HOPVAN: ANDROID BASED VAN BOOKING APPLICATION

YANI SHARIFF A. CORNELIO
GENE MARC C. TAN
YEE RIKKA MAE L. YEE

BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY

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APPROVAL SHEET

The BSIT Capstone project herein attached is entitled **"HOPVAN: ANDROID BASED VAN BOOKING APPLICATION,"** prepared and submitted by **YEE RIKKA MAE L.YEE, YANI SHARIFF A. CORNELIO**, and **GENE MARC C.TAN** were hereby recommended for approval and acceptance.

Endorsed by:

RAY JOHN A. SALIMACO, MIT
Adviser
Date: 6-29-2022

Approved by the Panel Members.

07/01/2022

JONATHAN S. CABRERA, MIT
Chair
Date: _____

JHON O. INOCO, MIT
Member
Date: 6-30-2022

DANVER G. PALMIANO
Member
Date: 6-30-2022

Accepted in partial fulfillment of the requirements for the degree in Bachelor of Science in Information Technology.

CINDY A. LASCO
Capstone Project Coordinator

EMMANUEL B. BARBAS, D.Eng.
Dean, Institute of Computing and Engineering
Date: 7/11/2022

ROSELYN V. REGINO, Ph.D.
Director for Instruction
Date: 07.22.2022

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ABSTRACT

Yani Shariff A. Cornelio, Gene Marc C. Tan, and Yee Rikka Mae L, Yee. "HopVan: Android Based Van Booking Application" (BSIT Capstone Project). Davao Oriental State University, May 2022.

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HopVan is a Mati City-based mobile application system. Using the system's concept, users can enter personal information and select specific seat numbers, dates, and trip destinations. Users can book up to a day in advance and receive a booking confirmation notification via the app, as well as choose between Gcash and P2P payment methods. The primary goal of this project was to create a mobile-based application for Mati users, tourists, and van vehicle drivers to help the Mati community improve tourism and distribute well-managed reservations for online booking travel systems for van vehicles. In addition, the project's developers successfully created a mobile-based application for Mati users and drivers. A survey of selected Mati city residents revealed that the created mobile application's Design, Functionality, Reliability, Usability, Efficiency, Maintainability, and Portability are all excellent.

Keywords: Tourist, Design, Functionality, Reliability, Usability, Efficiency, Maintainability, and Portability.

CHAPTER I
INTRODUCTION

1.1 The Rationale of the study

Occasionally, a new technology emerges with the promise of making a positive difference in our lives. It's either it improves our performance by making work simpler and allowing us to communicate and transact more quickly or it opens us new opportunities and options. Mobile Applications are one such technology. Mobile Apps are one of the most significant developments in the technology of all time. They are pivotal for businesses, entertainment, and information and shape our daily lives. It also creates different possibilities by applying knowledge about human life to create unique innovations and social applications. Since smartphones came into use, application development has started growing exponentially to make human lives easy and provide them with every small thing at their fingertips (Vyas, 2020). And these apps are not only intended for people but also a source of information that can lead to learning everything and everywhere. When it comes to services, many applications and systems were created most specific example is for travel reservations.

A booking system is an application solution that allows prospective guests to reserve rooms online and pay directly through your website and other channels. While it also providing you with the greatest tools to manage and develop your business. (Steeves, 2020). Using this system can help people easily transact their services just passively accept bookings and payments online. Reservation Technology has risen and evolved to the point that it has become a central hub for managing every aspect of the business field. From marketing, distribution to operations. It has a wide range of services that most people need in their everyday lives. From booking to delivering different types of products and services in different ways. How about the small companies for traditional booking like vehicles? That they aren't using online booking management? Online travel providers face a competition in the business travel sector. The majority of businesses use corporate travel agencies to plan their travels. This domain can increase their market shares because large companies book many flights, adding to their total profits (Michels, 2002). Business consumers are unlikely to use online bookings due to

corporate policies that can be restrictive and the fact that business trip bookings tend to be complex. Therefore, they continue to use traditional travel agencies to negotiate special fares. Many companies nowadays tend to use the conventional way of traveling system rather than an online booking system because of the agencies and the tradition and experience they always do in their traveling careers.

Due to the pandemic, many transportation companies lessen the number of passengers according to the regulation of the cities to provide security and assurance for every driver and passenger. The seat reservation was accommodated by only one person for every two chairs in bus vehicles in the Davao region, especially in Davao City. Davao City Overland Transport Terminal (DCOTT) implements a booking system to avoid getting a large influx of passengers within the terminal (LLEMIT, 2020). To maintain the population of every passenger that avail on the trip based on the regulation of every terminal and the cities. According to Davao City Transport Road Map in 2018, there are approximately 1,004 franchises and 1,076 Units of Van Vehicles in Davao City. Given the road-related issues in Davao, you might find it challenging to travel around the city. This is sad if you want to visit specific places on the list. Even if the two areas you wish to stay within a day are several miles apart, it is fine as long as you arrive at that specific destination you want. Safety is another issue with public transportation. Although Davao is one of Asia's safest cities, it is not crime-free. It may be difficult to use public transportation if you are not from the area. In addition, there are aging buses and vans still on the road.

In the City of Mati, Van vehicle is travelers' most used public transportation to Tagum and Davao City. A van is the most convenient way of transportation because the number of hours is lesser than taking a Bus. Currently, the City of Mati has 2 Van terminals catering to Tagum and Davao City passengers. In making a reservation, the passenger needs to go earlier before departure to get the seats they may feel comfortable with. They implement a first-come, first-serve basis in choosing the available seats. Some passengers will wait for another van vehicle to get/her desired seat number. Furthermore, due to the COVID-19 pandemic, all travelers must provide their personal information to the drivers and take a logbook to the terminal for contact tracing. With the

existing problem and data storage of travel history, the proponent proposed a project entitled Android-based Van Booking Application.

1.2 Purpose and Project Description

The proposed project's primary goal is to create a mobile-based application that will allow travelers in the City of Mati to book a van vehicle with specific seat numbers, dates, and destinations. The passenger can book a day before the travel date and receive a booking confirmation notification using the application. The passenger can choose to pay using G-cash or cash on payment on the date of travel. The passenger may cancel their trip at least one (1) hour before the scheduled departure time. The passenger will also be notified 30 minutes before the scheduled departure.

1.3 Objectives of the Study

The stated project's primary goal is to design and develop a Mobile-based Van Booking Application that will run for all Android users, which aims to:

1.3.1 Design and create an android based application that is capable of

- Create personal information of the passengers in registration;
- Generate registration confirmation and verification from the admin;
- Generate an interface for the verification for uploading Valid documents of every van driver who will use the application and the proof of good papers to be submitted to the manager of the van Vehicle Company (Admin);
- Create a virtual Arrangement of seats for passengers;
- Computerized van reservation and ticketing system for the verified user;
- Generate an e-payment option for the passenger;
- Automatic notification (30) minutes before boarding time;
- Generate travel history by plate/travel number of Van vehicle.

1.3.2 To Evaluate the HopVan: Android Based Van Booking Application to define if it complies with the ISO 9126-1; and

1.3.3 To formulate an application proposal for the deployment of HopVan: Android Based Van Booking Application.

1.4 Significance of the Study

This study is necessary for travelers, especially tourists, people, and drivers. It will impact tourism here in the City of Mati, Davao Oriental, in the way of distributing well-managing reservations for an online booking traveling system for Van vehicles. Provide the opportunity for companies of Van vehicles to gain more clients and provide drivers an option to gain more profit and maintain the traveling system as well as the hospitality of every driver. The study also includes seat reservations so that anyone can choose comfortable seats using the proposed application. The study will provide a contact tracing of every vehicle available on that specific travel for safety and security purposes. The success of this capstone project will give the researcher a considerable opportunity to help with the issues we're facing in terms of transportation. The success of this project will also made them realize their potential in providing tech-able solutions for different problems.

1.5 Scope and Limitations

1.5.1 Scope

- The proposed project will cover the passengers who originated from the City of Mati Davao Oriental.
- The proposed project provides specific functions of the users intended for the drivers, passengers, and also the admin or the controller of the van vehicle;
- The drivers need a Verification of every document submitted to the admin or the manager of the Van vehicle company;

- And for the passengers need the Valid ID information every passenger to be submitted to the admin as well as in the application for contact tracing and verification of passengers.
- The proposed system development and features of the project are intended for the drivers and the passengers and the company/terminal that manages the van vehicles in the City of Mati Davao Oriental.
- It will also include the validation of passengers and drivers during registration by verifying documents submitted through the application.
- Dealing with prank passengers will be done by banning/disabling their user's existing account.
- The proposed project provides optional payment, either online payment using G-cash on Cash on payment on the date of travel.
- The proposed application will provide contact tracing features for every passenger who traveled (Plate Number) by giving travel history in response to the IATF guidelines due to the COVID19 pandemic.

1.5.2 Limitation

- The system runs only in Android-based Applications for Van booking and it is not covered by IOS-based Applications.
- The system is intended only for users residing in Mati City.
- The system is limited to a certain vehicle which is the van.

1.5.3 Conceptual Framework

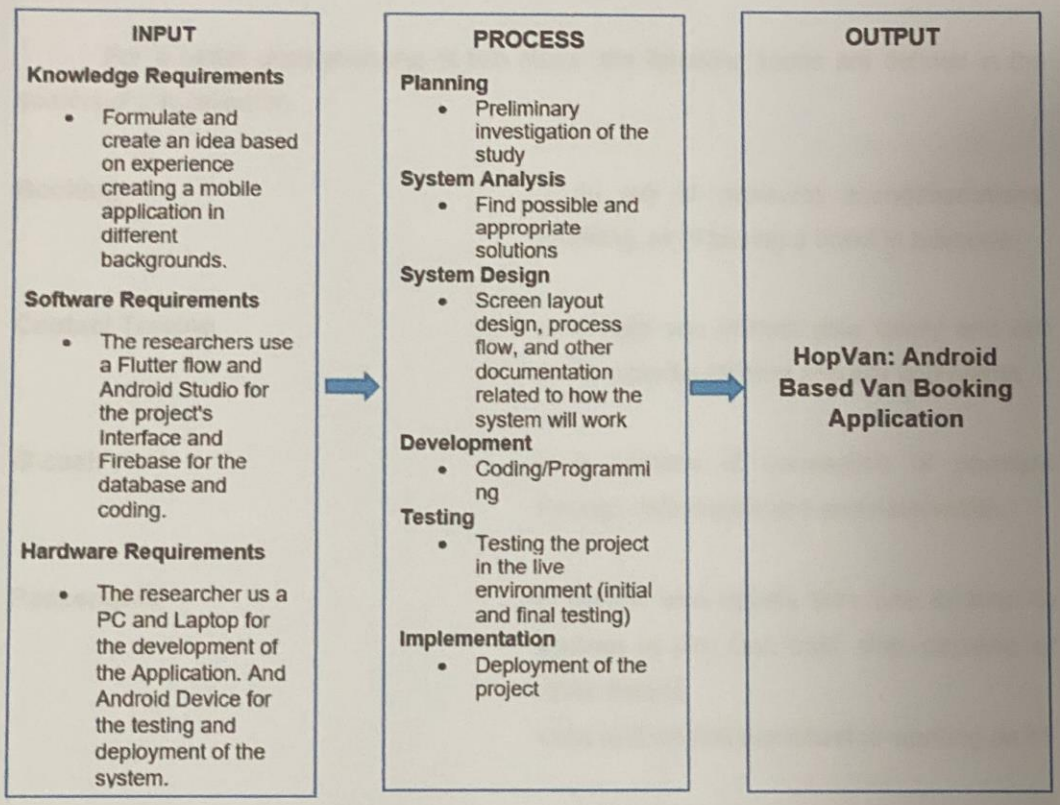

Figure 1.1 Conceptual Framework

1.6 Definition of Terms

For a better understanding of this study, the following terms are defined in the context of this research.

Booking	is an act of reserving accommodations, traveling, or of buying a ticket in advance.
Contact Tracing	is to help you protect your family and our community by utilizing security and health.
G-cash	is a process of transaction of payment through online payment and reservation.
Passengers	A person who travels from one location to another by car, bus, train, ship, airplane, or other means. Who isn't behind the wheel or working on it?
Payment Fee	using online payment and cash on payment on the travel date.
PUV Drivers Identification Card	is a card that needs the driver to travel from a different place, and the driver must take the training for this to verify as a professional van driver.
Reservation	an arrangement whereby something, especially a seat or room, is booked or reserved for a particular person.

Search Trip	is where you can search location, departure and returns dates, and several travelers specific travel.
Ticket System	is used for verification of your reservation in a specific service through means of software and hardware.
Valid ID	is used to identify passengers for valid documents of every citizen in a specific place.

CHAPTER II
REVIEW OF RELATED LITERATURE

2.1 Technical Background

Details of Technology to be used

In developing the system entitled HopVan: Van Booking Mobile Application in the City of Mati, Davao Oriental, and be able to have satisfying applications which will fit the objectives, the developers use the technological tools as stated below.

Android Studio

Android Studio is Google's official integrated development environment (IDE), built on JetBrains' IntelliJ IDEA software and designed specifically for Android development. It may be used to create high-quality apps for Android phones, tablets, wearables, TVs, and automobiles. According to TechTarget Contributor (2018), to push code and resource changes to a running application, Android Studio employs the Instant Push feature. A code editor helps the developer write code by providing code completion, refraction, and analysis.The built-in Android Studio of these applications is then used to compile them into APK format for submission to the Google Play Store. This Android Studio is an open-source project that we can use and download.

Flutter

Google launched Flutter, an open-source user interface software development kit. From a single codebase, it's possible to create cross-platform apps for android, iOS, Linux, Mac, Windows, Google Fuchsia, and the web. It's a pre-written software development kit (SDK) that includes ready-to-use and customized widgets and libraries, tools, and documentation for building cross-platform programs. (Flutter Developers, 2020). Flutter is the only mobile SDK framework that supports reactive styles without using a JavaScript bridge. Flutter integrates with current

code and is easy to use for developers because it is free and open source.

Firebase

According to Khawas (2018), Firebase is considered a web application platform. It helps developers build high-quality apps. It also stores data in JavaScript Object Notation (JSON) format, which doesn't use a query to insert, update, delete, or add data. It is a backend of a system used as a database for storing data.

Firebase is a Backend-as-a-Service (Baas). It provides developers with various tools and services to help them develop quality apps, grows their user base, and earn profit. It is built on Google's infrastructure. Firebase is a platform that makes it possible tocreate and manage successful apps. (Educative, 2021).

2.2 Literature

Application of Machine Learning in App-Based Cab Booking System: A Survey on Indian Scenario

The online cab booking system not only saves people time, but it also picks them up from their door and drops them off at their destination. However, the current demand for app cabs implies an even greater improvement in the existing online cab booking system. The authors analyzed existing research papers on online cab booking systems and attempted to incorporate all of their proposed solutions into this paper. (Saha et al., 2021).

An Exploratory Study on Uber, Grab Car, and Conventional Taxis in the Philippines

Uber Services

Uber, providing efficient, reliable, round the clock support to our customers is extremely important; and today, we're opening a new Center of Excellence in Asia, and recognizing the Philippines as a strategic hub for our global Community Operations and shared support services (Uber Staff, 2019).

Located in Skytech IT Park in Pampanga, near the dynamic business district of Clark, this cutting edge, 2,919 sqm facility, will employ 165 customer service specialists who will provide world-class support, 24/7, to our Uber community. Our solutions are rooted in technical skill, product expertise, and a deep understanding of our customers' needs. The Center will provide support via multiple channels–email, phone, video chat and social media to ensure seamless experience before, during and after the ride (Uber Staff, 2019).

A Survey on Car Service Slot Booking System

Booking a service appointment in the Car Service application allows you to access data from anywhere in the world. Every booking service in the market is dependent on another service. This application allows clients to book appointments online and manages reservations. They manage access and service as well as individuals and can help you book car services from anywhere and at any time. This app puts car services right at the user's fingertips. This app will save all of the user's information in the database and create a very safe and secure data store. As a result, overall user data will be clearer and more technological. (Reddy and Savant 2022). Additionally, users of this app can easily book a service slot at any time and from any location. Based on the date, the user can choose a car service slot. This car service saves time and money while also being paperless. A copy of the information is saved in the database once the car slot is reserved in the Car Service. Any user can book a slot in the Car Service app. Customers can use the app quickly and easily with a single touch. Because user data is stored on either the admin or the server side, both

sides are secure. Each user enters their id and password after logging in; this is a very common one-click log in, and they're good to go.

Effects of Taxi-Booking Apps of E-Service Quality on Use Intention in China

Considering the current market progression, a differential segment of the e-market, e-service, has revolutionized the business industry, the taxi-booking apps. Videlicet, the standard, and the research guidelines would encircle the effects of perceived value and satisfaction on the intention of continued use (Park et al., 2018). As a result, this study on perceived value and satisfaction with the desire to use taxi-booking apps indefinitely might be valuable to businesses because it has been in demand, especially by commuters.

E-payment for Jakarta Smart Public Transportation, Using the Point System for E-Commerce

This system required an e-wallet for payment in public transportation. This E-Wallet will search the possible route from the nearest location to the destination, only the public transport where there is a station that can use it. Further, more community in the city leads people to have more accessibility for their transportation (Anwar et al., 2019). People in Metropolis believe that time equals money and that the faster they arrive at their location, the better. Public transportation is insecure not just because of a lack of vehicle technologies but also due to poor passenger behavior. They prefer to pay online since it is more convenient, mainly because they hurry to get to their destination.

M-Payment between Banks Using SMS

The adoption of mobile payment (m-payment) and mobile banking (m-banking) is low in several countries, despite its associated benefits. The present study examines the impact of Pakistani consumers' financial skills and digital literacy on their intention to adopt m-payment/m-banking using the Technology Acceptance Model (TAM). The data were collected from 454 individual smartphone users residing in Punjab province via an online and offline questionnaire survey. Structural equation modeling was used to analyze the

consumers' data. The results endorse that (1) their financial skills have no association with intention to adopt but through perceived usefulness; (2) their digital literacy bridges a strong association with intention and through perceived ease of use. Furthermore, this study discusses the theoretical and practical implications of the findings, as well as limitations and future directions (Psychol, 2022).

E-BUSINESS IN THE ANDROID APPLICATION BASED ON E-PARKING BOOKING SYSTEM

In order to solve the particle problem, the system used the briefest part algorithm to evaluate the shortest distance between the parking docks and the nearest favored entrance and reported radio frequency identification smart card on the parking system. Furthermore, the application provides information on the availability of parking spaces, booking parking spaces, payment using e-money, and topping up the balance. An E-parking system is useful in everyday life because it supports business activities in a variety of ways. E-parking is more effective and efficient in processing transactions, allowing the customer to receive full service. (Soegoto and Suprianti 2019). Thus, technical innovation is required to solve problems such as making it easier to find a parking spot and accepting e-money payments using a smart card. One of the really popular models is the cell phone, which is used to communicate and access various forms of media. The e-parking system is useful in everyday life because it simplifies business activities in various ways. E-parking is more effective and efficient.in transaction processing, allowing customers to receive the best service possible. The app's advantages include making it easier to find a parking spot, reducing paper usage, and facilitating payment via e-money. This is because the smartphone is one of the most commonly used devices for communicating and accessing other media.

Effect of the Mobiles/Online Booking System on Rides Sharing app on the Philippines.

Ride-sharing apps have been very helpful to commuters, both owners and non-owners of automobiles. They're so convenient I don't even want to recall

what it was like without them. But since Uber pulled out of the Philippine market in March last year. The Land Transportation Franchising and Regulatory Board now wants to inform the public that there is more to app-based commuting than just grab. This is to discourage some transport network companies from charging desperate commuters unreasonably high rates just because they know the latter have no other choice (Sarne, 2019).

Systematic Literature Review: Evaluate User Experience on the Ticket Booking Application

A mobile application makes it simple to order tickets online and meets a variety of needs on a single platform. Utilizing innovation to book tickets can save time and money. A few of the determinants of the success of an application is focusing just on needs and emotions of users when using an online ticket application; by assessing the user experience of a ticketing application, users can find out the experience users get when using a ticket booking application. The User Experience Questionnaire (UEQ) method for evaluating user experience/user experience and ticket booking applications has the advantage of quickly trying to measure aspects of the product's customer experience and providing more comprehensive results on the user experience. Mobile booking system is an activity in which you can make an online reservation and ask for information about the date and price of a ticket. With user experience evaluation, application users can learn about the experience they have when using an online ticket booking application and improve service when ordering tickets. This study aims to measure user experience by reviewing previous research related to evaluating user experience/user experience on ticket ordering (Maharani, 2021).

2.3 Travelling System

Tourism and Travel Industry

The tourism industry, also known as the travel industry, is linked to the idea of people travelling to other locations, either domestically or internationally, for leisure, social or business purposes. It is closely connected to the hotel industry, the hospitality industry and the transport industry, and much of it is based around

keeping tourists happy, occupied and equipped with the things they need during their time away from home. It is also a wide-ranging industry, which includes the hotel industry, the transport industry and a number of additional industries or sectors. It is vital to understand that the tourist industry is linked to movement to different locations, based not only on leisure, but also business and some additional travel motivators (Revfine, 2022)

Uber: The South Africa Experience

In South Africa, extreme inequality means that drivers have a much more difficult time turning a profit with the ride-share service. In 2013, Uber was in the midst of an aggressive global expansion when it launched in South Africa. The app requires a critical mass of drivers to function properly, otherwise riders must wait prohibitively long for trips. But in South Africa, Uber's model doesn't work the way it can in some other countries. The country's severe income disparity means that few professional drivers actually own the cars they drive; instead, they rent them from owners and split the earnings, very often struggling to make ends meet. Though Uber does not release its figures, drivers and their representatives estimate that since 2013, the service has grown to around 4,000 Uber cars in Cape Town, mostly driven by foreign African migrants (Greef, 2018).

2.4 Related Systems

Bus Ticket Booking Mobile Application

Today most things have been digitalized and it is being cherished more than ever in the current situation, as this not just ensures convenience but also safety, i.e. the need of the hour. Now as it comes to bus-ticket booking, in the times we're living in, no one would be willing to stand in long queues and increase their risk of catching the virus just to get their tickets booked. And with this comes the significance of online bus-ticket booking mobile apps. Even before the pandemic hit, there were few prominent bus-tickets booking apps, such as RedBus, BookBus, and several others. But now its significance has reached multifold, and hence many new businesses are trying their hands in this domain and they all require an online platform (Samsukha, 2022).

The system in Bus Ticket Booking Mobile Application was developed to facilitate a person's journey. This production system uses online and therefore is accessible to all users who access the application. This system is expected to enable users to see the bus schedule provided and make a selection of seats and the price of the bus ticket. In this current technology, rapidity in daily life emphasizes smoothen time planning. Ease of the technologies such as mobile apps offer many advantages to users; the Bus Ticket Booking Mobile Application (Nice Ticket) was developed as a mobile-based system to ease the process of buying the bus ticket more efficiently and quickly and create a website for staff and administrators to manage the bus booking system.

Online Ticket Booking System for Mumbai Local Trains

In Mumbai Railway you can now book tickets for travelling in Mumbai local trains online and avoid crowds at booking counters, as the mobile ticketing app UTS (Universal Ticketing System) is now open on both Android and IOS platforms. As reported by mid-day earlier, the app has now been successfully linked to the Universal Ticketing App of the Maharashtra government for verification of vaccine certificates. Anil Kumar Lahoti, general manager, Central Railway, said that linking the UTS app with Universal Pass will enable passengers to get their tickets seamlessly without any hassle. During the pandemic, the app was suspended as there was no system to verify the vaccination status of passengers. Now the app will be open for the public with proper vaccination verification. This new and updated application is a standalone example where the Railway server is shaking hands with an external server for validation of tickets (Aklekar, 2021).

E-Business in the Android Application based on E-Parking Booking System

This android-based parking system provides real-time information about parking spaces as soon as the user books it. In terms of mobile applications, technology plays a significant role as an interface for users to interact with the mobile application. The application is developed through MySQL as a programming language (Soegoto and Suprianti, 2019). The server and the mobile application are connected via a secure channel. The purpose of this e-booking parking is to provide

information about parking space availability and allow the user to book a parking place based on that information.

Towards Smart Mobility in Cities - Bus Tracking and Booking System

Public transportation is becoming increasingly important in the lives of people who live in cities and urban areas. Because it is a safe, affordable, accessible, and sustainable transportation system for all, the bus is an efficient mode of transportation for commuting from one location to another. Waiting for a bus without knowing when it will arrive and being late due to bus unavailability or having difficult times due to overcrowding are the main reasons why people do not use bus transportation nowadays. (Sharma, 2021). It discussed here the solution for tracking and estimating the time of arrival of a city bus, so that users can learn the exact location of a bus as well as the time of arrival at a specific station. It also discussed a solution in which the user learns about the various bus options available on a specific route because, as we all know, there are always a different number of buses running between two stations and most users are unaware of all of the bus options available on a single route.

BOOKAZOR - an Online Appointment Booking System

This is a web-based appointment booking and scheduling application that is used to book appointments in the fields of parlors, hospitals, and architects within a specific geographic area. This application is built on an ionic foundation. It is an open source SDK for developing hybrid mobile applications. It also employs technologies such as CSS, HTML, and JavaScript. It has the Firebase software that essential for retrieving data for appointment scheduling, which aids in the effective development of applications. It includes here the features of this application such as analytics, database, messaging, and crash reporting to help users focus. (Akshay, 2019). Additionally, It has the NodeJS server that its being used to provide appointments at specific times, to use the table to verify for the accessibility of operatives in specific regions at specific times, and to add new job opportunities into the routes to reflect booked appointments.

ViserBus: Online Bus Ticket Booking System

A professional Bus Booking Solution that comes with PHP Laravel. It's developed for those people who want to start their Bus business website. Globally, at the end of 2017, there were 3 million city buses in operation worldwide; of these, 385,000 belong to the category of electric bus. The incidence on the global fleet is therefore 13 percent. Here, users can easily signup and login to his dashboard. Then he able to search ticket for his destination. 20+ automatic payment methods are there. When payment done, ticket will issue automatically. It handles unlimited Passengers, Tickets, Bus, Fleets, and Routes, able to accept payment via cards, crypto, and mobile money. Ready to go solution, it takes only a few minutes to set up your website with our system (Viserlab, 2022).

Mobile- base Bus Ticketing System in Saudi Arabia

SAPTCO, the Saudi Public Transport Company is the national bus company in Saudi Arabia. They have urban bus routes in Jeddah and Riyadh. Passengers pay for bus fares using SAPTCO's rechargeable smart card. The smart card itself costs SAR 10 while a single bus journey costs SAR 3. Recharging your SAPTCO smart card is possible at a ticket vending machine, via the SAPTCO app, or with the bus driver. Also runs an extensive network of intercity bus transport throughout Saudi Arabia. For long-distance journeys, tickets are available through SAPTCO's website, at a ticketing agent, or through SAPTCO's mobile app (Nowek, 2022).

Grab Mobile App: A UX Assessment on Mobile Devices

Grab car is a technology company that uses a mobile application to provide transportation services. Car Grab application allows users to get a taxi quickly by online/ mobile service and makes booking and searching for location quickly. It is prevalent in South East Asia, particularly Malaysia. Grab is a technology company that offers a wide range of ride and logistics services through its app (Mohammed et al., 2018). Moreover, Developers will experience difficulties in terms of app usability quality as the number of mobile applications grows, that is, as they become more common. Because various software applications were previously run-on computers (laptops and desktops), the usability of mobile applications is crucial. These applications now run-on smartphone technology.

ALL-IN-ONE VEHICLE BOOKING SYSTEM

In this day and age, voyaging has become a part of life. It could drive to work or travel to different cities for business or personal reasons. At some point in life, everyone must travel. There are various modes of transportation available, and the vast majority of us travel by Bike, Auto, Car, Bus, and so on. One advantage of booking a vehicle via cell phone is convenience. Making all sightseeing plans on cell phones or tablets implies that people can do so at each and every time of day or night, at home or during their mid-day break at work.The AVBS (All in One Vehicle Booking System) Android application allows travelers to book a vehicle of their choice based on their requirements from the comfort of their own home. The application is straightforward to use. Travelers can reserve a bike, an auto, a car, a bus, or a lorry. Vehicles can be reserved for both short and long separation ventures. Vehicles are also available for the transportation. (Namdan and Somya, 2019).

SHUTTLE BUS MOBILE BOOKING APPLICATION

Public transport is one of the most widely used transportation services. However, it is hard to know the availability and movement of these services. Computer systems and applications can help detect vehicle movement, provide a booking system for a ride, and provide a medium of communication between the services and their provider. The problem based on this case study is that there are no computerized shuttle bus systems or applications that can provide drivers with early information on which bus stop they need to take and drop off the student. Drivers only know which stop to take students by reaching each bus stop. To overcome the rise issues stated above, a mobile application which is a university shuttle bus application, is proposed through this paper. This application will be designed to be developed for university transportation services only. This application will help contribute to the objective stated and handle the issue from the existing system. The application will allow students to order a ride from the application and choose the closest driver to match the routes he/her taken. Drivers will be able to view the ride orders from the students. The application will also record all the rides and allow students and drivers to view this history. In developing this system, software model development has been implemented in the prototyping model. An application prototype is being built, tested, and reworked in the prototyping model.

These processes are done repeatedly until the output is acceptable to the client (Adnan et al., 2021).

Development of an Android Application for Online Service Booking System

The internet is a great revolution in information technology. We designed and built an application for the internet revolution that advertises information on public demand. This application can help a user find TO-LET, CAR, FREE SPACE, TUTOR, and properties easily without physical going. It creates a user-friendly that allows the user to get valid information. Besides this, this application is unique. Following the idea, we build a practical application that contains are To-Let, Car, Free-Space, and Tutor. Using the To-Let portion, The Landlord can post To-Let, and the Tenant can see those posts or find and book their desired residence. Using the Car portion, The Car Company or car owner can post their vehicle for rent details. The seeker, searcher, or app user can easily see the post and book Contact or rent facilities correctly. Our project motivation is to develop an online-based android app that is helpful for people. We noticed that many people want a house for rent. But they had suffered many difficulties searching for sweet home or flat for rent.

On the other hand, house or flat owners need people to rent. We think there is a platform where people can post and see much information about places and local areas for rent. Besides this, Tutor and Car rent and Free- space are also vital things so that we feel that and develop this application (Sarkar 2018).

ANDROID SECURITY BASED ON MOBILE APPLICATION DEVELOPMENT

Tech leaders often say that absolute security does not exist. Instead, it represents a set of measures, accumulated and combined, to slow down the inevitable. Application security is a key issue in data control. Therefore, developers go to great lengths to build secure applications by preventing hackers from circumventing security features. For this purpose, it is crucial to provide users with advanced security and privacy controls (OrderGroup, 2021).

Mobile application security in the hands of specialists

Currently, we are still working on the security of mobile systems. From the beginning, the main challenge in the project was the core of the whole project, which

was the operating system. Considering how many activities of mobile phone users are connected with sensitive data such as photos, personal data, passwords, and access to banks, providing high-class security is more important than ever. We welcome the opportunity to implement such a level of protection so that the user of the phone we provide feels safe (OrderGroup, 2021).

DriveMyCar Android Application

This study designs and implements an intelligent server-based driver system for serving passengers using local information. The proposed approach's implementation and analysis are carried out using an android-based web service-based system framework. Simulation results manifest that our method can encounter the shortcomings of the existing system. For human commerce, many applications and websites are available on the internet, making life easy. Likewise, many more applications provide a driver on demand to the customer wherever he needs it. For example, DriveU, Drive4U, and Hire4drive: Car Drivers and Cabs, Swift partners, Hop-on demand drivers. These applications provide convenient and best service to the customer. However, some issues are still there, like the existing system is not transparent with the customer. So, we will upgrade or add some points in the current system, which will help the customer find a driver in his area. It will reduce time and minimize the location finding issues (Kadam et al., 2021).

2.5 Synthesis

Based on the related systems presented above, they are many ways to book a seat in a mobile application. There are similar studies that engage booking systems and innovative application tools. Also, they met the users' needs and convenient experience. Due to the unexpected pandemic crisis, people are forced to find an alternative way to book a reservation for travel. The Bus Ticket Booking Mobile Application used the coding on the mobile device and the application on a mobile phone. The system uses the programming language JavaScript using the Meteor platform. The database is used to store data related to the design, whereas MongoDB is the database used for the system. The coding part of the website is for the reference purposes of users and administrator management. System development using JavaScript programming language will be integrated with

databases. The HopVan application has a different feature from the related developed projects because they provide a notification prompt for the users to notify regarding their reservation. Mostly it only bounded to the local era of Mati City. Davao Oriental, which there has not been implemented yet.

HopVan: Android-Based Van Booking Application; this technology is an android based it makes it easier for people to book a reservation to travel without hassle. You can go right there and sit down after booking with our app; you don't have to wait to see if there is space or not inside a van. Our app will assist travelers or local people so that they do not have to stow away in a van if space is limited. They have to make a reservation and select a seat, then have fun at their destination. This will assist our community in avoiding traffic congestion in vans.

CHAPTER III
MATERIALS AND METHODS

3.1 Software Methodology

3.1.1 The Rationale of the study

The researchers used Modified Waterfall Model, which includes requirements analysis, design, development, testing, implementation, and maintenance.

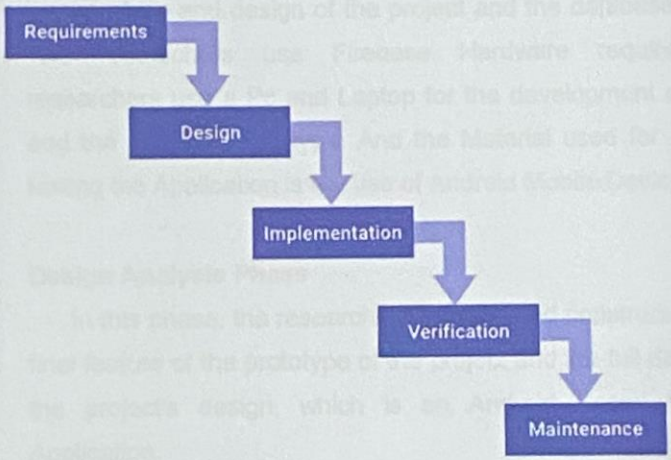

Figure 3.1 Modified Waterfall Model (Synopsys Editorial Team March 28, 2017)

- **Initial Planning**

  In this phase, the proponent had come up with an idea on how the current system is possible to make more convenient and innovative way, especially on the transportation system that could it be more helpful to all users of Mati City Davao Oriental and also the drivers and managers who are serving on the transportation in the city.

- **Planning**

  In the actual planning phase, in this phase, the proponent is now in the step of developing the proposed system since it contributes a big help to the people of Mati City. The proponent will start to think and create a plan for the whole process.0

- **Requirement Analysis Phase**

  In this phase, the researchers use two classifications of requirements: software and hardware requirements. For Software requirements, the researchers use Flutterflow and Android Studio for the Interface and design of the project and the database and coding. The researchers use Firebase Hardware requirements; the researchers use a Pc and Laptop for the development of the project and the featured prototype. And the Material used for applying and testing the Application is the use of Android Mobile Devices.

- **Design Analysis Phase**

  In this phase, the researchers validate and construct an initial and final feature of the prototype of the project and the full development of the project's design, which is an Android Based Van Booking Application.

- **Implementation Phase**

  In this phase, the proposed project will implement utilizing presentations of the researchers and the full development of the system with functionality and testing with initial and final testing of the system.

- **Testing Phase**

  After imposing its functions, the proponent will check the project implementation for viable mistakes to forestall problems in this phase. The proponent will also check all the project functionality to see if it has met all the objectives.

- **Evaluation**

  The proponent will think about the comments and suggestions of the end-user for improvements to meet the needs and satisfaction of the user.

- **Verification Phase**

  In this phase, the proposed project of the researchers will be deployed using the recommendation and verification of the head panel and the panel members of the committee. As well as the future deployment of the project will also need the confirmation of the cities and the company that wants to invest and deploy the project.

- **Deployment Phase**

  Finally, the deployment phase, in this phase is where the proponent is now ready to distribute the project to the intended use, which is the locals from Mati City and the tourist that come to our place and also the Company, Drivers, and Manager/Controller of Van vehicle located in Madang Terminal, City of Mati Davao Oriental.

- **Maintenance Phase**

  In this phase, the researchers provide maintenance for future development and future needs for the updates and additional steps of the system.

- **Hardware Requirements**

  The hardware requirements of the development and implementation of the proposed systems requires, personal computers (i.e., desktop and laptop), smartphones (Android API 16 (Android 4.1) & above), tablets, and other possible electronic-internet-capable devices. However, only personal computers will be related and involved to the actual development of the application, i.e., writing the program code. Smartphones, tablets, and other electronic-

internet-capable devices will be used for testing the responsiveness and usability of the mobile application. Additionally, the said devices are also seen to be used by the end users and the developers, especially, personal computers and smartphones.

- **Software Requirements**

  On the other hand, the software requirements that will be used in the application development and implementation are Android Studio, FlutterFlow, Firebase, and internet browser. Additionally, after implementing the application in each van terminal, the Firebase and internet browser, are needed or must have by the van terminal.

  Android Studio is the recommended software to be used in developing the web application. The application will be developed mainly with DART and Java. Additionally, for the front-end of the application, DART is used.

  FlutterFlow and Firebase is used for the deployment of the mobile application. Hence, van terminal needs to purchase or pay for a subscription for the mobile application be deployed on the internet. Similarly, Firebase is used as the database of the application.

3.2 Mockup Design

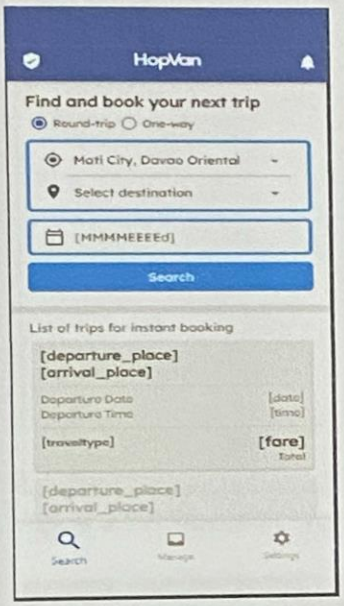

Figure 3.2 Home Page

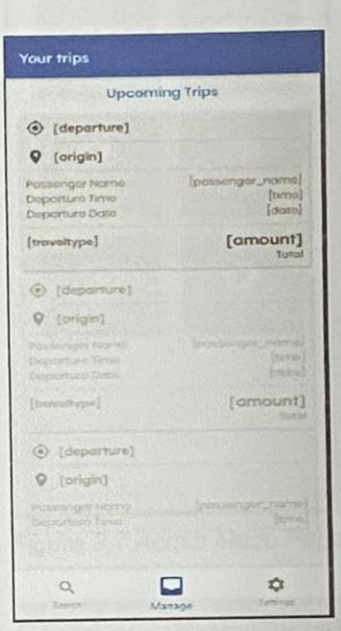

Figure 3.3 Manage Booking Page

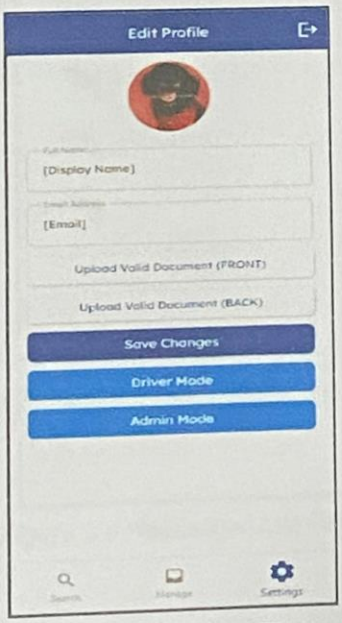

Figure 3.4 Settings Page

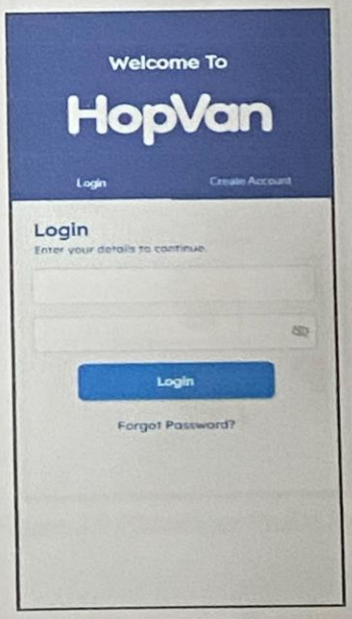

Figure 3.5 Login Page

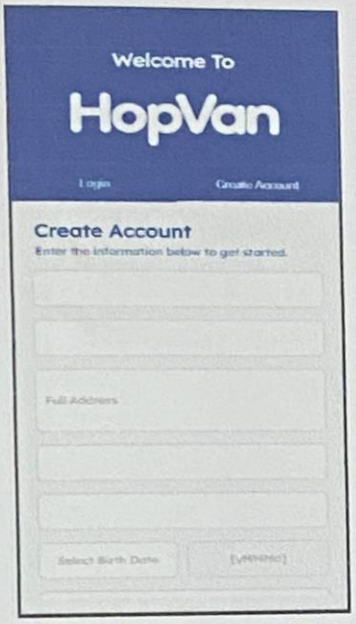

Figure 3.6 Registration Page

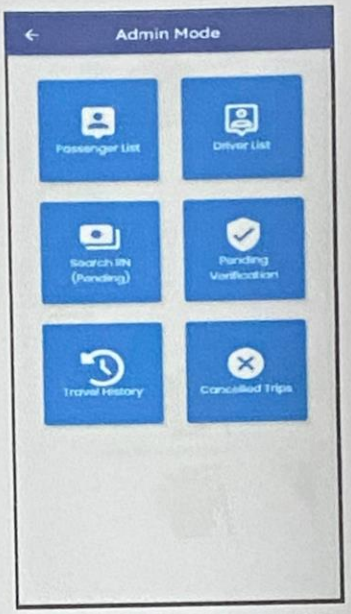

Figure 3.7 Admin Mode Page

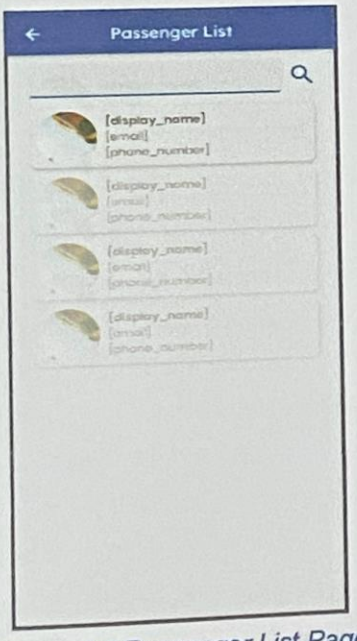

Figure 3.8 Passenger List Page

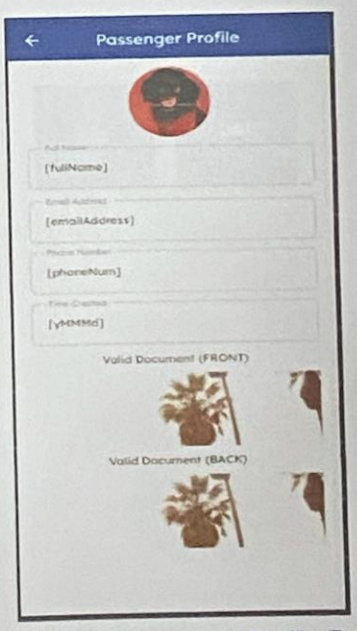

Figure 3.9 Passenger Profile Page

Figure 3.10 Driver List Page

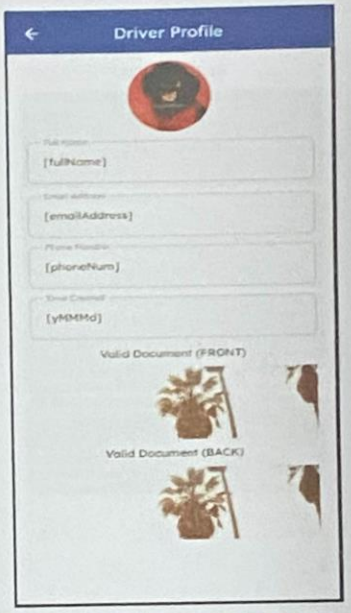

Figure 3.11 Driver Profile Page

Figure 3.12 Verification Page

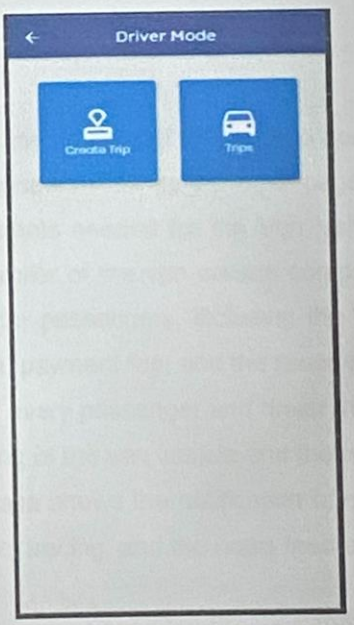

Figure 3.13 Driver Mode Page

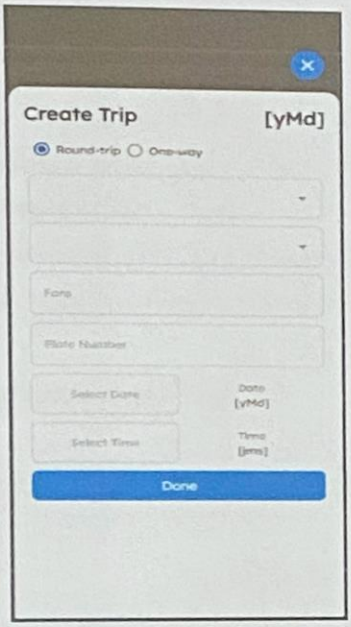

Figure 3.14 Create Trip Page

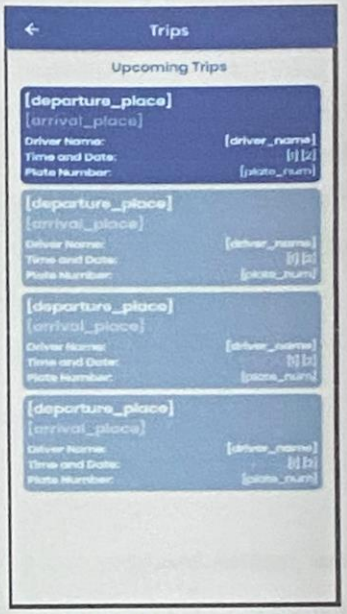

Figure 3.15 Drivers Trip Page

3.3 Prototype

Above it shows the prototype, and it shows the process of the mockup design by providing a page of every Interface. The first phase establishes the log-in page for drivers and passengers to verify data and documents needed for the Van Vehicle Company, which is led by the Administrator/Controller of the van vehicle company. The second phase shows the reservation guide for passengers, including the time and date of reservation through a ticketing system, payment fee, and the reservation of seats. The third phase shows the search trip of every passenger and driver that is available during that session and the contact tracing of the van vehicle and the driver for security and safety purposes. And the last phase shows the notification of every information dealing with the application, the contact tracing, and the news feed of the daily reports in the City of Mati Davao Oriental.

3.4 System Perspective

The idea of this project will be developed following the needs of the user, specifically passengers. This may not be a new system but an upgraded and innovative system. Additionally, the project has been designed for the benefit of the people inside Mati City Davao Oriental since it is not being implemented for the locals. It will be more advantageous for upgraded technology in the future.

3.5 Development and Testing

3.5.1 Data Analysis and Testing

The endpoint is the evaluation of the proposed system, which is the **HopVan: Android Based Van Booking Application,** to determine if it complies with ISO 9126. The analysis will depend on the evaluation of the Drivers for the Van vehicle and the passengers who will use the system in the City of Mati Davao Oriental.

In evaluating HopVan, the respondents used the adapted questionnaire from ISO 9126 Model. The approved questionnaire was administered to 30 respondents consisting of random passengers who avail on Van vehicles in the City of Mati Davao Oriental. After gathering the data, the developers utilized the Weighted Arithmetic Mean and analyzed the data.

The points that are used:

1 Point – Strongly Disagree
2 Points – Disagree
3 Points– Satisfactory
4 Points– Agree
5 Points- Strongly Agree

The following scale is used in interpreting the Weighted Arithmetic Mean Scale:

Range	Interpretation
4.51 – 5.00	Strongly Agree
3.51 – 4.50	Agree
2.51 – 3.50	Fair
1.51 – 2.00	Disagree
1.50 below	Strongly Disagree

Table 3.1 Weighted Arithmetic Mean

3.5.2 Questionnaire

Indicators	1	2	3	4	5
Functionality					
The mobile application can receive and store the data of the user.					
The mobile application can generate registration confirmation of the user in registration of the mobile app.					
The mobile application can require registration for valid documents such as IDs/(Valid IDs) for approval of the reservation.					
The mobile application can generate an arrangement of seats where the passengers can sit on their designated seats.					
The mobile application can generate a ticket system for approval of online van reservations.					
The mobile application can access and generate e-payment for the passengers, who can choose an option on cash or Gcash payment.					
The mobile application can generate time reservations and schedule their travels for passengers to have copies of their scheduled trips.					

The mobile application contains Contact Tracing to provide accurate location of the travels.					
The mobile application can generate travel history.					
Reliability					
The mobile application can handle unexpected errors.					
The mobile application can handle spam travel logs, especially on prank passengers.					
Usability					
The mobile application is easy to use					
The mobile application interface is visually appealing.					
Efficiency					
The mobile responds quickly to any task for Uploading documents and giving updates. Interface and language)					
The mobile application provides the light storage needed in installing the application, so anyone can easily install it anytime.					
The mobile application provides a formal language that is easy to navigate and use.					
Maintainability					
The mobile application can be tested quickly.					
The mobile application can install easily on android devices.					
Portability					
The mobile application can run on Android Devices.					

Table 3.2 Questionnaire

CHAPTER IV
RESULTS AND DISCUSSION

4.1 Achievements

This shows that the researchers have successfully worked out the objectives, including documentation of developers' methods to solve the particular objectives.

4.1.1 The Mobile Application

The objective is to develop an Android Based Application that can use freely and effectively anytime to the user of City of Mati through the use of mobile application. It can receive and store information of the reports of the users through the online reservation of Van Vehicle near in City of Mati Davao Oriental. Capable of registration and creating new user accounts, uploading valid documents of the user, providing an interface that allows the user to book specific travels and choose the availability of seats and van vehicles in the City of Mati Davao Oriental. Allow the company/admin of the Van vehicle to monitor the drivers and the passenger that will avail on the system and make sure that the drivers are fully authorized to drive a van vehicle due to the requirements needed. It will impact the tourism here in City of Mati, Davao Oriental, in the way of distributing well manage online reservations for van booking traveling system through the use of Android based mobile application.

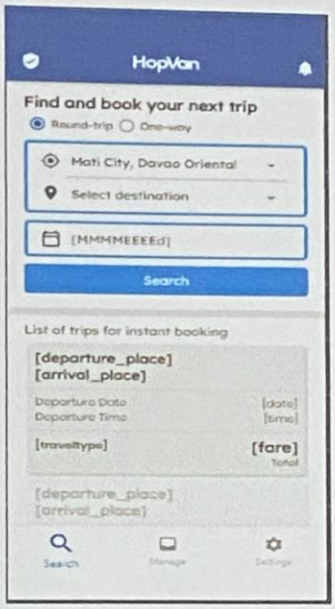

Figure 4.1 Mobile Application

4.2 Testing and Implementing Result

4.2.1 Presentation

The respondents evaluate the system using the adapted questionnaire from ISO 9126 Model. The questionnaire was administered to 30 respondents. After gathering the data, the proponents utilize the Weighted Arithmetic Mean to calculate and analyze the data, as shown in Appendix C.

Range	Interpretation
4.51 – 5.00	Strongly Agree
3.51 – 4.50	Agree
2.51 – 3.50	Fair
1.51 – 2.00	Disagree
1.50 below	Strongly Disagree

Table 4.1 Figure

Indicators	Respondents	Average Mean	Interpretation
Functionality	30	4.40	Strongly Agree
Reliability	30	3.83	Agree
Usability	30	4.4	Strongly Agree
Efficiency	30	3.89	Agree
Maintainability	30	4.45	Strongly Agree
Portability	30	4.6	Strongly Agree
Overall	30	3.70	Agree

Table 4.2 Average Mean

Table 4.2 shows the average mean of the Functionality, Reliability, Usability, Efficiency, Maintainability, and Portability.

Indicator Functionality has an average weighted mean of 4.40, which falls on the Strongly Agree scale. The respondents strongly agreed that the mobile application could generate registration confirmation of the user in registration of the mobile app, the mobile application can require registration for valid documents such as ID's/(Valid ID's) for approval of the reservation, the mobile application can generate arrangement of seats where the passengers can seat on their designated seats. The mobile application can access and generate e-payment for the passengers, who can choose the passengers an option of cash or G-cash payment. The mobile application can create time reservations and schedules for passengers to have a copy of their scheduled travels. The mobile application contains Contact Tracing to provide accurate location of the trips. The mobile application can generate travel history. It means that the respondents strongly agreed that the system is functional.

Indicator Reliability has an average weighted mean of 3.83, which falls on Agrees scale. The respondents agreed that the mobile application could handle unexpected errors. The mobile application can take spam travel logs, especially on prank passengers. It means that the respondents strongly agreed that the system is reliable.

Indicator Usability has an average weighted mean of 4.4, which falls on the Strongly Agree scale. The respondents strongly agreed that the mobile application is visually appealing and easy to use. It means that the respondents strongly agreed that the system is usable.

Indicator Efficiency has an average weighted mean of 3.89, which falls on agree scale. The respondents strongly agreed that the mobile application responds quickly to any task for uploading documents and giving updates. (Interface and language). The mobile application provides light storage needed in installing the application so anyone can quickly install it anytime. The mobile application offers formal language which is easy to navigate and used by the users. It means that the respondents strongly agreed that the system is efficient.

Indicator Maintainability has an average weighted mean of 4.45, which fall on the scale of strongly agree. The respondents strongly agreed that the mobile application could be tested quickly and installed easily on Android Devices. It means that the respondents strongly agreed that the system is maintainable.

Indicator Portability has an average weighted mean of 4.6, which falls on Agree' scale. The respondents agreed that the mobile application could be run efficiently and installed on Android Devices. It means that the system is portable.

Overall, the indicators above have an average weighted mean of 3.70, which falls on Agree' scale. This means the respondents agreed that the developed system is functional, Reliable, Usable, Efficient, Maintainable, and Portable.

4.3 Implementation Plan

Strategy	Activities	Person's Involved	Duration
Approval from the selected Users	Letter for the Administrator	Researcher, User	2 Days
System Installation	Installation of Software	Researcher, User	3 Hours
Information Distribution	Websites	Researcher, User	2 Days

Table 4.3 Implementation Plan

4.3.1. Android Studio

Developers used the android studio tool to implement the mobile application. The figures below are the snap codes of the project.

```
class AdminModePageWidget extends StatefulWidget {
  const AdminModePageWidget({Key key}) : super(key: key);

  @override
  _AdminModePageWidgetState createState() => _AdminModePageWidgetState()
}

class _AdminModePageWidgetState extends State<AdminModePageWidget> {
  final scaffoldKey = GlobalKey<ScaffoldState>();

  @override
  Widget build(BuildContext context) {
    return Scaffold(
      key: scaffoldKey,
      appBar: AppBar(
        backgroundColor: FlutterFlowTheme.of(context).primaryColor,
        automaticallyImplyLeading: true,
        title: Text(
          'Admin Mode',
          style: FlutterFlowTheme.of(context).subtitle1.override(
                fontFamily: 'Lexend Deca',
                color: Colors.white,
                fontSize: 20,
                fontWeight: FontWeight.w500,
              ),
        ),
        actions: [],
        centerTitle: true,
        elevation: 4,
      ),
      backgroundColor: FlutterFlowTheme.of(context).tertiaryColor,
      body: SafeArea(
        child: Padding(
          padding: EdgeInsetsDirectional.fromSTEB(30, 30, 30, 0),
          child: Column(
            mainAxisSize: MainAxisSize.max,
            children: [
              Expanded(
```

Figure 4.2 Snap Codes on Android Studio

4.3.2 Driver Page

```
class DriverModePageWidget extends StatefulWidget {
  const DriverModePageWidget({Key key}) : super(key: key);

  @override
  _DriverModePageWidgetState createState() => _DriverModePageWidgetState();
}

class _DriverModePageWidgetState extends State<DriverModePageWidget> {
  final scaffoldKey = GlobalKey<ScaffoldState>();

  @override
  Widget build(BuildContext context) {
    return Scaffold(
      key: scaffoldKey,
      appBar: AppBar(
        backgroundColor: FlutterFlowTheme.of(context).primaryColor,
        automaticallyImplyLeading: true,
        title: Text(
          'Driver Mode',
          style: FlutterFlowTheme.of(context).subtitle1.override(
                fontFamily: 'Lexend Deca',
                color: Colors.white,
                fontSize: 20,
                fontWeight: FontWeight.w500,
              ),
        ),
        actions: [],
        centerTitle: true,
        elevation: 4,
      ),
      backgroundColor: FlutterFlowTheme.of(context).tertiaryColor,
      body: SafeArea(
        child: Padding(
          padding: EdgeInsetsDirectional.fromSTEB(30, 30, 30, 0),
          child: Column(
            mainAxisSize: MainAxisSize.max,
            children: [
              Expanded(
                child: GridView(
                  padding: EdgeInsets.zero,
                  gridDelegate: SliverGridDelegateWithFixedCrossAxisCount(
                    crossAxisCount: 2,
                    crossAxisSpacing: 20,
                    mainAxisSpacing: 20,
                    childAspectRatio: 1,
                  ),
                  scrollDirection: Axis.vertical,
```

Figure 4.3 Driver Page Code Snippet

4.3.3 Imports

```
import '../flutter_flow/flutter_flow_radio_button.dart';
import '../flutter_flow/flutter_flow_theme.dart';
import '../flutter_flow/flutter_flow_util.dart';
import '../flutter_flow/flutter_flow_widgets.dart';
import '../seat_page/seat_page_widget.dart';
import 'package:flutter/material.dart';
import 'package:flutter_datetime_picker/flutter_datetime_picker.dart';
import 'package:google_fonts/google_fonts.dart';
```

Figure 4.4 Package Imports

4.3.4 Variables

The figures below show the snap codes variable and other repositories implemented to the "HopVan" Android Based Mobile Application.

```
class TravellerDetailsWidget extends StatefulWidget {
  const TravellerDetailsWidget({
    Key key,
    this.originplace,
    this.destplace,
    this.travelID,
    this.fare,
    this.traveltype,
    this.departDate,
    this.departTime,
    this.retDate,
    this.retTime,
  }) : super(key: key);

  final String originplace;
  final String destplace;
  final String travelID;
  final String fare;
  final String traveltype;
  final String departDate;
  final String departTime;
  final String retDate;
  final String retTime;
```

Figure 4.5 Variables

4.3.5 Settings

```
class SettingsWidget extends StatefulWidget {
  const SettingsWidget({Key key}) : super(key: key);

  @override
  _SettingsWidgetState createState() => _SettingsWidgetState();
}

class _SettingsWidgetState extends State<SettingsWidget> {
  String uploadedFileUrl1 = '';
  TextEditingController textController1;
  TextEditingController emailAddressController;
  String uploadedFileUrl2 = '';
  String uploadedFileUrl3 = '';
  final scaffoldKey = GlobalKey<ScaffoldState>();

  @override
  void initState() {
    super.initState();
    emailAddressController = TextEditingController(text: currentUserEm
    textController1 = TextEditingController(text: currentUserDisplayNa
  }

  @override
  Widget build(BuildContext context) {
    return StreamBuilder<UserProfileRecord>(
      stream: UserProfileRecord.getDocument(currentUserReference),
      builder: (context, snapshot) {
        // Customize what your widget looks like when it's loading.
        if (!snapshot.hasData) {
          return Center(
            child: SizedBox(
              width: 50,
              height: 50,
              child: CircularProgressIndicator(
                color: FlutterFlowTheme.of(context).primaryColor,
              ),
            ),
          );
        }
        final settingsUserProfileRecord = snapshot.data;
        return Scaffold(
          key: scaffoldKey,
          appBar: AppBar(
            backgroundColor: FlutterFlowTheme.of(context).primaryColor
            automaticallyImplyLeading: false,
            title: Text(
              'Edit Profile',
              style: FlutterFlowTheme.of(context).subtitle1.override(
```

Figure 4.6 Settings Page Code Snippet

4.3.6 Firebase Application on Google

The figures below show the process and overview of the Firebase. All data from users will be stored in a database.

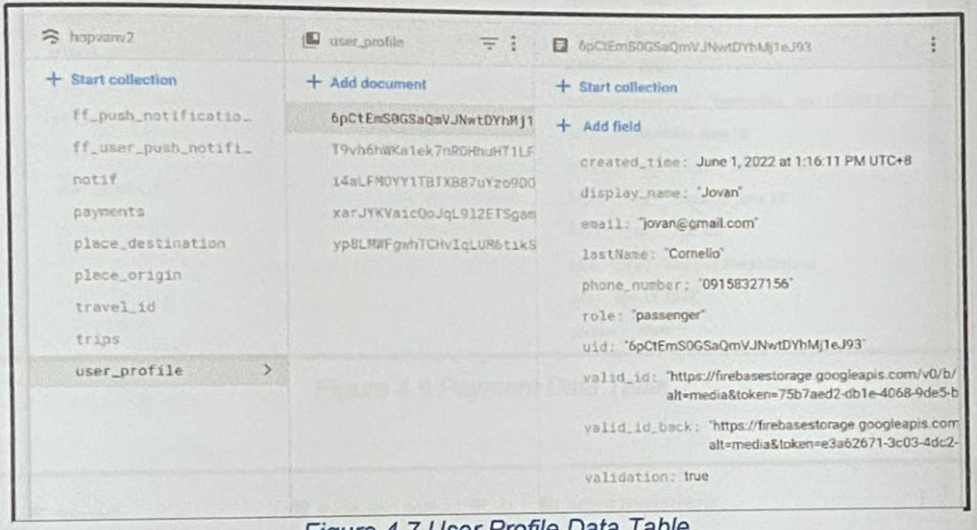

Figure 4.7 User Profile Data Table

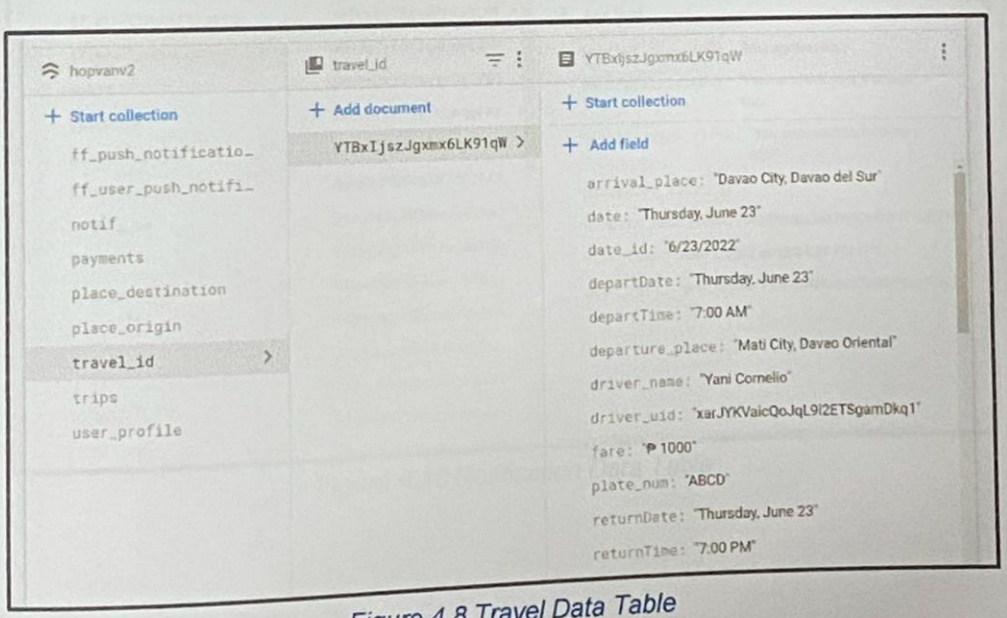

Figure 4.8 Travel Data Table

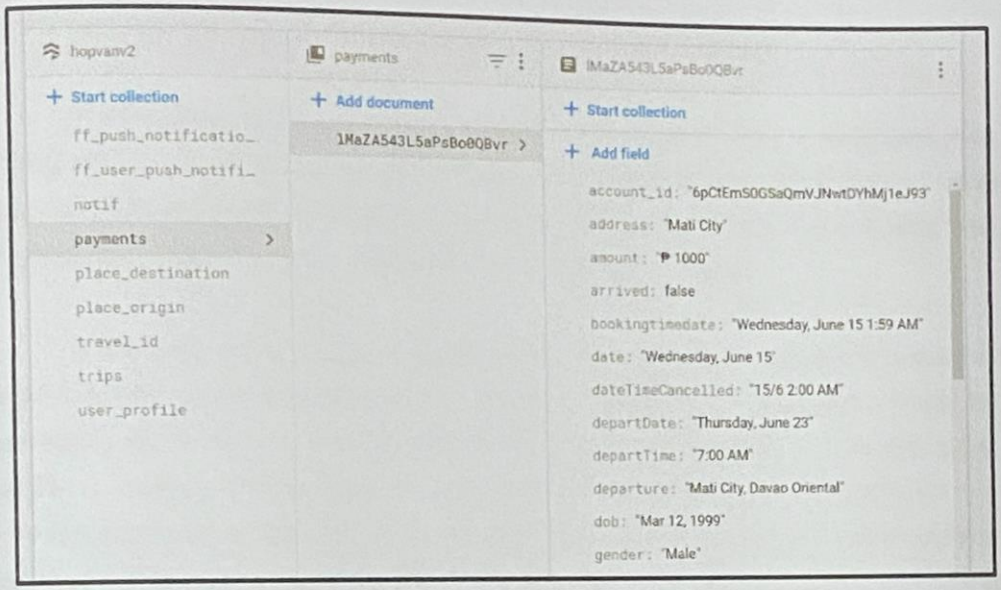

Figure 4.9 Payment Data Table

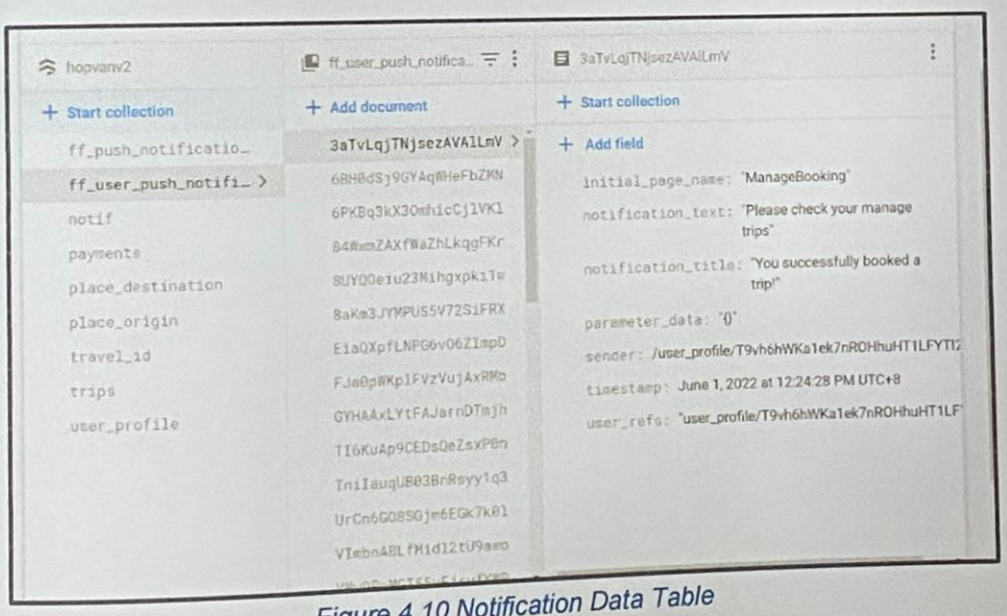

Figure 4.10 Notification Data Table

4.4 Problems Encountered during the Development and Testing

In developing and designing the system, the proponents tend to have difficulties coping with the chosen technologies. In the Interface of the mobile application part, the developer has problems selecting the design and color in the mobile app and what type of software application can be suitable for execution into the device.

In the part of the mobile application, the developer found out that it is hard to fetch data and create multiple codes in applying notifications in the system. It can be developed, but it takes a considerable time to finish the database and all the codes needed to create a notification on the system. This way of making mobile applications is time-consuming as it has more coding to do. As an alternative to the time-consuming problem, the developer found an idea to lessen the coding and time spent developing the mobile application. This resulted in the development of the mobile application, which uses the existing code and it on the mobile application.

4.5 Documentation

4.5.1 Software testing Documentation and Evaluation

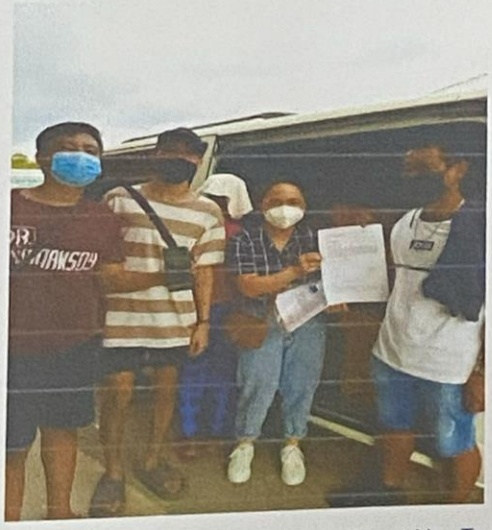

Figure 4.11 Documentation and Evaluation at Van Terminal

Figure 4.12 Documentation and Evaluation at Bus Terminal

Figure 11 and 12 shows the documentation of the software testing and evaluation. The proponents selected thirty (30) respondents to answer the specific questions about functionality, reliability, efficiency, usability, maintainability, and portability.

CHAPTER V
SUMMARY, CONCLUSION, AND RECOMMENDATIONS

5.1 Summary

Passengers are safe and comfortable when going to different locations thanks to secure vehicles and well-trained drivers. Van Vehicles are one of the most dependable modes of transportation in Davao Oriental; it is effortless to find a ride and conduct a quick transaction on any journey here in the City of Mati, Davao Oriental. Drivers are the ones who ensure that passengers are safe. They also take passengers where they need to go in assisting the passengers, securing their belongings and providing a comfortable seat to ensure that each passenger enjoys the entire journey. The proponents created a project to assist drivers and passengers in the City of Mati Davao Oriental in ensuring safety and comfort and developing a rapid transaction to reserve travels on Van Vehicles via technology, the most popular of which is Mobile Devices.

The study's goal is to assist the user/passenger, the driver, and the Van Vehicle Company. The study's specific goal was to design and develop a mobile-based Android application capable of (1) registering/creating new accounts for users and drivers, (2) providing an interface for uploading valid data for passengers and drivers, (3) providing travel history of all travels that occurred on the same day for Van Vehicle Contac Tracing, and (4) providing a graphical interface for users to obtain locations of travels near Davao Oriental. (5) Providing online storage for simple access and installation of information.

The study's findings revealed that the mobile application is functional and operable. No defects were discovered during testing and evaluation. Because of the small amount of space required for installation, the graphical interfaces are visually appealing, easy to use, and user-friendly. The researchers have found results during the evaluation and testing discussed in conclusion.

5.2 Conclusion

Most residents in Mati, Davao Oriental, prefer to travel in van vehicles rather than other modes of transportation due to the quick transaction, quick travel, and simple means of travel in various Davao Region regions.

Software testing and reliability testing are conducted based on the system's evaluation. Based on its goals, the system is performing well. The system assessment and test results are favorable since most respondents highly agree with the system. As a result, the respondents consider that the system is functional and can assist the registered user and the company's driver in using the mobile application in a secure and well-managed manner.

5.3 Recommendations

The researchers strongly recommended the following as a result of the study's results and conclusions:

- When designing a mobile application, it is advisable to utilize the most recent or most recent software application and ensure that the code is adaptable across all sorts of software applications and can easily manipulate all errors.
- It is the best working library in programs, such as JavaScript and other programming languages that can apply to a mobile application. It helps lessen the time in the coding process.

YANI SHARRIFF A. CORNELIO
Email: yanicornel211@gmail.com
Contact #: 09158327156
Location: Brgy. Matiao, City of Mati, Davao Oriental

PERSONAL DATA

Age	:	23
Sex	:	Male
Date of Birth	:	March 12, 1999
Place of Birth	:	Mati, Davao Oriental
Height	:	161 cm
Weight	:	60kg
Civil Status	:	Single
Nationality	:	Filipino

SKILLS AND INTEREST

- Computer Skills
- Photography
- Programming Skills
- Problem Solving

EDUCATIONAL BACKGROUND

TERTIARY
Bachelor of Science in Information Technology
Davao Oriental State University
Guang-Guang, Dahican, City of Mati
2018 - 2022

SECONDARY
Davao Oriental Regional Science High School
Dahican, City of Mati, Davao Oriental
2012 - 2018

ELEMENTARY
Sunbeam Christian S
City of Mati, Davao Oriental
2006 - 2012

GENE MARC C. TAN
Email: genetan69@gmail.com
Contact #: 09530365453
Location: Interco Compound, Brgy. Matiao, City of Mati, Davao Oriental

PERSONAL DATA

Age	:	23
Sex	:	Male
Date of Birth	:	March 27, 1999
Place of Birth	:	Mati, Davao Oriental
Height	:	5'11ft
Weight	:	60kg
Civil Status	:	Single
Nationality	:	Filipino

SKILLS AND INTEREST

- Computer Literature (MS Office Word, Excel, PPT)
- Video Editing
- Web Design
- Prototyping Software

EDUCATIONAL BACKGROUND

TERTIARY
Bachelor of Science in Information Technology
Davao Oriental State University
Guang-Guang, Dahican, City of Mati
2016 - 2022

SECONDARY
Davao Oriental Regional Science High School
Dahican, City of Mati, Davao Oriental
2012 - 2016

ELEMENTARY
Rabat Rocamora, Mati Central, Special Education School
City of Mati, Davao Oriental
2006 - 2012