

## Designing and Implementing I-Bike Motorcycle Rental System (Case Study on Tian Qi Diandong Che Xing, Nantong, China)

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**Abstract:** The i-bike motorcycle rental was a considerable and well-known venture existing in China. One of the cases is in Nantong, Jiangsu Province where the i-bike motorcycle rental system of Tian Qi Diandong Che Xing is not effective, since the booking is still being done by coming directly to the rental place, but not all local Chinese can speak English, so it is difficult for foreigners who want to rent i-bike motorcycle to communicate with them. The research aims to build a web application system for i-bike motorcycle online. The app was made using PHP and My SQL for databases. This application is expected to provide detailed and accurate information about i-bike motorcycle to be rented to prospective tenants online, where companies are assisted to promote their motorbikes to foreigners with a web-based application system in English and can also facilitate companies in processing transactions, data management and assisting companies in reporting.

**Keyword:** I-bike motorcycle rental, China, PHP and My SQL.

### 1. INTRODUCTION

The media for promotion of the motorbike rental business must follow the very rapid technological developments at this time. The case raised was from one of the rental vehicles in Holland Street, Jiayou Road, Chongchuan District, Nantong, Jiangsu Province, and China named Tian Qi DiandongChe Xing (天琪电动车行). This i-bike motorcycle rental place was still ineffective because motorbike rental transactions was still being done by coming directly to the rental place, which made communication difficult due to language differences.

From this background, the authors developed a motorcycle rental information system to overcome this problem. The advantages of a website can help a company or organization financially because it does not need to spend a lot of money. This information system is expected to help motorbike rental business actors in promoting their business and helping consumers or the public to find and order motorbike rentals more easily without having to come directly to the motorbike rental place

#### Research Objectives

Based on the background and problem formulations that had been described, this study aims to reconsider the i-bikes as an alternative transportation solution. First, it aimed to save visiting time or other activities and also avoided air pollution because the fuel from this i-bike was electric, almost all electric motorbikes in China, precisely in Nantong do not use gasoline but use electricity. Second, it was a way to introduce or promote this i- bike motorcycle rental business to foreigners.

## 2. LITERATURE REVIEW

The website is known to most people because of the internet network. The website in general is a page designed in such a way as to be accessed by the whole world using the internet network to obtain information. In the business world, the website is also used as a promotional medium which can help in developing the buying and selling process of a company. The following is the definition of a website according some experts, namely: According to Sibero in the journal Supriyanta (2015: 35): "World Wide Web (W3) or also known as the web is a system related to documents used as a medium for displaying text, images, multimedia and others on the internet network".

### a. Website

The website was known to most people because of the internet network. The website in general was a page designed in such a way as to be accessed by the whole world using the internet network to obtain information. In the business world, the website was also used as a promotional medium which helped develop the buying and selling process of a company. From the definition above, it was concluded that the website was a system where information in the form of text, images, sound, inside which using the HTTP protocol (hypertext transfer protocol) so that it was seen as the world's largest network, namely the internet.

### b. Database

Database was a collection of data (files or tables) that were mutually exclusive related to each other and organized by a certain schemes or structures, stored in computer hardware, and software used to manipulate it. There were several meanings database of several experts but had a same purpose.

### c. My SQL

My SQL was actually a product that run on the Linux platform. It was open source so that it was run on a Windows and Linux. In addition, My SQL was also a network database access program used for Multi User applications (multiple users). My SQL database had been used by almost all database programmers, especially in web programming. MySQL (My Structure Query Language) according to (2008: 2) is a database server that initially runs on the system Unix and Linux. Over time and many users who are interested in using this database, MySQL began to release a version which can be installed on most platforms including the operating system windows. The MySQL license is freeware, which means us can download and use it without having to pay.

In general, commands used in My SQL were SELECT (fetch), INSERT (add), UPDATE (change), and DELETE (delete). In addition, SQL also provided commands to create databases, fields, or to add indexes or delete data. Some of the advantages of My SQL included:

- 1) Open source, it had the ability to be developed again.
- 2) Using SQL (Structure Query Language), it was a world standard language in data processing.
- 3) Super reliable performance, the database processing was very fast and stable.
- 4) Very easy to learn.
- 5) Had support (group) of My SQL users.
- 6) Able to cross platform can run on various operating systems.
- 7) Multiuser, where My SQL was used by several users at the same time without experiencing conflict.

- 8) The conclusion of My SQL was a database server that helped very fast database processing using SQL Language.
- d. PHP  
The PHP programming language is often used because PHP is a language open source which has its simplicity and has several features built-in which serves to handle the needs of standard in web application creation. PHP is also a scripting language easiest to understand because it has several references.
- e. Sublime Text 3  
Sublime text was a Python-based text editor, an elegant, feature-rich, cross-platform, easy and simple text editor that was quite popular among developers, writers and designers. Programmers usually used sublime text to edit the source code they were working with. Until now, sublime text reached version 3

### 3. METHOD

#### a. Research Flow

The appearance of the research began with researching ideas and backgrounds on the existing problems. The determination of objectives were followed with data collection as a source of supporting data. The data collection was started from source search by conducting questionnaires and observations also from fundamental theory and related studies. After that, the problem analysis process was performed in accordance with the supporting facts and look for suitable solutions. An application design was made according to a predetermined solution. The next stage was the process of developing, implementing, and testing. The final stage made the results of discussions with potential users. If the results were obtained as it was expected, then the next application was released; otherwise, there was a re-analysis until the results were created as it was expected.

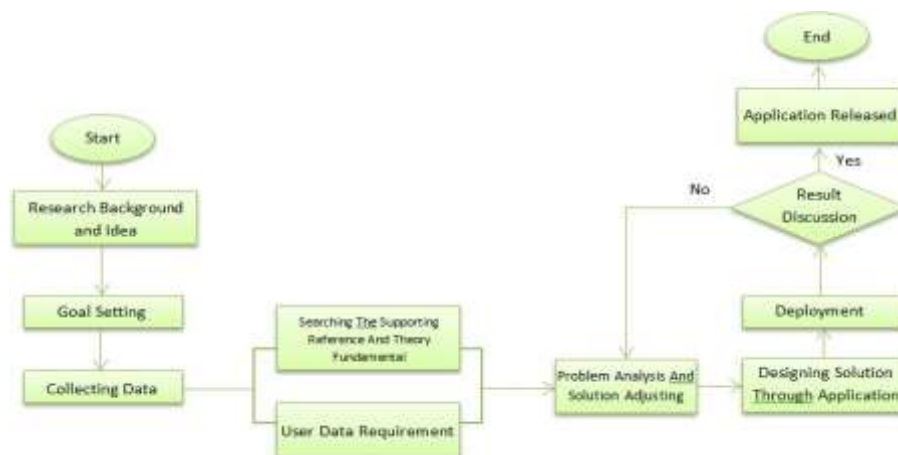


Figure 1. Researh Flow

#### b. Problem Analysis Method

The methodology used to analyze the problem was the PIECES method where this analysis usually appears on the surface not the main problem

**Table 1. Problem Analysis Method**

No	Aspect	Problem	Solution
1	Performance	Rentals were done manually where customers came, rented and returned the i-bike. owners sometimes did not come to tourist spots so customers always rented i- bike	With this web, rentals were managed more professionally. I-bike was always available, and customers conducted transactions independently. Rentals used the web so that all transactions were recorded in detail.
2	Information	Income management and calculation were ineffective, less accurate.	It used the system so that the transaction calculations were more accurate, transaction data was withdrawn for a certain period.
3	Economics	Fluctuative and uncertain income. Bicycle owners were not always available on location	More professional management was able to attract more public interest
4	Control	Transaction income was manipulated	Transaction revenues were recorded in the system and minimized fraud.
5	Efficiency	Less efficient if the public interest was high because the queue was not controlled	The process of renting was easier and faster
6	Services	The behavior of i-bike owners caused prospective tenants to be reluctant to rent	The rental process was faster and automated

c. The Application Development Stage

After analyzing existing needs and problems, the next step was to develop an application or coding. This application was created through the Sublime Text 3 to use the PHP programming language and My SQL as the database. My SQL was a database server software or program. While SQL was a programming language, the query language on the database server was included in My SQL itself. The method used in this research was an iterative method, which consisted of the planning stage, the problem analysis stage, the design stage, the implementation stage and the maintenance stage.

d. Database Design

The following was the database design could see in Table 1 - 9

**Table 1. Table Admin**

No	Nama Field	Type
1	Id	Int(11)
2	UserName	Varchar(100)
3	Password	Varchar(100)
4	updatationDate	timestamp

**Table 2. Table booking i-bike motorcycle**

No	Nama field	Type
1	id	Int(11)
2	UserEmail	Vachar(100)
3	VehicleId	Int(11)
4	FromDate	Varchar(20)
5	ToDate	Varchar(20)
5	message	Varchar(255)
6	Status	Int(11)
7	PostingDate	timestamp

**Table 3. Table brands**

No	Nama Field	Type
1	id	Int(11)
2	BrandName	Varchar(120)
3	CreationDate	timestamp
4	UpdationDate	timestamp

**Table 4. Table contact us info**

No	Nama Field	Type
1	Id	Int(11)
2	Address	Tinytext
3	EmailId	Varchar(225)
4	ContactNo	Char(11)

**Table 5. Table pages**

No	Nama Field	Type
1	id	Int(11)
2	PageName	Varchar(255)
3	type	Varchar(255)
4	detail	longtext

**Table 6. Tabel subscribers**

No	Nama Field	Type
1	id	Int(11)
2	SubscribersEmail	Varchar(120)
3	PostingDate	Timestamp

**Table 7. Table testimonial**

No	Nama Field	Type
1	id	Int(11)
2	UserEmail	Varchar(100)
3	Testimonial	Mediumtext
4	PostingDate	timestamp
5	status	Int(11)

**Table 8. Table user**

No	Nama Field	Type
1	id	Int(11)
2	FullName	Varchar(120)
3	EmailId	Varchar(100)
4	Password	Varchar(100)
5	ContactNo	Char(11)
6	dob	Varchar(100)
7	Address	Varchar(255)
8	City	Varchar(100)
9	Country	Varchar(100)
10	RegData	timestamp
11	UpdationDate	timestamp

**Table 9. Table vehicles**

No	Nama Field	Type
1	id	Int(11)
2	VehiclesTitle	Varchar(150)
3	VehiclesBrand	Int(11)
4	VehiclesOverview	Longtext
5	PricePerDay	Int(11)
6	FuelType	Varchar(100)
7	ModelYear	Int(6)
8	SeatingCapacity	Int(11)
9	Vimage1	Varchar(120)
10	Vimage2	Varchar(120)
11	Vimage3	Varchar(120)
12	Vimage4	Varchar(120)
13	Vimage5	Varchar(120)
14	BrakeAssist	int(11)
15	CrashSensor	Int(11)
16	LeatherSeats	Int(11)
17	RegDate	Timestamp
18	UpdationDate	timestamp

e. Interface Design

The display design was used to make it easier to build applications. The following explained the design of each screen displayed in this application.

- 1) Home Page Display Design (Home Menu)

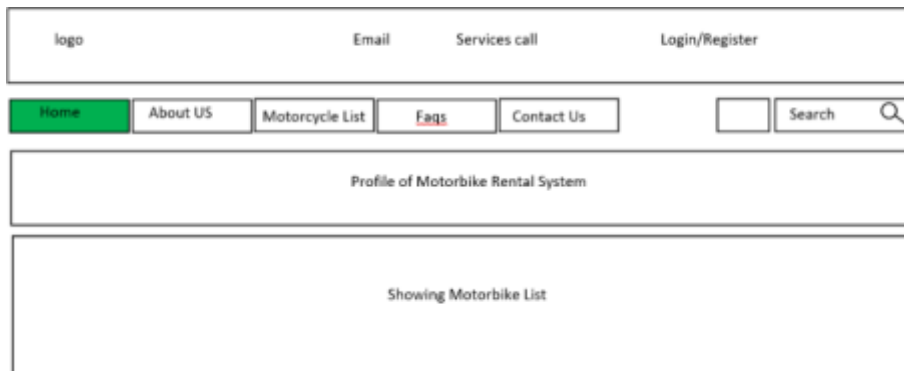


Figure 2. Home Page Display Design (Home Menu)

## 2) About Us Page Display Design (Profile)



Figure 3. Page Display Design (Profile)

## 3) Motorcycle List Page Display Design (Choose Vehicle)

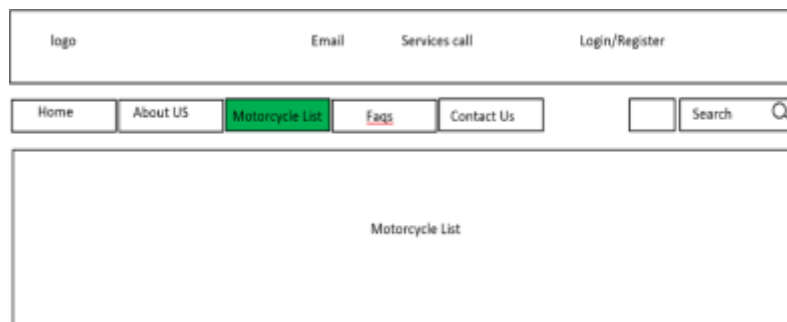


Figure 4. Motorcycle List Page Display Design (Choose Vehicle)

## 4) Faqs Page Display Design (faqs)

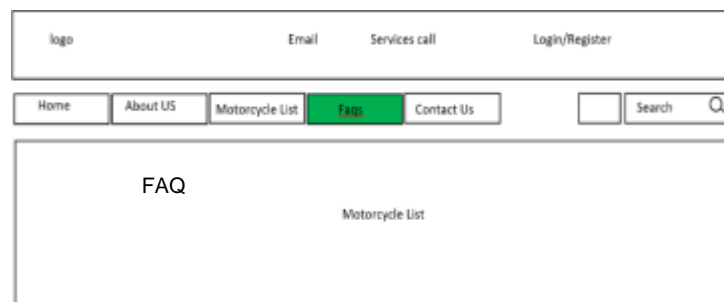


Figure 5. Faqs Page Display Design (faqs)

## 5) Contact Us Page Display Design (Contact)

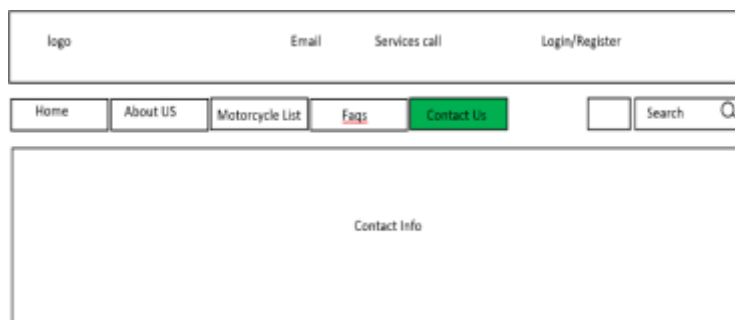


Figure 6. Contact Us Page Display Design (Contact)

## f. Tools Used

The tools used to create this static website used PHP supported by sublime text 3 and also My SQL. The first step to create this website was by installing the Sublime text 3 - text editor application to write code to use the PHP programming language and also My SQL in order to complete this research properly and optimally.

**4. RESULT AND DISCUSSION**

## a. Use Case Diagram

Use Case diagram is a diagram that illustrates methods or functions that can be performed by the system and describe how actors such as admin, customers interact with the system. Based on the assumptions used, a use case diagram was:

## 1) Use Case Diagram of Admin





Figure 7. Use Case Diagram of Admin

## 2) Use Case Diagram of Customers



Figure 8. Use Case Diagram of Customers

## b. The Description of Use Case Diagram

Based on the admin and customers use case diagrams discussed previously, the use case was in the system. The actor was the person who performed the action, the description was explaining with words clearly and in detail, an exception was an exception or outside normal conditions, precondition was a precondition that must be met.

## c. System Implementation

The results of the implementation of the system design of tian qi diandong che xing Nantong were as follows:

Results of Implementation of the Design Output and Input:

## 1) Index / Main Page Login/Register

The image below was the main page or login/Register page.



Figure 9. Display Main Page of Login/Register

- 2) Home Page  
If the login was successful, a logged in home page appeared.



Figure 10. Display Home Page

- 3) About Us Page  
On this page it explained that this motorbike rental business had already had a second branch that strengthened the level of confidence of customers to order vehicles here.

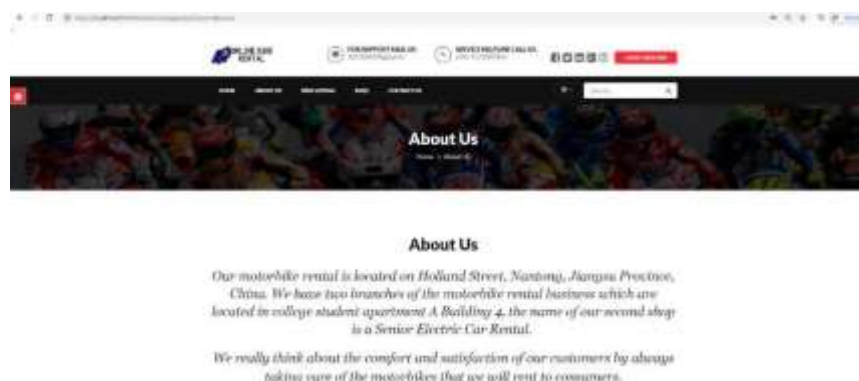


Figure 11. Display About Us Page

## 4) Motorcycle List Page

On this page, it was shown that this motorbike rental business had quite a lot of lists of motorbikes that was rented for various types, shapes and models. Customers ordered a motorbike model they liked at very affordable prices.



Figure 12. Display Motorcycle List Page

## 5) Faqs Page

FAQ was an abbreviation of the frequently asked question, a list that contained questions that were often asked by consumers or users who used motorbike rental services in Tian Qi Diandong Che Xing.

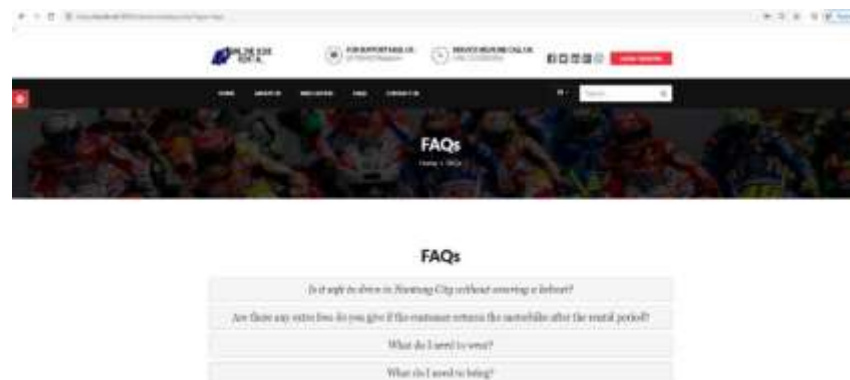


Figure 12. Display Faqs Page

## 6) Contact Us Page

This page showed the information contact of this rent system.

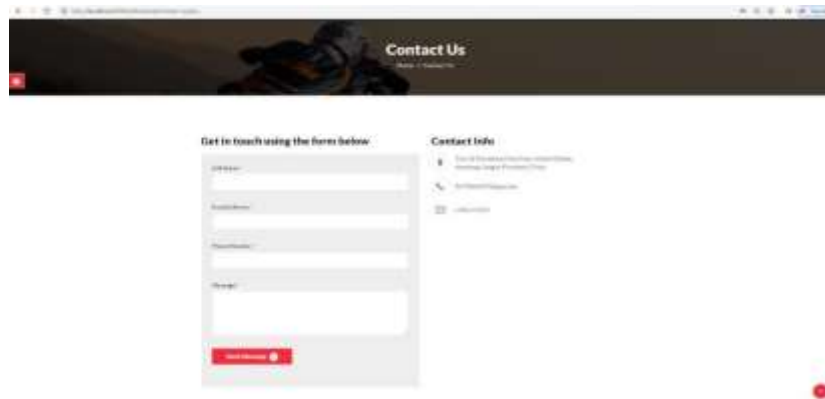


Figure 13. Display Contact Us Page

Results of Implementation of the Display Login Admin Page

1) Login Admin Page

On this page, the admin needed username and password.

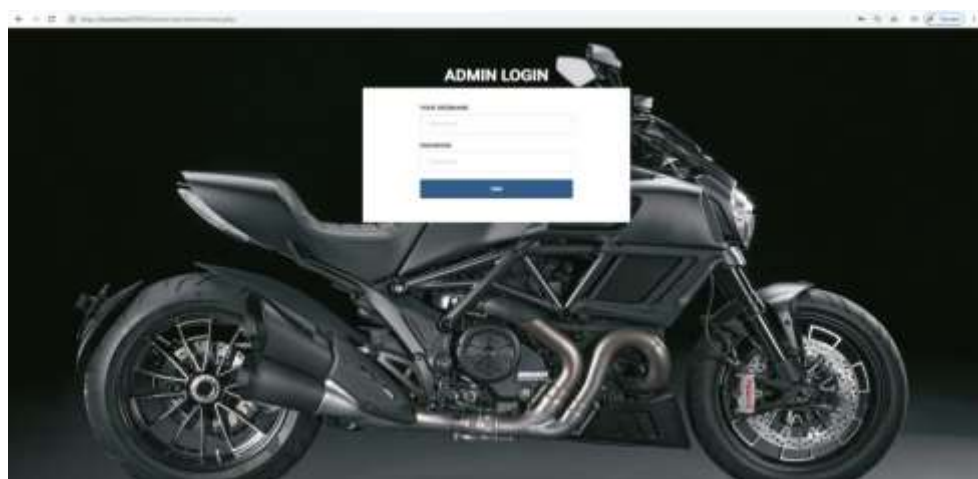


Figure 14. Display Login Admin Page

2) Display Dashboard Admin Page

On this, page the data that was entered into this motorbike rental system.



Figure 15. Display Dashboard Admin Page

### 3) Display Reg User Page

On this page showed data of the customers that had been registered/logged in to this website.

The screenshot shows the 'Registered Users' page with a table listing user information. The table has columns for Name, Email, Phone No, IDK, Address, City, District, and Reg Date. There are 6 rows of data.

#	Name	Email	Phone No	IDK	Address	City	District	Reg Date
1	Admin	admin@gmail.com	08123456789					2020-12-02 10:00:00
2	John	john@gmail.com	08123456789					2020-12-02 10:00:00
3	John P	johnp@gmail.com	08123456789	001	Jl. Jend. Sudharmono	Jakarta	Jakarta	2020-12-02 10:00:00
4	John	john@gmail.com	08123456789					2020-12-02 10:00:00
5	Admin	admin@gmail.com	08123456789					2020-12-02 10:00:00
6	Admin	admin@gmail.com	08123456789					2020-12-02 10:00:00

Figure 16. Display Reg User Page

### 4) Display Manage Vehicle Page

On this page a list of vehicles were displayed on the website and only the admin changed, added, or deleted vehicle data on the website.

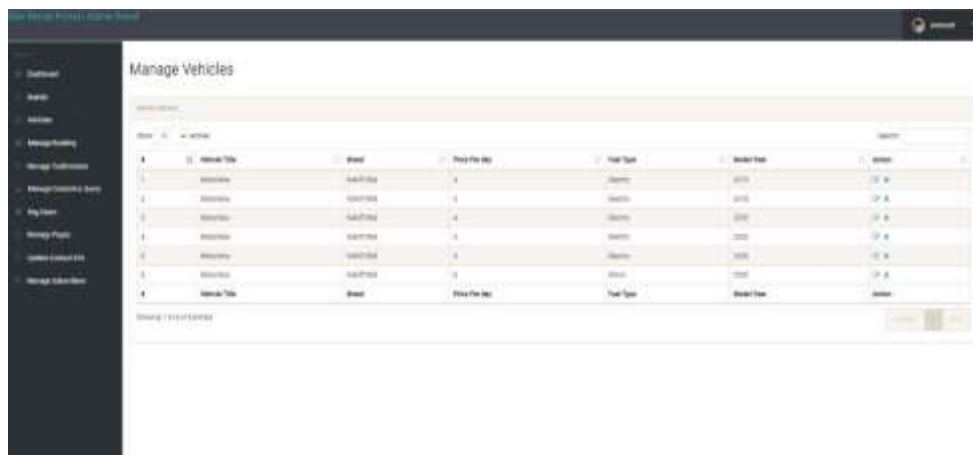


Figure 17. Display Manage Vehicle Page

5) Display Manage Booking Page

On the page a list of customers who had ordered a motorbike at this motorbike rental was displayed, the admin's job was confirming the order from the customer or cancelling the order.

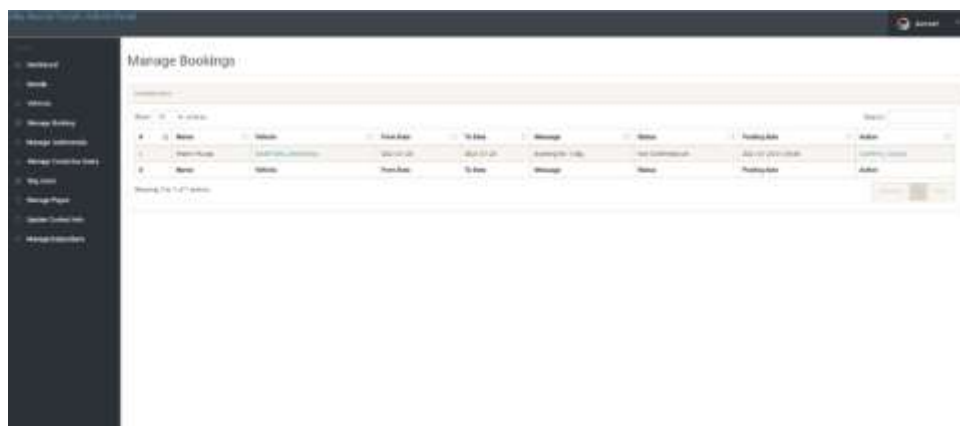


Figure 18. Display Manage Booking Page

6) Display Update Contact Info

On this page, the admin changed their location, phone number and business email.



Figure 19. Display Update Contact Info Page

## 5. CONCLUSION

Based on the research flow that had been explained, it was concluded that this research aimed to help or facilitate foreign citizens and to rent a motorbike with an easier and faster system in the form of a website and had a good database. Making a simple motorbike rental website was created through the PHP programming language with the support of Sublime Text 3 software and using MySQL as the database.

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