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### **TODAMaC Booking Application**

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**A BSIT Capstone Project Submitted to the Faculty of Computing, Data Science,  
Engineering and Technology of the  
Davao Oriental State University in Partial Fulfillment of the Requirements  
for the Degree**

**BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY**

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*HAGTU*

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## APPROVAL SHEET

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## ABSTRACT

**Arjade S. Mabasa & Veejay G. Dumaran “TODAMaC Booking Application”. (BSIT Capstone Project). Davao Oriental State University. June 2023.**

**Adviser: Lesley Dianne M. Bargamento**

This Capstone Project was created to encourage commuters to use technology when booking a ride on Bao-bao or tricycle is more accessible through the TODAMaC Booking Application. This Android-Based Booking Application System aims to relieve passengers' burden in riding to their destinations while helping drivers to earn money for a living. Through this study, the researchers created a mobile application that allows drivers and commuters/passengers to sign up for the application and log in. Additionally, this android-based booking application is more reliable since it allows commuters/passengers to report a driver and book a ride conveniently, allows the commuter to choose their destination, whether Toda or Non-Toda area and allows the user to view the previous activities. Furthermore, this study follows innovative community based development that utilizes the waterfall method, requirement analysis, specification, documentation, design, Graphic User Interface (GUI) Design, development and testing, and data analysis plan. Finally, the researchers met the objectives of this study through the presentation of achievement per objectives.

**Keywords:** Booking, Mobile App, Firebase, Google Map API and Authority

## **CHAPTER I**

### **INTRODUCTION**

#### **1.1 Rationale**

The public is alarmed by kidnapping and other transportation-related crimes. It has caused anxiety and fear among commuters. It is timely and relevant to launch an application that will assist in tracking, monitoring commuter/passenger activity, and reporting drivers for every commuter/passenger activity in the city with the aid of programming and development. This booking application for our Local TODAs will aid in modernizing the commuter transportation application.

Filipino commuters heavily rely on riding Bao-bao and tricycles, and the app booking is a way further to integrate these vehicles into the country's riding culture. The TODAMaC Booking Application was developed using mobile application development to encourage commuters to use technology when booking a ride on Bao-bao or tricycles. The program makes it simpler for the riders of bao-bao and tricycles to serve their current clients and attract new ones.

Using the application can aid commuters in lessening transportation-related issues. It provides a more organized and practical transportation experience for residents and visitors. This app has made it easier for commuters and bao-bao and tricycle drivers in Mati City to order better and safer ride services.

Further, this app work like an Uber or Grab application to book a ride depending on the demand or capacity of the commuters/passenger's request. However, this app differs in the qualification of a courier and booking scheme. This app is designed for only registered Bao-bao and tricycle drivers queued to the specific Toda.

It also has features on cash-to-cash transactions by giving automated bills to the riders depending on the TODA registered cost per kilometer or route.

### **1.2 Purpose and Project Descriptions**

With the help of the TODAMaC app, riders may conveniently and inexpensively ride around Mati. It wants to help residents of the City of Mati get to where they're going safely. Since the driver will go through screening by the TODA partner registered in the admin or server, the commuter or Passenger will reach home safely and securely with the aid of the developed program.

Registering with the TODA mentioned above and requesting to line up for the available rides helps the driver make money. Additionally, it will allow the driver to get paid precisely based on how many kilometers the Passenger travels. The app will help TODA partners by making it easier for them to earn membership fees, monthly fees, or daily payments for their TODA. The aforementioned TODA can only collect fees and make money using an Android phone.

### **1.3 Objectives of the Study**

The study's general objective is to create an Android-Based Booking Application System to improve passengers' burden in riding to their destinations and help drivers earn a living.

Specifically, it aims to:

1. Design and develop an online booking application for TODA or Non-TODA Bao-Bao Terminal, called "TODAMaC," will be capable of the:
  - Create software that allows drivers and commuters/passengers to sign up for the application and log in.
  - It provides a reliable android-base booking application that allows commuters/passengers to report a driver and book a ride conveniently.
  - Allows the commuters to choose their destination, whether TODA or Non-TODA area.
  - Allows the user to view the previous activities.
2. Evaluate the TODAMaC to determine if it complies with the ISO 9126 standards.
3. To prepare an implementation plan for the deployment of the TODAMaC.

### **1.4 Significance of the Study**

This application would maximize the efficient use of commuters' apps to ride easily just by clicking the application. Book the nearest registered TODAMaC site based on the location of the user. To the driver or courier of a tricycle or bao2, it will allow earning money just by clicking the accept button of the app. They will earn money depending on the kilometers their vehicle runs and will be paid accordingly.

Furthermore, drivers of bao-bao, tricycles, and passengers must register to utilize the TODAMaC Booking Application. The network administrator also manages reports and monitors bao-bao and tricycles. This application also helps to eliminate crimes via transaction information while maintaining data privacy.

### **1.5 Scope and Limitation of the Study**

#### **1.5.1 Scope**

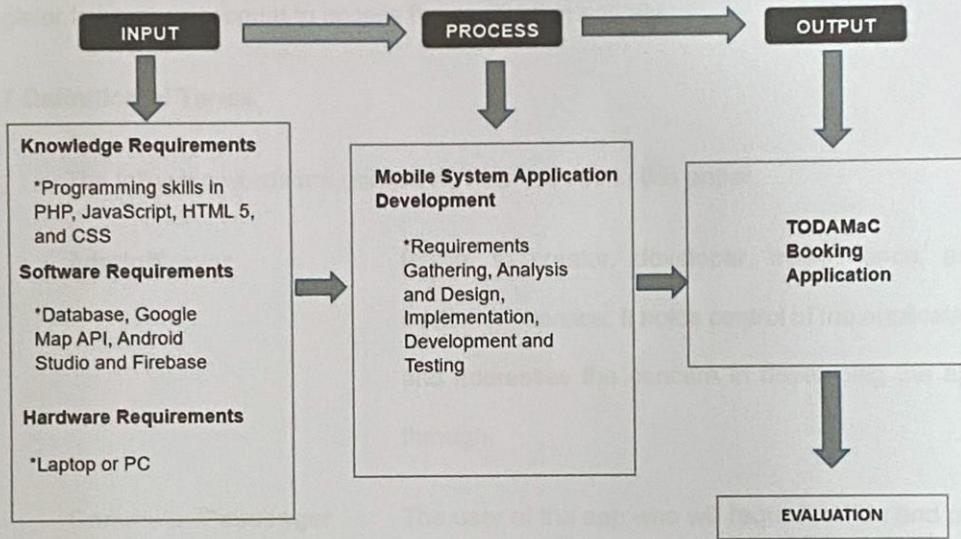
- This application is for any person with an installed application of TODAMaC applications in the Mati City area only for commuters/passengers/riders and drivers/couriers.
- This application is also intended to help commuters from any part of the City of Mati to find their drivers easily by installing the TODAMaC application while turning on the location of an Android phone.
- It also helps the drivers to find commuters by just waiting in a relaxing area or at their Registered Toda and earning money for a living.

#### **1.5.1.2 Limitation**

- This application is not working in offline mode.
- This app will only work for the registered Toda within Mati City.
- However, suppose the Passenger is going to the nearby municipality. In that case, it will depend on the route of the registered Toda either they will accept the ride or deny it.
- The admin has the only option to accept or deny the application of the driver's application for each registered Toda.

- Also, the admin can only accept and verify each Toda applicant for registration and orientation about the application.

## 1.6 Conceptual Framework



*Figure 1.1. Conceptual Framework*

The figure above shows the conceptual framework of its concepts and the development of the application. It shows the user's input, process, and output flow. The developers used the following inputs as a Database for organizing the collection of structured information, or data, typically stored electronically in a computer system; Google Map API for detailed information about geographical region sites around the world that was useful to the application; Firebase messaging for displaying notifications and messages and lastly the Android Studio for the development of the mobile application.

The developers have undergone requirements gathering, Analysis, and Design during the application development. Data and information were collected and studied to

develop, design, and build the desired application. Through the help of the inputs and outputs mentioned above, the developers created a friendly user online application. The developed application can only be opened on an Android-based phone. To use the Android application, public users must install it on mobile phones. The user will need to register to have an account to access the application entirely.

### **1.7 Definition of Terms**

The following words are defined by how it is used in this paper.

<b>Admin/Server</b>	Refers to creator, developer, maintenance, and customer service. It holds control of the application and addresses the concern in developing the app through.
<b>Commuter/Passenger</b>	The user of the app who will request a ride and pay in cash. It refers to the person who will use the app, commuters, or passengers who live in Mati City.
<b>Courier/Driver</b>	This refers to the driver who will give a ride to the customer and earn money for a living. The driver will be able to give an easy route to the customer's destination and get paid accordingly.
<b>TODAMaC Partner</b>	The server or portal that can accept a driver's queue is referred to. They are also accountable for using the program for the rest time by registering as a TODAMaC partner with the server or admin. They

will also offer a chance to make money without being  
present in the abovementioned TODA

## CHAPTER II

### REVIEW OF RELATED LITERATURE

For the researchers to be able to accomplish the study, these technological tools will be used.

#### 2.1 Technical Background

The proponents have used different applications during the development of the system, and these were the following:

##### 2.1.1 Android Studio

###### Android Studio

Currently, everyone needs smartphones in a big way. Individuals often use Android phones for daily communication. Android is a Linux-based operating system. Since Android is open-sourced, anybody may use it for nothing. It is primarily made for touch-screen mobile devices like smartphones and tablets (Periyanayagi, S. et al., 2021). Each project built in Android Studio uses a griddle-based development system, an android emulator, as well as code templates. Additionally, some projects also include resource files and source code. Furthermore, the functionality is used to push changes to code and resources to an application that is already running. It offers code completion, refraction, and analysis in addition to helping the developer write code. The TODAMac Booking Application was successfully constructed with the aid of the Android studio.

### **2.1.2 Java**

Java is a high-level object-oriented programming language that enables programmers to create code that can be executed anywhere. Java was created so that everyone may fearlessly run programs in their browser. It ensures that programs are stopped if they attempt to conduct something risky (Horstmann, C., 2020). It is utilized to create reliable programs and safely transfer and modify code between several devices. It includes a large range of resources and libraries and is used in many various situations, from basic GUI applications to sophisticated back-end systems. It concurrently enables the Android application to accommodate high bandwidth requirements, lower latency, and boost output.

### **2.1.3 Google Map API**

The Google Maps API enables the integration of Google Maps on websites employing a straightforward JavaScript interface or a Flash interface, a third-party developers' website. The API includes language localization, region localization, and geocoding. It has mechanisms for enterprise developers who want to utilize the Google Maps API within an intranet (De S., et.al., 2022). It is utilized to explore a new area and make difficult activities like traveling simpler to plan, organize, and carry out. Users of Google Map can access maps online and useful trip data through the applications. Developers may now include editorial summaries, unique

business hours, and present ratings organized by latest by leveraging the Google Map to integrate useful information into their and services.

#### **2.1.4 Firebase**

Google's Firebase is a platform for building mobile apps with robust tools for creating, managing, and upgrading applications. Its services are hosted in the cloud, and developers can efficiently perform on demand scaling. It is a backbone platform for creating websites and mobile apps (Batschinski, 2022). It serves as a storage space for the data and information specified in the application. Additionally, it offers monitoring tools, data analysis, reporting and correcting app errors, as well as product development trials to developers. It aids in the development, deployment, and scaling of mobile applications.

### **2.2 Related Literature**

Living in a secure atmosphere is very important to everyone. A safe means of transportation is also essential. People in a particular environment travel by foot, buses, trains, and vehicles to go from their homes to their places of employment and other daily activities. Crime cannot be avoided using public transportation, such as violence, fare evasion, and pickpocketing. Drivers who violated crimes while driving with their passengers can easily report them to the police; the prior art is overcome by the present invention, which, in one aspect, is an apparatus for transport booking that includes tracking and monitoring devices until the Passenger reach their destination.

Kidnapping and other crimes involving transportation receive less attention than they would elsewhere, especially when compared to the frequency of such crimes (Newton, 2004). The TODAMaC Booking Application is the rest place of passengers go after which they register to use the app while being transported and to report any incidents of profanity, aggression, fare evasion, or pickpocketing. A motorist will be reported to authorities for his actions by being ned, suspended, or sued after being successfully reported. It all depends on how terrible he was.

In addition to actual victimization, fear of crime can result in several undesirable repercussions (Etopio, Berthelot 2021). Urban crime prevention plans include situational and societal crime prevention measures. Social crime prevention focuses on the underlying causes or criminogenic aspects of crime (Lucagbo, De la Cruz, Narvaza, Paglicawan, Pepito n.d.).

According to Statista, there were already 27 abduction incidents in the Philippines as of September 2022, a rise from the 38 kidnapping cases reported in 2020. 2019 had 85 occurrences of abduction, which is the highest amount ever. Most working class in the Philippines travels by public transit, and the morning commute alone may be very taxing. Even if the number of street crimes in the Philippines dropped from 23,963 last year, it still reached 21,496. Unsurprisingly, our streets could be safer (Portugal, 2014). But since we have no other options or alternatives, we continue to ride, hoping that today won't be the day we become victims of the crimes that plague our society.

Tracking systems are frequently employed to monitor moving objects. Monitoring such antisocial behavior is necessary. It uses surveillance technology, such as a GPS-like device (Akshatha S.A, 2017). These days, it's necessary to have a car tracking system since it enables tracking and movement monitoring. Additionally, it allows the user to

examine the motions and previous actions taken by the vehicle. The global positioning system (GPS), geographic information system (GIS), and contemporary communications technology make up the high-tech vehicle monitoring system (Lino Jr, Festijo n.d.).

### 2.3 Related System

#### 2.3.1 JoyRide Superapp

Leading domestic super app JoyRide provides e-commerce, ride-hailing, and delivery services on demand in the Philippines. As a response to commuters' demand for a dependable and safe mode of transportation, JoyRide began as a motorbike taxi service. JoyRide is available 24/7; it serves cities in Metro Manila, Rizal, Bulacan, Cavite, Laguna, Baguio, and more (JoyRide Superapp, 2019).



Figure 2.1 JoyRide Superapp

### 2.3.2 BeepMe Inc.

BeepMe Inc.'s simple Car & Taxi hailing app will respond in less than a second. It enables customers to hail a vehicle using smartphones or tablets, monitor the driver's progress in real time, and provide integrated payment and rating systems. In addition, users can Instagram, tweet, and use Facebook without ever leaving the app (BeepMe Inc.).

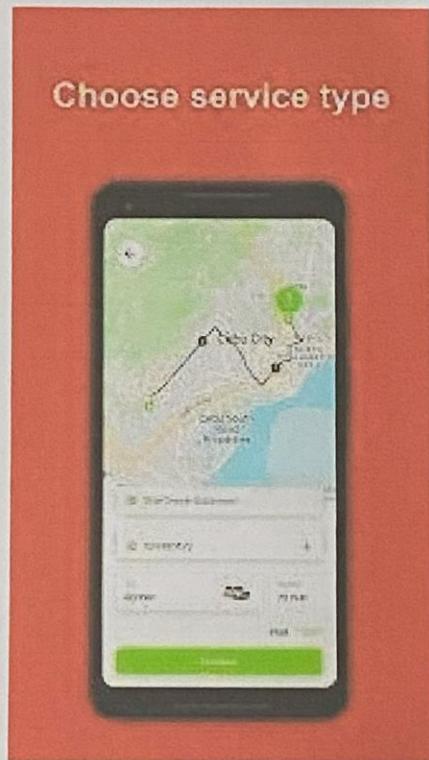


Figure 2.2 BeepMe Inc.

### 2.3.3 GrabTaxi

The most popular mega app in Southeast Asia, Grab provides a range of services including deliveries, mobility, financial services, enterprise, and others. Additionally, it provides users with meal delivery, grocery delivery, and rapid connections to everything. In addition, Grab offers financial services like insurance and securities services, as well as a platform for safe and convenient cashless transactions (GlobalData, n.d.).

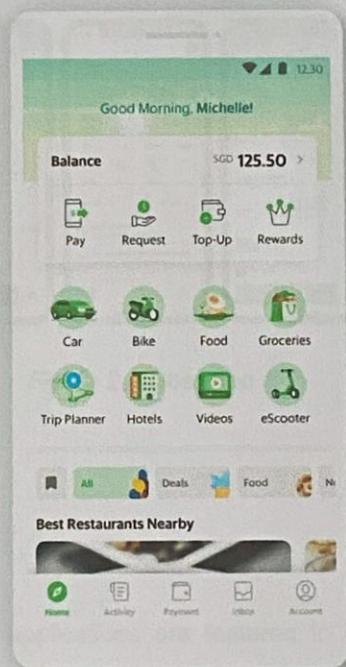


Figure 2.3 GrabTaxi.

#### 2.3.4 Uber App

Uber is a transportation services firm that provides the Uber app. By using the app, you may request a trip that will be instantly delivered by a Uber driver

nearby and let them know where you are. Despite you having to speak a word or take out your wallet, it determines the driver's navigational path, estimates the distance and charge, and transmits the payment from your chosen payment method to the driver (Picaro, 2023).

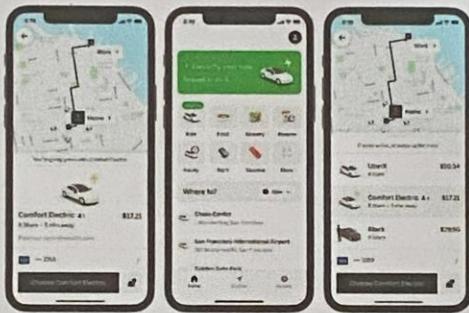


Figure 2.4 Uber App

## 2.4 Synthesis

These three significant applications are featured to help people earn money, access rides easily, and utilize the advantage of high-technology businesses. These apps allow the user to ride to their destinations safely and securely.

The same advantage applies to the driver, who may take rides at their earliest convenience using an Android app or mobile phone and make a career at it. The minimum requirement for these four applications is to give the server access to personal information for security purposes only.

It also allows commuters for an instant booking application. It is most reliable when it comes to the auto-calculating system of the app to avoid ununiformed payables of rid.

## CHAPTER III

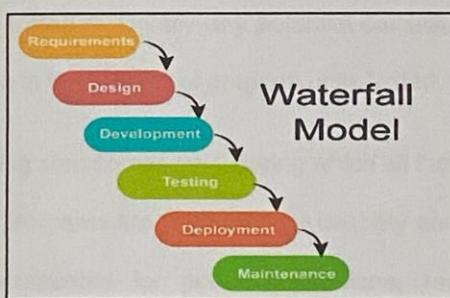
### MATERIALS AND METHODS

#### 3.1 Software Methodology

The methodology of this study follows innovative community-based development that utilizes, innovates, and applies information for community service purposes.

##### 3.1.1 Waterfall Model

The researchers chose the Waterfall Methodology because it best suited the nature of the investigation, as seen in the image below. Since the suggested system needs to be ready for requirements, design, development, testing, deployment, and maintenance, each phase must be fully completed, as illustrated in the image, to go forward and produce precise results for the entire system's development. (Ganney 2020).



*Figure 3.1 Waterfall Model*

In applications related to industrial design, the waterfall model approach is still employed. It is generally referred to be the original software development

technique. For complex, diverse projects, the model is often employed more broadly as a high-level project management methodology. (Lutkevich Ben, 2020).

This phase takes a lot of time because the development and potential costs and expenses that might be constrained during the process are investigated. Before moving on to the design process, this information is reviewed and documented for future clarification.

The Scope of the study is built after carefully reading and analyzing the rest phase to ensure the project is feasible. The structure of the software is designed and written using programming codes and programming tools like Android Studio under the scope document. This official IDE program is appropriate for the investigation and enables researchers to create Android applications. (Developers, 2021).

The step of implementation that follows the strategy involves breaking down the established software application's functions into smaller program units, which are then tested to identify any potential calculation errors and functional laws. Unit testing is the division of program units tested. (Sharma, 2016).

The testing step comes next, during which all the procedures and features of the software programs are examined for usability and application clarity. Data results are documented for potential revisions, redevelopment, and error correction if any are discovered.

The final phase is deployment, which involves delivering the finished software application with all its functionalities to the intended users.

### 3.2 Requirement Analysis

#### 3.2.1 Documentation of the Current System

Some commuters need help finding or searching for bao-bao and tricycles.

The TODAMac application, available in the Mati City area, has made locating any bao-bao and tricycle simpler. Some updates are made by our TODA Administrator or the TODA server's App.

### 3.3 Requirement Documentation

#### 3.3.1 System Architecture

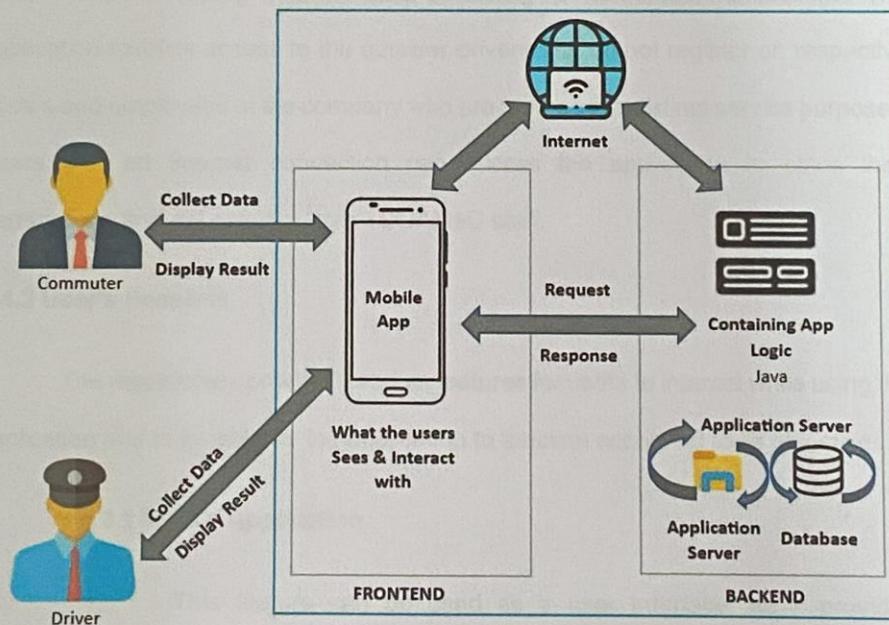


Figure 3.2 TODAMC Booking Application System Architecture

This figure shows the flows of the mobile application that would assist the public. This application comprises Message building and targeting, FCM backend,

Platform-level message transport, and SDK on devices. This architecture would become the primary interface that the user can interact with this application.

### **3.4 Requirement Specification**

This creative project is an Android-base mobile application that helps TODA businesses and their respective clients by helping to create a much more upscale environment.

#### **3.4.1 Product Perspective**

This project makes it simple to navigate and aids drivers, commuters, and server staff in keeping track of data pertaining to numerous transactions. The application restricts access to the outsider drivers that do not register on respective Toda's and employees of the company who are assigned to distinct service purposes. Users with an internet connection can access the application to place their transactions and get catering from TODAMaC staff.

#### **3.4.2 User's Features**

The researchers provided product features for users to interact while using the application and to be able for the application to function according to its objectives.

##### **3.4.2.1 Mobile Application**

This feature can be used as a user interface, as it provides interactions with the user. It serves as the primary user interface of the project, as modern society now has mobile and even desktop devices such as laptops or personal computers (PC) that can be used as a medium of the application. It is also programmed to run on mobile phones that are

handy and easy to use and laptops/desktop devices that are also easy to use.

#### **3.4.3 Features of the Android Application**

This app has creative feature in three faces namely the rider's/passenger's app, the driver/courier's app, and the TODA partner app.

#### **3.4.4 User Classes and Characteristics**

The user of this innovation would be the following:

- TODA Partner's App
- Admin/Server's App
- TODA Driver's App
- TODA Commuters/Passenger's App

The above-mentioned innovations have specific function and features. These features will be discussed further in the 1.7 Definition of Terms. However, as an overview of the said user's classes namely: TODA Rider's App dashboard shows an option to request for a ride and rate the app according to his/her experience;

#### **3.4.5 Software Specifications**

Android Studio will be used to construct the application in accordance with the study's parameters. The primary usage of Android Studio, an official IDE that supports the Java programming language, is the creation of Android software and applications.

### **3.4.6 Design and Implementation Constraints**

Some software has its limit and constraints as this prevents and forbids the application from processing work that is not included in its functionality. It is only applicable for mobile applications on any Android phone with an OS version 4.4 up to the latest version. The internet connection should have a bandwidth of 1-2mbps and up for faster processing.

### **3.4.7 Other Non-Functional Requirements**

The developers have provided different requirements to ensure the application satisfies the functionalities intended for its scope.

#### **3.4.7.1 Safety Requirements**

The developer made sure that the application did not consist of any harmful or uncertain content that it is created for two different users, such as the driver and commuter. In this technique, the confidential information in the database is kept safe.

#### **3.4.7.2 Security Requirements**

Researchers ensured that no user privacy risks were violated throughout the development of the program and that no excessive or dangerous content was included for the application's user-friendliness and exclusivity.

### **3.4.8 Software Quality Attributes**

The following qualities of software are present in the (Business Application Name) application:

#### **3.4.8.1 Reliability**

During the project's development, engineers made sure the program is dependable and that all features will work to facilitate transactions across the system.

#### **3.4.8.2 Efficiency**

The researchers took care to collect user feedback from those who would help the application's effectiveness based on their experiences using it.

#### **3.4.8.3 Portability**

To maintain the application's portability and user-friendliness for both passengers and drivers, the researchers created it in a mobile environment.

#### **3.4.8.4 Functionality**

To guarantee that every aspect of the application is usable and free from issues, it was tested on the various target user categories.

### **3.5 Design**

The figures shown below are the graphical user interface design for mobile and web-based applications, as well as a tabulated description of the UI components shown in each figure.

### 3.5.1 Use Case Diagram

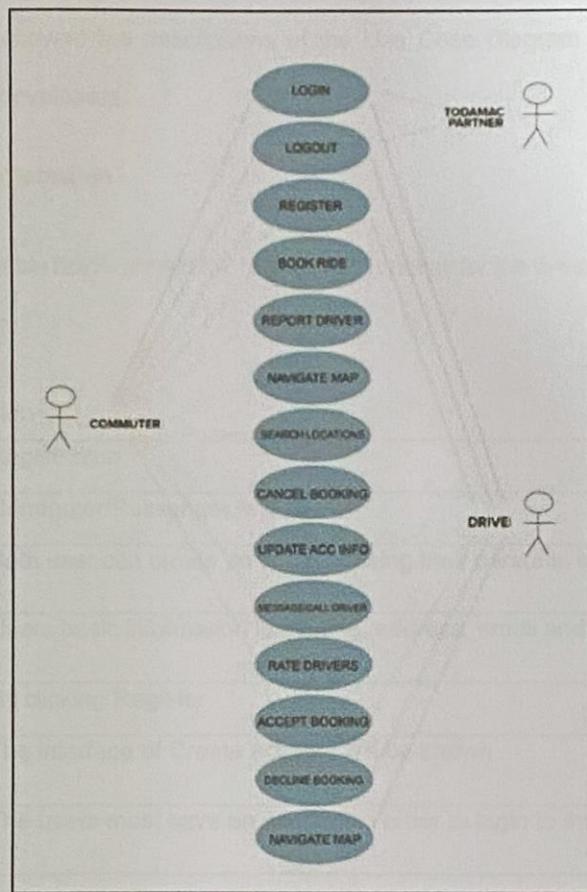


Figure 3.3: Use Case Diagram for TODAMaC Booking Application

This figure shows the use case diagram for TODAMaC Booking Application; it defines the Scope of the system that provided the user to create an account and log-in features where utilizing Google map API, the user would view the shown destination where you want to travel according to its exact location, category, prices and other information of the application.

### 3.5.1.1 Use Case Descriptions

This showed the descriptions of the Use Case Diagram that was being used by the developers.

#### 3.5.1.1.1 Registration

The table below shows the registration process for the driver and commuter using the application.

Table 3.1: Registration

<b>Name</b>	Registration
<b>Actors</b>	Commuter/Passenger and Driver
<b>Description</b>	Both user can create an account using their personal information
<b>Data</b>	Users basic information like name, address, email and etc.
<b>Stimulus</b>	By clicking Register
<b>Response</b>	The interface of Create account will be shown
<b>Comments</b>	The users must have an account in order to login to the application

#### 3.5.1.1.2 Login

The table below shows the specific process of logging in for commuters and drivers using the application.

Table 3.2: Login

<b>Name</b>	Login
<b>Actors</b>	Commuter/Passenger and Driver
<b>Description</b>	Both user can login an account
<b>Data</b>	Users basic information like name, address, email and etc.

<b>Stimulus</b>	By Clicking Login
<b>Response</b>	The interface of Create account will be shown
<b>Comments</b>	The users must have an account in order to login to the application

### 3.5.1.1.3 Book a Ride

The table shows the process of booking a Ride and how the commuter chooses where to go by using the application.

Table 3.3: Book Ride

<b>Name</b>	Book Ride
<b>Actors</b>	Commuter or Passenger
<b>Description</b>	The Commuters/passengers can book a ride according to their needs
<b>Data</b>	By the use of Google Map API
<b>Stimulus</b>	By clicking book a ride
<b>Response</b>	It will be shown once it is done
<b>Comments</b>	The user must login in order to use the application.

### 3.5.1.1.4 Report Driver

The table shows the process of reporting a Driver and how the commuter rates the driver's behavior after the ride is successful.

Table 3.4: Report Driver

<b>Name</b>	Report Driver
<b>Actors</b>	Commuter or Passenger
<b>Description</b>	The commuter/passenger can give feedbacks or report the driver after the rides is successfully done.
<b>Data</b>	Information of the driver's like name, plate number, proofs and etc.

<b>Stimulus</b>	By click report a driver
<b>Response</b>	It will show once it is done
<b>Comments</b>	The user must have proofs in order to validate the report

#### 3.5.1.1.4 Navigate Map

The table shows the process of Navigate Map and how commuters and drivers can locate their destination using the Google Map API in the application.

Table 3.5: Navigate Map

<b>Name</b>	Navigate Map
<b>Actors</b>	Commuter/Passenger and Driver
<b>Description</b>	Both users can view any suggested destination nearby their locations
<b>Data</b>	By the use of Google Map AP
<b>Stimulus</b>	Clicked by the type of users
<b>Response</b>	List of registered area in the said TODA
<b>Comments</b>	The users must login in order to access the application

#### 3.5.1.1.5 Search Locations

The table shows the process of the commuters searching for locations using the application.

Table 3.6: Search Location

<b>Name</b>	Search Location
<b>Actors</b>	Commuter or Passenger
<b>Description</b>	The commuter/passenger can search for a specific location
<b>Data</b>	Location Name and fare
<b>Stimulus</b>	Clicked by the type of passenger/rider

<b>Response</b>	View all the possible location according to the specific location name
<b>Comments</b>	The commuter/passenger must login in order to access the application

### 3.5.1.1.6 Cancel Booking

The table shows the process of canceling a booking and how the commuter and driver interact with the application.

Table 3.7: Cancel Booking

<b>Name</b>	Cancel Booking
<b>Actors</b>	Commuter or Passenger
<b>Description</b>	The commuter/passenger can cancel book
<b>Data</b>	By the use of Google MAP API
<b>Stimulus</b>	Clicked by the typed of the passenger/rider
<b>Response</b>	The cancel booking will be shown
<b>Comments</b>	The commuter/passenger must login in order to access the application

### 3.5.1.1.7 Update Account INFO

The table show the process of Update Account Information.

Table 3.8: Update Account INFO

<b>Name</b>	Update Account INFO
<b>Actors</b>	Commuter/Passenger and driver
<b>Description</b>	Both users can update their account/personal information
<b>Data</b>	Update Personal Information like Name, Address, Email & etc.
<b>Stimulus</b>	Clicked by the typed of the users

<b>Response</b>	The update info will be shown
<b>Comments</b>	Both users must update their information in order to be shown in the interface

### 3.5.1.1.8 Message or Call Driver

The table show the process of Message or Call the Driver.

Table 3.9: Message or Call Driver

<b>Name</b>	Message or Call Driver
<b>Actors</b>	Commuter or Passenger
<b>Description</b>	Commuter/Passenger can message or call the driver
<b>Data</b>	Driver's rating and etc.
<b>Stimulus</b>	Clicked by the typed of the passenger/rider
<b>Response</b>	The driver's phone number and etc. will be shown.
<b>Comments</b>	The commuter/passenger must login in order to access the application

### 3.5.1.1.9 Rate Drivers

The table show the process of Rate Drivers.

Table 3.10: Rate Drivers

<b>Name</b>	Rate Drivers
<b>Actors</b>	Commuter or Passenger
<b>Description</b>	The commuter/passenger can give feedbacks to the driver after rides is successfully done
<b>Data</b>	Driver personal information and etc.
<b>Stimulus</b>	Clicked by the typed of the passenger/rider
<b>Response</b>	The drivers rating and personal information will be shown.

<b>Comments</b>	The commuter/passenger must login in order to access the application
-----------------	--

### 3.5.1.1.10 Accept Booking

The table show the process of Accept Booking.

Table 3.11: Accept Booking

<b>Name</b>	Accept Booking
<b>Actors</b>	Drivers
<b>Description</b>	The drivers can accept the passenger/rider book
<b>Data</b>	Message
<b>Stimulus</b>	By clicking accept book
<b>Response</b>	Accept book will be shown
<b>Comment</b>	The driver must login in order to access the application

### 3.5.1.1.11 Decline Booking

The table show the process of Decline Booking.

Table 3.12: Decline Booking

<b>Name</b>	Decline Booking
<b>Actors</b>	Drivers
<b>Description</b>	The driver have an option to decline a book
<b>Data</b>	Message
<b>Stimulus</b>	By clicking decline book
<b>Response</b>	Decline book will be shown
<b>Comments</b>	The driver must login in order to access the application

### 3.5.2 Entity Relationship Diagram

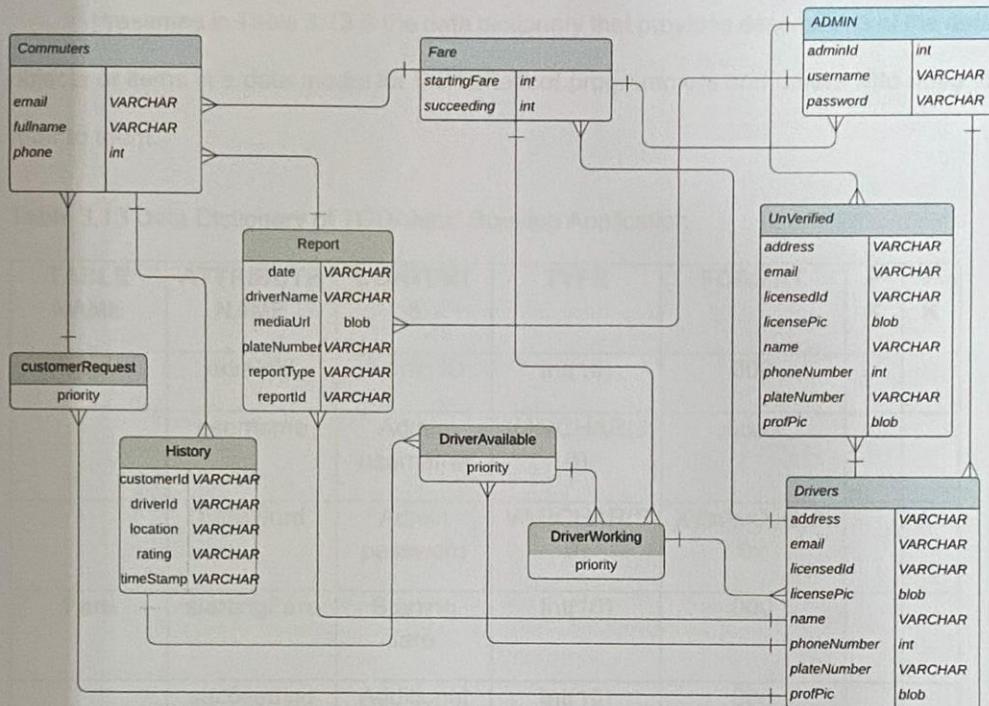


Figure 3.4 Entity Relationship Diagram of TODAMaC Booking Application

The Entity Relationship Diagram (ERD) for TODAMaC was displayed in this figure.

These Diagrams were made up of tables that represented the database's structure, making it simpler to understand how data was sent from the application to the database and retrieved from it.

### 3.5.3 Data Dictionary

Presented in Table 3.13 is the data dictionary that provides descriptions of the data objects or items in a data model for the benefit of programmers and others who need to refer to them.

Table 3.13 Data Dictionary of TODAMaC Booking Application

TABLE NAME	ATTRIBUTE NAME	CONTENT S	TYPE	FORMAT	P K	F K
<b>Admin</b>	adminId	Admin ID	Int(10)	000	✓	
	username	Admin username	VARCHAR(50)	xxxxx		
	password	Admin password	VARCHAR(50)	XYz0xxXx0xX 0x		
<b>Fare</b>	startingFare	Starting fare	Int(10)	000		
	succeeding	Additional fare	Int(10)	000		
<b>History</b>	customerId	Commuters ID	VARCHAR(50)	xxxxx		✓
	driverId	Drivers ID	VARCHAR(50)	xxxxx		✓
	location	Commuters ' location	VARCHAR(50)	Xxxxxx Xxxxxx		
	rating	Driver's rating	VARCHAR(50)	xxxxx		
	timeStamp	Time of arrival	TIMESTAMP	mm-dd-yy 00:00:00		
<b>Report</b>	date	Date	TIMESTAMP	mm-dd-yy 00:00:00		

	driverName	Driver name	VARCHAR(50)	Xxx Xxx		
	mediaUrl	Image/video proof	BLOB	.jpeg, .png, .mp4		
	plateNumber	Vehicle plate number	VARCHAR(50)	XXXXXX		
	reportType	Type of infraction	VARCHAR(50)	xxxxx		
	reportId	Report ID	VARCHAR(50)	xxxxx	✓	
<b>USERS</b>						
<b>Commuters</b>	email	Commuters email	VARCHAR(50)	xxxxx	✓	
	fullname	Commuters fullname	VARCHAR(50)	xxxxx		
	phone	Commuters phone number	Int(11)	000		
<b>Drivers</b>	address	Drivers address	VARCHAR(50)	XXXXXX XXXXX		
	email	Drivers email	VARCHAR(50)	xxxxx		
	licenseId	Drivers license ID	VARCHAR(50)	xxxxx	✓	
	licensePic	License ID image proof	BLOB	.jpeg, .png, .mp4		
	name	Drivers name	VARCHAR(50)	Xxx Xxx		
	phoneNumber	Drivers phone number	Int(11)	000		

	plateNumber	Drivers vehicle plate number	VARCHAR(50)	XXXXXX		
	profPic	Drivers profile picture	BLOB	.jpeg, .png, .mp4		
<b>Unverified</b>	address	Unverified drivers address	VARCHAR(50)	Xxxxxx XXXXXX		
	email	Unverified drivers email	VARCHAR(50)	xxxxxx		
	licenseId	Unverified Drivers license ID	VARCHAR(50)	xxxxxx	✓	
	licensePic	License ID image proof	BLOB	.jpeg, .png, .mp4		
	name	Unverified drivers name	VARCHAR(50)	Xxx Xxx		
	phoneNumber	Unverified drivers phone number	Int(11)	000		
	plateNumber	Unverified drivers vehicle plate number	VARCHAR(50)	XXXXXXXX		
	profPic	Unverified drivers profile picture	BLOB	.jpeg, .png, .mp4		

### 3.6 Graphic User Interface (GUI) Design

The graphical user interface designs for mobile application is shown in the figures below, along with a tabular description of the UI elements displayed in each figure.

#### 3.6.1 Mobile GUI Design

The smartphone application's user interface is depicted in the figures below for clients and riders to engage with. Includes putting orders, keeping track of completed orders for riders, making rider features available, & et cetera.

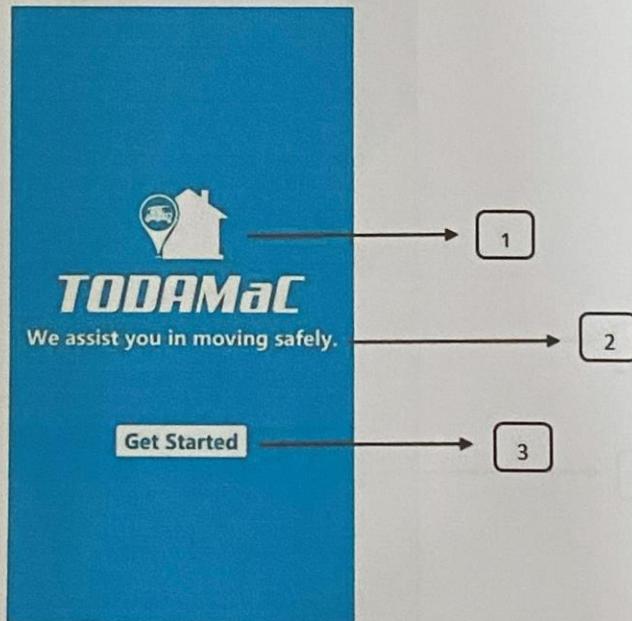


Figure 3.4 Loading Screen

Table 3.13: Loading Screen Interface

No	Ui Components	Name	Description
1	Logo	Application Logo	Business Logo
2	Tagline	Company Tagline	Company Tagline
3	Get Started	Getting Started	Starting point for application

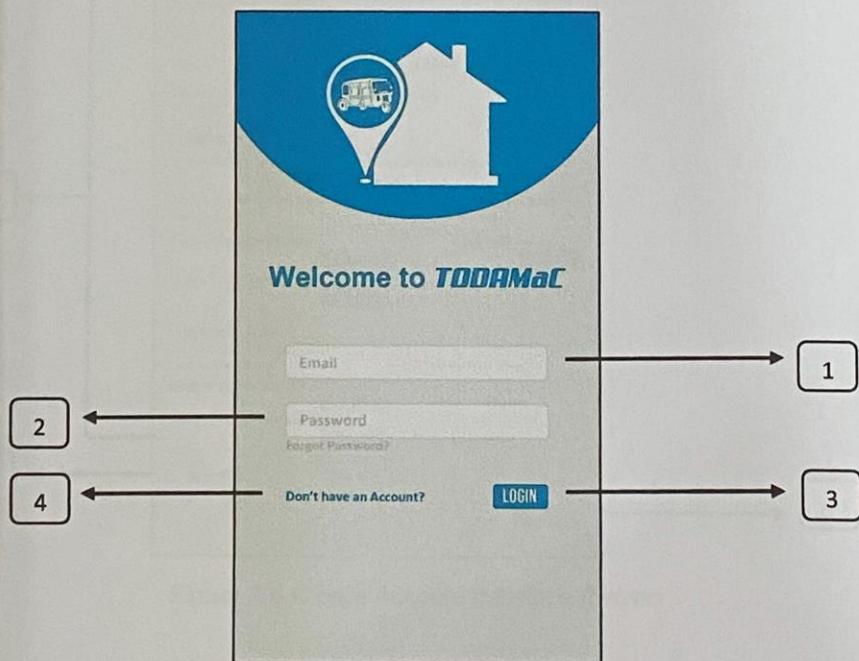


Figure 3.5 Login/Sign-up Screen

Table 3.14: Login/Sign-up Screen

No	UI Components	Name	Description
1	Email	Email	Business Logo
2	Password	Password	Company Tagline
3	Log in	Log in option	Log in using email account registered
4	Sign up	Create an account Option	Create an account and register

The screenshot shows the 'CREATE AN ACCOUNT' interface for drivers. The screen is titled 'CREATE AN ACCOUNT' with a back arrow icon. It includes tabs for 'As Driver' and 'As Passenger'. The 'Personal Info' section contains fields for Full Name, Email Address, Current Address, City/Province, Sex (Male/Female), Date of Birth (mm/dd/yyyy), and Mobile Number. There is also an 'Upload: Profile Photo' button. The 'Driver's License' section requires a driver's license type (Professional or Non-Professional) and includes fields for Driver's License Number (Format: N1234567890), License Expiry Date (mm/dd/yyyy), and Upload buttons for Driver's License Photo and NBI Clearance. The 'Vehicle Info' section includes fields for Vehicle Plate Number, Vehicle Brand/Model, Vehicle Transmission, Vehicle Ownership, and dropdown menus for Vehicle Type and Status. There are also upload buttons for Vehicle Official Receipt (OR) or Sales Invoice and Vehicle Certificate of Registration (CR). At the bottom, there is an 'Agreement' checkbox and a 'SUBMIT' button.

- 1: Points to the Business Logo at the top left.
- 2: Points to the As Driver tab.
- 3: Points to the Personal Info section.
- 4: Points to the Driver's License section.
- 5: Points to the Vehicle Info section.
- 6: Points to the SUBMIT button at the bottom right.

Figure 3.6 Create Account Interface (Driver)

Table 3.15: Create an Account Interface (Driver)

No	UI Components	Name	Description
1	Create an account	Sign up process	Features in applying as a driver
2	As driver	Driver signup process	Click the "as a driver option to show the sign up provided with the needed information below
3	Major information	Major Information	This will give background as a user of the app for the purpose of signing for specific information
4	Specific information	Personal data	Fill out the necessary data needed in each box and do not leave it blank only if necessary. Write N/A if not applicable
5	Confidentiality agreement	Agree with the terms and condition	Agree with the terms and condition and confidentiality of the personal data or information
6	Submit button	Submit button	Submit the information to save and have an account as a driver

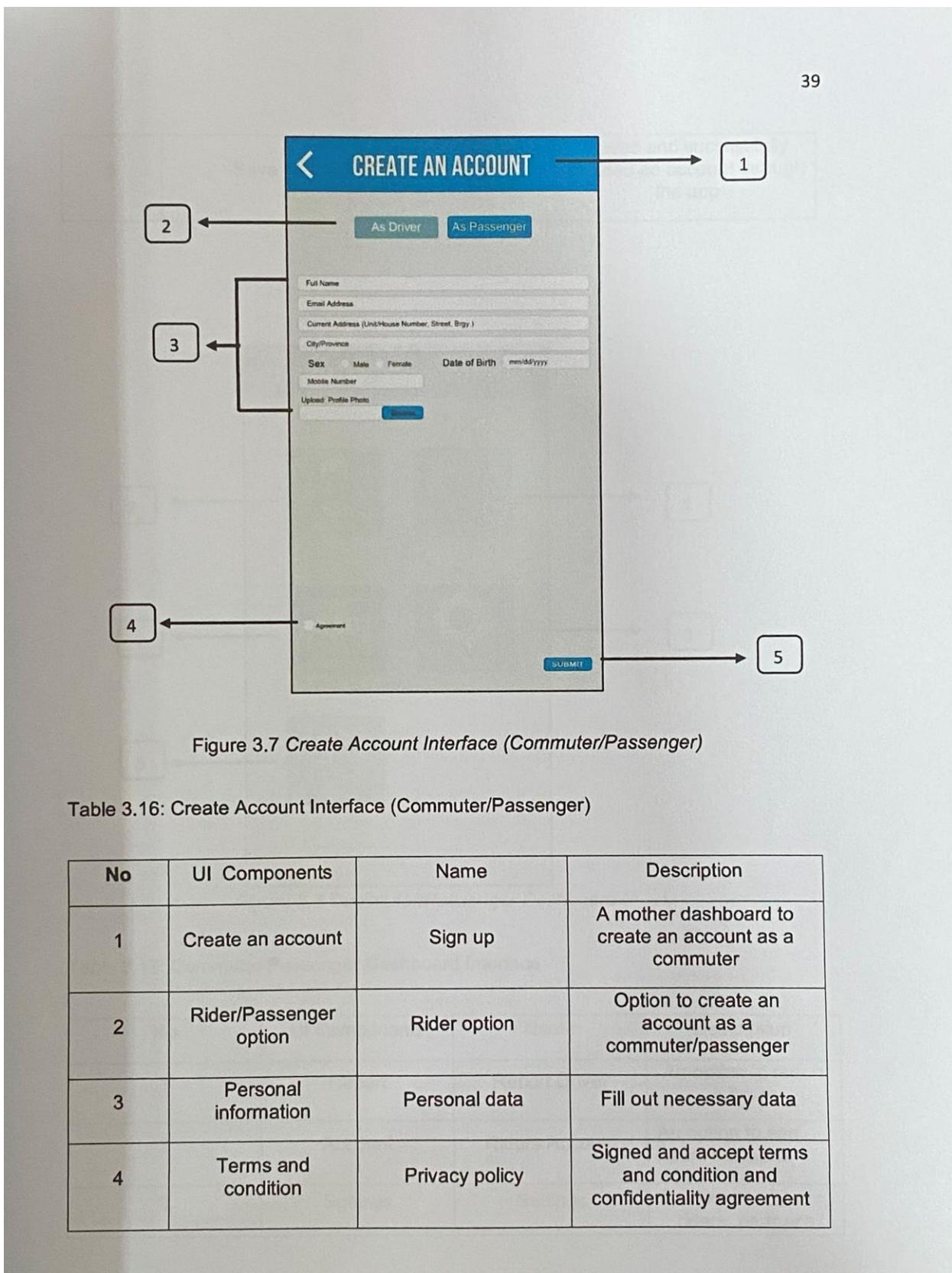


Figure 3.7 Create Account Interface (Commuter/Passenger)

Table 3.16: Create Account Interface (Commuter/Passenger)

No	UI Components	Name	Description
1	Create an account	Sign up	A mother dashboard to create an account as a commuter
2	Rider/Passenger option	Rider option	Option to create an account as a commuter/passenger
3	Personal information	Personal data	Fill out necessary data
4	Terms and condition	Privacy policy	Signed and accept terms and condition and confidentiality agreement

5	Save	Submit button	Saved and successfully created an account through the app
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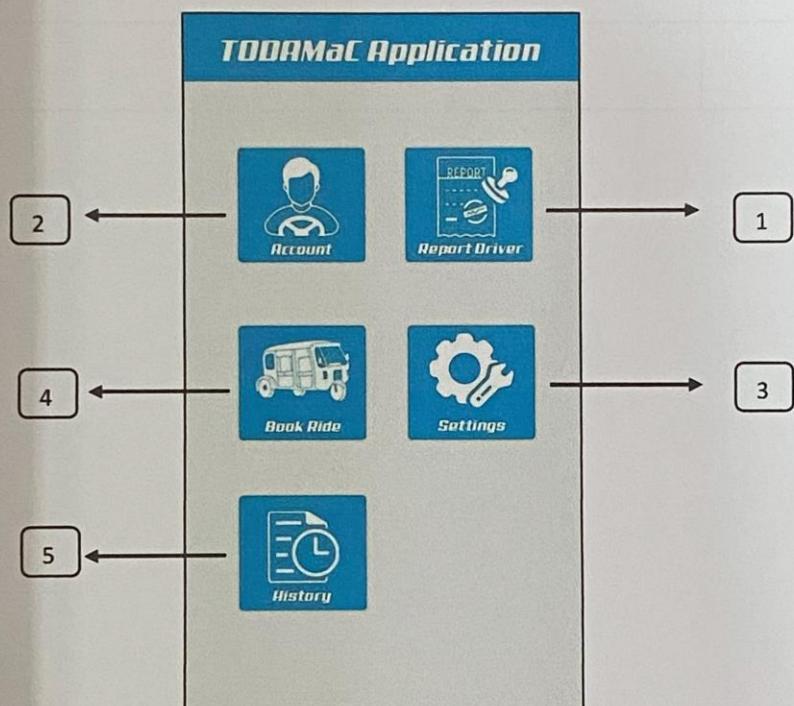


Figure 3.8 Commuter/Passenger Dashboard

Table 3.17: Commuter/Passenger Dashboard Interface

No	UI Components	Name	Description
1	Report	Report Driver	An option to report a driver
2	Account	Riders Account	An option to see riders accounts
3	Settings	Settings	Review the drivers, riders, partner's

			applications if necessary.
4	Book	Book Ride	An option which riders can request a ride
5	History	Ride History	Narratives of all recent rides

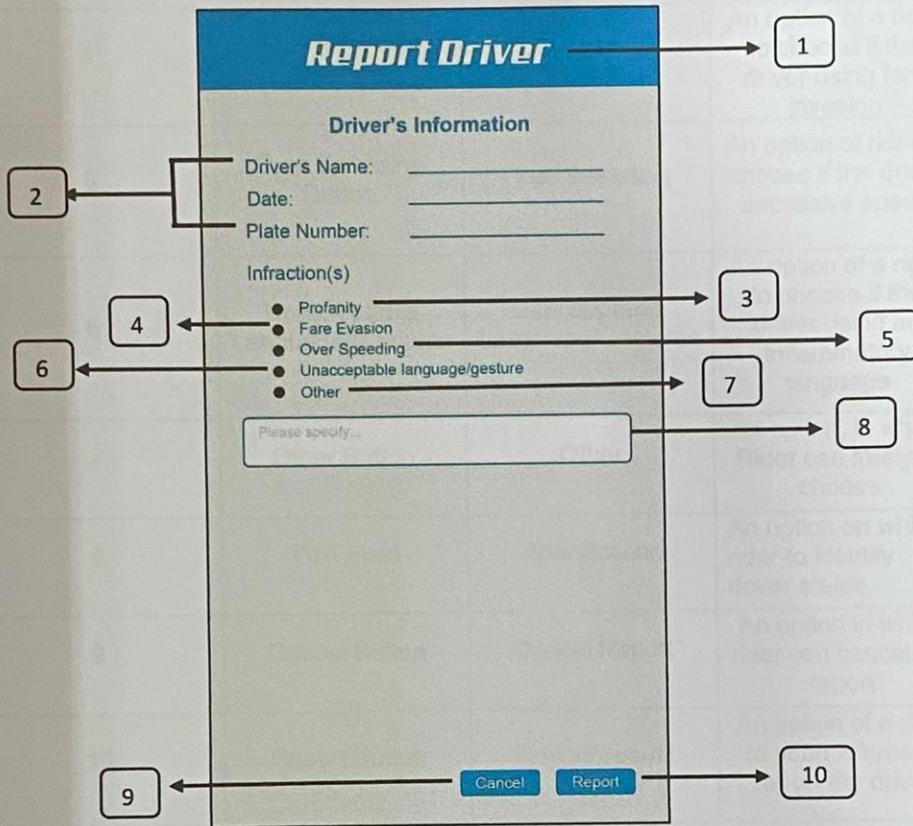
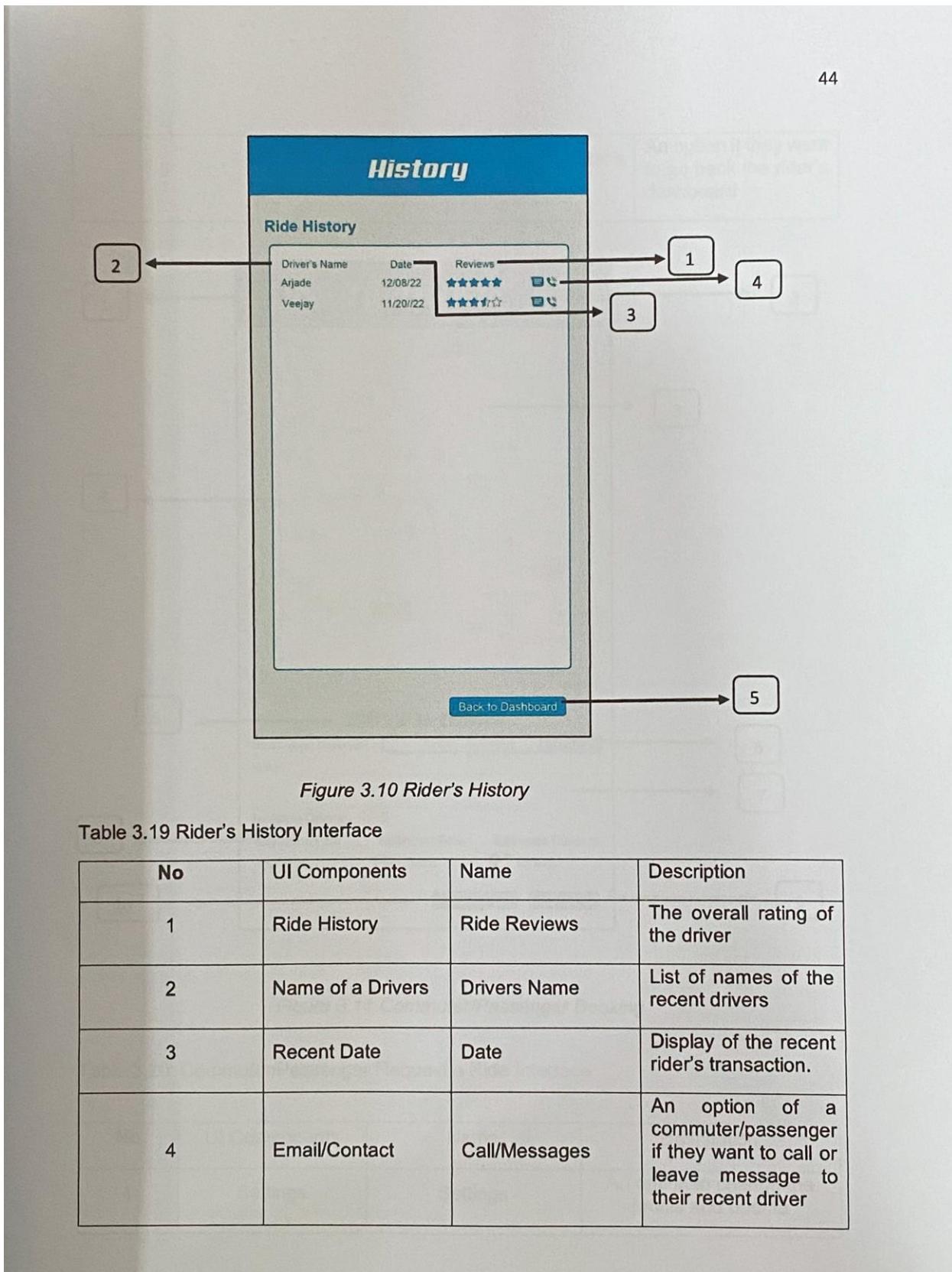


Figure 3.9 Report Driver

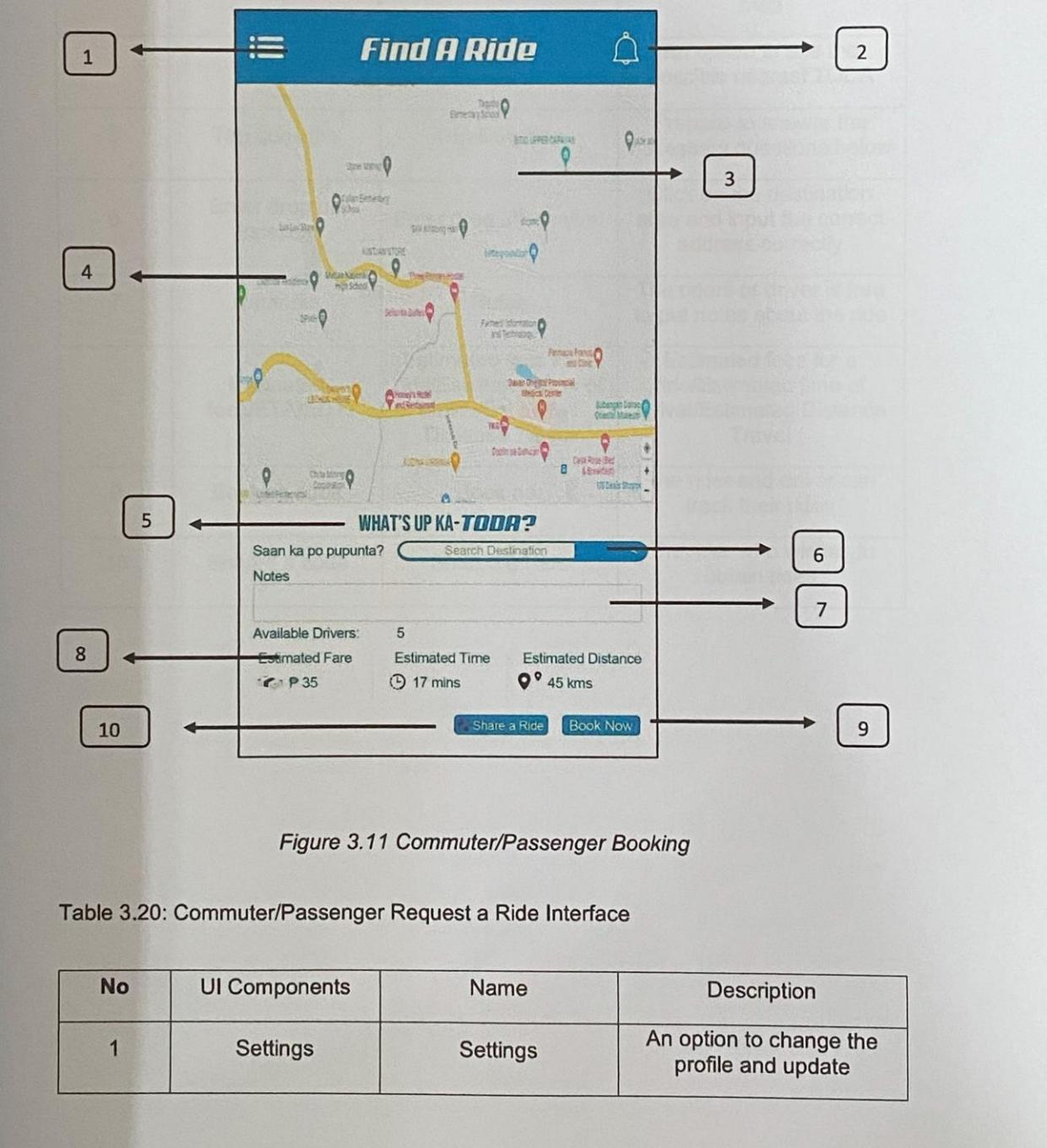
Table 3.18: Report Driver Interface

No	UI Components	Name	Description
1	Report	Report Driver	
2	Personal Data	Driver's Name	Driver's personal data
3	Profanity Button	Profanity	An option of a rider to choose if the driver's using profanity

4	Fare Invasion Button	Fare Invasion	An option of a rider to choose if the driver using fare invasion
5	Over Speeding Button	Over Speeding	An option of rider to choose if the driver excessive speed
6	Unacceptable Language/Gestures	Unacceptable Language/Gestures	An option of a rider to choose if the driver using an inflammatory language
7	Other Button	Other	An option, in which Rider can freely to choose
8	Text Field	Specification	An option on which rider to identify driver status
9	Cancel Button	Cancel Report	An option in which rider can cancel the report
10	Report Button	Report/Submit	An option of a rider to submit/force to report the driver



5	Button	Back to rider's dashboard	An option if they want to go back the rider's dashboard
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2	Notification Bell	Notification Button	Click the notification bell if want to be notified and let the cell phone ring/vibrate
3	Map	Map	An opportunity to see the map
4	Origin	Current location	An option to see the possible nearest TODA
5	Tag question	Tag Question	Prepare to answer the necessary questions below
6	Enter drop off location	Enter drop off location	Click on the destination area and input the correct address correctly
7	Remarks	Notes	The riders or driver is free to put notes about the ride
8	Estimated fees/ETA/EDT	Estimated fees for a ride/Estimated time of arrival/Estimated Distance Travel	Estimated fees for a ride/Estimated time of arrival/Estimated Distance Travel
9	Booking code	Book no.	The rider and driver can track their rides
10	Shared a code	Shared a Ride	The rider who wishes to obtain rides

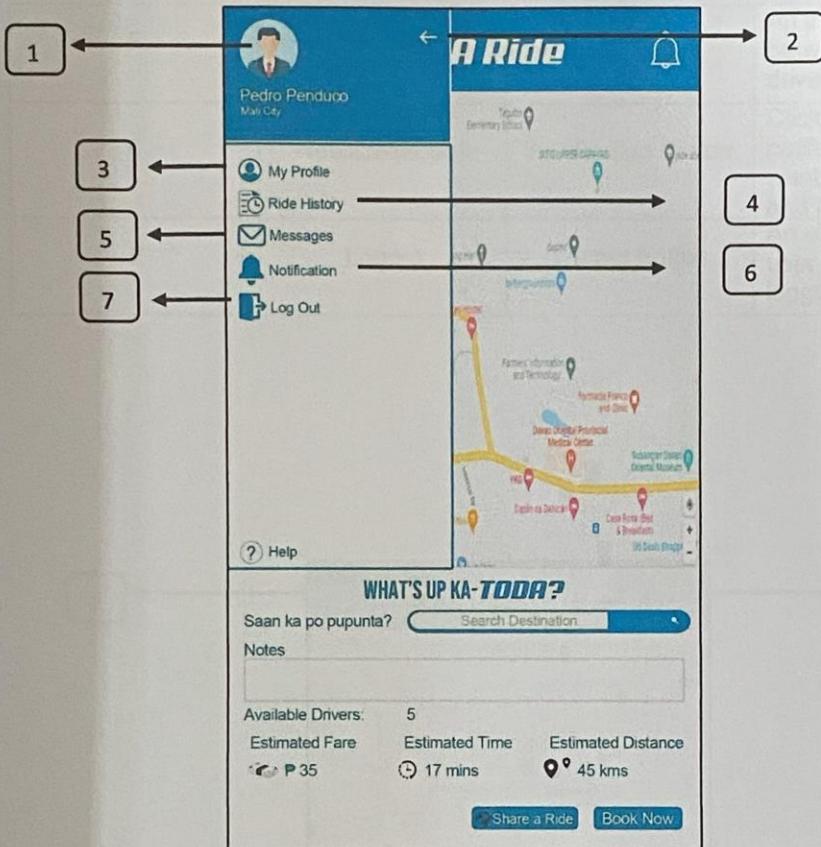


Figure 3.12 Commuter/Passenger Profile/Menu

Table 3.2: Commuter/Passenger Profile/Menu Interface

No	UI Components	Name	Description
1	Profile	Riders Profile	It represents the rider's profile
2	Back/Return	Back	An option of the rider's to back to rider's booking dashboard
3	Figure	Riders Information/Profile	An option which riders can edit and see their profile
4	History	Riders History	To see riders ride history

5	Messages	Email	An interaction between rider's and drivers
6	Notification Bell	Notification Button	Click the notification bell if want to be notified and let the cell
7	Logout	Logout Button	An option which user want's to logging out the app

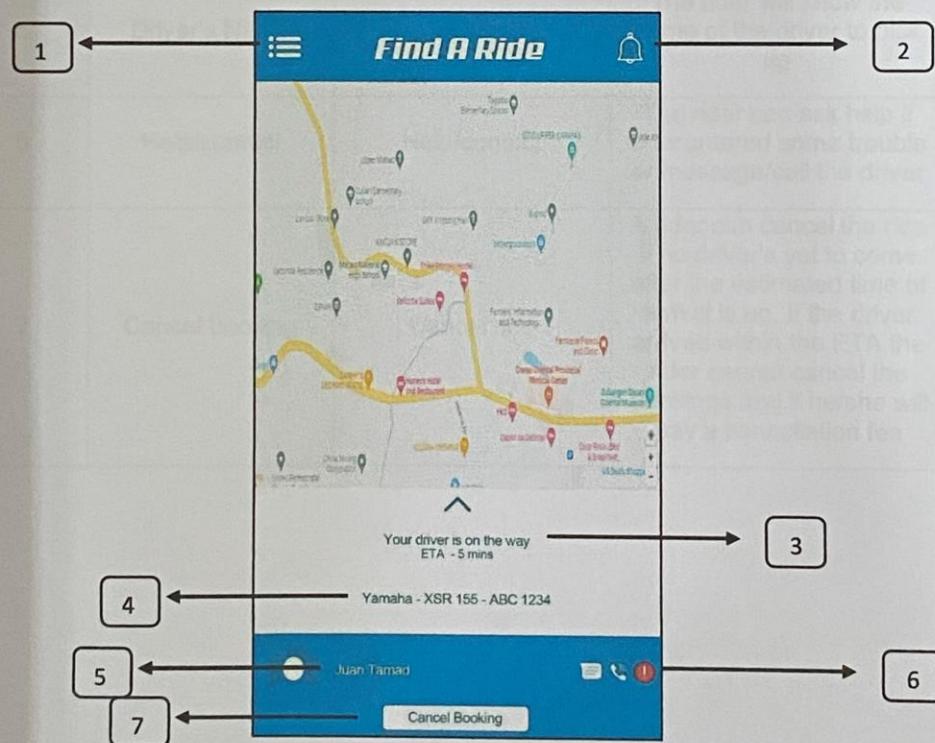


Figure 3.13 Requested Ride Interface

Table 3.22: Requested Ride Interface

No	UI Components	Name	Description
1	Settings	Settings	An option to change the profile and update
2	Map	Map	An opportunity to see the map
3	Status	Driver's status	A status that shows how far the driver is on the way to pick up the rider
4	Plate number	Registry number	The rider was able to check the driver's registry number
5	Driver's Name	Driver's Name	The rider will know the name of the driver to pick up
6	Help/contact	Help/contact	The rider can ask help if encountered some trouble or message/call the driver
7	Cancel booking	Cancel ride	A rider can cancel the ride if no driver's yet to come after the estimated time of arrival is up. If the driver arrived within the ETA the rider cannot cancel the bookings and if he/she will pay a cancellation fee

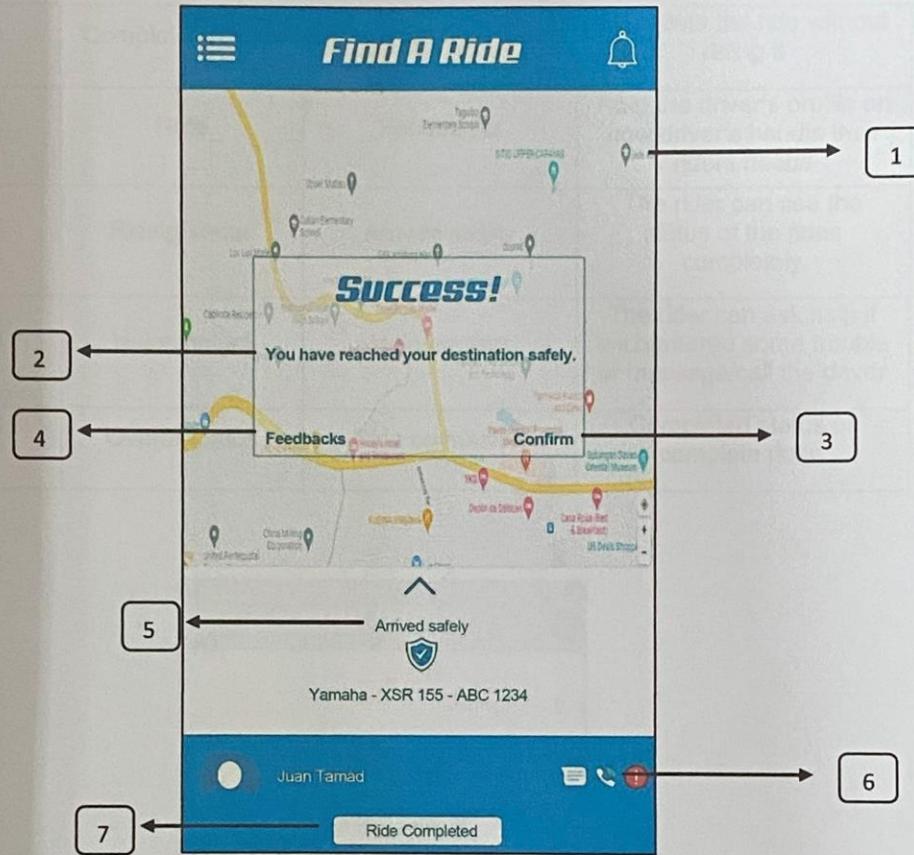


Figure 3.14 Completed Ride

Table 3.23: Completed Ride Interface

No	UI Components	Name	Description
1	Drop off address	The drop off location of a rider	The app will give an option to complete the ride through notification from the origin to the drop off location
2	Origin	Place of rider's origin	The automatic location of a commuter/passenger when he/she is turning on the location on the android phone he/she used

3	Complete the ride	Confirm	Complete the ride without rating it
4	Rate	Feedbacks	Rate the driver's profile on how driver's handle their riders needs
5	Riding status	Arrived safely	The rider can see the status of the rides completely
6	Help/contact	Help/contact	The rider can ask help if encountered some trouble or message/call the driver
7	Overall status	Ride completed	Completed status of complete rides

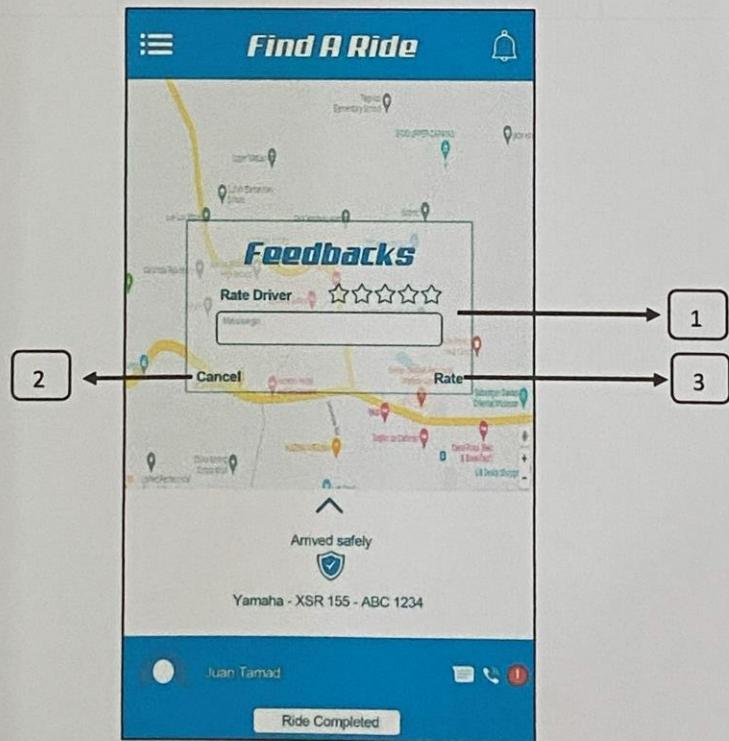


Figure 3.15 Rider's Feedback

Table 3.24: Drivers Feedback Interface

No	UI Components	Name	Description
1	Feedbacks	Feedbacks	Information about how commuter/passenger rate the driver's profile
2	Button	Cancel	Ignoring to rate the driver or wants go back to the rider's dashboard
3	Button	Rate	An option of a rider's/passengers wants to submit rates of a drivers

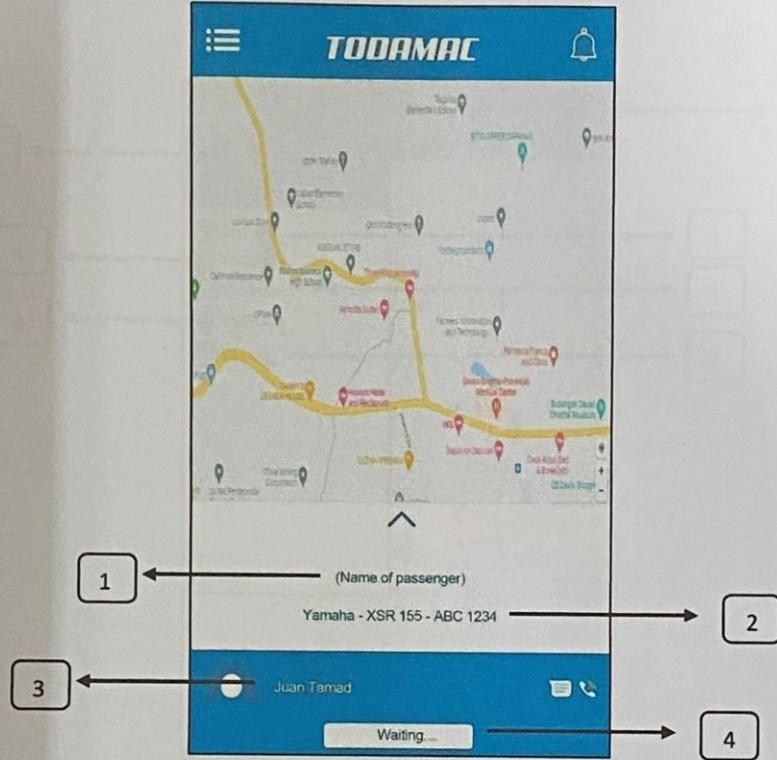


Figure 3.16 Driver's waiting a Ride

Table 3.25: Driver's waiting a Ride Interface

No	UI Components	Name	Description
1	Name	Name of the rider's/passenger's	Rider's name who wants a ride
2	Vehicle Status	Vehicle name and vehicle plate number	A complete status of driver's vehicle
3	Name	Driver's Name	Name of driver's
4	Stand by	Waiting Status	allowing time to pass, until someone book a ride

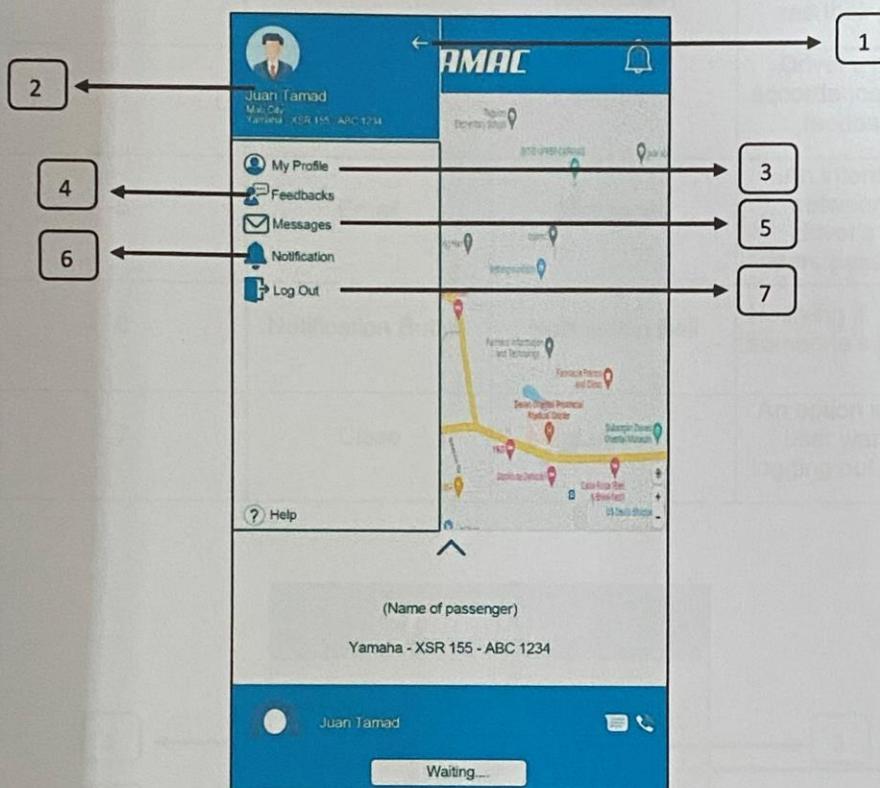
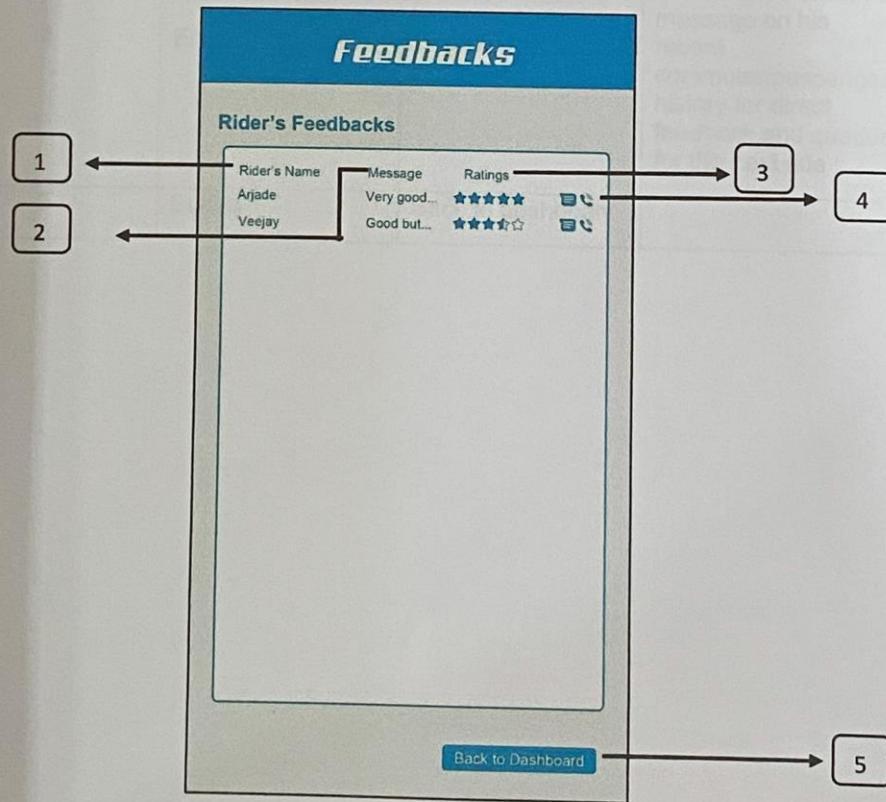


Figure 3.17 Driver's Menu/Profile

Table 3.26 Driver's Menu/Profile Interface

No	UI Components	Name	Description
1	Reverse	Back	An option of the drivers to back driver's dashboard
2	Driver's/Vehicle information	Figure	A driver's name and Driver's vehicle information

3	Figure	Drivers' personal information	An option which drivers can edit and see their profile
4	Rates	Feedbacks	Driver's rate in accordance to rides feedbacks
5	Email	Messages	An interaction between the driver's and riders/passengers
6	Notification Button	Notification Bell	Notifying if someone's booking
7	Close	Logout	An option in which user wants to logging out the app



*Figure 3.18 Drivers Reviews/Feedbacks*

Table 3.27: Drivers Reviews/Feedbacks Interface

No	UI Components	Name	Description
1	Name of the riders/passengers	Rider's/passengers name	Display the name of the recent commuter/passenger
2	Comments	Messages	Messages/Comments from the commuter/passenger to the riding driver
3	Reviews	rating	Over all reviews of every riding history
4	Email/Contact	Call/Message	An option in of a driver in which he wants to call or leave message on his recent commuter/passenger history for direct feedback and queued for the next ride
5	Button	Back to dashboard	

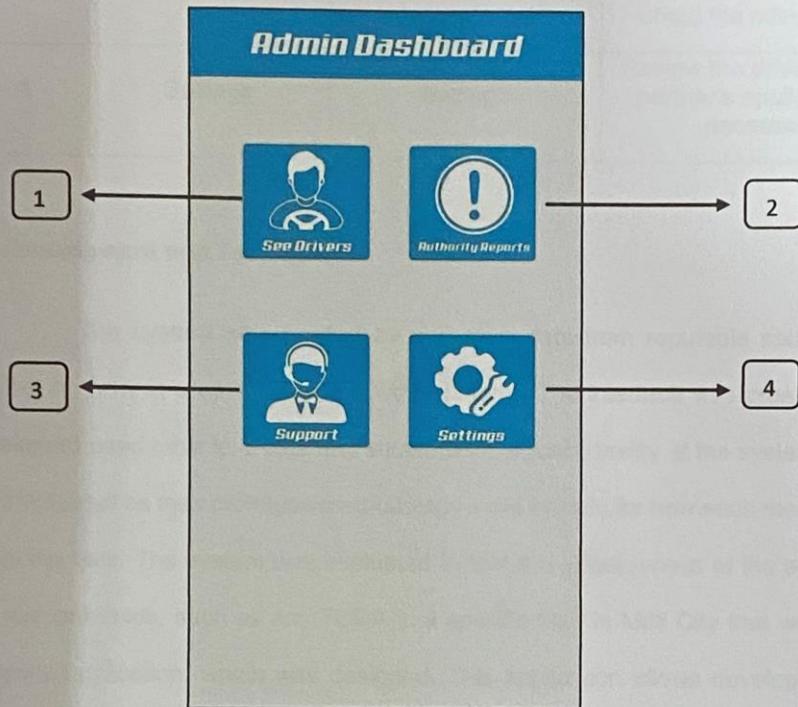


Figure 3.19 Admin/Server Interface

Table 3.28: Admin/Server Interface

No	UI Components	Name	Description
1	Drivers	See Drivers	The drivers can be accessed by the technical support if necessary to track transactions and help the riders in trouble
2	Reports	Authority Reports	The driver's reviews of reports and other concerns from the riders will be found in this section
3	Supports	Supports	An option for commuter/sdrivers/partners to call for help or contact for technical support and

			addressed the concerns about the riding history
4	Settings	Settings	Review the drivers, riders, partner's applications if necessary.

### 3.7 Development and Testing

The system was created by gathering data from reputable sources on the internet on how to create this application platform. The interface was created, and the developers used tools to create and implement the functionality of the system's creators used Waterfall as their prototype methodology—the formula for how each member should share the task. The system was evaluated to test the effectiveness of the application in the relevant fields, such as any TODA in a specific field in Mati City that would run the system's application, which was designed. This application allows developers to learn fresh suggestions for enhancing the program.

#### 3.7.1 Data Analysis Plan

The data was analyzed using Weighted Arithmetic Mean after it was collected. It was utilized to calculate the average replies for each of the five (5) alternatives in the evaluation, namely 5 (Excellent), 4 (Good), 3 (Satisfactory), 2 (Needs Improvement), and 1 (Unsatisfactory). The respondents' answers on the survey may produce the Likert scale.

**The points are used:**

Excellent

Good

Satisfactory

Needs Improvement

Unsatisfactory

## CHAPTER IV

### Result and Discussion

#### 4.1 Development of TODAMaC Booking Application

##### 4.1.1 Allows users to sign up for the application and log in

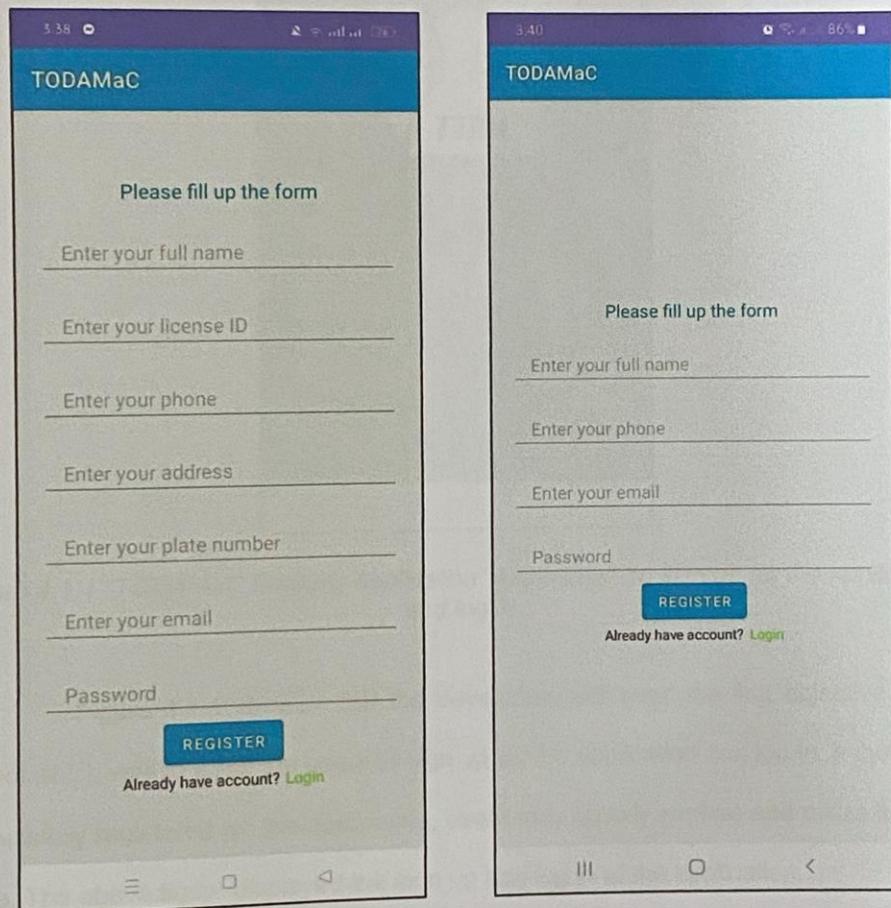




Figure 4.1.1 “TODAMaC Booking Application” Allow users to sign up for the application and log in

Figure 4.1.1 showed that the developers achieved the first objective of the Project which was to allow the users to sign up for the application and log in. If they have successfully registered for the application, users may quickly explore and utilize it in this figure. The above figure displayed the sign up and log in of the application.

#### 4.1.2 Report A Driver and Book A Ride.

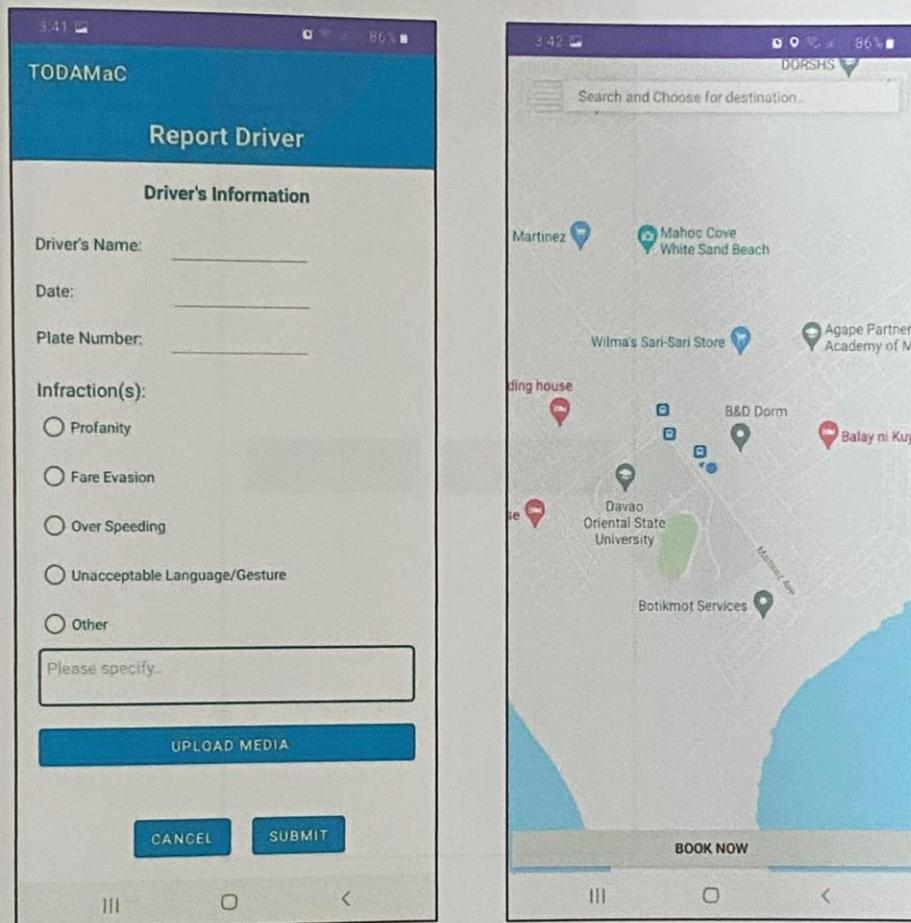
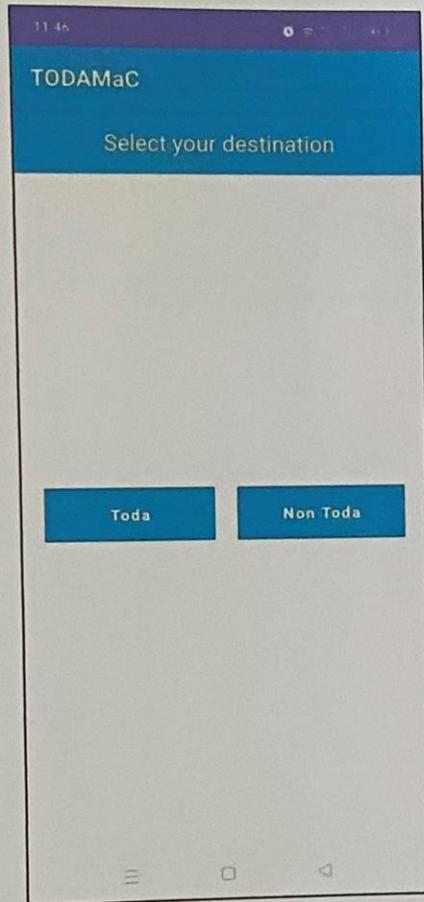


Figure 4.1.2 "TODAMaC Booking Application" Report A Driver and Book a Ride.

Figure 4.1.2 showed that the developers achieved the second objective of the project which was to develop a report a driver in case there are any infractions happened and passengers can book a ride easily. The above figure displayed the result of the applications objective.

**4.1.3 Allows the commuters to choose their destination, whether TODA or Non-TODA area.**



*Figure 4.1.3 “TODAMaC Booking Application” Toda or Non-Toda*

Figure 4.1.3 showed that the developers achieved the third objective of the project which was to develop a TODA or NON-TODA where passengers are able to choose which of those two choices is their destination. The above figure displayed the result of the applications objective.

#### 4.1.4 View the previous activities/history

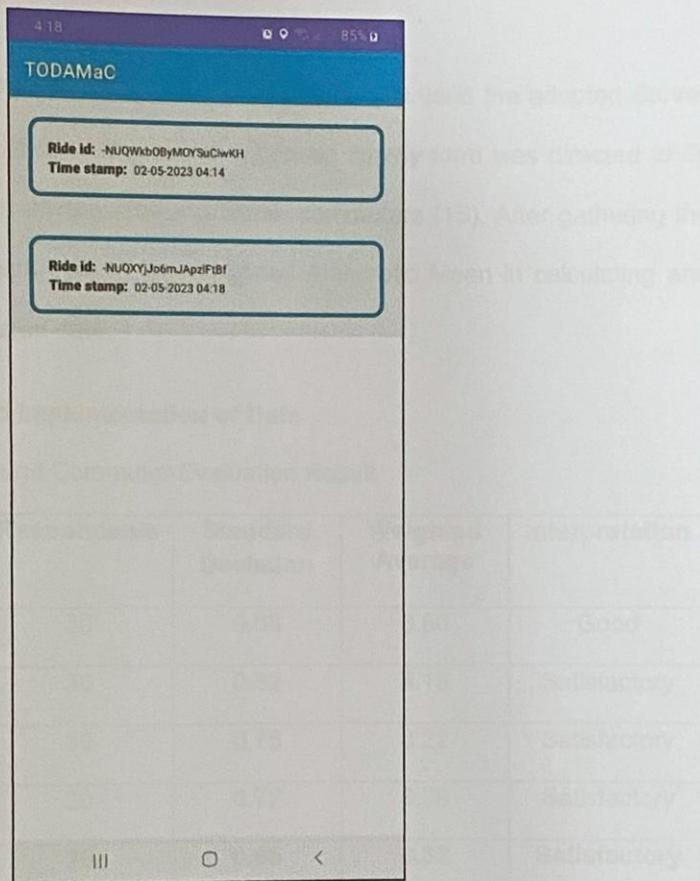


Figure 4.1.4 “TODAMaC Booking Application” View the previous activities / History

Figure 4.1.4 showed that the developers achieved the fourth objective of the project which was to view the previous activities or the history after the successful ride of the passengers. The above figure displayed the result of the applications objectives.

## 4.2 Testing/Implementation Results

### 4.2.1 Presentation

In evaluating the TODAMaC, the respondents used the adapted Survey Form from ISO 9126 Standards. The approved survey form was directed to 30 respondents: fifteen drivers (15) and fifteen commuters (15). After gathering the data, the researchers utilized the Weighted Arithmetic Mean in calculating and analyzing the gathered data.

### 4.2.2 Analysis and Implementation of Data

Table 4.1: Driver and Commuter Evaluation Result

Indicators	Respondents	Standard Deviation	Weighted Average	Interpretation
Reliability	30	0.68	3.50	Good
Efficiency	30	0.82	3.19	Satisfactory
Functionality	30	0.75	3.22	Satisfactory
Portability	30	0.72	3.38	Satisfactory
<b>Overall Weighted Mean</b>	<b>30</b>	<b>0.65</b>	<b>3.32</b>	<b>Satisfactory</b>

Table 4.1, presents indicators, standard deviations, average means, and descriptive levels for various aspects of the TODAMaC Booking Application. Here is a discussion based on the information provided:

Reliability of the application is gauged by how regularly and correctly it can carry out its intended tasks. The TODAMaC Booking Application has substantial dependability with a standard deviation of 0.68 and an average mean of 3.50. Users can infer from this that they can trust the system to produce reliable results.

Efficiency indicator assesses the effectiveness of the application in terms of speed, reaction time, and resource usage. The average mean of 3.19 and the standard deviation of 0.82 points to typical levels of variability and performance efficiency for the system. This result means that the system provides users with prompt and responsive services.

Functionality metric assesses how effectively the system performs as planned functional specifications. The system performs exceptionally well in terms of functionality, with a standard deviation of 0.75 and an average mean of 3.22. This result means that the system has an average ability to perform as predicted. Portability: The system's Portability is determined by how easily it can be moved between environments or systems. The average mean of 3.38 and the standard deviation of 0.72 points to high

Portability result suggests that the TODAMaC Booking Application may be installed and utilized across various systems and contexts. Overall, TODAMaC Booking Application performs well across all indicators, as evidenced by the average means and descriptive levels. It demonstrates satisfaction with Reliability and average Efficiency, Functionality, and Portability. Users can expect a reliable, efficient, and user-friendly experience while using the TODAMaC Booking Application in Davao Oriental.

Overall, TODAMaC Booking Application performs well across all indicators, as evidenced by the average means and descriptive levels. It demonstrates satisfaction on Reliability and average on Efficiency, Functionality, and Portability. Users can expect a reliable, efficient, and user-friendly experience while using the TODAMaC Booking Application in Davao Oriental.

#### **4.2.3 Implementation Plan**

In order to implement the mobile application, the proponents gained consent from the selected user through a formal letter that took 10 minutes to distribute. The APK of the application was distributed using various sharing apps. It took them 15 minutes to download and install the application for them to use. After the installation process, the information about the mobile application was disseminated over one day through direct presentations with the drivers and commuters. These strategies only involve the users and the proponents in terms of individuals involved.

Table: 4.3: TODAMaC Booking Application Implementation Plan

Strategy	Activity	Person Involved	Duration
Approval from the selected users	Letter for the administrator user's	Researchers, Users	1 Day
APK dissemination	Dissemination of the APK	Researchers, Users	1 Day
System Installation	Installation of Application	Researchers, Users	1 Day
Information Distribution	Posters	Researchers, Users	1 Day

## CHAPTER V

### SUMMARY, CONLUSION AND RECOMMENDATION

#### 5.1 Summary

Researching relevant studies and literature was simple while developing TODAMaC, an internet application for scheduling rides exclusively in Mati City. Many comparable systems have already been developed but as the developers, produced something distinctive to set our system apart. The creators thought this booking tool would be helpful to users, particularly those from Mati City, tourists, and foreigners who like exploring our city.

Besides that, this program might help create a fair system for all users and passengers, keeping them secure. At the same time, they go to their desired destinations, whether they are in their homes or somewhere else. The primary goal of the developers' research was to design a booking application that would make it simple for people to arrange transport to a particular area easily, have a safe ride, and report a rude driver.

The research the developers had recommended was created using the tools Android Studio, Google Map API, and Firebase. Additionally, to meet ISO Standards, the developers put the system's Functionality, Reliability, Efficiency, and Portability to the test.

#### 5.2 Conclusion

The share-a-ride feature was complex during system development since the developers needed help creating the ideal code. It causes errors in our back end. The underlying issue has thus far been adequately handled. The researchers successfully

developed the following: 1. Allows users to sign up for the app and log in.; 2. Allows riders to report a driver and book a ride quickly; 3. Providing a program that allows commuter to choose their destination; 4. The user is given the option to see previous activities. The application can arrange a quick and secure trip with the best driver. As mentioned earlier, the evaluation results that the application shows satisfaction to the drivers and commuters in Mati City.

### **5.3 Recommendation**

The application was created by its aims, as well as with its Scope and limitations. However, the developers could not produce a perfect application given their limited resources and time. After the respondents tested the application, some provided honest recommendations. The developers took the following advice from the responders, which they regarded to be the TODAMaC Booking Application will be much enhanced and improved.

- More enhancements to the system's user interface.
- More functions can be implemented or added.
- Must have an IOS Version.

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Sex	:	Male
Height	:	53cm
Weight	:	62kg
Civil Status	:	Single
Nationality	:	Filipino

**SKILLS AND INTEREST**

- Computer Literate
- Flexible
- Communication Skills
- Basic Trouble Shooting

**EDUCATIONAL BACKGROUND**

<b>ELEMENTARY</b>	Culian Elementary School Brgy. Culian, City of Mati, Davao Oriental 2006-2013
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<b>TERTIARY</b>	Davao Oriental State University Guang-Guang Dahican, City of Mati, Davao Oriental Bachelor of Science in Information Technology (BSIT) 2019 at Present

**WORK EXPERIENCE**

- NCII CSS Passer in Tagum Inquiline Academy (2018-2019)
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I hereby certify that the information is true and correct.



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Nationality	:	Filipino

**SKILLS AND INTEREST**

- Computer literacy skills
- Organizational skills
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**Bachelor of Science in Information Technology (BSIT)**  
**2019 – Present**

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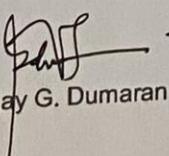
**WORK EXPERIENCE**

- On-the-Job Training – PESO Office DOrSU (February – March 2023)
  - On-the-Job Training – Zetzab Prints and Studio (March – May 2023)
- 

**REFERENCES**

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I hereby certify that the information is true and correct.



Veejay G. Dumaran