RETICENCE AND ENDOWMENT SYSTEM

FOR SILONAY MANGROVE

A Research/Capstone Project

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Chapter I

INTRODUCTION

Project Context

Silonay Mangrove Conservation and Ecopark is a 42-hectare mangrove conservation and ecopark in Barangay Silonay, Calapan City, featuring a 350- cadence walk leading to a 6- cadence high palace with a panoramic view of the Silonay River and the neighboring ocean(NM Pampolina,2020). As citizens or even the one who manage the mangrove of this place are needed some help to improve the system that provides each people with what they want in the Silonay Mangrove. On this official website it allows the admission to access all the information that they need for the people who will use the website.

The important role of the Reticence and Endowment System is to build a website that will capable to fasten the processing of reservations for tour visiting. Because of the pandemic there's a way for a new normal way for these. Also based on a new protocol that there is a limit for the tourist and they must be aware and less hassle for every people. One of the most commonly reported issues in planning and managing places with high biodiversity value in the Philippines is the lack of financial assistance for resource managers to maintain protected area management (PAs). So, we create a donation site for all the good hearted people who wants to help in improving the beautiful scenery of the Silonay Mangrove Park. The goal of conservation financing is to generate revenue that may be used to ensure proper planning and management of

high-value biodiversity regions, often indefinitely (RM SANDALO,2017).

According to (Fatwa Ramdani,2017) Websites used for university selection entrance (admission) are among the most frequently visited websites in daily activity, so their performance is critical. The ability of web applications to control or process user requests determines their dependability. This measurement is used to determine response time, throughput, capability, and system scalability in response to a given workload. This study contributes to the presentation of testing performance concepts, goals, targets, types, and tools of Apache JMeter, which is used for web assessment, including the detection of mistakes and errors related to application performance and the assistance in improving the level of application performance as expected. This study collects data using the qualitative method, which includes in-depth interviews, observation, and documentation analysis. Purposive sample of empowerment advocates, community leaders, village government, business organizations, academics, and visitors are used to determine it. The goal is to create an official website dedicated to the ecotourism potential of mangrove forests. (Asmin, F. 2017).

In the same way, the Internet has a huge effect on profitability. Because of the Internet, marketing, advertising, and promotional initiatives have already transformed. As more and more tourists utilize the internet, strategists have taken advantage of it to achieve a competitive advantage. It has changed the competitive

landscape by supporting coastal ecosystems in establishing themselves on the internet (Pressey, R. L. (2012). The donation and reservation system are a service for people who want to donate money to the Silonay Mangrove Fund, which will help to preserve the natural beauty of the area. This article will look at the entire functionality of the system that was designed, as well as the necessity for a centralized, digitized, online Reticence and Endowment System for Silonay Mangrove (M Alshabanah, 2018). Despite the fact that Southern Luzon is the most extensive, it is extremely vulnerable in the country's mangrove areas in the face of anthropogenic impact and natural disasters in Mangrove planting is a regular activity in all of its provinces. Planting sites are typically located along the shoreline using pieces of the Rhizophora genus (Salmo & Duke 2010).

This study aims to develop an official website that will help Silonay mangroves to promote and advertise the place for the tourist, making this process much more user-friendly, efficient, and time-saving, internet advertising, public relations, and sales promotion efforts. Digitalization and online marketing are becoming essential in the industry of tourism. Tourists use the internet to find information, make and pay for bookings, and look for activities and events in the destinations they visit, and to raise a fund by donation that will be given for the improvement of Silonay Mangrove. More and more people are spending their leisure time on the internet, which allows them to learn about events in other countries, plan upcoming trips, and pay for them with a few

clicks without leaving their homes. This website will help Silonay mangroves to encourage tourists to one of their tourist destinations.

Objectives of the Study

General Objective

The main objective of this study entitled "Reticence and Endowment System for Silonay Mangrove", is to create an official website where it can help to promote, preserve and also conserve the only estuary in Calapan City, Oriental Mindoro.

Specific Objective

Specifically, it aims to achieve the following objectives:

1) To provide a system that create an online reservation that scopes online reservation for specific event such as kayaking, planting mangroves, board-walking and catering.

2) To provide notification to the public whether it is high tide or low tide.

3) To provide Booking confirmation and/or notification via email for the user's reservation.

4) To provide a search engine where it will allow the users to search for the specific activity that they wanted to do in the website.

5) To generate reports for the donation and income received and manage the availability for appointments and reservation period.

6) To manage the availability for appointments and reservation period. Also, to monitor the population number of mangroves planted.

7) To test and evaluate the performance of the development project in ISO 25010 criteria. Also, to acquire an implementation plan.

Scope and Limitation of the Study

The study entitled "Reticence and Endowment System for Silonay Mangrove" is a system that monitors the status of an area in Silonay Mangrove. This system covers those who make reservations when they go, including reservations for activities like kayaking, fishing and mangrove planting. The system will serve as a bridge to advertise Silonay Mangrove. There will also be a section for donations to further maintain the renovation of its tourist spot. It also provides reports for donations and total income enabling users to know the weekly and monthly results. In order to provide a solution to speed up the booking and advertising process, the developer to evaluate the system in terms of functionality, reliability, usability, maintainability and effectiveness, and efficiency through ISO 9126. For the limitations, if you don't have internet connection you can't access this official website. And for the user if they haven't register to this website as user they can't see the one of the core in this system which is the reservation only the donation. In user if they register and not yet approved by the admin they can't log in their account.

Significance of the Study

The result of this study will benefit the following:

Corporation. It is beneficial to the corporation because they can gain profit from it. And also, they can enhance the area and they can advertise the place by using the project.

Residents. This helps the residents to identify their place. Through this system, it is possible for the tourist spot to hire those who will work for them.

Community. It will serve as the community guide on reservations and protocols to be done within the mangrove area.

Local Government. This study is beneficial to the local government as this helps to spread information needed or inquiries.

Researchers. The study will benefit the researchers wherein it will help them to explore their knowledge on the system they will be creating.

Future Researchers. This research will help the future researchers as it can be used as a guide and references while conducting research that is connected to the research study.

Conceptual Framework

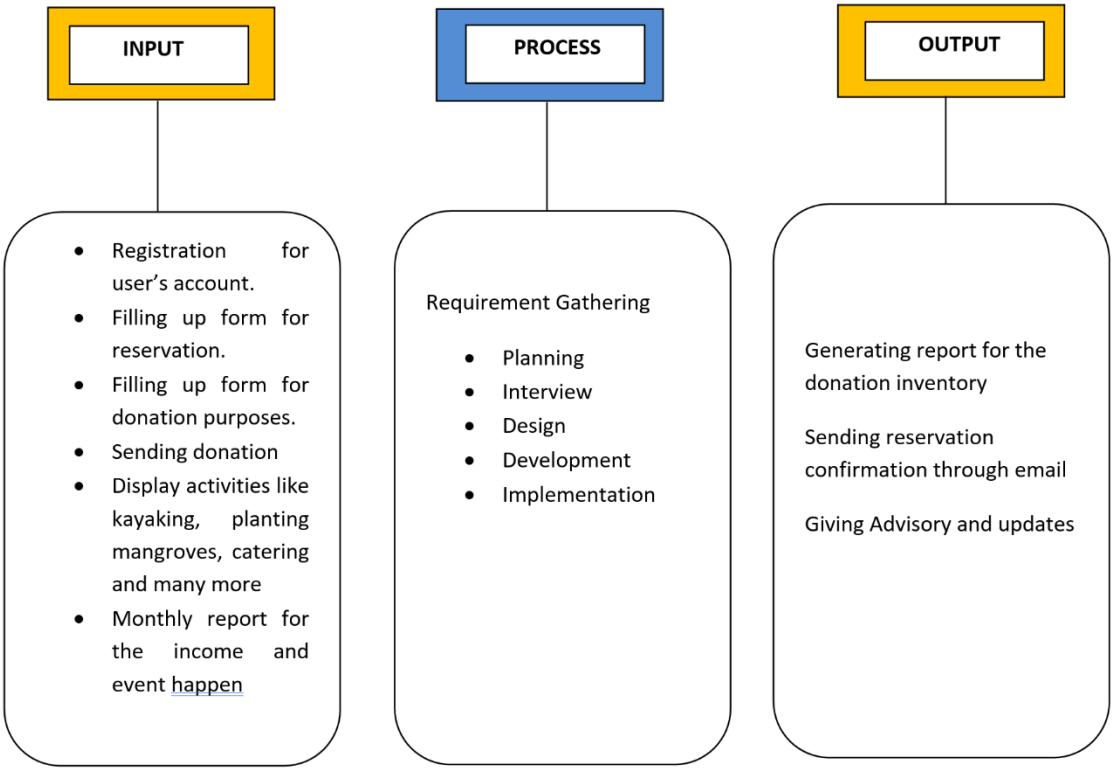

Figure 1. Conceptual Framework

Figure 1 shows the concept of processing data from input to output. Input requires the filling up of information provided for users; the process goes through the analysis and implementation. While, output implies the result and/or outcomes of the whole process. Which is once tested and planned by the process implied from the beginning.

Definition of Terms

In order to easily understand the terms used in the system the following are operationally defined.

- **Reticence**- the way of reserving some events from the website.
- **Endowment**- A transfer generally as a gift of money to an organization for a purpose.
- **Advertisements** - the act or process of persuading the viewers to something that they will expected.
- **Verification** - The process of confirming or checking the accuracy of the state of being confirmed or having the accuracy of checked.
- **Website** - A collection of web pages and related content that is identified by a common domain name and published on at least one web server.

Chapter II

REVIEW OF RELATED LITERATURE

This chapter discusses different literature and studies from foreign and local sources which are connected to the present study that the developers are conducting. It focuses on helping the developers for their study. This focuses on the capability of creating Official Website, to implement technology in Silonay Mangrove. Literature for this study come from articles, journals, PDF or E-books and other foreign research conducted.

Foreign Literature/Studies

DH Kim, et. al. (2021) discussed in their study about the Korean Red Cross (KRC) developed a mobile simple payment system construction strategy, as well as its execution method and results, which are presented in this study. This study aims to present specifically how online donation invigoration should be led and how the simple payment system can be used by non-governmental associations (NGOs) and applicable institutions that need to encourage benefactions and donation conditioning in response to changes in the temporal terrain. As a result of the case study, the older's use of mobile notice authentication and simpleminded payment was authentically low. However, like other digital services, had been used for donation, If an online system like other digital services, had been used for donation, this study discovered

that an increase in education for e-literacy in smartphones and services for the elderly is critical.

Giorgos Kordopatis-Zilos,et. al. (2019) in their study the widespread availability of user-generated content on social media platforms has recently opened up new avenues for investigating and comprehending the geospatial dimensions of real-wor ld phenomena and events. However, the vast majority of user-generated content is devoid of accurate geographic information (in the form of latitude and longitude coordinates). As a result, the problem of multimedia geotagging, or extracting location information from user-generated text items when this information is not explicitly available, has piqued the interest of researchers. We present a highly accurate geotagging approach based on refined language models learned from massive corpora of social media annotations for estimating the locations alluded to by text annotations. Using various data sets and comparing it to a number of state-of-the-art systems, we demonstrate the proposed approach's consistently superior geotagging accuracy and low median distance error. Wen, A. (2020) stated in an article published in Digital Society about the Artificial intelligence: Robot Waiters that robot waiters are only pieces of metals and circuits that were put together and follows the set of instructions that were programmed on them. These robots often make mistakes and breakdown like any other technologies proving that they can only do some tasks that human can do but they can never replace them. Mass, M., et. al,(2017) stated in his article entitled Snail Mail Beats Email Any Day: On Effective Operator Security Notifications in the Internet to protect users' logins and passwords from intruders

and hackers, website owners and administrators provide specific guidelines to users on how to create secure and strong passwords using a mechanism known as Password Checkers. These guidelines assist users in creating strong passwords; however, these guidelines are also becoming raw input for hackers because they clearly show which policy the password was generated based on, increasing the risk for brute force attacks with greater ease.

M D Rahmatya et. al, (2020) on their article Design of Reservation Information System. The goal of this research is to create a reservation information system. The object-oriented system approach method was used to analyze the system, and the waterfall system development method was used. The system was designed not only as a promotional medium, but also as an information system that allows customers to book event places and make payments via the website. As a result, the findings of this study can assist customers in obtaining adequate information about tourist sites and making reservations at any time and from any location.

According to Halkiopoulos et.al (2020), study focuses on the exploration of knowledge for online booking systems as well as the perspectives of local students-users on the booking rate based on these online systems. Another focus of this project is to investigate the decision-making process (emotion-focused) that people use to select a tourist destination via online booking systems. Three scales were used for this study: the E-WOM and Accommodation Scale, the Emotion-Based Decision-Making Scale, and the Trait Emotional Intelligence Scale. Survey data were collected, preprocessed,

and analyzed using Data Mining techniques to evaluate the results. More specifically, classification and association algorithms were used to describe hidden patterns. The findings demonstrated how the advancement of the Internet has significantly altered the market conditions of tourist organizations, providing new tools for tourism marketing and management. It enables interaction between tourist organizations and users, which changes the entire process of tourism development, management, and marketing. There are numerous opportunities for further research in this field, because the complex nature of human behavior, the constant changes in the environment and the various e-technologies provide numerous opportunities for tourism companies to engage in innovative activities and make use of new and previously unrecognized opportunities.

According to Chen, Y.-C., & Shih, C.-H. (2019), Mangrove management has been a long-term concern in coastal wetlands, particularly for original near-shore wetlands and environments devoid of mangrove forests. Despite an increase in studies outlining the environmental, social, and economic benefits of mangrove forests, few studies have looked at sustainability and policies for reducing or removing mangroves. This study investigates the current strategies for the invasion, conservation, and removal of mangroves for wetland sustainability. A total of 19 mangrove sites were identified in order to develop the main patterns and factors for destruction or protection in estuaries on Taiwan's western coast. When it comes to traditional wetland management, having protected areas under certain laws is a good way to go for mangrove sustainability. Furthermore, the Siangshan Wetland indicated that mangrove removal can be a positive conservation

case as an appropriate habitat rehabilitation strategy for benthic organisms due to the invasion of mangroves in the mudflats. Under certain conditions, mangrove removal can provide valuable insights into the long-term viability of wetlands. These findings help to accelerate the global transition to sustainable management of mangrove wetlands. The study also proposes the following strategies for further reducing or removing mangroves in coastal wetlands that lack mangrove forests: (1) conducting studies to assess the effectiveness of mangrove removal; (2) implementing policies to ensure positive influences on coastal wetlands; and (3) providing mangrove conservation education for sustainable development.

As stated by Otero et.al (2017), Traditional forest inventory data collection methods have typically been used to retrieve biophysical properties of mangrove vegetation (e.g., height and above ground biomass). Recently, the availability of Unmanned Aerial Vehicles (UAV) with various types of sensors and capabilities has increased, allowing for the expansion of methods for retrieving biophysical properties of vegetation. The purpose of this study, which focused on the Matang Mangrove Forest Reserve (MMFR) in Perak Province, Malaysia, was to investigate the use of UAV imagery for retrieving structural information on mangroves. We concentrated on a 90-year-old structurally complex protective forest zone and a 15-year-old productive forest zone that had been silvicultural managed for charcoal production. The UAV data was collected in June 2016. The median tree stands heights retrieved from the UAV and field data in the productive zone were 13.7 m and 14 m, respectively (no significant difference, p-value =.375). Taking only the upper

canopy into account, the median tree stands heights retrieved from the UAV and field data in the protective zone were 25.8 and 16.5 m, respectively (significant difference, p-value =.0001). Using UAV data, the above ground biomass (AGB) in the productive zone was estimated to be 217 Mg ha1 and 238 Mg ha1 using ground inventory data. The AGB in the protective zone was estimated to be 210 Mg ha1 using UAV data and 143 Mg ha1 using ground inventory data, with both estimates taking only upper canopy trees into account. These findings suggested that UAV data were most useful for determining canopy height and biomass in forests with a single dominant layer that were relatively homogeneous. A set of guidelines is presented for enabling the use of UAV data for local management, including suggestions for how to use these data in conjunction with field observations to support management activities. This approach would be applicable in other areas where mangroves occur, particularly because these are often remote, inaccessible, or difficult to work in.

According to Almeida, F., Almeida J., Mota, M. (2019), Online booking services for lodging are becoming increasingly important in the tourist services offered by tour operators. The purpose of this study is to identify the main dimensions that characterize each payment method and, for each of them, to characterize the tourists' perceptions of the main advantages and limitations associated with them. Through the use of an online survey, this study employs a quantitative analysis methodology. A total of 238 responses were considered in the final sample. Stata software was used to analyze the data, and statistical inference methods based on analysis of variance were used. Based on the findings, we can conclude that cash payment is the payment method with the best

availability and ease of use. However, it is also the least secure of the payment methods under consideration. The debit card, for its part, is regarded as the most secure method. The purpose of this study was not to examine the evolution of these payment methods over time. Furthermore, other emerging payment methods such as NFC, QR codes, and mobile wallets have recently gained prominence and may be worth including in future studies. The findings are primarily relevant for tourism agencies, demonstrating that tourists' perceptions are primarily influenced by their age and the number of trips taken.

As stated by Emran et.al (2018), Knowledge Management (KM) processes are critical in the implementation of various Information Systems (IS). A number of review studies were conducted in order to gain a better understanding of the current research trend in KM processes. This issue, however, requires further investigation from a variety of angles. Previous research has been found to overlook the examination of KM process studies in relation to ISs. The current study systematically reviews and sheds light on KM processes studies related to ISs, with the goal of providing a comprehensive analysis of 41 peer-reviewed journal articles published between 2001 and 2018. The study's main findings show that knowledge sharing is the most common KM process studied, followed by knowledge acquisition and knowledge application. Furthermore, questionnaire surveys were discovered to be the most commonly used research methods for data collection in the context of KM processes. Furthermore, 78 percent of the studies examined yielded positive research results. In terms of IS type, the majority of the studies examined looked into the impact of KM processes on E-business

systems, knowledge management systems, and IS outsourcing, in that order. Additionally, in terms of data collection, the majority of the analyzed studies were primarily focused on the participants who are IS executives/managers. Furthermore, most of the analyzed studies that achieved positive outcomes were carried out in China. To that end, this review study attempts to demonstrate and detail the recent increase in the interest and the advancement made in KM processes research considering ISs studies, which form an essential reference for scholars in the KM field

Todri et. al, (2019), To improve advertising effectiveness, digital advertisers frequently use technology-enabled advertising-scheduling strategies such as ad repetition at the individual consumer level. However, anecdotal evidence suggests that such strategies may irritate consumers, as evidenced by the popularity of ad-blocking technologies. This trade-off between effective and annoying display advertising is captured in the research. Proposes a hidden Markov model that allows us to investigate the long-term impact of display advertising on consumer purchase decisions as well as the potential for persistent display advertising to irritate consumers. Furthermore, we investigate the structural dynamics of these advertising effects by making them contingent on the latent state of the funnel path in which each consumer resides. Findings show that there is a trade-off between generating interest and causing annoyance in consumers; whereas display advertising has a long-term impact on moving consumers further down the purchase funnel, persistent display advertising exposures above a certain frequency threshold can have a negative effect by increasing the likelihood that consumers will be annoyed.

Investigating the dynamics of these annoyance effects, we discover that consumers at various stages of the purchase funnel have significantly different tolerance for annoyance stimulation. Findings also show that the format of display advertisements, the level of ad creative diversification, and consumer demographics all help to moderate consumers' thresholds for annoyance elicitation. Advertisers, for example, can reduce annoyance elicitation as a result of frequent display advertising exposures by using static rather than animated display ads and by diversifying the display ad creatives shown to consumers. The paper adds to the body of knowledge on digital advertising and consumer annoyance, and it has important managerial implications for the online advertising ecosystem.

According to Rossi et al. (2017), Despite growing recognition of the importance of mangrove conservation, degradation has continued over the last two decades due to ineffective and non-inclusive decision-making processes based solely on economic factors. The current study aims to provide tools for mangrove conservation management and policy by investigating the sociocultural valuation of mangrove ecosystem services through a case study in northeastern Brazil, an area heavily impacted by shrimp aquaculture. We used a variety of methods to supplement academically identified ecosystem services with those perceived by the public. We examined these locally perceived mangrove services in relation to community livelihoods and discovered four additional cultural services related to the preservation of Traditional Ecological Knowledge (TEK), the formation and maintenance of social relationships, personal satisfaction, and mental and physical relaxation. This demonstrates that

local people have a symbolic relationship with the mangrove forest that extends beyond the material approach typically used to assess ecosystem services. Such findings suggest that policymakers should consider the socio-cultural dimension of mangrove services as an essential criterion for confronting the key challenges in coastal ecosystem conservation.

As stated by Cornell et al (2018), Mangroves, seagrass meadows, and salt marshes, collectively known as "Blue Forests," are among the world's most valuable and productive coastal ecosystems. A recent review of Blue Forest valuation research identified mangroves as the most frequently studied of these ecosystems, but the literature reveals several gaps in terms of geographic location of studies, methods used to value the services, and, most importantly, a lack of valuation for cultural services. To better understand this, we analyzed the studies dealing specifically with mangroves from the original literature review to quantify what was valued, where, how it was valued, and the variation in published values. We then use this data to synthesize our current level of knowledge on the type and value of services provided by mangroves, discuss data gaps, and specifically address the collection of data relevant to cultural ecosystem services (CES). Our findings shed light on two major issues plaguing the mangrove valuation literature: the overuse of benefit transfer in valuing mangrove ecosystem services and a lack of attention paid to the CES provided by mangroves. The literature on mangrove valuation is not yet robust, with estimates of many ecosystem services, including CES, such as spiritual and aesthetic value, lacking. Most published studies concentrate on a small number of ecosystem services

based on the availability of benefit transfer values and the ease with which values can be measured using market prices. As a result, many ecosystem services that cannot be monetized but are often equally important to local communities are ignored. Given the wide range of ecosystem services provided by mangroves and the variety of valuation methods that must be used collectively, we argue that conducting effective valuation studies necessitates a multi-disciplinary approach involving anthropologists, social scientists, ecologists, and economists. Involving local stakeholders thoughtfully and thoroughly in valuation studies and the resulting policy discussions leads to a more holistic understanding of the services mangroves provide, as well as viable solutions with an increase in local willingness to act in accordance with those solutions.

According to Fithor et al. (2018), Mangrove ecosystem management is an important agenda item in the conservation of coastal tourism spots. The purpose of this study was to look into the recreation activities and mangrove forest strategy in Maron Beach, Tambakharjo, Semarang Municipality. This study used a survey method with direct interviews and field observations. The respondents represented the entire population of the study area. The cluster random sampling technique was used to select samples for this study. Data were gathered through observations, interviews, and document review, followed by a SWOT analysis. The findings revealed that the opening of the Maron Beach recreation area had some negative effects on the post-rehabilitation of mangrove ecosystems, including a reduction in the function of mangroves in protecting the shore from coastal abrasion, a reduction in

the ability of wind abrasion protection, a weakening of environmental conditions, a decrease in the number of visitors, and a decrease in fish production. Mangrove forest management should be progressive, which means that research should be conducted in poor and unstable conditions, allowing the market to continuously expand, enlarge market growth, and maximize progress. This condition can be improved by implementing a non-overlapping effort.

According to Rossi et al. (2017), Despite growing recognition of the importance of mangrove conservation, degradation has continued over the last two decades due to ineffective and non-inclusive decision-making processes based solely on economic factors. The current study aims to provide tools for mangrove conservation management and policy by investigating the sociocultural valuation of mangrove ecosystem services through a case study in northeastern Brazil, an area heavily impacted by shrimp aquaculture. We used a variety of methods to supplement academically identified ecosystem services with those perceived by the public. We examined these locally perceived mangrove services in relation to community livelihoods and discovered four additional cultural services related to the preservation of Traditional Ecological Knowledge (TEK), the formation and maintenance of social relationships, personal satisfaction, and mental and physical relaxation. This demonstrates that local people have a symbolic relationship with the mangrove forest that extends beyond the material approach typically used to assess ecosystem services. Such findings suggest that policymakers should consider the socio-cultural dimension of

mangrove services as an essential criterion for confronting the key challenges in coastal ecosystem conservation.

Local Literature/Studies

As stated by Quevedo et al. (2020), Mangrove ecosystems, which provide a variety of benefits to local communities, are vulnerable to both natural and man-made threats. In the Philippines, existing policies and decision-makers are geared toward integrating physical, ecological, and social elements in the management of these ecosystems. To date, however, the link between policies and the direct beneficiaries (i.e. coastal communities) of ecosystem services has largely gone unexplored from a local perspective using quantitative methodology. As a result, we conducted household surveys in Eastern Samar's coastal villages. By doing so, we provide scientists and policymakers with basic information on the following elements of one of the blue carbon ecosystems, mangroves: (1) resource utilization, (2) level of awareness on ecosystem services and existing management plans, and (3) perceptions of natural and anthropogenic threats. The survey results show that social demography and local awareness influence the utilization of mangrove ecosystem services. The trends in locals' utilization and perceptions of the various ecosystem services may provide evidence for their active participation in protecting these resources. This study suggests that, in order to enable more holistic and sustainable management, coastal communities should be included in contextualizing management plans, particularly in areas frequently visited by natural hazards.

According to Wodehouse (2020), Mangroves are an assemblage of salt-tolerant trees and plants found in the intertidal coastal zones of tropics and subtropics countries. Because of the wealth of ecosystem goods and services they provide, healthy mangroves can greatly aid the sustainable existence of local coastal villagers. However, much of this ecosystem has been degraded or converted to other land uses. Many government mangrove agencies are realizing that, due to the diffuse nature of this ecosystem and limited government resources, they must collaborate with local communities based within or near these forests, encouraging some form of community management and participation to counter mangrove losses.

According to Borres et.al (2021), The Philippines was regarded as one of the first few countries to begin using mobile money or simply digital payments. Because the country's development was uneven as it began in the technological field, the government collaborated with its related sectors to fully facilitate and promote the use of digital payments. Adapting to this type of payment system may be difficult at first, but as progress and development continue, people were able to manage all challenges encountered, resulting in a sudden increase in usage of digital payments such as GCash, Paymaya, and Debit Card applications, as these were considered to be payment options that are widely used in the country in completing any transaction. The researchers' goal in this study is to determine which of the three (3) payment options is considered to be the most beneficial in terms of aesthetics, benefits/rewards, ease of use, loading convenience, range of transactions, security, and service fees by administering an online survey to GCash, Paymaya, and

Debit Card users to assess their customer satisfaction with the applications.The data gathered was used in the Analytical Hierarchy Process, which was carried out with the help of the software Expert Choice. The criteria weights and local weights obtained from the software were used to calculate the global weight for each of the payment options in order to determine which of the three is the best option. The factor of security was highly prioritized and considered by its users based on an analysis of the related literature and gathered data using the criteria used by the researchers.

According to Buitre et al. (2019), The Philippines is rich in mangrove forests, containing half of the world's total mangrove species. However, the country's vast mangrove areas have declined to about half their original extent in the last century. Recognizing the ecological benefits that mangrove forests can provide, a government initiative was launched in the 1970s to protect the remaining mangrove forests. Over a 30-year period, we examined two mangrove areas in the Philippines: Coron in Palawan and Balangiga-Lawaan in Eastern Samar. Four landscape metrics were used to classify and spatially analyze sets of Landsat images from 1987 to 2016. Additional analyses of the spatiotemporal dynamics of mangrove areas were carried out. The impact of typhoon landfall on mangrove areas was also studied qualitatively. Spatiotemporal changes show that, despite being designated as protected areas, the Coron and Balangiga-Lawaan mangrove forests are still losing mangrove area. Both typhoon occurrence and management practices can be blamed for mangrove area shrinkage and expansion. Overall, our research identifies which mangrove forests require more responsive

action and provides a new perspective on the spatiotemporal dynamics of these mangrove areas.

Huxham(2017), Mangrove forests provide a variety of services, some of which are used primarily or exclusively by locals, who are frequently the poor and marginalized. In this context, 'local ecosystem services' are defined as those that benefit people who live within tens of kilometers of a forest. The provision of fuel, timber, fodder, crustacean, fin-fish, and shoreline protection services is examined, as are their links to global patterns in biodiversity and poverty. Higher floral and faunal diversity in the Indo-West-Pacific correlates with a greater range of species exploited for fuel, timber, crustaceans, and coastal protection. While poverty is a strong predictor of reliance on some local services, such as fuel wood, it is not related to others, such as fin-fish; thus, increased income may 'liberate' local people from reliance on some services, but they must rely on others to generate that wealth. The vulnerability of these services to climate change is determined by geomorphological, biological, and social factors at the local level. Forests with abundant sediment and fresh water, as well as fauna with relatively simple life cycles, will most likely be more resilient. Greater wealth (or investment) may enable people to transition from capture to aquaculture fisheries and to be more adaptable in the face of changing or reduced service provision.

Pastor (2020), the Information System is critical to the success of any organization. Every organization's management information system should operate in accordance with its strategic plan and vision. The goal of this research is to highlight the significance of the Management Information

System through a review of the literature and to determine the level of implementation in Pangasinan's private universities. In order to meet the study's requirements, a literature search and a survey questionnaire were used. According to the findings of the study, schools in Pangasinan are implementing the Management Information System process and practice. According to the study's findings, schools in Pangasinan are implementing the management Information System process and practice. The literature review demonstrates the critical importance of industries and organizations in maximizing unit utilization. It is suggested that all institutions revisit and include the Management Information System unit as a priority unit for improvement in order to improve organizational effectiveness and innovation.

Krishen et.al (2021), the widespread use of digital technologies and online social networks has transformed the way marketers interact with customers. Organizations can compete with more objective, relational, and interactive marketing techniques by deploying various digital platforms and information and communication technology (ICT) tools (e.g., smartphones, social media, mobile apps, electronic billboards, and so on). Adoption of cutting-edge devices and data-driven marketing, particularly in digital advertising, provides a broad and efficient reach. As a result, digital marketing (DM) has resulted in the formation of more informed, empowered, and connected customer groups in both the real and virtual worlds. The study contributes to the international and interdisciplinary field of research known as interactive digital marketing.

According to Ashiagbor et. al, (2021), despite the conservation importance of the Keta Lagoon Complex Ramsar Site (KLCRS), obtaining information on the extent and distribution of mangroves is challenging due to the unavailability of optical satellite data. This research explored Sentinel-1 radar data to provide information on mangrove distribution in the KLCRS. Global positioning system points from 443 training and 196 validation sites were used. In addition, focus group discussions and key informant interviews were used to corroborate information on mangrove distribution. Sentinel-1 data were processed for backscatter coefficients and two backscatter derivatives. These were stacked into a four-layer image composite and classified using a support vector machine. An overall classification accuracy of 89.28% was obtained. In addition, user and producer accuracies of 100 and 97.3% respectively were obtained for the mangrove class. The results show that mangroves occupy a total area of 41.02 km2 in the KLCRS and are mostly found around the Salo, Bomigo, Anyanui and Dzita communities. This study demonstrates the possibility of using Sentinel-1 imagery to map mangroves within the KLCRS. Thus, this study serves as a guideline for other data-constrained mangrove landscapes to map and monitor mangroves for conservation and restoration action.

According to Patroni *et al.*, 2019), there has been much less research into the human dimensions of such tourism, especially regarding visitor satisfaction with MWT experiences (Patroni, Simpson and Newsome, 2018; Lück and Porter, 2019; Patroni *et al.*, 2019). Hereafter in this review, the term visitor describes a tourist or local resident

who interacts with marine wildlife in an experience that is delivered and controlled by an operator who is (generally) licensed, regulated and/or permitted by a government or industry body to deliver marine-based wildlife tourism experiences. In this review, the term wildlife tourism means an authentic ecotourism experience that involves some form of interaction with or viewing of free-roaming wild animals in their natural habitat (Newsome *et al.*, 2005; Patroni, 2018). Visitor experiences are a complex combination of factors, which shape the feelings and attitude of the participants towards their marine wildlife interaction(s). Visitor experiences are an important component that influences the level of visitor satisfaction (Pastorelli, 2008; Senevirathna and Perera, 2013; Weiler and Black, 2014; Xin and Chan, 2014; Sumanapala *et al.*, 2015, 2017; Lück and Porter, 2019). Clearly, satisfaction is the result of quality experiences, with visitor perceptions of quality attributed to the tangible and intangible elements of the place of visit (Chan, 2005; Simpson and Newsome, 2017; Parker and Simpson, 2018a; Patroni, Day, Lee, Chan, Kerr, Newsome and Simpson, 2018; Simpson and Parker, 2018a). Hence, understanding wildlife tourism experiences is indeed a complex issue that relates to the perception, emotion and subjective experiences provided by the wildlife tourism operation(s).

The importance of visitor satisfaction for the ecotourism industry, within which wildlife tourism is a niche market segment, is summarised by Newsome *et al.* (2013, p. 23) who wrote "Satisfaction of visitors with the ecotourism experience is essential to the long-term viability of the ecotourism industry and satisfaction should be second only to

the conservation and protection of the resources on which tourism is based." Visitor satisfaction is a measure of how well the attributes of a product or service (i.e. an ecotourism experience) meet the expectations of visitors (Smolčić Jurdana and Soldić Frleta, 2011; Soldić Frleta, 2014; Sánchez-Rebull *et al.*, 2018). Visitors who are satisfied with their wildlife tourism experience are more likely to re-visit or recommend the experience to family or friends through word of mouth and, evermore commonly, through online platforms such as Facebook, Instagram and TripAdvisor (Gier *et al.*, 2017; Smolčić Jurdana *et al.*, 2017; Prakash *et al.*, 2019; Patroni *et al.*, 2019). Satisfied visitors are essential for the future viability of an ecotourism operation/experience, because the income from tourists is vital for funding the operation, and having satisfied visitors can make these experiences more ecologically, economically and socially sustainable (Wilson and Tisdell, 2003; Schleimer *et al.*, 2015; Patroni, Simpson and Newsome, 2018; Patroni *et al.*, 2019).

The Importance-Performance Analysis (IPA) technique, first described by Martilla and James (1977), has been widely used in tourism research as a measure of visitor satisfaction within both international tourism studies (e.g. Tonge and Moore, 2007; Smolčić Jurdana and Soldić Frleta, 2012a; Sörensson and Von Friedrichs, 2013; Boley *et al.*, 2017; Newsome *et al.*, 2019) and ecotourism recreation research based in Western Australia (e.g. Taplin, 2012; McGuiness *et al.*, 2017; Parker and Simpson, 2018b; Simpson and Parker, 2018b). Inherent in the name of the technique, IPA compares the importance visitors place on the attributes of a product or service (i.e. the wildlife

tourism experience) with visitor perceptions about the performance of those attributes with respect to how "good" those attributes are at meeting visitor expectations regarding their wildlife tourism experience (Oh, 2001; Taplin, 2012, pp. 1-2; Moore and Taplin, 2014). Attributes of an MWT experience are aspects such as: numbers of and/or proximity to target species; knowledge of staff, guides and volunteers; educational content of the experience; quality of the facilities and infrastructure; and increasingly perceptions of overcrowding (Bentz *et al.*, 2016; Patroni, 2018; Soldić Frleta, 2014, 2018).

Over the past 20 years, and especially more recently, there has been growing concern regarding the welfare of species targeted for tourism (e.g. Johnson and Lavigne, 1999; Semeniuk *et al.*, 2009; Bentz *et al.*, 2016; Senigaglia *et al.*, 2016; Patroni *et al.*, 2019; Simpson *et al.*, 2019; Walker *et al.*, 2019). Moreover, heavy tourism visitation (Plates 1 and 2), now frequently termed over-tourism, has placed additional pressures on nature-based tourism attractions, posing a risk to sustainability (Bentz *et al.*, 2016; Leung *et al.*, 2018; Capocchi *et al.*, 2019). This has increased pressure on managers and the ecotourism industry to respond, and there are now strongly researched guidelines in regards to tourism and visitor management in regard to wildlife tourism situations (e.g. Leung *et al.*, 2018). However, numerous opportunities remain to consolidate this research base and a vital aspect of the research effort concerned with visitor experiences during crowded and congested conditions lies in IPA (e.g. Newsome *et al.*, 2019). The IPA methodology can provide managers and researchers with insightful information

on ways to gauge visitor satisfaction and uncovers attributes of a MWT operation that may be of concern in a simple visual way that is easy to understand (Taplin, 2012). This is important for future monitoring and research targeted to reduce the impacts of MWT through best practice management while keeping visitor satisfaction high.

Informed by the recent dolphin tourism research by Patroni, Day, Lee, Chan, Kerr, Newsome and Simpson (2018); Patroni *et al.* (2019) and the systematic literature review of Patroni, Simpson and Newsome (2018), this general review highlights how the application of IPA can inform managers, operators and researchers regarding visitor satisfaction with the attributes of their MWT experience(s) and attributes that may require management action to ensure the future viability of the operation in a global ecotourism market that is becoming increasingly competitive. Further, the summary of IPA provided in this paper can benefit tourism students during their studies and as emerging practitioners when they transition from study to professional careers in tourism.

Research that investigates visitor opinions and satisfaction with MWT operations often employs questionnaires as the method of obtaining information from visitors (e.g. Mayes *et al.*, 2004; Orsini and Newsome, 2005; Draheim *et al.*, 2010; Filby *et al.*, 2015; Lück and Porter, 2019; Simpson *et al.*, 2016; Bach and Burton, 2017; McIntosh and Wright, 2017; Sitar *et al.*, 2017). However, to the best of our knowledge, only a few English language articles have applied IPA to researching MWT experiences (Patroni, 2018; Patroni, Simpson and Newsome, 2018).

Three studies on cetacean and Whale Shark tourism that utilized the IPA technique were able to identify key areas where management needed to be improved. Ziegler *et al.* (2012) used IPA to identify that crowding on a boat tour was a major issue, while Bentz *et al.* (2016) determined management needed to focus on providing more educational information, helping to resolve misleading advertising and reducing both crowding and the cost of tours. The study of Bentz *et al.* (2016) led to the realization that uncontrolled growth of the Whale Shark tourism industry was a significant issue that required attention and action from the authorities and operators to ensure visitor satisfaction and sustainability of the experience. Luck and Porter (2019) used IPA, to gauge visitor experiences at a swim-with dolphin tour operation at Kaikoura, New Zealand. Concluding that tourist satisfaction is a multi-faceted concept, Lück and Porter (2019) went on to posit that tour operators need to be aware of tourist interests, preferences and alignment to delivery and management of the MWT experience. The IPA revealed that participants highly valued a non-degraded marine environment and the viewing of dolphins. While most expectations were met, their IPA revealed that visitors wanted stronger interpretation and more information about threats to dolphins and marine systems. An important recommendation arising from the study was that visitors desired information about how tour operators can engage in marine wildlife conservation.

Filby *et al.* (2015) used a technique similar to IPA by administering questionnaires before and after dolphin swim experiences in order to compare expectations with the actual experience, which generated management suggestions based on

the expectations and experience of tourists. Ranking suggestions from visitors allow management to understand what visitors find most important, which in some cases is not what management expected. For example, close proximity to dolphins was amongst the least important aspects in the study of Filby *et al.* (2015) and even without close proximity visitors were satisfied with their experience. This can allow for higher compliance with codes of conduct as a result of operators having a better understanding of visitor satisfaction and what is actually important to optimize the wildlife tourism experience.

Similarly, recent research by Patroni (2018) found that overall the beach-based dolphin interaction provided at the Dolphin Discovery Centre (DDC) was a high-quality MWT experience with all attributes located high in the Keep Up Good Work quadrant. The application of two enhanced approaches to the IPA (see next section) revealed that management consideration of several attributes could further enhance the tourism experience provided by the DDC. For example, the IPA revealed that the amenities of the DDC facilities were below visitor expectations. Visitors also expressed a desire to be more informed about the wild dolphin-focused conservation and research initiatives of the DDC and a local university research partner. In addition to those two issues, management of the beach-based dolphin interaction, knowledge of the staff and volunteers, and value for money were aspects of the operation that management could review to better meet visitor expectations and increase satisfaction among future visitors. An IPA is typically displayed as a two-dimensional plot with the importance of the attributes ranked on the vertical axis and the perceived performance of the attributes plotted on

the horizontal axis of the IPA matrix. In its most basic form, an IPA is completed by using that matrix to plot the mean of the importance ratings for each attribute against the mean of its performance ratings (see Section 4.1 for notes on a possible exception to plotting the mean values). The original IPA of Martilla and James (1977) utilises a Scaled-Centred IPA (SC-IPA) matrix with four quadrants with different requirements for management actions. The crosshairs that delineate the quadrants are located at the neutral midpoint of the Likert scales for importance and performance. The matrix highlights those attributes that are working well and should be maintained (Keep Up Good Work), attributes that may require management action/attention (Concentrate Management Here) and attributes that fall into the Low Priority or Possible Overkill quadrants and therefore require less management focus (Martilla and James, 1977; Taplin, 2012; Patroni, 2018). On the contrary, an appropriate focus on attributes situated in the Possible Overkill quadrant that are being overserviced may reveal scarce resources that can be reallocated to correct the underperformance of other attributes (Parker, 2017; Parker and Simpson, 2018b). Accordingly, IPA provides managers with a statistically simple indication of what attributes of their operation require more attention, less attention and those that should be maintained at the current level of resourcing and performance (Oh, 2001; Smolčić Jurdana and Soldić Frleta, 2012b; Tonge *et al.*, 2011; Taplin, 2012; Moore and Taplin, 2014).

Synthesis

The literature and studies that are associated directly and indirectly to the present study gave more insight about the scope of the research about the implementation of technologies in Silonay Mangrove by developing Reticence and Endowment System, an official website.

The related literature emphasizes that reservation and doanation are now trying to collaborate with technologies to lessen the expenses of the business. They were trying to implement the use of technologies in their tourist place to lessen the manpower needed and since social distancing is still being followed by most countries, this will help them to continue their business.

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Chapter III

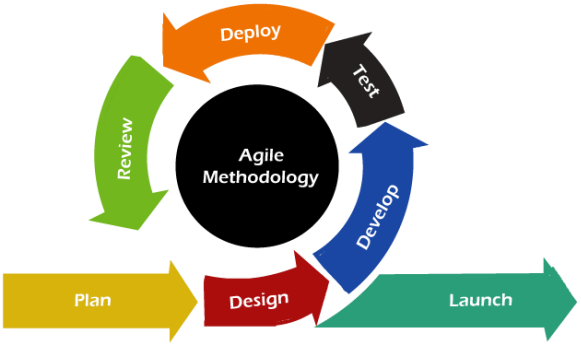
METHODOLOGY

This chapter presents the methods and strategies used in this study in order to develop an approach that matches its objectives. It was obtained using different processes, specifications, analysis, data gathering instruments, and evaluation that guide the researchers to manage and control the research.

Developmental Method

The research design used in this study is progressive and instructive. In accordance with the official website, this was utilized to observe, explain, and document the current situation. For much more effective and reliable information, the research design includes questionnaires, observation, and interview. Because the study also focused on product or system development, and then evaluated the effectiveness and uniqueness of the system at the end, a developmental research design was used.

Figure 2 SDLC Agile Model



Requirements gathering. In this phase, the researchers will gather all pertinent data such as the information of the barangay officials and the extend of the area they can see; we also need to include the fascinating place oof Mangrove. The subject is also included in collecting the data.

Designing the requirements. The software owner meets with the software development team in this phase and briefs them on the requirements defined in the previous step. The committee then examines the order in which functions should be introduced, as well as the necessary tools, such as the programming language, syntactic libraries, and basic frameworks. Software development teams can prototype the desired user interface at the same time.

Construction/Iteration: During this phase, When the team defines the requirements, the work begins. Designers and developers start working on their project, which aims to deploy a working product. The product will undergo various stages of improvement, so it includes simple, minimal functionality.

Testing. The official website will be created at this stage, therefore the team will need to do a series of tests to

confirm that the software is completely functional. If any potential faults or flaws are discovered, the developers will address them right away.

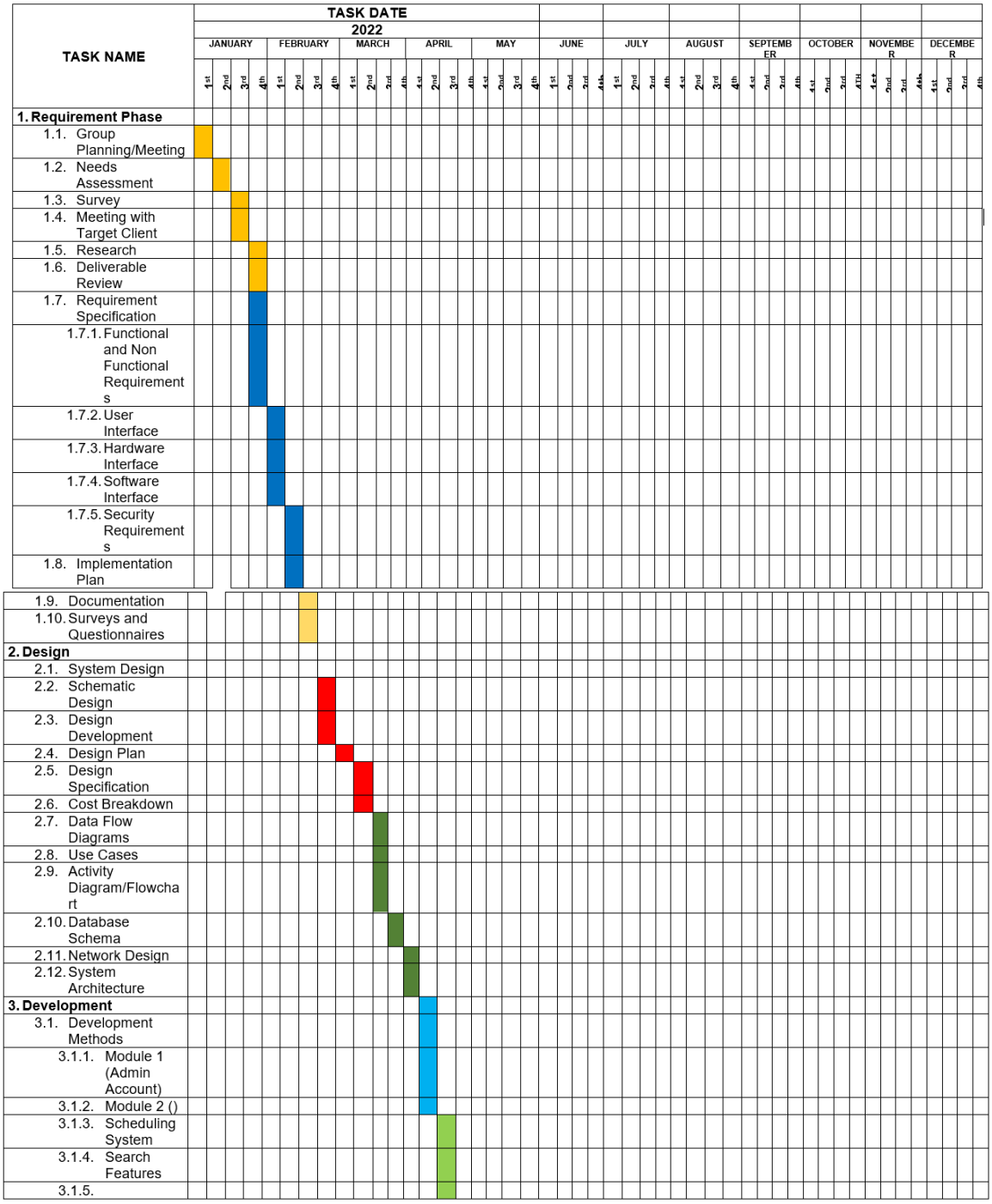
Implementation and deployment. The Silonay Manggrove, has access to the software now that it has been fully installed. They are now in the maintenance phase as a result of this action. During this phase, the software development team provides continuing support to ensure that the system continues to work properly and that any new defects are addressed. Further iterations to update an existing product or add new capabilities are feasible throughout time.

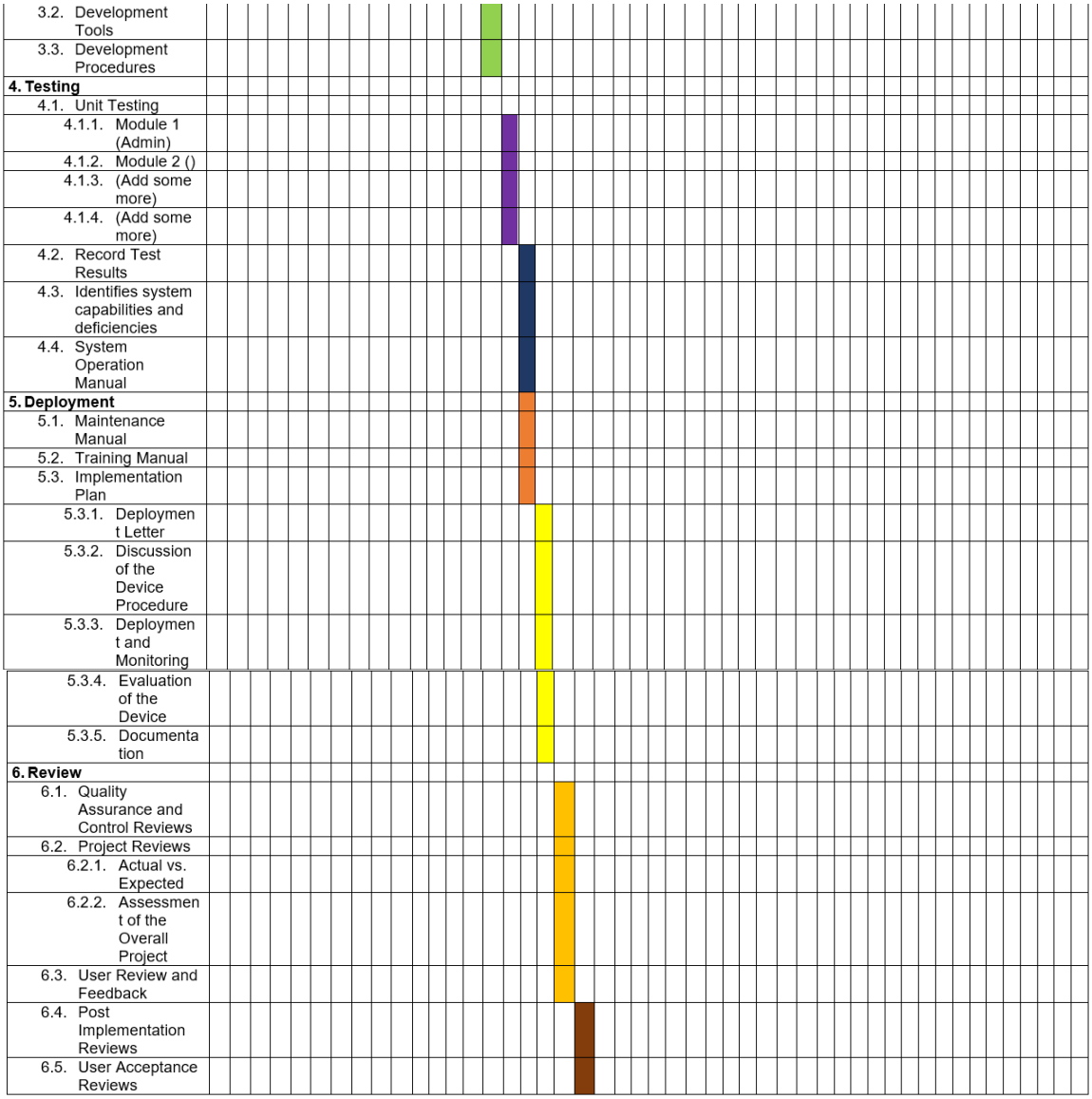
Feedback: After releasing the product, the last step is feedback. In this, the team receives feedback about the product and works through the feedback.

Table 1. Gantt chart

The Design development phase is divided into 13 activities and will take place all across the month of February. The implementation stage, which consists of six tasks, will then take place over the course of two months, between March and April. The fourth phase, testing, will take place throughout the month of May and will consist of four distinct tasks. While the evaluation stage will follow the testing stage, it will take place during the first three weeks of June. Finally, the deployment phase will begin directly following the evaluation, in the month of July. The following table illustrates the project's Gantt chart, which is based on which levels Several stages have been used in the development.

GANTT CHART


TASK NAME
TASK DATE
2022
JANUARY
FEBRUARY
MARCH
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER
1. Requirement Phase
1.1. Group Planning/Meeting
1.2. Needs Assessment
1.3. Survey
1.4. Meeting with Target Client
1.5. Research
1.6. Deliverable Review
1.7. Requirement Specification
1.7.1. Functional and Non Functional Requirements
1.7.2. User Interface
1.7.3. Hardware Interface
1.7.4. Software Interface
1.7.5. Security Requirements
1.8. Implementation Plan
1.9. Documentation
1.10. Surveys and Questionnaires
2. Design
2.1. System Design
2.2. Schematic Design
2.3. Design Development
2.4. Design Plan
2.5. Design Specification
2.6. Cost Breakdown
2.7. Data Flow Diagrams
2.8. Use Cases
2.9. Activity Diagram/Flowchart
2.10. Database Schema
2.11. Network Design
2.12. System Architecture
3. Development
3.1. Development Methods
3.1.1. Module 1 (Admin Account)
3.1.2. Module 2 ()
3.1.3. Scheduling System
3.1.4. Search Features
3.1.5.


3.2. Development Tools
3.3. Development Procedures
4. Testing
4.1. Unit Testing
4.1.1. Module 1 (Admin)
4.1.2. Module 2 ()
4.1.3. (Add some more)
4.1.4. (Add some more)
4.2. Record Test Results
4.3. Identifies system capabilities and deficiencies
4.4. System Operation Manual
5. Deployment
5.1. Maintenance Manual
5.2. Training Manual
5.3. Implementation Plan
5.3.1. Deployment Letter
5.3.2. Discussion of the Device Procedure
5.3.3. Deployment and Monitoring
5.3.4. Evaluation of the Device
5.3.5. Documentation
6. Review
6.1. Quality Assurance and Control Reviews
6.2. Project Reviews
6.2.1. Actual vs. Expected
6.2.2. Assessment of the Overall Project
6.3. User Review and Feedback
6.4. Post Implementation Reviews
6.5. User Acceptance Reviews

Requirement Specification

The user must completely employ the system at this phase in order to meet the system's functions. This includes, among other things, the user interface, software interface, hardware interface, and security interface. Furthermore, in order for the system to be fully obtained and utilized, the system developers must complete and fulfill the suitable system function. The system's operations and procedures must be learned by the users.

Functional Requirements

The functional requirements for this system define the method and functionality used to eliminate errors and needless events that may occur during the system. Specifically, the Reticence and Endowment System includes registration for the users to fill in their information upon browsing the website especially the reservation and donation features. They will not be able to browse all the features if they don’t do the registration step. Then the admin have the responsibility to accept and decline the new users registration. The admin also accesses the registration for the donors. The website also covers the implementation of donation form, appointments for events reservation inside the mangrove area, announcements and advertising, database, and updates. Furthermore, it will address the website's efficiency, analyzing the process and how data are altered to produce or construct a functional output.

User Interface

The researchers used the mangrove background for emphasizing the main purpose of the project it gives clarification that the system is somehow connected to the mangroves. The website was made with bootstrap to create a simple interface every function and this is also very responsive that is applicable in any devices. The landing page uses buttons for signing in and signing up of users. It also acquires options that uses for the security of the account.

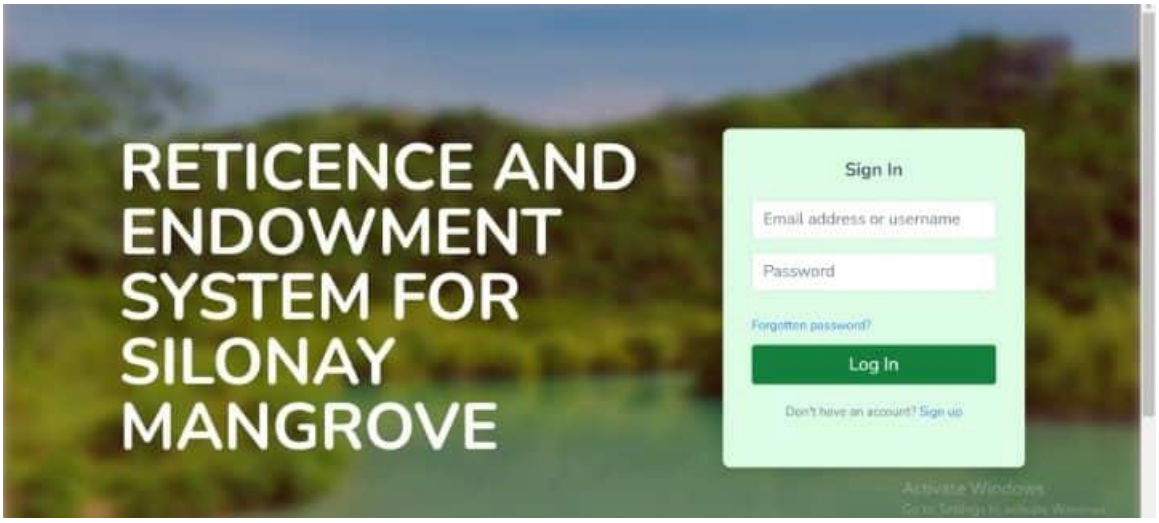


Figure 3. User Interface of the Website

Hardware Interface

The hardware interface specifies the logical and physical characteristics of each interface between the system's software and hardware components. The researchers used simple hardware such as laptop and desktop and its components that can hold and run the system. A broadband connection with a speed of 5mbps was used for internet access. The researcher must have a computer that can run browsers

such as Microsoft Internet Explorer (IE) v11 or later, Firefox v45 or later, and Google Chrome v58 or later.

Software Interface

The researchers utilize Windows 10 as their primary operating system, as well as Visual Studio Code as a text editor and source code editor. HTML, Java-Script, Tailwind CSS as CSS utility framework make up the front-end web foundation for this function. PHP Artisan, Apache as a webserver and Google Chrome as a browser are used to test web pages without posting them live on the internet. MYSQL is also used by the researchers as a database. Because of its structure and component-oriented capabilities, the researcher chose PHP as the programming language. The technology allows the admin to put advertisements, announcements, confirmation of reservation and donation registration which can be viewed by anybody with a registered account on the internet.

Communication Interface

The website has a report review features that the users can input some concerns, comments, and suggestions. The communication interface allows the website to be more trustworthy and makes it easier for users to engage with one another.

Security Requirements

The researcher used encrypted passwords to protect users' passwords and accounts on the website from unauthorized access. The researcher used an email verification for the registration, forgot password, and for the reservation of events. The administrator is the only person who has full access to the website. For security concerns, the admin's login panel is hidden. Only one person has access to the website's security: the administrator, who has complete control over the system. The administrator has full access to all of the system's transactions, whilst tourists are only allowed to visit the website whenever they wish. Users can also visit the website to learn about the material included therein, or simply to view the information contained therein. When you connect to the system for the first time. Users should double-check the website's address/URL for security reasons, notably phishing. The administrator must also monitor, log, and report on unauthorized behavior on operating systems on a regular basis. Methods of authentication, authorization, backup, and server clustering will all be covered.

Technical Background

This section depicts the various hardware and software components used in the creation of the capstone project website. Each performs a specific function that assists the system in processing effectively and efficiently.

Hardware Specifications

Table 2. Hardware Specifications

Component	Minimum	Recommended
RAM	2gb	6gb
Laptop	Windows 7	Windows 7-11
Storage Space	256gb	256gb-1TB
Wifi	15mbps	15mbps
CPU	Intel	Intel Pentium to Latest

The researchers used large memory storage of about 6gb RAM to enable implementation of the website and database-server with up to 15mbps for recommended internet speed. Technologies such as mobile phones, computers, as well as laptops with the use of internet will enable the users to open website.

Software Specification

Table 3. Software Specifications

Component	**Minimum**	**Recommended**
Operating System	Windows 8	Windows 8 or latest
RAM	2304 MB	2-12 GB
CPU Cores	2	2 or higher
Bandwith	100 GB	100 GB or unlimited
Database	1 Database	2-3 Available Databases
Framework	Laravel	Laravel
MySQL	5.1	5.6 or latest

Web Server		
Domains		

System Overview

The hardware system is a reservation website where the hardware administrator can display the entire Silonay Mangrove activities. The system had many functional requirements that would be required to use the system easily. It will benefit the user because it will not take up a lot of time and they will be able to choose which activities they want to do. Users can leave comments and make suggestions.

System Architecture

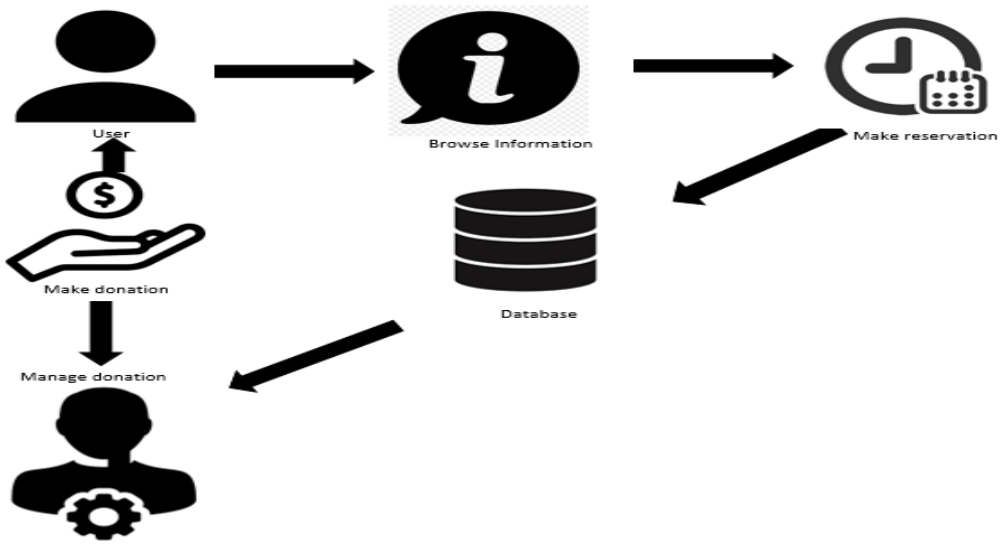


Figure 4. System Architecture

Figure 4. The figure shows the system architecture of Reticence and Endowment System for Silonay Mangrove. It represents the system's actual concept. The admin will manage

donation whenever there is donation registration. The user will have the access to browse information to the website and can make a reservation in a specific period of time. The system will accept reservation and provide advisory/reminders. The admin will take action to the user's comments, suggestions and ratings and he/she can also view the database of the system. The admin will take responsibilities for the confirmation, updating status and advertisements.

Use Case Diagram

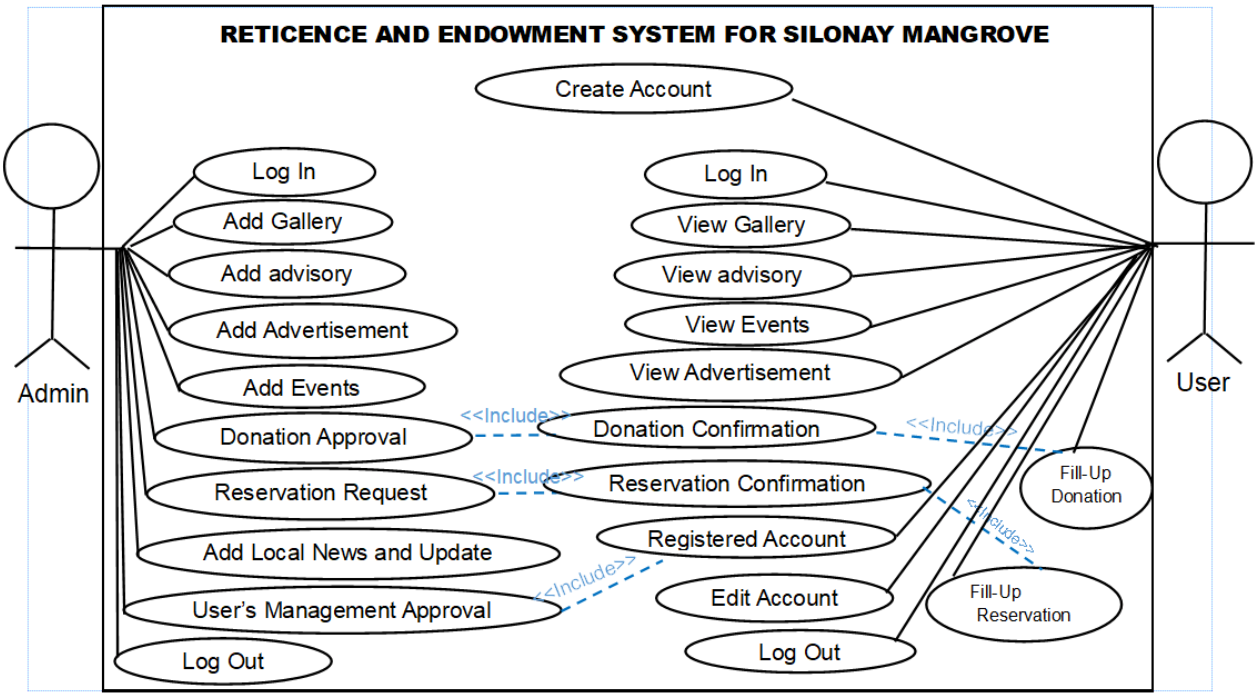


Figure 5. Use Case Diagram of the Whole System

Figure 5 . This figure shows the flow of the whole system. It represents how the admin and the user will use the system.

Activity Diagram

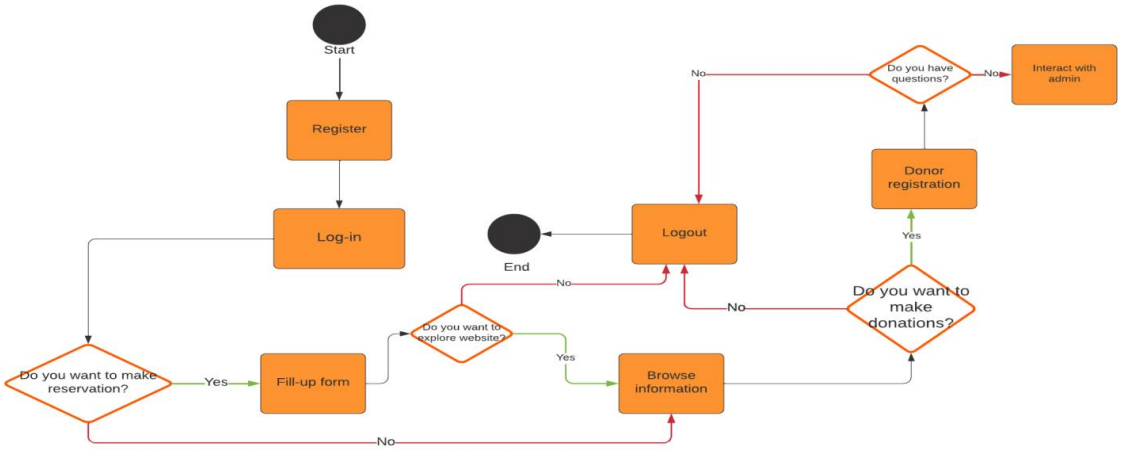


Figure 8. Activity Diagram

Figure 8. The figure depicts the activity diagram of the Silonay Mangrove Reticence and Endowment System, which depicts the actions taken by the user client, seller, and admin.

Data Flow Diagram (DFD)

This diagram depicts the information flow for any system process. It is used to analyze existing systems or to create new ones.

Narrative Description of the Current System

The method of making a reservation for the guest and tourist at Silonay, Calapan Oriental Mindoro is still utilizing manually. The main encoder will develop one by one that, personally entering all of the information for the reservation to be made. Due to this process, it takes a long time to have an reservation that results to a slow progress. Currently, Silonay Calapan Mangrove visited by many tourist so that reservation system will be necessary to have an speed

outcome.Also, Silonay Calapan Mangrove is considered as one the largest in mangrove in Oriental Mindoro.

Context Diagram

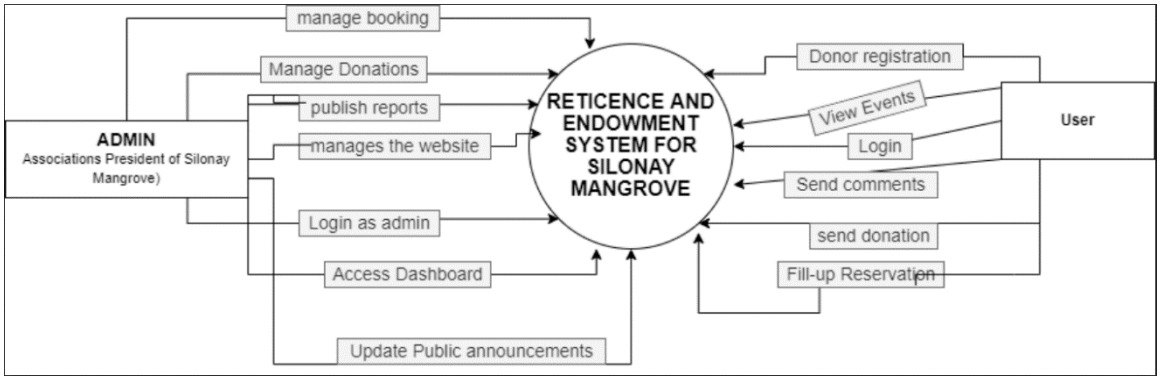


Figure 9. Context Diagram

Figure 9. It illustrates the interaction of the system and the actors. In our project, there are two actors: the administrator and the user. The context diagram above depicts the activities and functions that each user and the administrator have.

Project Design

The general layout is represented by the project design. It is the planning phase for the core functions, direct structure, principal purpose, and features. The project's functional design is focused on the users' desires. The project is composed of diagrams such as context diagram, entity-relationship diagram, flow diagrams, system architecture and structure for users to easily understand the objectives of the website. Furthermore, the major purpose of the Reticence and Endowment System design is to integrate

secure and comfortable platform which allows users to appointments and handle data precisely.

Diagram 0

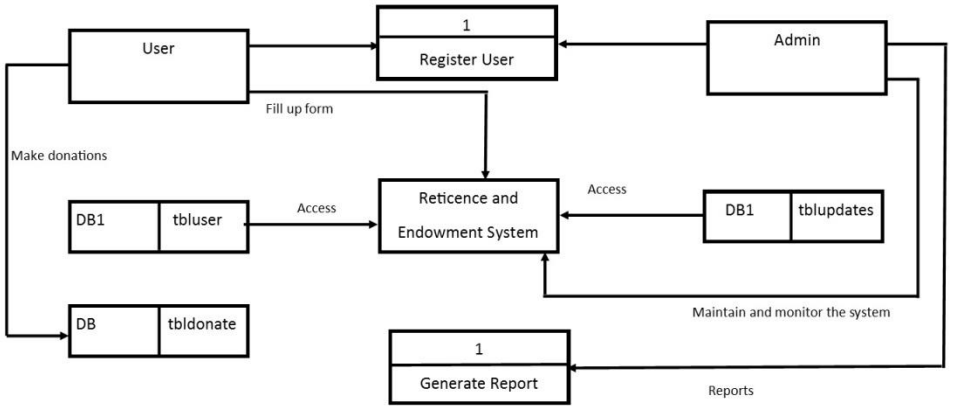


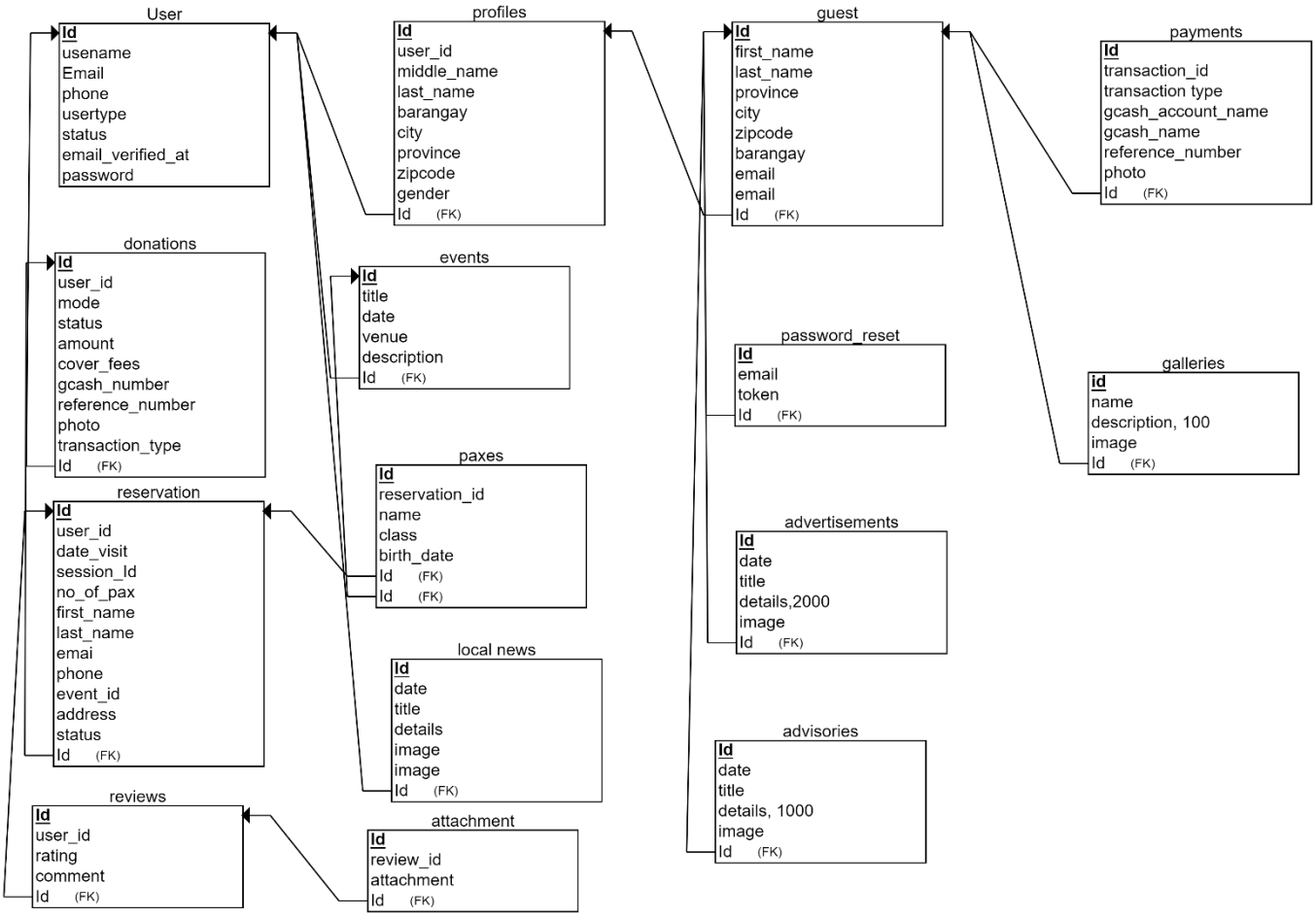
Figure 11. Diagram 0

Figure 11. This is a more detailed version of the context diagram.The "Reticence and Endowment System for Silonay Mangrove" is an official website that works for reservations and donations to preserve the beauty of the Mangrove Ecopark's scenery. The administrator can post their available activities and advertisements on the website so that tourists can see them and book them online.

Database Schema

One of the most crucial stages in the study's development was system design. This phase displayed the characteristics of the entities present in the system. This gives the user access to the attributes of existing entities. It describes the study's data. This defines how data is organized within a relational database; this includes logical constraints such

as table names, fields, data types, and relationships between these entities. Schemas commonly use visual representations to communicate the architecture of the database.



Testing and Evaluation

Software testing is the process of evaluating a software item to detect differences between given input and expected output, as well as to assess a software item's feature. Testing determines the product's quality. Software testing is a process that should be carried out during the development phase. The process of evaluating and verifying that a software product or application does what it is supposed to do is known as software testing. The advantages of testing include the prevention of bugs, the reduction of development costs, and the improvement of performance.

The researchers used the following types of testing for the proposed project:

- **Performance Testing**

  Participants: They are the ones who will perform the system.

  Methodology: They use trial and error to ensure that the website is efficient, reliable, and available within a specific time frame.

- **Usability Testing**

  Participants: In this test, the client, researcher and the users are the participants.

  Methodology: Allow end users to use the website, observe their behavior and emotional responses, and collect feedback on how the software can be made more usable or user friendly, and incorporate changes that make the software easier to use.

- **Security Testing**

  Participants: The software developers are the participants of the study.

  Methodology: The participant protected the website from external or internal threats posed by humans and malicious software.

Likert Scale

Table 8. Likert Scale

Scale	***Range***	***Verbal Interpretation***
5	4.51-5.00	Strongly Agree
4	3.51-4.50	Agree
3	2.51-3.50	Neutral
2	1.51-2.50	Disagree
1	1.00-1.50	Strongly Disagree

The researchers will give questionnaires for the study's purpose, which will be filled out by the participants. The researchers will employ rating scale surveys as a tool, collecting data from respondents using a Likert scale.

Participants of the Study

The respondents of the study are the Resident of Silonay whose visit the Silonay Mangrove. The participants of the study were composed of 150 residents from Silonay. The sample size was identified with the use of G-Power Analysis with the following assumptions: medium (0.20) effect size $\alpha = 0.05$ and statistical power of 0.95. the formula below was used in getting the actual sample size. The respondents are randomly selected based on the sample size.

N = $\frac{population\ per\ stratum}{total\ population}$ x total sample size

Where N = total actual size

Implementation Activity

The researchers have developed an implementation strategy for those who intend to use the system. The system and documentation will be turned over in this case. This can be used by the client as a guide for system maintenance. The new user should pay half the project cost to own the service, and their researchers should not be responsible for system maintenance. There should also be a settlement of agreement for the aforementioned conditions. If the project is completed, researchers will employ a variety of methods.

Activities	**No. of days to complete**	**Start Date**	**End Date**
Discussion with the client	7 days	March 3, 2022	March 10, 2022
Data Gathering	7 days	March 8, 2022	March 15, 2022
Planning	10 days	March 15, 2022	March 25, 2022

System Development	1 month	March 24, 2022	April 26, 2022
Testing	5 days	April 25, 2022	April 30, 2022
Finalization of the system	5 days	May 1, 2022	May 5, 2022