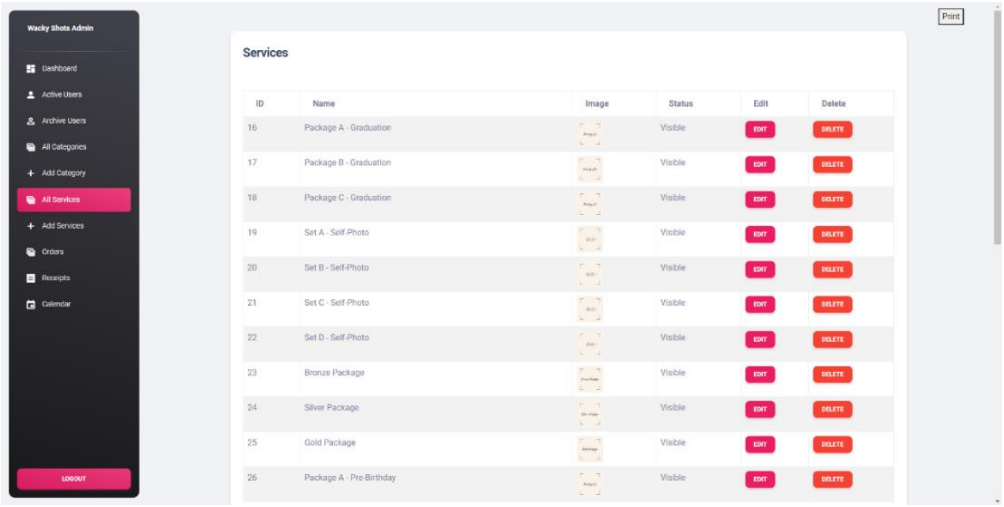

Figure 30. Service Management Page

Figure 30 showcases the Services Management page. This feature allows the administrators to manage all of the services presented within the system, enabling them to add or remove service and package when needed. This functionality enables the system to be flexible and it allows immediate adjustments in the response to changing offers or customer demands.

2.8 Comprehensive Report Generation

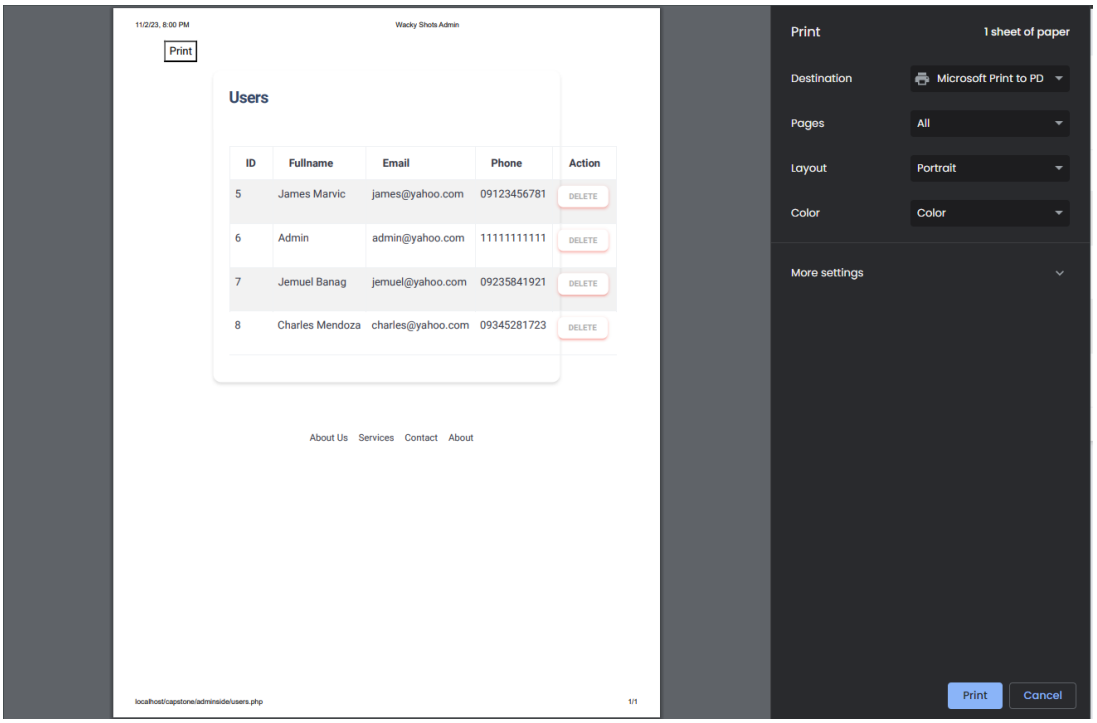

Figure 31. Comprehensive Report Generation Page

Figure 31 showcases the Comprehensive Report Generation page. On this page, administrators are able to perform a comprehensive review of the shop's entire booking history and also its ongoing activities. This functionality provides a valuable overview of the operations of the store, and it also facilitates decision-making and the evaluation of performance. Administrators can make informed decisions based on a thorough view of the records.

3. To evaluate the system's acceptability using the ISO/IEC 25010:2011 software quality evaluation criteria.

The aim is to conduct a thorough and consistent evaluation of the system's performance, confirming its alignment with well-established industry standards.

3.1 Functional Suitability

Table 5 displays the Review of Summary Metrics for Respondents Evaluations of the Booking System in terms of Functional Suitability.

Table 5

Review of Summary Metrics for Respondents Evaluations of the Booking System in Terms of Functional Suitability.

Item	Frequency				Mean	Descriptive Interpretation
	4	3	2	1		
Functional completeness. The system ensures comprehensive coverage of all specified tasks and user objectives such as allowing the admin to post services that enables the customers to add bookings	58	16	12	6	3.37	Agree
Functional correctness. The system guarantees accurate results and delivers correct outcome in terms of verifying receipts, updating order status, or managing appointments on the calendar.	55	20	14	3	3.38	Agree
Functional appropriateness. The system's functions are thoughtfully designed to facilitate the accomplishment of specified tasks and objectives such as the admin having the full control and the customers can effortlessly add orders and appointment.	59	14	12	7	3.36	Agree
Total Mean					**3.37**	**Agree**

3.50-4.00 Strongly Agree, 2.50-3.49 Agree, 1.50-2.49 Disagree, 1.00-1.49 Strongly Disagree

Table 5 provides an assessment of functionality as rated by the respondents. It reveals a general agreement among respondents who agreed with the system's functionality, resulting in a notable weighted mean of 3.37. This score signifies a close alignment between the system's functions and the specified requirements. The high level of agreement in the respondent ratings suggests a strong validation of the system.

3.2 Performance Efficiency

Table 6 displays the Review of Summary Metrics for Respondents Evaluations of the Booking System in terms of Performance Efficiency

Table 6

Review of Summary Metrics for Respondents Evaluations of the Booking System in Terms of Performance Efficiency

Item	Frequency				Mean	Descriptive Interpretation
	4	3	2	1		
Time behavior. The system ensures acceptable response and processing time when performing functions such as posting services, viewing appointments, verifying receipts, and updating order status.	60	16	13	3	3.45	Agree
Resource utilization. The system effectively manages the amounts and types of resources such as overseeing services and adding orders, required to respond to diverse user needs.	56	15	14	7	3.30	Agree
Capacity. The system is designed to accommodate the demands placed on it by both admin and customers.	57	17	14	4	3.38	Agree
Total Mean					**3.38**	**Agree**

3.50-4.00 Strongly Agree, 2.50-3.49 Agree, 1.50-2.49 Disagree, 1.00-1.49 Strongly Disagree

In Table 6, it's clear that the respondents have shown an agreement regarding the system's performance efficiency with mean of 3.38. This highlights system's capacity for efficient performance.

3.3 Compatibility

Table 7 displays the Review of Summary Metrics for Respondents Evaluations of the Booking System in terms of Compatibility.

Table 7

Review of Summary Metrics for Respondents Evaluations of the Booking System in Terms of Compatibility.

Item	Frequency				Mean	Descriptive Interpretation
	4	3	2	1		
Co-existence. The system seamlessly operates across different web browsers while ensuring a consistent user experience.	55	16	14	7	3.29	Agree
Interoperability. The system facilitates smooth information exchange among different account levels.	56	20	9	7	3.36	Agree
Total Mean					**3.33**	**Agree**

3.50-4.00 Strongly Agree, 2.50-3.49 Agree, 1.50-2.49 Disagree, 1.00-1.49 Strongly Disagree

Table 7 displays a considerable level of agreement with a mean of 3.33. This rating emphasizes the system's adaptability and whole performance, which are crucial for user experience and functional versatility, reinforcing its reliability and usability across various scenarios.

3.4 Usability

Table 8 displays the Review of Summary Metrics for Respondents Evaluations of the Booking System in terms of Usability.

Table 8

Review of Summary Metrics for Respondents Evaluations of the Booking System in Terms of Usability

Item	Frequency				Mean	Descriptive Interpretation
	4	3	2	1		
Appropriateness recognizability. The system ensures that the users can easily recognized its suitability by prominently displaying services offered.	62	14	10	6	3.43	Agree
Learnability. The system facilitates a seamless learning experience enabling users to easily grasp the functionality and features.	61	10	14	7	3.36	Agree
Operability. The system enhances ease of operation and control for efficiently post services and add orders.	62	12	11	7	3.40	Agree
User error protection. The system protects the users against errors with incorporating preventive measures.	51	22	11	8	3.26	Agree
User interface aesthetics. The system offers a visually pleasing and easy-to-navigate experience for users.	62	12	14	4	3.43	Agree
Accessibility. The system caters to a broad range of users and promotes inclusivity in the booking and order management process.	58	16	12	6	3.37	Agree
Total Mean					**3.38**	**Agree**

3.50-4.00 Strongly Agree, 2.50-3.49 Agree, 1.50-2.49 Disagree, 1.00-1.49 Strongly Disagree

Table 8 shows that respondents are strongly in agreement with regard to the usefulness of the system, which is shown by a high weighted mean of 3.38. This high rating

emphasizes the user-friendliness of the system and its role in enhancing the user experience, making it an important tool for the efficient and satisfactory tasks completion.

3.5 Reliability

Table 9 displays the Review of Summary Metrics for Respondents Evaluations of the Booking System in terms of Reliability.

Table 9

Review of Summary Metrics for Respondents Evaluations of the Booking System in Terms of Reliability

Item	Frequency				Mean	Descriptive Interpretation
	4	3	2	1		
Maturity. The system ensures reliability during standard operation meeting the needs of users consistently.	57	13	13	9	3.28	Agree
Availability. The system is operational and accessible as needed.	57	15	13	7	3.33	Agree
Fault tolerance. The system maintains consistency even in the presence of hardware and software faults.	56	16	13	7	3.32	Agree
Recoverability. The system effectively recovers from any data failures or interruption.	56	17	11	8	3.32	Agree
Total Mean					**3.31**	**Agree**

3.50-4.00 Strongly Agree, 2.50-3.49 Agree, 1.50-2.49 Disagree, 1.00-1.49 Strongly Disagree

Table 9 serves as a valuable resource for assessing the system's reliability, the impressive weighted mean score of 3.31 showed a good performance. The system has high

level of availability, ensuring that users are provided with the ability to make use of it when needed, and also verifying a degree of fault tolerance.

3.6 Security

Table 10 displays the Review of Summary Metrics for Respondents Evaluations of the Booking System in terms of Security.

Table 10

Review of Summary Metrics for Respondents Evaluations of the Booking System in Terms of Security

Item	Frequency				Mean	Descriptive Interpretation
	4	3	2	1		
Confidentiality. The system ensures that customer information and order details are accessible only to authorized personnel.	61	10	11	10	3.33	Agree
Integrity. The system ensures that only authorized admin can update and verify receipts.	58	15	14	5	3.37	Agree
Non-repudiation. The system provides a trail of events and actions such as transactions, appointments, and order updates that cannot be repudiated later.	57	15	14	6	3.34	Agree
Accountability. The system ensures the records are modifiable based on the level of authorization.	62	16	9	5	3.47	Agree
Authenticity. The system allows viewing and downloading of records promoting trustworthiness.	61	11	11	9	3.35	Agree
Total Mean					**3.37**	**Strongly Agree**

3.50-4.00 Strongly Agree, 2.50-3.49 Agree, 1.50-2.49 Disagree, 1.00-1.49 Strongly Disagree

Table 10 exhibits strong security performance with a mean of 3.37. The system excels in safeguarding data confidentiality and user accountability of data.

3.7 Maintainability

Table 11 displays the Review of Summary Metrics for Respondents Evaluations of the Booking System in terms of Maintainability.

Table 11

Review of Summary Metrics for Respondents Evaluations of the Booking System in Terms of Maintainability

Item	Frequency				Mean	Descriptive Interpretation
	4	3	2	1		
Modularity. The system ensures that modification to one component have minimal impact on others.	56	17	14	5	3.35	Agree
Reusability. The system maximizes reusability by employing shared assets for displaying various data.	60	15	13	4	3.42	Agree
Analyzability. The system enables the assessment of the effects of modifications on different parts.	60	10	13	9	3.32	Agree
Modifiability. The system allows effective modifications without introducing effect or compromising product quality.	56	14	13	9	3.27	Agree
Testability. The system establishes test criteria and efficiently conducts test to verify whether the criteria are met.	59	15	12	6	3.38	Agree
Total Mean					**3.35**	**Agree**

3.50-4.00 Strongly Agree, 2.50-3.49 Agree, 1.50-2.49 Disagree, 1.00-1.49 Strongly Disagree

Table 11 shows a weighted mean of 3.35 in maintainability, emphasizing on the system's efficiency on adapting and also evolving over time. Its strength lies in modularity, enabling continuous changes to individual components, while reusability optimizes asset utilization across various views and pages.

3.8 Portability

Table 12 displays the Review of Summary Metrics for Respondents Evaluations of the Booking System in terms of Portability

Table 12

Review of Summary Metrics for Respondents Evaluations of the Booking System in Terms of Portability

Item	Frequency				Mean	Descriptive Interpretation
	4	**3**	**2s**	**1**		
Adaptability. The system allows the user to access the platform from any device at any time.	61	9	11	11	3.30	Agree
Installability. The system provides users the flexibility to use it across various locations and times.	63	10	10	9	3.38	Agree
Replaceability. The system can easily incorporate changes over time.	54	20	9	9	3.29	Agree
Total Mean					**3.33**	Agree

3.50-4.00 Strongly Agree, 2.50-3.49 Agree, 1.50-2.49 Disagree, 1.00-1.49 Strongly Disagree

Table 12 highlights the system's outstanding performance, achieving a significant weighted mean of 3.33 in portability. This emphasizes the system's adaptability, enabling access from various locations and at any time. It excels in installability, ensuring user-friendly operation in various environments, and its built-in flexibility allows for seamless updates as necessary.

Table 13 exhibits the overall mean of the web system. It depicts summary of the evaluation using ISO/IEC 25010.

Table 13

Summary of the Evaluation using ISO/IEC 25010

Item	Mean	Descriptive Interpretation
Functional Suitability	3.37	Agree
Performance Efficiency	3.38	Agree
Compatibility	3.33	Agree
Usability	3.38	Agree
Reliability	3.31	Agree
Security	3.37	Agree
Maintainability	3.35	Agree
Portability	3.33	Agree
Overall Mean	**3.35**	Agree

3.50-4.00 Strongly Agree, 2.50-3.49 Agree, 1.50-2.49 Disagree, 1.00-1.49 Strongly Disagree

Table 13 implies that the system has received remarkably high ratings in all ISO/IEC 25010 categories, achieving an overall mean of 3.35. This suggests an agreement among respondents that every part of the system meets the specified criteria and successfully passes the evaluation.

CHAPTER V

SUMMARY AND RECOMMENDATION

This section serves as a comprehensive discussion of the study's summary and conclusion, offering valuable insight into the entire development. It not only acknowledges the details of the development process but also explores the significant impact the system has on the matter under consideration.

Summary of Findings

This section discusses the summary of findings of each objective of this study.

1. To determine the processes and difficulty experience by Wacky Shots in their day-to-day operation in order to create an effective system.

The researchers were able to identify the difficulties encountered by Wacky shots and is able to develop a Web-based Booking System that improves the service and production of the shop, significantly enhancing the shop's service delivery and production efficiency.

2. To create a Web-Based Booking System with the following features.

The system has been successfully developed, encompassing the desired features outlined in the earlier chapters, including excellent appointment management, efficient account management, and effective portfolio management functionalities. These major features are functioning as anticipated, showcasing the system's ability to meet its objectives and deliver the intended value to users. Furthermore, user feedback and testing have validated the system's performance and feature functionality, reinforcing its overall effectiveness and utility.

3. To evaluate the system's acceptability using the ISO/IEC 25010:2011 software quality evaluation as perceived by the respondents.

To recognize the acceptability of the system, the researchers have conducted a survey involving the end users of the web system. The questions were made in consideration of the ISO/IEC 23010: software quality evaluation criteria, with each category earning a high grade of evaluation presented in tabular form. This indicates that the system meets the qualification and satisfies the user.

Conclusions

Based on the aforementioned findings, the study has led to a conclusive response addressing the initial assumptions. As the system was being developed, the project team exercised meticulous attention to detail in identifying the exact requirements needed to improve the operation of the shop. This diligent effort played a crucial role, ensuring that the system's features were not only innovative but also positioned to exert a significant influence on the operations of the client's business.

The introduction of this system is expected to bring significant positive changes to the client's business. Customers will benefit from a more efficient and user-friendly way to access the shop's services. At the same time, the system directly resolves a persistent issue of overlapping bookings that has long troubled the client's business operations. This solution is set to enhance the quality of service and, as a result, improve overall customer satisfaction, leading to a more positive and long-lasting effect on the client's business performance. The implementation of this system is expected to be a crucial moment in the client's business experience, marking a significant step towards efficiency, customer-focused service, and an overall enhancement of the client's business performance.

Recommendations

After reviewing the study's findings and conclusions, the subsequent recommendations have been formulated, serving as a valuable guide for future researchers in the Information Technology field intending to conduct similar study:

1. Inclusion of a user feedback feature in the booking system.
2. Explore the implementation of modern payment methods like mobile payments and blockchain.
3. Create transparent cancellation and refund policies that specify conditions and procedures.
4. Expand the study's sample size to include a more diverse and representative population.

Research Implications

These findings highlight the system's significant outcomes and complex benefits. Firstly, the system effectively resolves the issue of overlapping appointments inherent in manual booking processes, improving scheduling procedures through its web-based interface. Secondly, it benefits the store with crucial data analytics and customer insights, gathering essential information on preferences, booking patterns, and peak times. This data serves as a foundation for decision-making in marketing strategies, pricing models, and resource allocation. Lastly, the system substantially boosts the store's competitive advantage within the industry scene, strengthening its positioning and differentiation to competitors.

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Appendix A

Communication Papers

Bulacan State University
COLLEGE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY
Guinhawa, City of Malolos

March 24, 2022

Name: Rigo Ros

Position, Company name: Owner, WackyShots

Company Address: Brgy. Cutcot, Pulilan. Bulacan

Request for Permission to Conduct Interview

Greetings Mr. Rigo Ros!

We are 3rd year college students from **College of Information and Communications Technology of Bulacan State University under Bachelor of Science in Information Technology (BSIT)**. We humbly ask for your permission to conduct a research study in your college to develop our Capstone Project as mandated in our curriculum. The Capstone Project aims to Provide BS Information Technology students the ability to understand and redefine a given engineering problem, and the ability to develop a conceptual design.

Hence, this letter intends to ask permission from your good office to please allow us to conduct an interview with your highly suggested informant who can give us sufficient information about your college and we would like to propose a question-and-answer website that will help your college

In compliance with the Data Privacy Act of 2012, the data that would be collected will only be used for academic research purposes, will not be disclosed without proper consent, and will only be retained for one year.

Your approval to conduct the said activity is much appreciated!

Respectfully Yours,

ABBY CLARISSE N. ROMUALDO
Capstone 2 Leader, BSIT 3J

Noted by:

GABRIEL M. GALANG, MSIT
Area Chair, BSIT Web and Mobile Application Development

Approved by:

RIGO ROS
Wacky Shot Owner

Appendix B

Relevant Source Code

```php
<?php


include('../middleware/adminMiddleware.php');
include('includes/header.php');

?>

<div class="container">
    <div class="row">
        <div class="col-md-12">
            <div class="card">
                <div class="card-header">
                    <h4> Orders </h4>
                </div>
                <div class="card-body" id="">
                    <table class="table table-bordered table-striped" >
                        <thead style="color:black;">
                            <th>ID</th>
                            <th>User</th>
                            <th>Order No.</th>
                            <th>Price</th>
                            <th>Date</th>
                            <th>View</th>
                        </thead>
                        <tbody style="color:black;">
                            <?php
                            $orders = getAllOrders();

                            if(mysqli_num_rows($orders) > 0)
                            {
                                foreach ($orders as $item){
                                    ?>
                                        <tr>
                                            <td><?= $item['id']; ?></td>
                                            <td><?= $item['fullname']; ?></td>
                                            <td><?= $item['order_no']; ?></td>
                                            <td><?= $item['total_price']; ?></td>
                                            <td><?= $item['created_at']; ?></td>
                                            <td>
                                                <a href="view-order.php?o=<?= $item['order_no']; ?>" class="btn btn-primary">View Details<
                                            </td>
                                        </tr>
                                    <?php
                                }
```

```php
<?php require_once('db-connect.php');
include('../pages/navbar.php');
include("../process/myfunctions.php");

if (!isset($_SESSION['auth_user']['email'])) {
    // If the user is not in the session, redirect to the login page
    header("Location: ../pages/login.php");
    exit;
}

$username = $_SESSION['auth_user']['user_id'];

?>
<!DOCTYPE html>
<html lang="en">

<head>
    <meta charset="UTF-8">
    <meta http-equiv="X-UA-Compatible" content="IE=edge">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Scheduling</title>
    <link rel="stylesheet" href="https://pro.fontawesome.com/releases/v5.10.0/css/all.css" integrity="sha384-AYmEC3Yw5cVb3ZcuHtOA93w
    <link rel="stylesheet" href="./css/bootstrap.min.css">
    <link rel="stylesheet" href="./fullcalendar/lib/main.min.css">
    <script src="./js/jquery-3.6.0.min.js"></script>
    <script src="./js/bootstrap.min.js"></script>
    <script src="./fullcalendar/lib/main.min.js"></script>
    <style>
        :root {
            --bs-success-rgb: 71, 222, 152 !important;
        }

        html,
        body {
            height: 100%;
            width: 100%;
            font-family: Apple Chancery, cursive;
```

```php
<?php
include('navbar.php');
include('../process/userfunctions.php');
include('authenticate.php');

?>



<div class="py-3" style="background:#a6a6a6">
    <div class="container">
        <h6 class="text-white">
            <a href="home.php" class="text-white">
             Home /
            </a>
            <a href="cart.php" class="text-white">
             Cart
            </a>
        </h6>
    </div>
</div>


<div class ="py-5">
    <div class="container">
        <div class="card card-body shadow">
            <div class="row">
                <div class="col-md-12">
                <div id="mycart">
                    <?php
                    $items= getCartItems();

                            if(mysqli_num_rows($items) > 0 ) {
                            ?>

                            <div class="row align-items-center">
                                <div class="col-md-5">
                                    <h6>Product</h6>
                                </div>
                                <div class="col-md-3">
                                    <h6>Price</h6>
                                </div>
                                <div class="col-md-2">
                                    <h6>Quantity</h6>
                                </div>
                                <div class="col-md-2">
                                    <h6>Remove</h6>
                                </div>
                            </div>

                        <div id =""">
```

```php
<?php

include('../process/myfunctions.php');

?>



<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Payment Page</title>
    <link rel="stylesheet" href="../css/payment.css">
    <link rel="stylesheet" href="https://stackpath.bootstrapcdn.com/font-awesome/4.7.0/css/font-awesome.min.css">
    <link rel='stylesheet' href='https://cdnjs.cloudflare.com/ajax/libs/font-awesome/4.7.0/css/font-awesome.min.css'>
    <link rel="stylesheet" href="https://cdnjs.cloudflare.com/ajax/libs/font-awesome/6.0.0/css/all.min.css" integrity="sha512-9usAa10IRO0HhonpyAIVpjrylPvoDwiPUiKdWk5t3PyolY1cOd4DSE0Ga+ri4AuTroPR5aQvXU9xC6qOPnzFeg==" crossor
    <link href='https://unpkg.com/boxicons@2.1.4/css/boxicons.min.css' rel='stylesheet'>
</head>

<body>
    <?php if(isset($_GET['error'])): ?>
        <p><?php echo $_GET['error']; ?></p>
    <?php endif ?>
    <div class="hero">
        <nav>
            <a href="home.php" class="href"><img class="logo" src="../images/logo.png" alt="logo"></a>
            <ul>
                <li><a href="../schedule/usercalendar.php">Calendar</a></li>
                <li><a href="services">Services</a></li>
                <li><a href="cart.php">Cart</a></li>
                <li><a href="profile.php">Profile</a></li>
            </ul>
        </nav>

        <div class="box">
            <div class="left">
                <div class="left-cont">
                    <div class="img">
                        <img src="../images/gcash.jpg" alt="profile pic">
                    </div>
                    <div class="txt">
                        <p>WackyShots</p>
                        <p>0905-253-9373</p>
```

```php
<?php

include('../middleware/adminMiddleware.php');
include('includes/header.php');

?>

<div class="container">
    <div class="row">
        <div class="col-md-12">
            <?php
                if(isset($_GET['id']))
                {
                    $id = $_GET['id'];

                    $services = getById("services",$id);

                    if(mysqli_num_rows($services) > 0)
                    {
                        $data = mysqli_fetch_array($services);
                        ?>

                        <div class="card">
                        <div class="card-header">
                        <h4>Edit Services
                        <a href="services.php" class="btn btn-primary float-end">Back</a>
                        </h4>
                        </div>

                        <div class="card-body">
                        <form action="code.php" method="POST" enctype="multipart/form-data">
                            <div class="row">
                            <div class="col-md-12">
                                <label class="mb-0">Select Category</label>
                                <select name="category_id" class="form-select" aria-label="Default select exa
                                    <option selected>Select category</option>
                                    <?php
                                        $categories = getAll("categories");

```

```php
<?php

include('../middleware/adminMiddleware.php');
include('includes/header.php');


?>

<div class="container">
    <div class="row">
        <div class="col-md-12">
            <?php
                if(isset($_GET['id']))
                {
                    $id = $_GET['id'];
                    $category = getByID("categories", $id);

                    if(mysqli_num_rows($category) > 0)
                    {
                        $data = mysqli_fetch_array($category);
                    ?>
                        <div class="card">
                        <div class="card-header">
                            <h4> Edit Category
                                <a href="category.php" class="btn btn-primary float-end">Back</a>
                            </h4>
                        </div>
                        <div class="card-body">
                        <form action="code.php" method="POST" enctype="multipart/form-data">
                        <div class="row">
                        <div class="col-md-6">
                            <input type="hidden" name="category_id" value="<?= $data['id'] ?>">
                            <label for="">Name</label>
                            <input type="text" name="name" value="<?= $data['name'] ?>" placeholder="Enter Category Name" class="form-co
                        </div>
```

```php
<?php
    include("../process/myfunctions.php");
    $email = $_SESSION['auth_user']['email'];

    // $uid = $_SESSION['uid'];
    $query = "SELECT * FROM users WHERE email = '$email'";
    $res = mysqli_query($con, $query);
    $row = mysqli_fetch_array($res);

    if (!isset($_SESSION['auth_user']['email'])) {
        // If the user is not in the session, redirect to the login page
        header("Location: login.php");
        exit;
    }

function uploadDP()
{
    include('../config/dbcon.php');
    $email = $_SESSION['auth_user']['email'];

    $file = $_FILES['file'];
    $fileName = $_FILES['file']['name'];
    $fileTmpName = $_FILES['file']['tmp_name'];
    $fileSize = $_FILES['file']['size'];
    $fileError = $_FILES['file']['error'];
    $fileType = $_FILES['file']['type'];

    $fileExt = explode('.', $fileName);
    $fileActualExt =  strtolower(end($fileExt));

    $allowed = array('jpeg', 'jpg', 'png');

    if (in_array($fileActualExt, $allowed)) {
        if ($fileError === 0) {
            if ($fileSize < 1000000) {
                $fileNameNew = uniqid('', true) . "." . $fileActualExt;
                $fileDestination = '../user-profile-picture/' . $fileNameNew;

                move_uploaded_file($fileTmpName, $fileDestination);

                $sql = "UPDATE  users  SET image = '$fileNameNew' WHERE email = '$email'";
                $result = $con->query($sql);

                $sql1 = "SELECT image FROM users WHERE email = '$email'";
                $res = mysqli_query($con, $sql1);
                $row = mysqli_fetch_assoc($res);

                $image_path = $row['image'];

                echo "<script>
                       alert('Picture Updated!')
                      // window.location.href = 'index.php';
                   </script>";
            } else {
                echo
                "<script>
                alert('File is too big');
               </script>";
```

Appendix C

Research Instruments

INTERVIEW GUIDE

Investigating The Foundational Details and Operational Aspects of Wacky Shots and Their Shop

Name:

Position:

1. When did you start this business and how?
   _____
   _____
   _____
2. Where are you located?
   _____
   _____
   _____
3. Your most booked service at the moment?
   _____
   _____
   _____
4. Average booking per month? (Normal/Peak Season)
   _____
   _____
   _____
5. Average booking per week?
   _____
   _____
   _____
6. What type of system are you using for operation?
   _____
   _____
   _____
7. Have you encountered any issues?
   _____
   _____
8. What are you looking for in a system?
   _____
   _____
   _____

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Guinhawa City of Malolos

Name *(optional)*: _____
Role: _____

Dear Participant,

We, **Hael Leightton Rei Cruz, Tristan Maree Dionisio, Israel Jacob Lizarondo, Charles Gabriel Mendoza, Abby Clarisse Romualdo,** are currently conducting a study entitled, **"ShotsOnUs: A WEB-BASED BOOKING SYSTEM FOR WACKY SHOTS PHOTO AND PRINTING SHOP"** which aims to improve the booking operation of Wacky Shots.

Using a scale of 1 (Poor) to 5 (Excellent), please rate the developed system with the following criteria by marking the box.

Thank you very much.

Sincerely yours,

The researchers

A. Functional Suitability	**4**	**3**	**2**	**1**
Functional Completeness. The system covers all the specified tasks and user objectives.	☐	☐	☐	☐
Functional Correctness. The system provides the correct results with the needed degree of precision.	☐	☐	☐	☐
Functional Appropriateness. The system facilitates the accomplishment of specified tasks and objectives.	☐	☐	☐	☐

B. Performance Efficiency	**4**	**3**	**2**	**1**
Time Behavior. The system's response and processing times and throughput rates when performing its functions, meet requirements.	☐	☐	☐	☐
Resource Utilization. The system's amounts and types of resources used when performing its functions, meet requirements.	☐	☐	☐	☐
Capacity. The system's maximum limits of parameters meet requirements.	☐	☐	☐	☐

C. Compatibility	**4**	**3**	**2**	**1**
Co-existence. The system can perform its required functions efficiently while sharing a common environment and resources with other products, without detrimental impact on any other product.	☐	☐	☐	☐
Interoperability. The system can exchange information and use the information that has been exchanged.	☐	☐	☐	☐

D. Usability	**4**	**3**	**2**	**1**
Appropriateness Recognizability. The system allows users to recognize if it is appropriate for their needs.	☐	☐	☐	☐
Learnability. The system can be used by specified users to achieve specified goals of learning to use the application with effectiveness, efficiency, freedom from risk, and satisfaction in a specified context of use.	☐	☐	☐	☐
Operability. The system has attributes that make it easy to operate and control.	☐	☐	☐	☐
User Error Protection. The system protects users against making errors.	☐	☐	☐	☐
User Interaction Aesthetics. The system's user interface enables pleasing and satisfying interaction for the user.	☐	☐	☐	☐

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Accessibility. The system can be used by people with the widest range of characteristics and capabilities to achieve a specified goal in a specified context of use.	☐	☐	☐	☐

E. Reliability	**4**	**3**	**2**	**1**
Maturity. The system meets the need for reliability under normal operation.	☐	☐	☐	☐
Availability. The system is operational and accessible when required for use.	☐	☐	☐	☐
Fault Tolerance. The system operates as intended despite the presence of hardware or software faults.	☐	☐	☐	☐
Recoverability. The system can recover the data directly affected and re-establish the desired state.	☐	☐	☐	☐

F. Security	**4**	**3**	**2**	**1**
Confidentiality. The system ensures that data are accessible only to those authorized to have access.	☐	☐	☐	☐
Integrity. The system prevents unauthorized access to, or modification of, computer programs or data.	☐	☐	☐	☐
Non-repudiation. The system can be proven to have taken place so that the events or actions cannot be repudiated later.	☐	☐	☐	☐
Accountability. The system can be traced uniquely to the entity.	☐	☐	☐	☐
Authenticity. The system can be proved to be the one claimed.	☐	☐	☐	☐

G. Maintainability	**4**	**3**	**2**	**1**
Modularity. The system is composed of discrete components such that a change to one component has minimal impact on other components.	☐	☐	☐	☐
Reusability. The system components can be used in more than one system, or in building other assets.	☐	☐	☐	☐
Analysability. The system's effectiveness and efficiency with which it is possible to assess the impact on a product or system of an intended change to one or more of its parts, to diagnose a product for deficiencies or causes of failures, or to identify parts to be modified.	☐	☐	☐	☐
Modifiability. The system can be effectively and efficiently modified without introducing defects or degrading existing product quality.	☐	☐	☐	☐
Testability. The system's effectiveness and efficiency with which test criteria can be established for a system, product, or component and tests can be performed to determine whether those criteria have been met.	☐	☐	☐	☐

H. Portability	**4**	**3**	**2**	**1**
Adaptability. The system can effectively and efficiently be adapted for different or evolving hardware, software, or other operational or usage environments.	☐	☐	☐	☐
Installability. The system can be successfully installed and/or uninstalled in a specified environment.	☐	☐	☐	☐
Replaceability. The system can replace another specified software product for the same purpose in the same environment.	☐	☐	☐	☐

Thank you!

Comments/Suggestions/Recommendations:

_____

_____

Evaluated by:

_____/_____

Signature/Date Signed

Appendix D

Plagiarism Check Certificate

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This is to certify that the research paper detailed below has been evaluated by online anti-plagiarism software. The contents and material were found outstanding and below the permissible limit of content copied.

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Name of Researcher/s	: Abby Clarisse N. Romualdo Charles Gabriel C. Mendoza Tristan Maree DL. Dionisio Israel DR. Lizarondo Hael Leightton Rei A. Cruz
Corresponding Author	: Gabriel S. Galang, MSIT
Date	: November 28, 2023
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Document type	: IMRAD
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Corresponding Author	: Gabriel S. Galang, MSIT
Date	: November 30, 2023
Campus	: Main
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Remarks	: 5 pages, 3157 words the combined total of all matches, including overlapping sources, for each database; 0% internet base, 0% submitted works database, 2% publication database. Crossref posted content database. Excluded from similarity report: bibliographic material, quoted material, small matches (less then 10 words); manually excluded text blocks

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Appendix E

IMRaD Format

ShotsOnUs: A Web-based Booking System for Wacky Shots Photo and Printing Shop

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ABSTRACT

The project addresses the operational challenges faced by Wacky Shots Photo and Printing Shop through the creation of a web-based booking system. The client's primary issues included overlapping bookings and physical record loss. To accomplish this, a mixed methodology was employed. The study adopted a descriptive approach along with a developmental research method The project utilized both expert and random sampling methods with a total of 92 respondents, comprising 20 IT experts and 72 potential end-users of the system. The research instrument utilized was a survey based on ISO/IEC 25010. The resulting system successfully integrated crucial features such as service, appointment, and payment management. According to the survey results, the system achieved an overall mean of 3.35, interpreted as "agree," indicating a general agreement among respondents that the system meets necessary criteria and requirements. Deploying this system is expected to enhance Wacky Shots' operations, improving service quality and user satisfaction.

CCS Concepts

• Applied Computing→Online Shopping • Information Systems→World Wide Web→Electronic Commerce.

Keywords

booking system; centralized customer database; online appointment; photo and printing service; online payment

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1. INTRODUCTION

According to [1], the emergence of the web and internet has evidently changed business processes and procedures. Information Technology had a great impact on various aspects of our daily lives. “It has made it possible for businesses to perform new tasks including controlling operations from anywhere outside of an office or organization, using secure payment methods, and using web-based business processes” [1].

In the light of this, [2] stated that implementing a web system can greatly benefit a business as “a well-designed Web System can provide real-time visibility into the production process, allowing managers to identify holdups, address issues promptly, and deliver service on time.”

Now for the client, Wacky Shots, the above statement is timely for them because Wacky Shots, a freelance photography venture, was founded back in 2012 with a vision to capture unique and unusual shots. Over the years, the shop's reputation grew steadily as they produced excellent work and satisfied numerous clients. As the demand for their services soared, Wacky Shots realized the need for expansion to better serve their ever-increasing customer base and this expansion introduces multiple operational challenges. One major problem is the absence of a centralized customer database. Without a system, customer information is scattered across various platforms, making it challenging to provide personalized services and maintain effective communication with clients. Furthermore, the absence of real-time data analysis and reporting makes it difficult to identify sales trends, track profitability, and make data-driven decisions. Overall, the absence of a system leads to operational inefficiencies, faulty customer service, and missed growth opportunities for the photo and printing shop.

Thus, developing a Web-Based Photo and Printing Booking System is timely significant to this growing business of Wacky Shots. By switching to online appointment scheduling, the researchers believes that it

will offer numerous benefits and will be highly useful to Wacky Shots. This will improve the shop's operation, making way for good service quality and outstanding user satisfaction.

1.1 Project Objectives

This research strives for the development of a Web-Based booking System for "Wacky Shots". Addressing operational challenges and enhancing service delivery.

Specifically, the researchers aim to consider the following objectives: (1) to determine the processes and difficulty experienced by Wacky Shots in their shop operation in order to create an effective system; (2) to create a Web-Based Booking System that includes appropriate features; (3) to evaluate the system's acceptability using ISO 25010 Software Quality Standards with the participation of experts in IT field and possible system end users.

2. LITERATURE REVIEW

It is mentioned in the study of [3] that "it's worth noting that the manual registration process can lead to data redundancy and place additional workload on medical personnel" Outdated business practices, like hiring office assistant to write event information for record keeping. They may need to do this approach multiple times to schedule an appointment. This manual approach is vulnerable to human errors, introducing considerable inefficiencies into standard business procedures. [4] emphasized that relying on a manual information management system in day-to-day business operations poses a significant risk of data loss, ultimately resulting in suboptimal performance.

Addressing these concerns, [5] emphasized two significant advantages of adopting digital platforms in business operations. Firstly, digital platforms enable the transformation of manual record keeping into a centralized and efficient data management system, facilitating rapid information retrieval and seamless sharing with customers. Secondly, automation in record keeping empowers owners to accurately calculate, identify, and correct errors in inventory calculations and provide refunds when necessary.

Online scheduling offers a valuable option for vulnerable individuals, such as senior citizens and infants, to avoid exposure to crowded waiting areas, reducing their risk of exposure. Moreover, it simplifies the reservation process, saving time and effort that would otherwise be spent on in-person bookings. Research indicates that computer simulation-based appointment scheduling techniques have effectively decreased waiting times, further enhancing the overall experience for service users. This technological approach not only safeguards health but also optimizes efficiency in the scheduling process [6].

According to [7], the "widespread adoption of the Internet and web-based systems has ushered in numerous benefits by facilitating seamless connections between service/product providers and their customers. The utilization of Information and Communication Technology (ICT) has introduced a fresh set of challenges" across various industries, with healthcare sector managers acknowledging the importance of strategizing and executing web-based information systems. Within any business or organization, the primary focus should be on alleviating staff workload while concurrently elevating efficiency and service quality. In this context, leveraging ICT and the Internet can prove to be immensely valuable. These technologies offer a pathway to not only streamline operations but also enhance the overall customer experience.

3. METHODS AND DESIGN

3.1 Research Design

The research utilized developmental and descriptive research approaches. The descriptive approach was utilized to look for explanations, answers, and fixes for the problems that had been found. The researcher obtained key data for the analysis of the issue and the formulation of feasible solutions through the use of observation and interviews. Additionally, a web-based application created to address the issue was developed using the developmental research methodology. Experts evaluated the system to determine its technical viability and agreement with development requirements.

3.2 Project Development

The researchers utilized Agile methodology as it actively encourages customer collaboration. By involving customers in the development process, Agile ensures that their needs and preferences are consistently considered, leading to a solution that better aligns with their requirements. Agile also promotes quick feedback loops, facilitating continuous improvement.

3.2.1 Requirements

The researcher collected essential data by conducting interviews, questionnaires, and observations. The primary objective of the interviews was to initially identify the needs and challenges faced by Wacky Shots photo and printing shop.

3.2.2 Design

After gathering the requirements, the researchers analyzed them and move forward with the system design phase. In this step, user stories and thorough design documents that give a thorough explanation of the features and functionalities of the system are developed.

3.2.3 Develop

This stage involves developing and coding the software, which turns the conceptual idea into a working system. The product backlog's user sectioning is carried out and divided into doable tasks that may be finished in a sprint. The required code is written by the developers in accordance with the given specifications and design guidelines.

3.2.4 Test

The system is put through thorough testing after development to guarantee functionality and quality. Throughout the Agile development lifecycle, careful testing is done, including unit testing, system testing, integration testing, and user acceptance testing (UAT). Testing validates functionality and reliability, improving

the system's quality and user experience. Continuous testing allows for quick feedback and iterative improvements, ensuring high performance and effective fulfillment of user requirements.

3.2.5 Deploy

After testing and approval, the software moves to the deployment phase, where it is released into the production environment. This involves deploying it to a staging environment for user acceptance testing (UAT) to ensure it meets requirements. Upon successful completion of UAT, the software is released into the live environment for end-user access.

3.3 Population and Sample

A total of 92 respondents participated in the evaluation process. It will include 10 staffs from Wacky Shots including the owners. 62 out of 100 respondents will be randomly picked individuals which are potential customers of Wacky Shots. Lastly, 20 out of 92 respondents which has the second to the highest frequency are the IT Experts which may include developers, testers, and professors/faculty members from relevant fields such as Information and Communication Technology, Computer Engineering, and Computer Science.

3.4 System Evaluation

To evaluate the proposed web-based system, the researchers employed a survey questionnaire incorporating a 4-point Likert Scale. This questionnaire assesses the performance of the end product based on the established criteria of ISO/IEC 25010, utilizing a scale ranging from 1 to 4. In this scale, a rating of 1 indicates strong disagreement, while a rating of 4 indicates strong agreement. This methodology will provide valuable insights into the system's effectiveness and adherence to the defined standards.

Table 1. Four-point Likert Scale

Scale	Range	Descriptive Interpretation
4	3.5-4.0	Strongly Agree
3	2.5-3.49	Agree
2	1.5-2.49	Disagree
1	1.0-1.49	Strongly Disagree

4. RESULTS AND DISCUSSION

4.1 Determine the processes and difficulty experienced by Wacky Shots in their shop operation in order to create an effective system

After conducting an interview with the shop owner, the proponents gathered valuable insights. With an increasing customer base, averaging around 40 bookings per month and surging to 50-70 during peak seasons like December to February, several operational challenges have surfaced. The primary issues arising from their current manual booking system, which involve the loss of physical records and the occurrence of overlapping bookings. In response to these challenges, the proponents have proposed to develop a web-based booking system to enhance and manage all bookings for Wacky Shots.

4.2 Creating a Web-Based Booking System that includes the following features:

To create an efficient booking system, it is crucial to meet specific requirements. Taking these requirements into careful consideration, the proponents suggests that the incorporation of essential and impactful features is necessary for enhancing the system's quality and improving the business operation. In the light of this, the following sections will highlight the key features of the web-based system.

Figure 1 showcases the Admin Dashboard page. This page allows the admin to navigate through the whole function of the system.

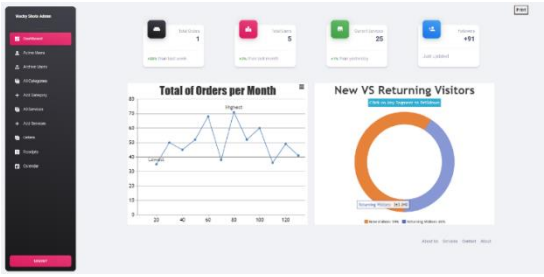

Figure 1. Admin Dashboard Page

Figure 2 showcases the Admin Account Management page. In this page the admin is able to view and manage all the registered accounts in the system. They can select weather they would archive or recover an account.

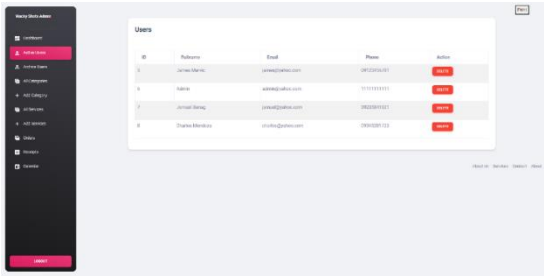

Figure 2. Admin Account Management Page

Figure 3 showcases the Customer Account Management feature. This page allows the customer to edit details such as password and upload display picture.

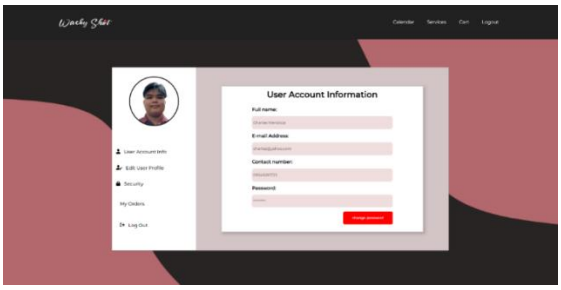

Figure 3. Customer Account Management Page

Figure 4 showcases the Customer Payment Management page. Once an appointment is successfully booked, users will be redirected to the Payment Management page. Here, customers can conveniently complete their payments by scanning a provided QR code and uploading their payment receipts.

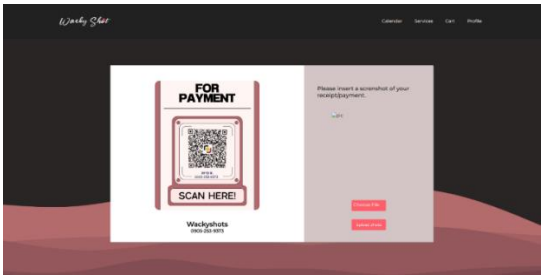

Figure 4. Customer Payment Management Page

Figure 5 showcases the Services Management page. This feature grants administrators the capability to oversee the services presented within the system, allowing them to both add and remove services and packages as needed.

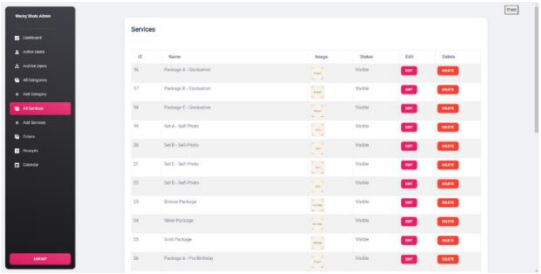

Figure 5. Service Management Page

4.3 Evaluating the system's validity using the ISO/IEC 25010

Table 2 exhibits the overall mean of the web system. It depicts summary of the evaluation using ISO/IEC 25010.Table 2. Summary of the Evaluation using ISO/IEC 25010

Table 2. Summary of the Evaluation using ISO/IEC 25010

Item	Mean	Descriptive Interpretation
Functional Suitability	3.37	Agree
Performance Efficiency	3.38	Agree
Compatibility	3.33	Agree
Usability	3.38	Agree
Reliability	3.31	Agree
Security	3.37	Agree
Maintainability	3.35	Agree
Portability	3.33	Agree
Overall Mean	**3.35**	Agree

Table 2 illustrates the has received remarkably high ratings in all ISO/IEC 25010 categories, achieving an overall mean of 3.35. This suggests an agreement among respondents that every part of the system meets the specified criteria and successfully passes the evaluation.

5. CONCLUSIONS

Based on the aforementioned findings, the study has led to a conclusive response addressing the initial assumptions. As the system was being developed, the project team exercised meticulous attention to detail in identifying the exact requirements needed to improve the operation of the shop. This diligent effort played a crucial role, ensuring that the system's features were not only innovative but also positioned to exert a significant influence on the operations of the client's business.

The introduction of this system is expected to bring significant positive changes to the client's business. Customers will benefit from a more efficient and user-friendly way to access the shop's services. At the same time, the system directly resolves a persistent issue of overlapping bookings that has long troubled the client's business operations. This solution is set to enhance the quality of service and, as a result, improve overall customer satisfaction, leading to a more positive and long-lasting effect on the client's business performance. The implementation of this system is expected to be a crucial moment in the client's business experience, marking a significant step towards efficiency, customer-focused service, and an overall enhancement of the client's business performance.

6. RECOMMENDATIONS

After reviewing the study's findings and conclusions, the subsequent recommendations have been formulated, serving as a valuable guide for future researchers in the Information Technology field intending to conduct similar study: (1) Inclusion of a user feedback feature in the booking system; (2) Explore the implementation of modern payment methods like mobile payments and blockchain; (3) Create transparent cancellation and refund policies that specify conditions and procedures; and (4) Expand the study's sample size including more diverse population.

7. RESEARCH IMPLICATIONS

These findings highlight the system's significant outcomes and complex benefits. Firstly, the system effectively resolves the issue of overlapping appointments inherent in manual booking processes, improving scheduling procedures through its web-based interface. Secondly, it benefits the store with crucial data analytics and customer insights, gathering essential information on preferences, booking patterns, and peak times. This data serves as a foundation for decision-making in marketing strategies, pricing models, and resource allocation. Lastly, the system substantially boosts the store's competitive advantage within the industry scene, strengthening its positioning and differentiation to competitors.

8. ACKNOWLEDGMENTS

This work has been entirely self-funded during its development. The researchers express their sincere gratitude to Mr. Rigo Ros, the owner of Wacky Shots, for his gracious agreement and cooperation throughout the project's evolution.

9. REFERENCES

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Appendix F

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AUTHOR/S: Hael Leightton Rei A. Cruz, Tristan Maree DL. Dionisio, Israel DR. Lizarondo, Charles Gabriel C. Mendoza, Abby Clarisse N. Romualdo
ADVISER: Mr. Gabriel Galang
DATE SUBMITTED:
DEGREE: Bachelor of Science in Information and Technology

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Date: _____

Author(s): Hael Leightton Rei A. Cruz, Tristan Maree DL. Dionisio, Israel DR. Lizarondo,

Charles Gabriel C. Mendoza, Abby Clarisse N. Romualdo

Date: _____

Appendix G

Curriculum Vitae

HC

Hael Leightton Rei A. **Cruz**

Student

To seek and maintain full-time position that offers professional challenges utilizing interpersonal skills, excellent time management and problem-solving skills. Detail-oriented team player with strong organizational skills. Ability to handle multiple projects simultaneously with a high degree of accuracy. Organized and dependable candidate successful at managing multiple priorities with a positive attitude. Willingness to take on added responsibilities to meet team goals.

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Skills

Video Editing

Graphic Designing

Image Editing

Web Developing

Competencies

Mobile Developing

Education

2018 – 2019 **High School Diploma**

AMA Computer Learning Center - Sta. Maria, Bulacan

2019 – 2024 **Bachelor of Science: Information Technology**

Bulacan State University - Guinhawa City Of Malolos, Bulacan

- Member of CICT Local Student Council
- Member of BulSU The Otaku Philippines
- Member of BulSU Capture
- Member of KASAMA

Seminars and Trainings

12th IT Congress – Virtuous Reality: The Rebirth of Power-users into Trailblazers

November 16 – 17, 2022

Valencia Hall, Bulacan State University - Guinhawa City Of Malolos, Bulacan

11th IT Congress – Panorama: The Wide Projection of Technology

November 09 – December 03, 2021

On-line

10th IT Congress – Valor's Vision: The Dauntless Upgrade

November 7 -- 11, 2021

On-line

9th IT Congress – REVOTECH: Elevating Generation

November 22, 2019

Kapitolyo ng Bulacan Gymnasium - Guinhawa City Of Malolos, Bulacan

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SKILLS

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- **Image Editing**

EDUCATIONAL BACKGROUND

Bachelor of Science in Information Technology

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2018-2024

Science, Technology, Engineering & Mathematics

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Kapitolyo ng Bulacan Gymnasium – Malolos, Bulacan

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Typing Skills

Teamwork

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Image Editing

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AWARDS AND HONORS

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Loyalty Award

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EXPERTISE

- Computer Hardware and Software
- Experienced in Microsoft Office
- Skilled in Adobe
- Basic Programming
- Web design

REFERENCES

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ABOUT MYSELF

I am a passionate and driven IT student with an insatiable curiosity and a strong desire to explore various environments within the field of Information Technology. My journey into the world of IT has been marked by a fervent dedication to learning and a yearning for exposure to diverse experiences

EDUCATION

2014-2020 Highschool	St. Dominic Academy of Pulilan, Inc. National Road, Poblacion, Pulilan Bulacan
2020-2024 College	Bulacan State University-Main Campus Malolos, Bulacan

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EXPERTISE

- Test Documentation
- Test Execution
- Microsoft Excel

REFERENCES

Available upon request

MY PROFILE

I am a dedicated Information Technology student known for my ability to quickly grasp new concepts and thrive in diverse work environments. My strong team collaboration and communication skills, combined with my expertise in crafting comprehensive test plans and executing test cases, whether manually or through automation tools, make me a valuable team member with significant contributions to offer.

EXPERIENCES

PasaBuy sa Japan I 2020-2022
Customer Service

I've been actively engaged in customer service, where I consistently provide top-notch assistance to our cherished customers, while also taking on responsibilities related to inventory management and other vital operations.

EDUCATION

2020-2024
Bulacan State University

Bachelor in Science of Information and Technology.

2018-2020
Academia de Pulilan

Science, Technology, Engineering, and Mathematics