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**Progressive Web Application Photography Platform for Mhark
Photography: Booking Services with Specialized Portfolios and Diverse
Event Packages**

A Thesis Presented to
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CHAPTER I

Project Context

In the era of digital storytelling and visual narratives, capturing life's moments through the lens of a camera has evolved into an art form. Mhark Photography, a passionate endeavor led by acclaimed photographer Mhark, has been on a mission to encapsulate the essence of every moment, from intimate portraits to grand events. Mhark has recognized a pressing need to transcend traditional boundaries and embrace innovation to better serve clients in today's dynamic market.

Enter the Progressive Web Application Photography Platform, a visionary project aimed at revolutionizing the way clients interact with Mhark Photography's services. This platform seeks to seamlessly integrate booking functionalities, specialized portfolios, and diverse event packages into a user-friendly interface, providing clients with an unparalleled photography experience.

The platform will serve as a digital hub where clients can explore Mhark Photography's extensive portfolio, showcasing Mhark's mastery across various genres, from weddings and family portraits to corporate events and fashion shoots. Each portfolio will offer a glimpse into Mhark's distinctive style and creative vision, allowing clients to find the perfect match for their unique needs and preferences.

The service will streamline the booking process, empowering clients to effortlessly schedule appointments, customize packages, and communicate



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directly with Mhark and his team. Through intuitive features such as real-time availability calendars and instant booking confirmations, clients will enjoy a hassle-free experience from inquiry to delivery.

What sets this platform apart is its commitment to personalization and flexibility. Recognizing that every client is different, Mhark Photography will offer a range of specialized packages tailored to specific occasions, budgets, and preferences. Whether it's a romantic engagement shoot, a lavish wedding affair, or a corporate branding campaign, clients can choose from an array of options, each designed to elevate their vision and exceed their expectations.

It's client centric approach, the platform will also benefit Mhark Photography's internal operations, streamlining workflow management, client communication, and project coordination. By harnessing the power of technology, Mhark and his team will have more time and resources to focus on what they do best: capturing timeless moments and creating unforgettable memories.

The Progressive Web Application Photography Platform represents not only a strategic business endeavor for Mhark Photography but also a commitment to innovation, excellence, and customer satisfaction. By embracing digital transformation and reimagining the client experience, Mhark Photography is poised to redefine the standards of modern photography and leave an indelible mark on the industry.



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Mhark Photography, a passionate endeavor led by acclaimed photographer Mark Anthony Maghanoy, has been on a mission to encapsulate the essence of every moment, from intimate portraits to grand events. Established in 2014, Mhark Photography has built a reputation for excellence in various photography services, including weddings, debuts, pageants, and pre-birthday shoots. The studio is located at 78A PNR Compound, Purok Bago Masagana, Cotta, Lucena City, and is owned and operated by Mark Anthony Maghanoy. Mark's dedication to his craft and commitment to capturing timeless memories has made Mhark Photography a trusted name in the industry.

Purpose and Description

The main objective of the study Progressive Web Application Photography Platform is to revolutionize the way clients engage with Mhark Photography's services, enhancing convenience, personalization, and efficiency. By creating a user-friendly digital hub, the platform aims to streamline the booking process, showcase Mhark's diverse portfolio, and offer tailored event packages, ultimately delivering an unparalleled photography experience.

The platform serves as a centralized hub where clients can explore Mhark Photography's extensive portfolio of their photographer, book appointments, and communicate directly with Mhark and his team. Real-time availability calendars



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and instant booking confirmations ensure a hassle-free process from inquiry to delivery, enhancing efficiency and transparency.

The service prioritizes personalization, offering tailored packages to suit specific occasions, budgets, and preferences. This commitment to flexibility ensures that each client receives a bespoke photography experience, exceeding their expectations and capturing the essence of their memorable moments.

It's more optimizing workflow management, client communication, and project coordination, allowing Mhark and his team to focus on their creative endeavors. By harnessing the power of technology, Mhark Photography reaffirms its commitment to innovation, excellence, and customer satisfaction, setting new standards in the field of modern photography.

Statement of Objectives

The main objective of this capstone project is to create a Progressive Web Application Photography Platform for Mhark Photography that improves customer interaction, maximizes operational efficiency, and establishes a new standard in the photography business. The study aims to achieve the following:

1. This is to Improve Client Accessibility and Interaction of Mhark Photography:
 - a. Create a user-friendly interface so that clients can quickly browse portfolios, book services, and contact with the photographic team.



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- b. Integrate real-time availability calendars and fast booking confirmations to improve scheduling efficiency and client convenience.
2. Developed Personalization and Service Customization:
 - a. Provide a range of specialized event packages geared to specific client demands, occasions, and budgets, delivering a unique photography experience.
 - b. Allow clients to tailor their packages and services using the platform, increasing flexibility and satisfaction.
3. Optimize operational efficiency:
 - a. Automate administrative operations like:
 - appointment scheduling,
 - payment processing,
 - client communications to reduce manual and minimize errors.
 - appointment re-scheduling
 - b. Implement workflow management technologies to develop:
 - project coordination
 - team collaboration
4. To assess the developed application based on the ISO standard on Quality Evaluation Division (ISO/IEC 25010):
 - 1.1. Functional Suitability
 - 1.2. Performance Efficiency
 - 1.3. Usability



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- 1.4. Reliability
- 1.5. Security
- 1.6. Maintainability
- 1.7. Portability
- 1.8. Compatibility

Scope and Limitations

This capstone project focuses on designing and developing a Progressive Web Application Photography Platform for Mhark Photography, aimed at enhancing client engagement and streamlining operations. The platform is designed to facilitate the booking of photography services, showcase specialized portfolios, and offer diverse event packages tailored to various client needs and preferences.

The platform includes an administrator module, allowing the management team to add, edit, archive, and archive photography services and event packages. Administrators can also manage client inquiries, appointments, and communication through the platform. Additionally, they can add new users, and manage user information such as names and contact details. The platform supports importing and exporting data related to bookings, client information, and service offerings, and provides a dashboard for monitoring key metrics like booking volumes and client interactions.



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The user interface is designed to be responsive and accessible on various devices, including smartphones, tablets, and desktops, ensuring clients have a seamless experience regardless of how they access the platform. Real-time availability calendars and instant booking confirmations streamline the booking process, making it easy for clients to schedule and manage their photography sessions.

The platform's accessibility is limited to clients with verified accounts, and it requires an internet connection for access. Additionally, while the platform supports a wide range of photography services and packages, the availability of some specialized services may be subject to the photographer's schedule and location constraints.

All raw footage captured by Mhark Photography cannot be downloaded directly by clients, ensuring that the quality and integrity of the photographs and videos are maintained, and any necessary post-processing is performed by the professional team. Additionally, once a venue is booked and confirmed for a photoshoot or event, it cannot be changed. This fixed venue policy is in place to ensure logistical efficiency and to provide the best possible service without last-minute adjustments.

Mhark Photography primarily operates within the Lucena City area, and services outside this region are currently not offered, meaning clients must schedule their events within this geographical boundary. There is a maximum limit on the number of shots that can be taken during an event or photoshoot. This



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limitation is set to manage time effectively and ensure that the highest quality of service and attention to detail is provided to each client.

These limitations are designed to maintain the high standards of service and professionalism that Mhark Photography is known for, ensuring that each client receives a well-curated and meticulously managed photography experience.

Significance of the Project

The significance of the Progressive Web Application Photography Platform for Mhark Photography extends beyond its immediate implementation, providing tangible benefits to various stakeholders:

Mhark Photography: The platform will revolutionize the way Mhark Photography interacts with clients, streamlining booking processes, enhancing portfolio visibility, and offering tailored event packages. This will lead to increased client satisfaction, improved brand reputation, and ultimately, higher revenue generation.

Mhark Photography Clients: Clients will benefit from a more accessible and personalized photography experience, with easy access to Mhark Photography's specialized portfolios and diverse event packages. The platform will simplify the booking process, saving time and effort, and ensuring that each client receives a customized photography solution that perfectly aligns with their needs and preferences.



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Event Planners and Organizers: Professionals involved in event planning and organizing will find the platform invaluable for sourcing high-quality photography services tailored to their event requirements. The diverse event packages offered by Mhark Photography will cater to a wide range of events, from weddings and corporate functions to fashion shows and product launches, providing event planners with the flexibility and choice they need to execute successful events.

Photographers and Artists: The platform will serve as a showcase for Mhark Photography's artistic talent and creative vision, providing photographers and artists with a platform to display their work to a wider audience. This exposure can lead to new opportunities for collaboration, networking, and career advancement within the photography industry.

Future Innovations in Photography: The development of the Comprehensive Photography Platform represents a significant advancement in the field of photography technology and service delivery. By leveraging digital tools and innovative features, the platform sets a new standard for excellence in photography services, inspiring future innovations and advancements in the industry.

Researchers: This project offers valuable insights into the integration of modern web technologies in traditional business models, particularly in the photography industry. It will serve as a comprehensive case study on how digital transformation can impact and improve small to medium-sized businesses, providing a rich source of data and analysis for academic and practical research.



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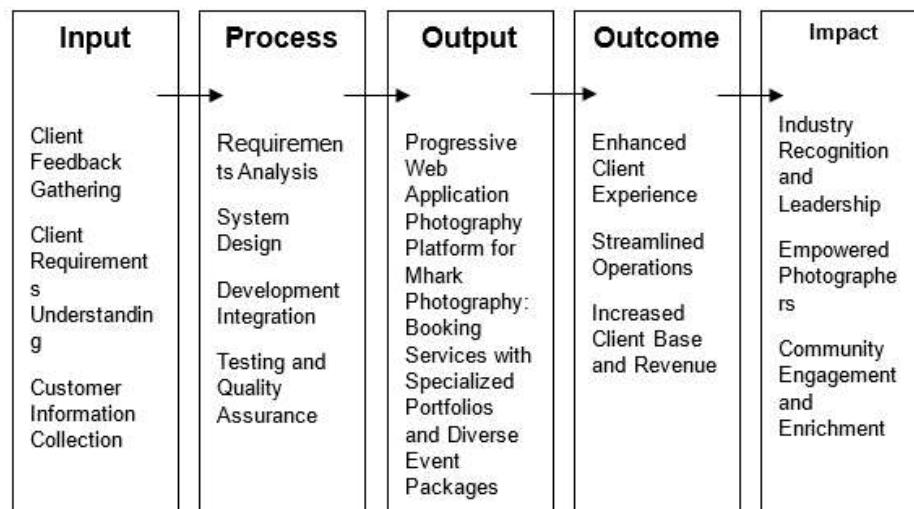
Future Researchers: The project provides a solid foundation for further study on PWA applications, client interaction with digital platforms, and the overall impact of technology on service industries. It also serves as a resource for innovation, enabling future researchers to use the findings and methodologies from this project to develop new applications or improve existing ones, thus contributing to the body of knowledge in technology and business integration.

The Comprehensive Photography Platform for Mhark Photography has the potential to transform the landscape of photography services, benefiting not only Mhark Photography and its clients but also the wider photography community and future generations of photographers and artists.

Conceptual Framework

Figure I.

Input Process Output Model





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Figure 1 show the conceptual framework for the development of the Comprehensive Photography Platform for Mhark Photography. This framework guides the project to achieve its objectives by detailing the key stages from input to impact. This framework ensures that the development of the Comprehensive Photography Platform is systematic and aligned with the objectives of Mhark Photography, ultimately leading to significant positive impacts on the business and its stakeholders.

Theoretical Framework

Figure II.

Technology Acceptance Model

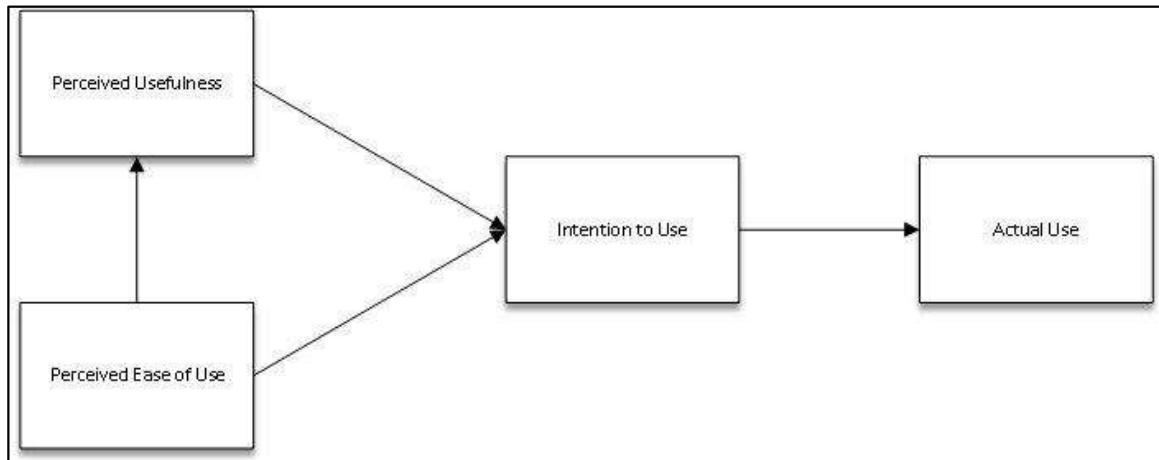


Figure 2 show the theoretical framework is based on the principles of the Technology Acceptance Model (TAM) introduced by Fred Davis in 1989, which is a widely recognized model for understanding how users come to accept and use



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a new technology. This framework will guide the development and implementation of the Comprehensive Photography Platform for Mhark Photography. By applying the TAM framework, this conceptual model ensures that the development of the Comprehensive Photography Platform is centered on user acceptance and satisfaction, leading to successful adoption and sustained use of the platform by clients and stakeholders.

Definition of Terms

The following terms are categorized into two groups: technical and non-technical terms. These are important in the context of academic and research environments, and they are as follows:

Technical Terms:

1. Photography Platform: A digital platform designed to facilitate various aspects of photography services, including booking appointments, showcasing portfolios, and offering event packages.
2. Web-based Platform: An online platform accessible through a web browser, allowing users to interact with its features and functionalities via the internet.
3. Portfolio Showcase: A section of the platform dedicated to displaying samples of Mhark Photography's work, including photographs from various genres such as weddings, portraits, corporate events, and fashion shoots.



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4. Booking System: A feature of the platform that enables clients to schedule appointments for photography sessions, select preferred dates and times, and make reservations for specific services or event packages.

Operational Terms:

1. Photography Service Management: The process of overseeing and coordinating photography services offered by Mhark Photography, including scheduling appointments, managing client inquiries, and organizing event logistics.
2. Client Interaction: The communication and engagement between Mhark Photography and its clients, encompassing activities such as responding to inquiries, providing updates on bookings, and addressing customer feedback.
3. Event Package Customization: The process of tailoring photography services and offerings to meet the specific needs and preferences of clients, including selecting event types, choosing photography styles, and adding personalized touches to enhance the overall experience.
4. Service Accessibility: The ease with which clients can access and utilize the features and functionalities of the Comprehensive Photography Platform, including navigating the interface, browsing portfolios, and making bookings.



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These definitions will help clarify the terminology used within the context of the Comprehensive Photography Platform for Mhark Photography, ensuring a better understanding of its features and operations.



CHAPTER II

REVIEW OF RELATED LITERATURE AND STUDIES

This chapter presents an examination of the relevant literature and studies related to the project. It covers different topics, providing a comprehensive understanding of the subject matter.

This article of exile photography was extensively discussed during a workshop held in Jerusalem in the summer of 2016, organized by the Da'at Hamakom Center for the Study of Cultures of Place in the Modern Jewish World and the Koebner Minerva Center for German History at the Hebrew University. This workshop aimed to define exile photography as a distinct approach within the field, focusing on its unique characteristics and methodologies rather than merely referencing photographs taken in exile. The resulting articles from this workshop encapsulate a variety of perspectives and methodologies, illustrating the rich potential of examining exile in the context of photography. This discourse is significant for understanding the broader implications of specialized photography domains, such as those incorporated in the Progressive Web Application Photography Platform for Mhark Photography.

Specialized Portfolios and Diverse Event Packages

According to Daniel Wildmann (2019), By recognizing the diverse methods and potential benefits highlighted in the workshop, this project can draw parallels



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in how specialized portfolios and event packages are curated and presented. Insights into niche photographic practices can inform the development of a more nuanced and user-centric platform. For instance, understanding the intricacies of exile photography can inspire more thoughtful and meaningful photographic documentation for clients, whether for weddings, debuts, or other events. Integrating these scholarly perspectives ensures that the platform not only serves as a booking service but also as a repository of carefully curated, specialized portfolios. This approach enriches the user experience by offering diverse, high-quality photographic content that caters to various events and styles, reflecting the thoughtful and contemplative nature discussed in the Jerusalem workshop.

According to Ghangare and Adhikary's (2019) research on an online booking venue system, one significant benefit of implementing such a system is the convenience it offers to customers. They do not need to travel anywhere and can access all event information with a single click. Customers must register and log in to view the list of events added by the dealer, check availability, and book the event. They then wait for a confirmation response to finalize their booking.

These studies highlight the importance of automation and real-time data integration in booking systems. For Mhark Photography's Progressive Web Application, these insights underscore the value of an intuitive and automated booking system. By incorporating specialized portfolios and diverse event packages, the platform can enhance user experience, ensuring clients can effortlessly book photography services tailored to their specific events. This



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approach aligns with the convenience and efficiency highlighted in the existing research, making the platform both user-friendly and efficient in managing bookings and service offerings.

Booking Services

According to Vaidya et al. (January 2019), the time and effort-saving internet Photoshoot Booking Service is the answer for the present "online generation." It also helps informal picture shoots and expands the market for informal photographers. Additionally, it saves money because of the competition and the platform that has allowed it to grow. As time passes, more Indian photographers will sign up, saving money on phone calls to photographers. From a distance, significantly lowering the price and raising demand. The photography industry is expected to increase daily as more devices become more affordable and make a tiny contribution to it.

These studies highlight how crucial it is to integrate casual photographers into booking systems to grow their business. The easy booking process is highlighted by these insights for the Progressive Web Application of Mhark Photography. The website can improve the user experience by integrating specialized portfolios and a variety of event packages. This will guarantee that clients can easily reserve photographic services that are customized for their events. The user-friendliness and efficiency of the platform in handling bookings



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and service offers are enhanced by this method, which is consistent with the convenience and effectiveness noted in current research.

Photography Platform

According to Capistrano E. P. (2021), In the rapidly evolving Philippine business landscape, where information technologies play a crucial role in growth and sustainability, there is increasing pressure to develop e-commerce platforms. Academic research must keep pace by providing well-supported insights. This study, integrating trust theory and the Unified Theory of Acceptance and Use of Technology (UTAUT), aims to fill these gaps. Examining 399 Filipino customers using online food delivery and tourism booking services, this research identifies factors influencing their intention to use websites and mobile apps. Results show trust significantly affects customers' perceptions of utility, environmental impact, and enjoyment. However, not all factors significantly influence their actual use. This highlights opportunities to enhance these platforms' strengths and address weaknesses. Future research directions and practical implications are also discussed.

In this study finds to reveal that trust significantly impacts customers' perceptions of utility, environmental impact, and enjoyment, although not all these factors influence their actual usage. This underscores the importance of building trust to enhance platform strengths and address weaknesses. The study's insights



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can guide the development of Mhark Photography's Progressive Web Application by emphasizing trust-building measures, utility, and user enjoyment to improve booking services, specialized portfolios, and diverse event packages. Future research directions and practical implications are also discussed.

As stated by Haryati S. and Ratnasari C. I. March of 2021. Booking Information System for Photo Studios (Case Study: Yogyakarta Reflection Photography). This study investigated a system designed to make it easier for clients to get information about photo studios, expedite the payment confirmation process, and make it easier to reschedule picture shoot dates. In addition, the system supported reservations with more participants than could fit in the original photo package.

This study focused on improving user experience in online photography booking systems, emphasizing the importance of intuitive interfaces, seamless payment processes, and flexible scheduling options to meet diverse customer needs. The study highlighted how these features can significantly enhance customer satisfaction and operational efficiency for photography service providers.

According to Pablo K. I. A. et al. Photo editing has become more popular as businesses moved to e-commerce. It helps companies make their products look better. Instagram is a popular e-commerce platform that uses photo-enhancing tools. Studies show that visuals change how people think and act because of cognitive and perceptual biases. This affects how consumers behave when they start shopping online. Instagram marketing relies heavily on photos, which some



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worry might be misleading. This study shows that photos influence consumer purchasing behavior, especially if the marketing images are appealing. This boosts consumer interest and helps businesses improve their sales. Despite concerns, the study found that perceptual bias is most common, showing that people manage their expectations well. This challenges the idea that Instagram marketing is misleading.

This study explores the growing popularity of photo editing as businesses transition to e-commerce. Photo editing is pivotal in enhancing the visual appeal of products, making them more attractive to consumers. Instagram, a key e-commerce platform, extensively uses photo-enhancing tools. Research indicates that visuals significantly impact consumer perceptions and behaviors due to cognitive and perceptual biases. This visual influence is particularly evident in online shopping, where appealing images drive consumer interest and boost sales. Despite concerns about the potential for misleading marketing on Instagram, the study found that perceptual bias is most prevalent, suggesting that consumers generally manage their expectations well. This challenges the notion that Instagram marketing is inherently misleading, underscoring the importance of visually appealing content in influencing purchasing decisions.

According to Sibulan F. C. & Limos-Galey J. (2023), at Occidental Mindoro, the photography and videography industry has become increasingly important. Starting a brand can be expensive, but using social media is a cheaper option for small businesses with limited marketing funds. Consistency in messaging is crucial



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for building a strong brand and keeping customers. Content marketing is now essential for marketing. Small photography and videography businesses use storytelling to meet both practical and emotional customer needs. They carefully choose which clients and work to showcase online. Posting visually appealing content on social media can attract attention and promote business. Many businesses use image-focused content in their social media strategies.

This study aims to create a comprehensive online platform for Mhark Photography. This platform will facilitate booking services, feature specialized portfolios, and offer diverse event packages. By integrating modern web technologies and strategic content marketing approaches, our project seeks to enhance Mhark Photography's online presence, streamline client interactions, and showcase their work effectively to attract a wider audience.

Progressive Web Application

According to Asharul I. K. et al. (2019) The review identified PWA practices, six challenges of the previous mobile application development approach that are resolved by PWA, and seven challenges posed by the practice of PWA. Introduced in 2015, studies on PWA topics have increased significantly since 2017, with an even distribution of research across various nations. Approximately 74% of the selected studies focus on PWA practices. While it cannot be generalized that the PWA approach universally addresses all challenges of previous methods, some



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studies reported that PWA effectively mitigates certain issues. However, despite its advantages, PWA still faces challenges, primarily related to browser support.

This study finds the increasing relevance of PWAs in providing a seamless and engaging user experience across platforms. For our capstone project, "Progressive Web Application Photography Platform for Mhark Photography: Booking Services with Specialized Portfolios and Diverse Event Packages". Implementing PWA practices can enhance the functionality and accessibility of the platform, ensuring it meets modern web standards while addressing potential challenges effectively.

According to Fauzan R. et al. (2022) This research aims to establish a comprehensive understanding of Progressive Web Application (PWA) practices based on published empirical investigations, identify challenges faced by the PWA method, and explore its approach to experimental studies. We also investigated PWA practices that might address issues inherent in previous methods. A broad, automated search was conducted to identify systematic literature reviews (SLRs) and 43 relevant papers published between January 1, 2015, and November 6, 2021, that discuss PWA. Specific inclusion and exclusion criteria were applied to determine the relevance of studies for our research purposes.

This study seeks to provide a detailed overview of the current of PWA practices by analyzing published empirical investigations. This helps our Progressive Web Application (PWA) apply best practices and avoid common pitfalls in PWA development. By being aware of potential difficulties, you can



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proactively address them in your development process, ensuring a smoother implementation and better user experience. This study's exploration of experimental methods in PWA research can guide how you evaluate and test your PWA platform. Applying robust experimental approaches can help ensure your platform's reliability, performance, and user satisfaction.



Chapter III

RESEARCH METHODOLOGY

This chapter outlines the Agile methodology employed to develop the Progressive Web Application (PWA) Photography Platform for Mhark Photography. It includes an overview of the Agile framework, phases of development, requirements analysis, system design, implementation, testing, deployment, and evaluation.

Figure 3.

Agile Model Framework of the Proposed System



Agile is an iterative and incremental approach to software development that emphasizes flexibility, customer feedback, and rapid delivery of functional



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software. The Agile model is characterized by short development cycles and regular reassessment and adaptation of plans. Therefore, the researchers used this software development method to quickly adapt to the changes and implement them to the development process.

Plan

In the first phase of the project, the goals, objectives, and requirements were defined. The researchers collaborated with the owner of Mhark Photography to understand the operations of their business. The owner highlighted the challenges of managing multiple packages. The researchers then suggested potential features for the system, which the owner approved. These features include a management system with an admin dashboard, calendar booking, portfolios of the photographers and packages of the team for users.

Develop.

In the development phase, the actual coding of the software begins. The research team works on implementing the features planned and designed earlier. They use HTML to build the structure of the system, CSS to style the website, and JavaScript to add interactivity. For the backend, they use PHP, allowing the website to interact with a MySQL database to store essential information.



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Test.

Rigorous testing is carried out during the development process to find and fix bugs, ensuring the software meets the required standards. The team frequently tests the website whenever a new feature is added.

Deploy.

During the deployment phase, the system is released for testing, allowing users to try out the website. The research team closely monitors the system during this time. They gather feedback on any issues with the main features. Additionally, they check that the system meets non-functional requirements and follows software development standards.

Review.

Regular reviews are held to evaluate the software's performance, collect user feedback, and find areas for improvement. The researchers collected feedback from users, including the owner (as admin) and clients, after they tested the website. This feedback was crucial for refining the system. Based on the suggestions for improvements, the development process returned to the design phase to address issues and implement the recommended changes.



Launch.

After thoroughly testing the software and ensuring it is ready, it is launched in a production environment and made available to users. The developers continuously monitor and improve the website based on user reviews. Finally, the researchers launched a refined website for users to access.

Requirements Analysis

In this section, we describe what the system needs to do and how well it should perform to satisfy both admin/photographers and clients. By setting clear requirements and following technical standards, we aim to guide the development process to create a final product that is efficient, reliable, and easy to use.

Functional Requirements

User Registration - New users, including both clients and admins, can sign up using the registration forms in the system. Existing users can log in securely with their credentials. If they forget their passwords, they can recover them through a safe verification process.

Admin Dashboard - The admin, who owns the portfolios, uses a dashboard to manage the entire system, ensuring all controls are centralized.

Property Browsing and Search - Users on the platform can look for Portfolios by specifying different things like where they want to book, how much they want to pay, what type of shoot they're interested in, and when they need it. There are also



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filters and sorting choices to help users narrow down their search results and find properties that match exactly what they're looking for.

Non-Functional Requirements

Performance:

Response Time: The system should respond to user interactions (e.g., page loads, search queries).

Scalability: The platform should handle a gradual increase in user traffic and data volume without significant performance degradation.

Load Testing: Conduct load testing to ensure the system can handle peak loads during busy periods.

Reliability:

Availability: Aim for a system uptime of at least 99.9%, minimizing downtime for maintenance and upgrades.

Fault Tolerance: Implement measures (e.g., redundant servers, automated backups) to ensure the system remains operational in case of hardware or software failures.

Security:

Data Encryption: Encrypt sensitive data (e.g., user credentials, payment information) during transmission and storage.



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Access Control: Implement role-based access control (RBAC) to restrict access to sensitive features and data based on user roles.

Regular Security Audits: Conduct regular security audits and vulnerability assessments to identify and mitigate potential security risks.

Usability:

User Interface Design: Ensure the user interface (UI) is intuitive, consistent, and easy to use.

Accessibility: Design the platform to be accessible to users with disabilities, following WCAG (Web Content Accessibility Guidelines) standards where applicable.

User Training and Documentation: Provide clear user documentation and training materials to assist users in utilizing the platform effectively.

Compatibility:

Cross-Browser Compatibility: Ensure the platform functions correctly across major web browsers (e.g., Chrome, Firefox, Safari).

Device Compatibility: Support responsiveness across various devices (e.g., desktops, tablets, mobile phones) and screen sizes.

Scalability:

Future Expansion: Design the architecture to accommodate future enhancements and new features as the platform grows.



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Elasticity: Ensure the system can scale horizontally or vertically based on changing demands and user growth.

Performance Monitoring:

Monitoring Tools: Implement tools to monitor system performance metrics (e.g., CPU usage, memory usage, database queries).

Alerting: Set up alerts to notify administrators of performance issues or anomalies that require attention.

Regulatory Compliance:

Data Protection: Ensure compliance with relevant data protection regulations (e.g., GDPR, CCPA) regarding user data handling and privacy.

Payment Processing: Adhere Gcash requirements if processing online payments or physical payments for head-to-head payment process.

Backup and Recovery:

Regular Backups: Implement automated backups of critical data to prevent data loss in case of system failures or disasters.

Disaster Recovery Plan: Have a documented plan for recovering data and restoring operations in the event of a catastrophic failure.



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Requirements Documentation

In this section, the procedures for data collection, the participants involved in the study, the statistical methods applied, and the ethical considerations are discussed.

Population and Sampling

This study focused on photographer's clients, future clients, and potential photographer's clients of Mhark Photography. The participants needed in this study will be chosen using convenience sampling method. Since potential clients and future clients cannot be determined while the data for clients is not available, the researchers were advised to choose participants based on availability and convenience.

Research Instrument

The research methodology will use survey questionnaires that are based on Likert scale questions ranging from one to five. The respondents will be tasked to answer the questions the researchers will provide during the data gathering phase. With this, quantitative analysis will be used.

Data Gathering Procedures

The researchers will develop survey questionnaires to evaluate and understand the implementation of Mhark Photography, a booking management system, for Mhark Photography. The questionnaires will include questions to



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gather the perspective of the sole owner of the business and its clients. It will identify the difference between the existing process in booking packages and the systems that will be developed. The questionnaires will be distributed online through google form and in person with the use of printed survey forms.

Statistical Treatment

The researchers will prepare quantitative data analysis to analyze the data gathered from participants during the collecting of data phase. Then, the results of the evaluation will be displayed using tables. This will make the results presented in an organized and precise manner.

The researchers will use the following statistical formula to analyze the data will be gathered from the survey questionnaire:

A. Andrew Fisher's Formula

The researchers used Andrew Fisher's formula to calculate the sample size given population size and margin of error. The following computes it:

$$n = \frac{Z^2 \cdot P \cdot (1-P)}{E^2}$$

Where:

Z = level of significance (0.05)

P= estimated population proportion (0.5)

E= the margin of error which is 5% or 0.05



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Adjust for Finite Population

$$n' = \frac{n}{1 + \frac{n-1}{N}}$$

Where:

n' = adjusted sample size.

n= is the initial sample size without the finite population correction

N = the total population size of the participants

The sample size or the selected participants of the study are seventy-six (76) respondents.

A. Weighted Mean

The researchers will use weighted mean to help them gather the data. The final average number will reflect the evaluation or the observation of the respondents to the proposed system. The following formula will be used:

$$\bar{x} = (\sum(x_n w_n)) / \sum x$$

Where:

\bar{x} = weighted mean

x = value

w = weight



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The option in the questionnaire will use verbal interpretations for each result, which will be assigned to the computed means using the following scale:

B. Likert Scale

After calculating the weighted mean, the researchers will use a five-point Likert scale to interpret the data gathered from the respondents and will measure their evaluation about the system. The five-point Likert scale used in the interpretation of data is the following:

Table 1.
4 - Point Likert Scale

Weighted Point	Range Interval	Verbal Interpretation
4	3.25 – 4.00	Strongly Agree
3	2.50 – 3.25	Agree
2	1.75 – 2.50	Disagree
1	1.00 – 1.75	Strongly Disagree

$$x = \frac{n - 1}{n}$$



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Ethical Considerations

Throughout this study, the researchers constantly followed the ethical standards especially in the phase of gathering information from respondents to protect sensitive information. Optional fill in of names is highly recommended to the respondents to protect their identities. Prior to their involvement, all participants were fully informed about the study's objectives, their roles, and their rights, and provided explicit consent through a formal consent form. Confidentiality measures were strictly maintained throughout the study duration. System log data was aggregated to prevent individual identification. Robust data security protocols, including encryption and secure storage solutions, were implemented to safeguard all collected data from unauthorized access. Participation in the study was entirely voluntary, ensuring participants could withdraw at any point without facing any consequences. These ethical practices were integral to obtaining reliable and valid data while prioritizing the ethical treatment and confidentiality of all participants involved in the research.

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

In this section, the diagrams for the proposed system are shown and discussed. The representation of the proposed system will be used as the basis by the researchers in developing the system.



Figure 4

Data Flow Diagram of the Existing Process

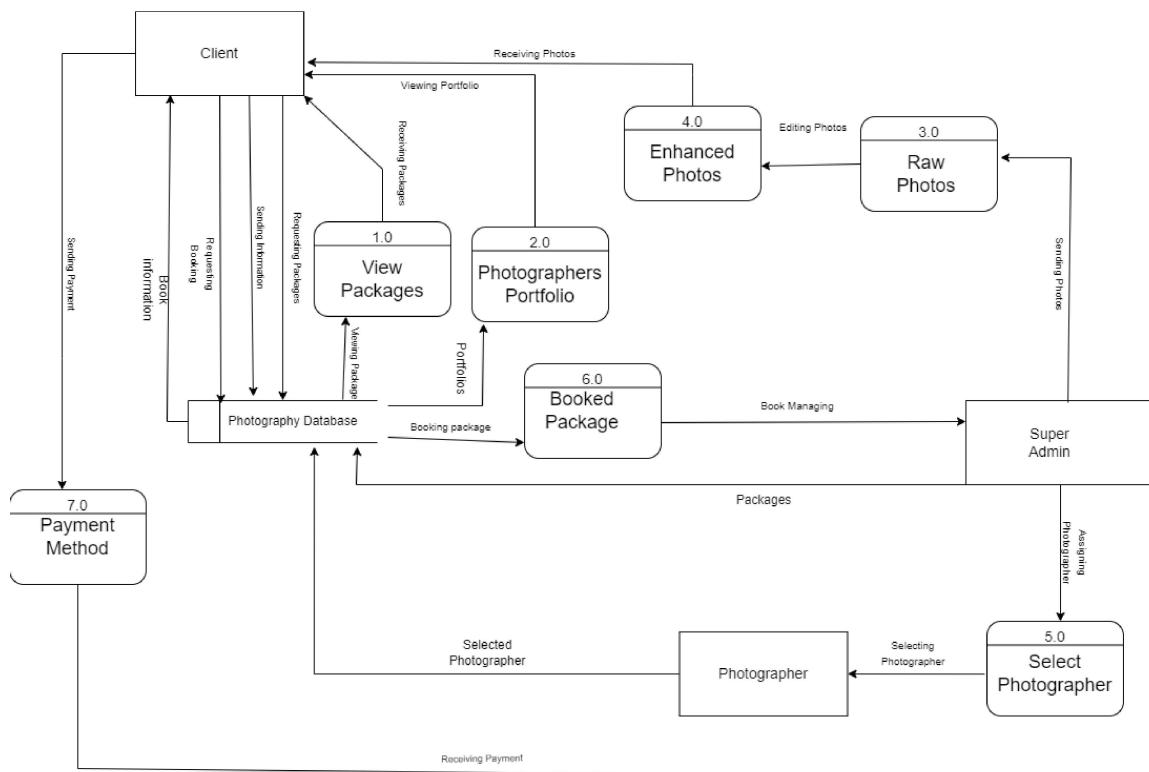


Figure 4 The data flow diagram illustrates the existing processes involved in handling photography-related activities. Clients begin by viewing available photography packages (1.0) and photographers' portfolios (2.0), with information fetched from the Photography Database. Photographers upload raw photos (3.0) to the database, which are then processed into enhanced photos (4.0) and stored back in the database. Clients select photographers (5.0) based on the viewed portfolios, and this selection process is recorded in the database. Once a



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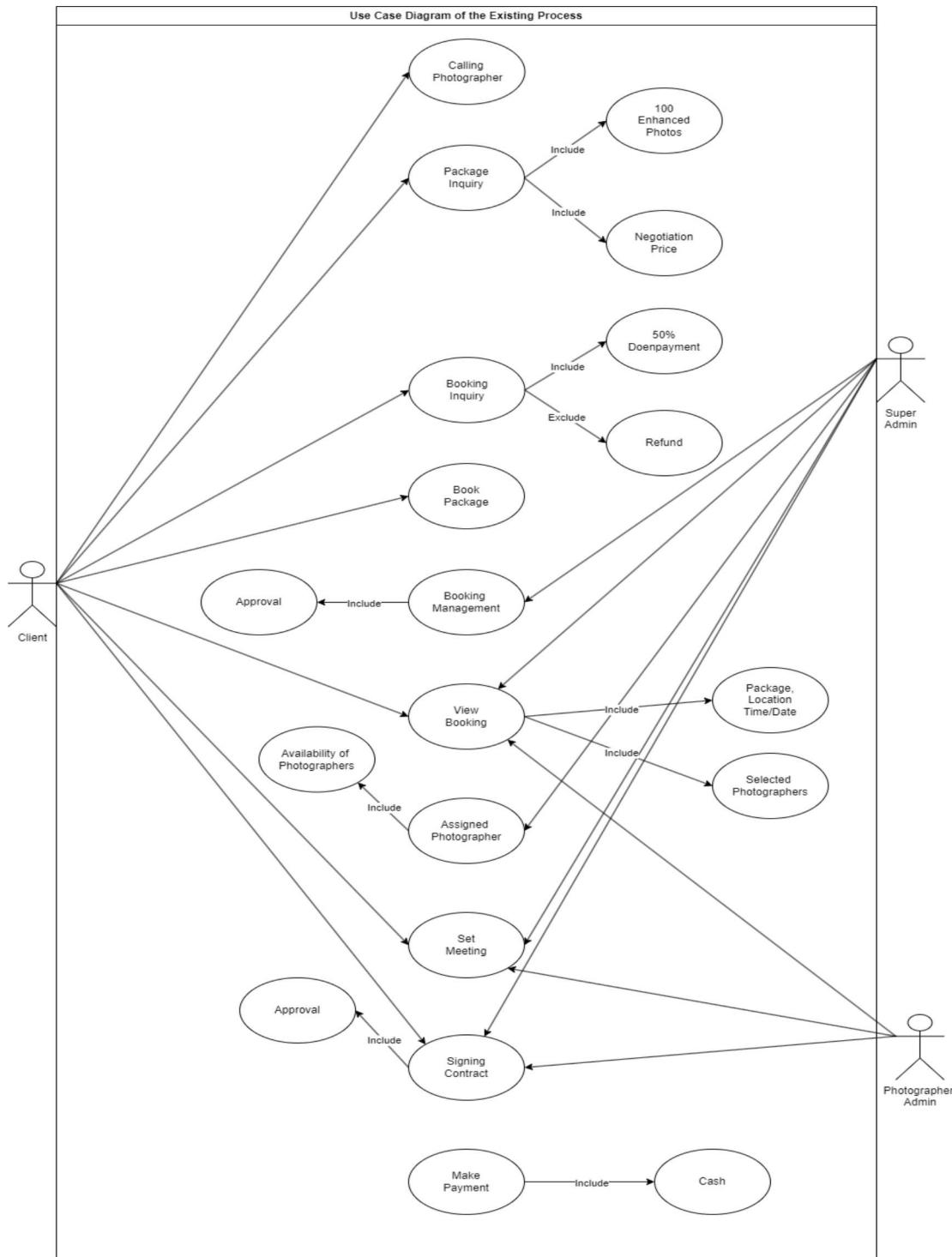
photographer is selected and a package is chosen, the booking is made (6.0) and stored in the database. Clients then provide payment details (7.0), which are securely stored in the database. Throughout the process, the Super Admin oversees and manages all activities, having access to the entire Photography Database to ensure smooth operation.



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Figure 5.

Use Case Diagram of the Existing Process





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Figure 5 shows the processes being taken on the existing process of the business. These processes are performed by the super admin, photographer, and the potential customer.

Actor: Super Admin

1. Booking Management: The super admin oversees and manages the entire booking process, ensuring all steps are completed smoothly.
2. Approval: The super admin grants final approval for bookings, payments, and other critical decisions.
3. View Booking: The super admin has access to view all bookings to monitor the business operations.
4. Assigned Photographer: The super admin can assign photographers to events based on availability and client requirements.
5. Set Meeting: The super admin can facilitate and schedule meetings between clients and photographers.
6. Signing Contract. The super admin ensures that all contracts are signed and stored properly for legal and administrative purposes.
7. Make Payment; The super admin oversees the payment process, ensuring all the transactions are completed correctly.

Actor: Client:

1. Calling Photographer: Clients initiate contact with the photographer to inquire about services.
2. Package Inquiry: Clients inquire about the different photographs available.
3. Booking Inquiry: Clients request information about the availability and details of booking packages.
4. Book Package: The client books a selected photography package.

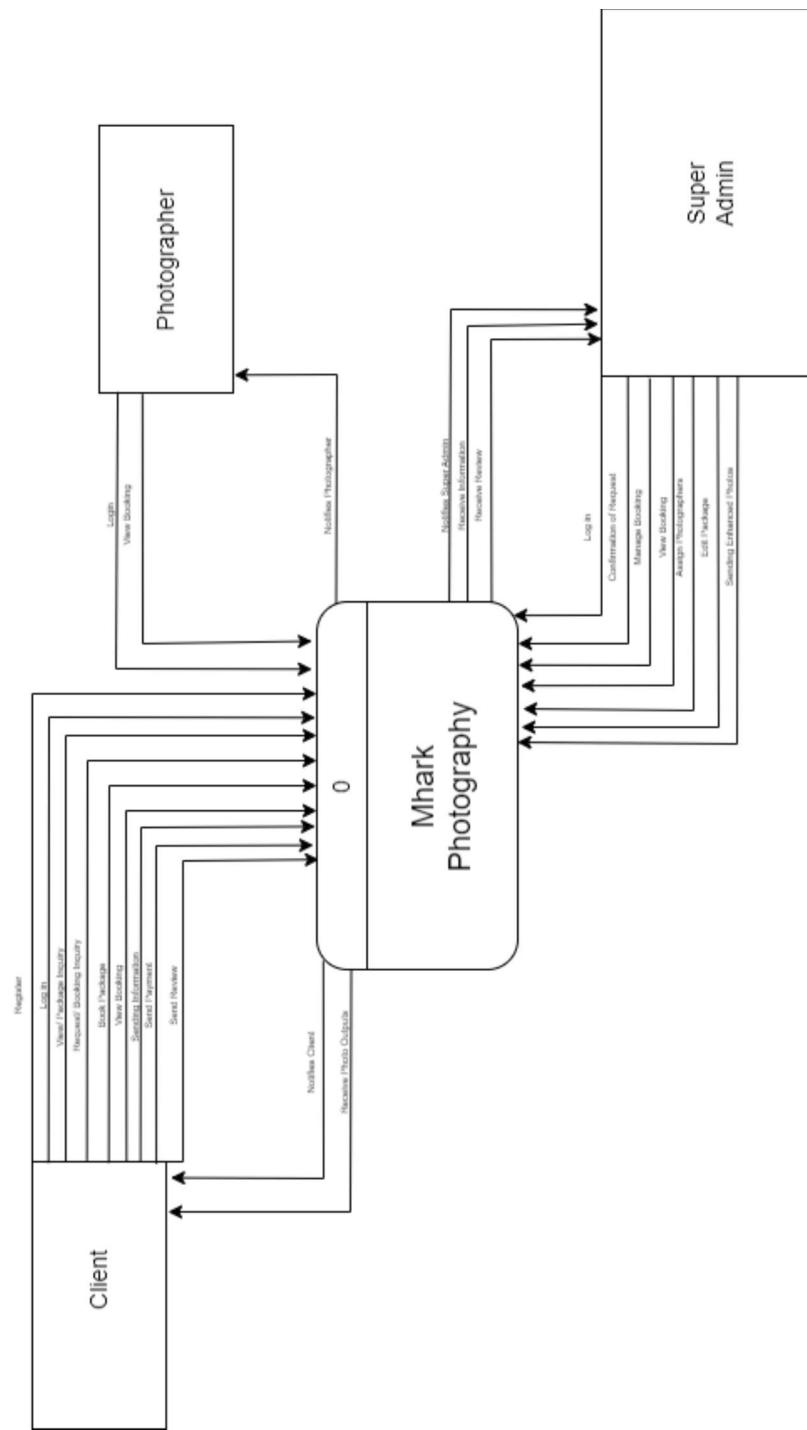


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5. View Booking: Clients can view the packages of the photographer's portfolios and set method of packages.
6. Set Meeting: The client schedules a meeting with the photographer to discuss details and expectations.
7. Signing Contract: The Client signs a contract to confirm the booking and agreement terms.
8. Make Payment: The Client makes the payment for the booked package.

Actor: Photographer

1. View Booking: photographers can view the packages of their portfolios and set method of packages.
2. Set Meeting: photographers are assigned by the super admin to discuss the following details and the preferred shots of the client.
3. Signing Contract: photographers are allowed to sign the contract for legal and administrative purposes.

**Figure 6.***Context Diagram of the Proposed System*



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Figure 6 shows the overview of user interactions within the proposed system. It outlines the functionalities available to clients, photographers, and super admin, illustrating key features of the system. Clients have the features over the system through view package, request booking, book, package, send information, send payment, and send review.

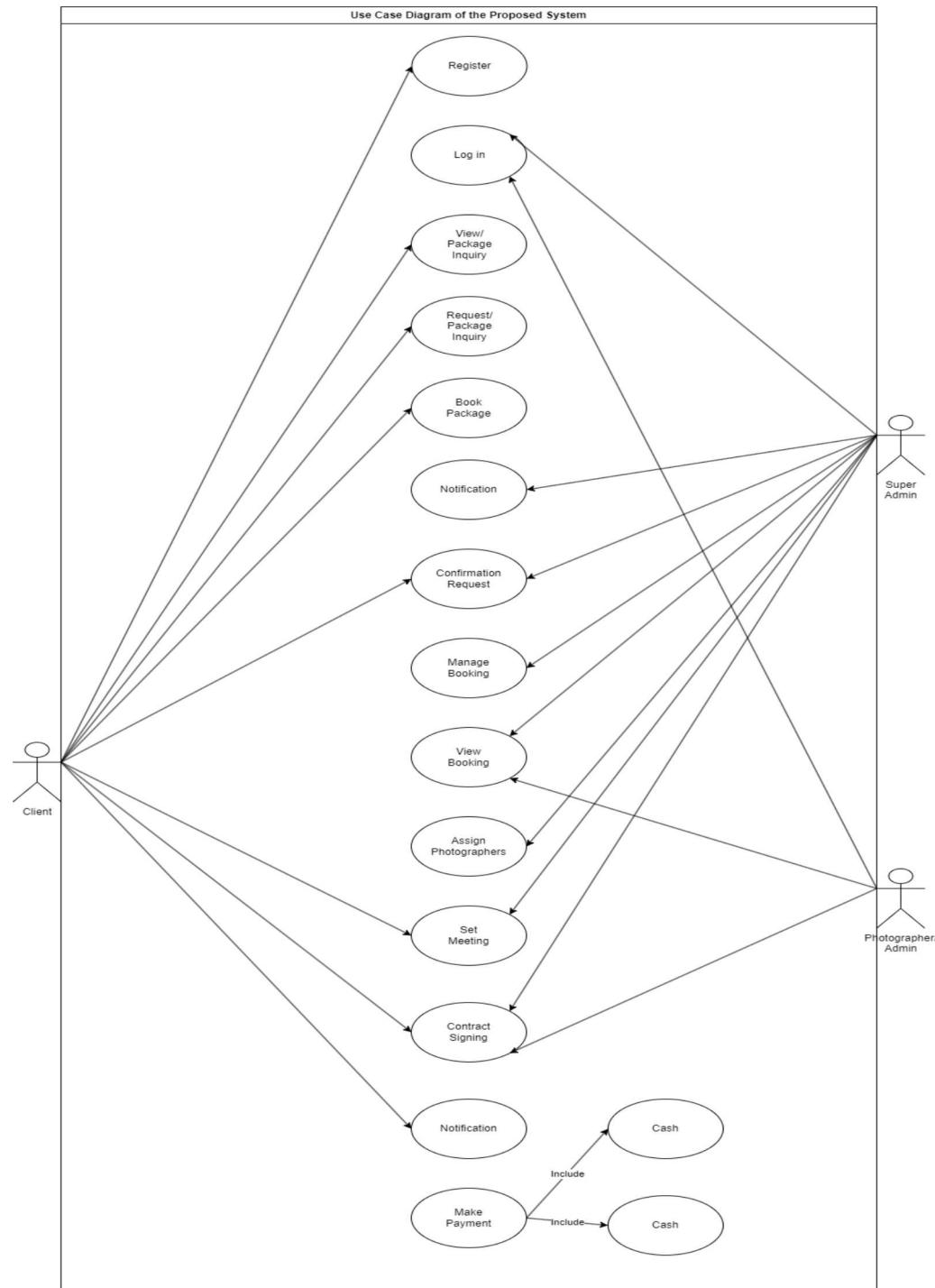
Photographers can view booking for their respective portfolios and other portfolios and notify photographer whether they have book process.

Super admins have extensive control over the system, encompassing confirmation request, management booking, view booking, assigning photographers, edit, packages, and sending enhanced photos for the system.

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Figure 7.

Use Case Diagram of the Proposed System





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Figure 7 shows the processes being taken on the proposed system for the business. These processes are performed by the owner and the potential tenant.

Actor: Super Admin

1. Login: The super admin logs into the system
2. Notification: The super admin can send notifications to clients and photographers regarding bookings and updates.
3. Confirmation Request: The super admin can send confirmation requests to clients for their bookings.
4. Manage Booking: The super admin can manage all bookings, including modifications and cancellations.
5. View Booking: The super admin can view all bookings in the system.
6. Assign Photographers: The super admin assigns photographers to specific bookings.
7. Set Meeting: The super admin sets meeting between the clients and photographers.
8. Contract Signing: The super admin oversees the signing of contracts between clients and photographers.
9. Make Payment: The super admin can process payments, including cash transactions.



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Actor: Photographer

1. View Booking: Photographers can view their assigned bookings and package details.
2. Log in: Photographers can log in to the system.
3. Set Meeting: Photographers are assigned by the super admin to discuss the details and preferred shots with the client.
4. Contract Signing: Photographers are allowed to sign contracts for legal and administrative purposes.

Actor: Client

1. Register: Client can register on the system to create an account.
2. View/ Packages Inquiry: Clients can view available packages.
3. Request/ Package Inquiry: Clients can request packages details or make inquiries.
4. Book Package: Clients can book packages based on their preferences/
5. Notification: Clients receive notifications, about their bookings and updates
6. Confirmation Request: Clients receive to confirm their bookings.
7. Set Meeting: Clients can set meetings for their further details.
8. Contract Signing: Clients are bound to sign the contract for their legal transactions.



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Figure 6.

Database Schema

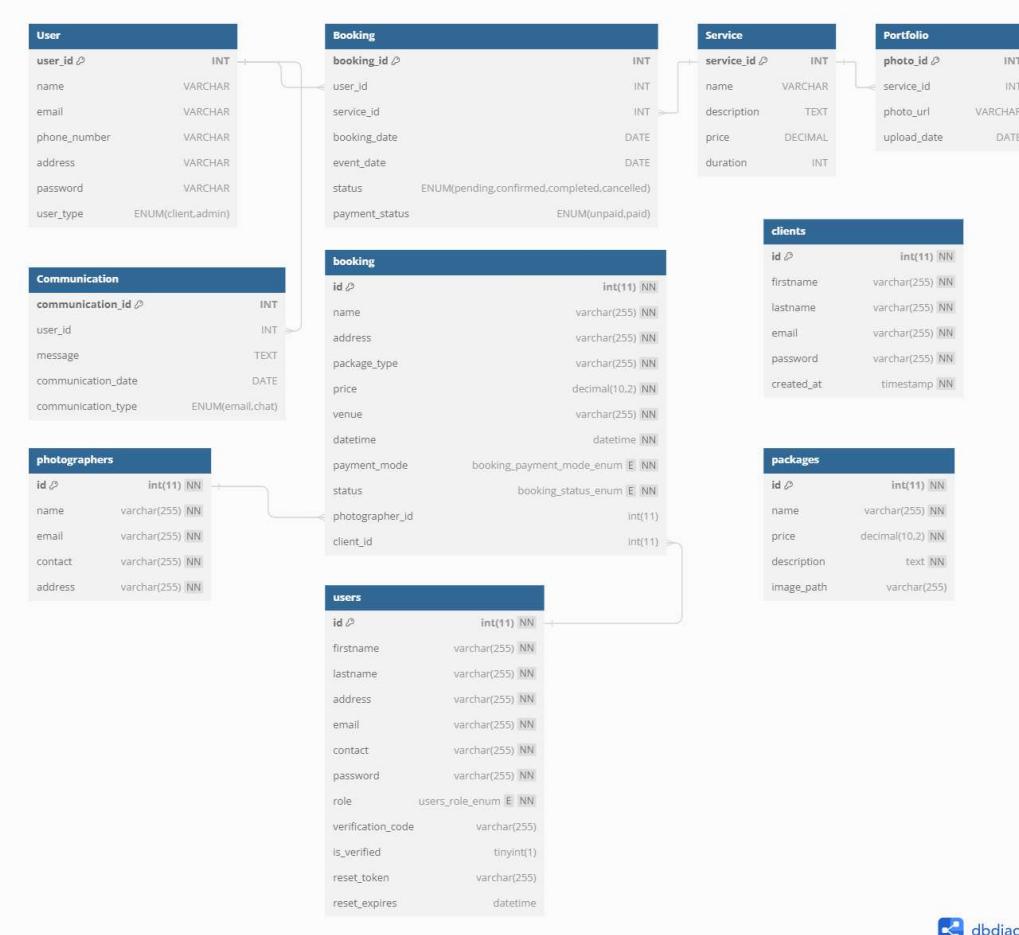


Figure 6 shows the proposed system's database structure designed to handle data efficiently within the proposed system. The database consists of tables such as "User", "Booking", "photographers", "users", "communication", "Service", "clients", "packages", "portfolios" and other tables related to archiving different data. These tables store user information, manage identification numbers, organize packages details, categorize package types sent by the inquirers to the



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owner. This will help the proposed system to perform necessary operations to achieve the objectives of the project.

Data Dictionary

Table 2.

Table: User

Attribute	Data Type	Description
User_Id	Integer, primary key	Unique identifier for users
Username	Varchar(50) not null	Unique username for the user
Password	Varchar(50) not null	Password for Log in
Email	Varchar(50) not null	Email address of the user. Email for login
Phone_number	Varchar(50) not null	Phone number of the user
Address	Varchar(50) not null	Physical address of the user
User_type	ENUM	Type of user, either 'client' or 'admin'

Table 2 contains user's stores information about users including clients and admins.



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Table 3.

Table: Booking

Attribute	Data Type	Description
booking_id	Integer, primary key	Unique identifier for each booking
user_id	Integer, primary key	Identifier for the user who made the booking
service_id	Integer, primary key	Identifier for the service being booked
booking_date	DATE	Date when the booking was made.
event_date	DATE	Date when the event will take place.
status	ENUM	Status of the booking ('pending', 'confirmed', 'completed', 'cancelled').
payment_status	ENUM	Payment status of the booking ('unpaid', 'paid').

Table 3 contains for the booking table stores details about each booking made by users.



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Table 4.

Table: Service

Attribute	Data Type	Description
service_id	Int, Primary key	Unique identifier for each service
name	varchar, not null	Name of the customer.
description	text	Description of the service.
price	decimal	Price of the service.
duration	Int, Primary key	Duration of the service in minutes.

Table 4 contains a service table to store information about the services offered.

Table 5.

Table: Portfolio

Attribute	Data Type	Description
photo_id	Int, Primary Key	Unique identifier for each portfolio.
service_id	Int, Foreign key	Identifier for the service related to the photo



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photo_url	Varchar(50),not null	Title of the portfolio
upload_date	Varchar(50),not null	Description of the portfolio

Table 5 shows the portfolio's table to store photographs related to each service for portfolio purposes.

Table 6.

Table: Communication

Attribute	Data Type	Description
communication_id	Int, Primary key	Unique identifier for each communication
user_id	Int, Foreign key	Identifier for the user involved in the communication
message	text	Content of the communication message.
communication_date	date	Date when the communication took place.



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communication_type	enum	Type of communication ('email', 'chat').
--------------------	------	--

Table 6 shows to store communication records between users.

Table 7.

Table: Booking (extended)

Attribute	Data Type	Description
Id	Int, Primary key	Unique identifier for each booking
name	Varchar(50), not null	Name associated with the booking.
address	Varchar(50), not null	Address related to the booking.
package_type	Varchar(50), not null	Type of package booked.
price	Decimal (10, 2)	Price of the package.
venue	Varchar(50), not null	Venue of the event.
datetime	datetime	Date and time of the booking.



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payment_mode	booking_payment_mode_enum	Mode of payment for the booking.
status	booking_status_enum	Status of the booking ('pending', 'accepted', 'declined').
photographer_id	Int, Primary key	Identifier for the photographer assigned
client_id	Int, Primary key	Identifier for the client making the booking

Table 7 to store detailed information about each booking including payment and status.

Table 8.

Table: Clients

Attribute	Data type	Description
Id	Int, Primary key	Unique identifier for each clients.
firstname	Varchar(50), not null	First name of the client.



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lastname	Varchar(50), not null	Last name of the client.
email	Varchar(50), not null	Email address of the client.
password	Varchar(50), not null	Password for the client's account.
created_at	Timestamp, current_timestamp	Timestamp when the client account was created

Table 8 shows to store information about clients who use the platform.

Table 9.

Table: Packages

Attribute	Data Type	Description
Id	Int, Primary key	Unique identifier for each packages.
name	Varchar(50),not null	Name of the package.
price	Decimal(10,2)	Price of the package.
description	text	Description of the package.
image_path	Varchar(50),not null	Path to the image related to the package



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Table 9 shows store information about the event packages offered.

Table 10.

Table: Photographers

Attribute	Data Type	Description
Id	Int, Primary key	Unique identifier for each photographer.
name	Varchar(50),not null	Name of the photographer.
email	Varchar(50),not null	Email address of the photographer.
contact	Varchar(50),not null	Contact number of the photographer.
address	Varchar(50),not null	Address of the photographer.

Table 10 shows to store information about photographers working on the platform.

Table 11.

Table: Users

Attribute	Data Type	Description



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Id	Int, Primary key	Unique identifier for each user.
firstname	Varchar(50),not null	First name of the user.
lastname	Varchar(50),not null	Last name of the user.
address	Varchar(50),not null	Address of the user.
email	Varchar(50),not null	Email address of the user.
contact	Varchar(50),not null	Contact number of the user.
password	Varchar(50),not null	Password for the user's account.
role	users_role_enum	Role of the user ('admin', 'photographer', 'client').
verification_code	Varchar(50),not null	Verification code for email verification
is_verified	tinyint (1)	Indicates if the user's email is verified
reset_token	Varchar(50),not null	Token for password reset
reset_expires	Datetime, not null	Expiration time for the reset token



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Table 10 shows to stores information about users with different roles on the platform.

Development and Testing

The researchers are using different approaches and tools in the development of the system. The researchers adopted a structured and thorough development testing approach. The development process primarily utilized Visual Studio Code as our integrated development environment (IDE), leveraging HTML, CSS, and JavaScript for the front-end, and PHP for the back-end development.



Description of the Prototype

Figure 7.

Landing Page

The screenshot shows the homepage of a photography website. At the top, there is a navigation bar with links for HOME, ABOUT, PHOTOGRAPHERS, SERVICES, CONTACT, and LOG IN. Below the navigation bar, the title "Mhark Photography" is displayed in a large, bold font. A brief description follows: "Mark's dedication to his craft and commitment to capturing timeless memories has made Mhark Photography a trusted name in the industry." To the right of the text is a large, light gray rectangular area with a prominent white 'X' drawn through it. Below the title is a button labeled "Explore our Services". In the middle section, there is a heading "About Us" with a three-line icon to its left. To the right of the heading is a search bar with a magnifying glass icon and the word "Search". Below the "About Us" heading is a graphic of three overlapping envelopes, each with a white 'X' drawn through it. To the right of the graphic is the text "Wedding Portfolio" and "Unlimited Shoot". Below this text are three small rectangular boxes containing the text "₱ 80", "₱ 100", and "₱ 150", each accompanied by a small graphic of a camera lens. Navigation arrows are positioned on either side of the envelope graphic, indicating that more services can be viewed by clicking them.

Figure 7 shows the landing page the users will see upon entering the website.

This includes information about the features of the website and the business. The purpose of the website is also including in the landing page.



Figure 8.

Photographers Portfolios

Photographers

Picture to

Name: John Kirby Hao
Address: 39 M.L Tagarao Street Barangay 3, Lucena City
Contact: 09306974738

About Me

A bio gives your audience an idea of who you are, your education, experience, and your inspiration and/or motivation for being a photographer.
A bio should describe your specialties and an overall aesthetic of your work while including a list of current and previous clients.

Experiences:

Contact Me



Figure 8 shows the portfolios of the photographers and the description of their skills for their photography skills. This shows the customer that photographers from the team can shoot for the customer's liking.



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Figure 9.

Services

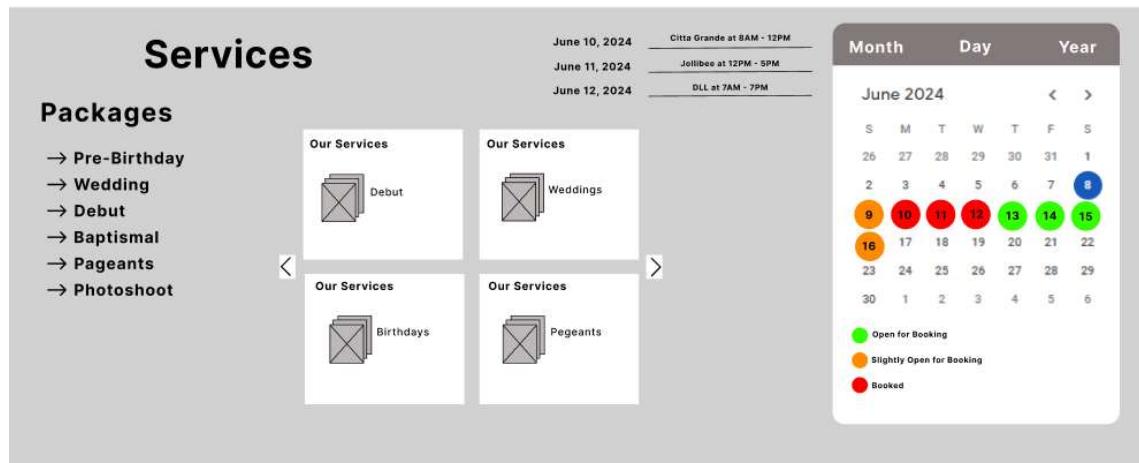


Figure 9 shows the packages and the book of the customers. This shows the awareness of the customers if they want to book off the existing dates.



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Figure 10.

Login Pages

Sign In

Email:

Password: 

Remember Me

LOG IN

[Forgot Password?](#)

[Create an Account?](#)

Mhark Photography Admin

Sign In

Email:

Password: 

Remember Me

LOG IN

[Forgot Password?](#)

Figure 10 shows the log in panel for both admin and users. It requires them to input username and password. If there are no accounts yet, they can click sign up text at the bottom part of the login panel to register.



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Figure 11.

Photographer's Lists

The figure displays four identical-looking web page snippets for a photographer named John Kirby Hap. Each snippet includes:

- A profile picture of the photographer.
- Contact information: Name: John Kirby Hap, Address: 39 M.L. Tagapao Street Barangay 3, Lucena City, Contact: 093906874738.
- An 'About Me' section with the following text:

A bio gives your audience an idea of who you are, your education, experience, and your inspiration and/or motivation for being a photographer.
A bio should describe your specialties and an overall aesthetic of your work while including a list of current and previous clients.
- A 'Picture to' section with a placeholder image labeled "Picture to".
- An 'Experiences' section showing four small thumbnail images.
- A "Contact Me" button.

Figure 11 shows the photographers about their skills and portfolios of the website.



Figure 12.

Admin Dashboard

The screenshot shows the Admin Dashboard for 'Mhark Photography'. At the top left is the logo 'Mhark Photography'. To its right is a search bar with the placeholder 'Search'. Below the header is a navigation menu with three items: 'Dashboard' (selected), 'Gallery', and 'Booking List'. The 'Dashboard' item has a sub-menu with four items: 'Dashboard' (selected), 'Gallery', and 'Booking List'. The main content area features several large, light-gray rectangular boxes, likely placeholders for data or charts. One large box is positioned below the navigation, and four smaller boxes are arranged horizontally above a larger one.

Figure 12 shows the Admin Dashboard which has the business insights and the notification of the booking in the system.



Figure 13.

Admin Gallery

The screenshot shows a web-based administration interface for a photography service. At the top left is the logo "Mhark Photography". To its right is a search bar with the placeholder "Search". Below the header, there is a navigation menu on the left with three items: "Dashboard" (represented by a dashboard icon), "Gallery" (represented by a camera icon), and "Booking List" (represented by a calendar icon). The main area is titled "Gallery" and displays a grid of 20 empty gray boxes, representing where photos would normally be displayed. The overall layout is clean and modern, typical of a professional website's back-end administration panel.

Figure 13 shows the Admin Gallery which has business insights and the photos on the website.

**Figure 14.***Admin Booking List*

The screenshot shows the 'Booking List' section of the Mhark Photography admin dashboard. At the top, there is a logo for 'Mhark Photography' and a search bar. Below the search bar, there are three navigation links: 'Dashboard', 'Gallery', and 'Booking List'. The 'Booking List' link is selected and highlighted in blue. The main content area displays a table titled 'Booking List' with the following data:

#	Photographer	Date	Packages Type	Location	Status	Booked Type
1.	Peter Ventocilla	June 10, 2024	Wedding	St.Ferdinand Cathedral	● Reserved	<input checked="" type="checkbox"/> Confirm <input type="checkbox"/> Cancel
2.	John Kirby Hao	June 11, 2024	Pre-Birthday	Jollibee	● Not Reserve	<input checked="" type="checkbox"/> Confirm <input type="checkbox"/> Cancel
2.	Xyrus Uy	June 12, 2024	Pageants	DLL	● Not Reserve	<input checked="" type="checkbox"/> Confirm <input type="checkbox"/> Cancel

Figure 14 shows the admin booking list that if the photographers are available on this date and time to book for the customer.