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Admission : CIT-221-041/2018

PROJECT PROPOSAL ON BODA SMART CARE

Abstract

The boda- boda sector is the fastest growing sector and a major source of income for most Kenyans . As a result the riders are very busy and work around the clock .They face major issues such asroad accidents, law enforcement irregularities ,delayed health care and lack of knowledge of the latest happenings as they are mostly on the road.

When a boda-boda emergency occurs, the community can be a helpful support for the operation centers involved in the response activities. As witnesses to a crisis, they initially can share updated and detailed information about what is going on. Moreover, thanks to the current technological evolution people are able to quickly and easily gather rich information and transmit it through different communication channels. Modern devices have embedded several technologies such as GPS receivers, Wi-Fi, accelerometers or cameras that can transform users into well-equipped human sensors.

Accident scenes and other misunderstandings among the boda-boda community attract law enforcers and court cases which don't favor the community as the saccos they have ,have not established secure communication channels with the law enforcers .

As the riders go about their daily duties they lack enough time to get proper healthcare for them and their families since the health care system in Kenya is slow. They also lack proper updates on the latest occurrences in the areas they operate like traffic and police check-ups which can really cause delays.

For these reasons, there is need to develop a smart application for reporting any exceptional circumstances ,accessing proper services and creating a communication platform for the community .

DECLARATION PAGE

I declare that the content of this work is my original research and has not been submitted before for the award of any degree or for any other academic purpose.

Signature: _____ Date: _____

KIARIE FAITH MUTHONI

CIT-221-041/2018

This research project has been submitted with my approval as university supervisor

Signature: _____ Date: _____

JOHN WALUBENGO

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ACKNOWLEDGEMENTS

I have taken efforts in this project. However it would not have been possible without the kind support and help of many individuals and organizations. I would like to extend my sincere thanks to all of them.

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Chapter 1

1.0 introduction

Boda smart care will be a web based application with the purpose of reporting and accessing faster help for the bodaboda community .Web search has become the world's most popular way of obtaining information or even help. Considering our real life demand and situation, this application will be a great technological support for the community. The information collected from cases reported can be used as evidence in court and by the government and hospitals to formulate strategies to manage the bodaboda sector.

1.1 Background of the study

Boda-boda as means of transport is conceived to be the cheapest way of navigating the roads and paths, especially in rural areas where there are no proper or paved roads that can easily be passed by taxis or buses. In town areas, they offer a quicker way of navigating jam's hence preferred for emergency cases and rush hours' occasions.

Many youths have joined boda-boda industry, providing transport services to customers, steady increase in the number of youth joining the sector makes it more reachable especially in demand by the general public. Boda-boda are everywhere customers can get them at any time. Their prices are relatively cheaper than that of single sourced taxi and slightly more expensive than that for commuter busses. Steady regulatory system is key in any sector for it to thrive in its objectives, this is lacking in boda-boda sector, Kenyan government haven't effectively implemented proper regulations in boda-boda sector. It's against the Kenya laws to carry two or more adult passengers on motorcycles, but motorist does carry more than one which has now become a norm, a good number of boda-boda riders drive on Kenyan roads without valid driving licenses, proper cycling attires for themselves and their passengers. Kenyan laws and directives for use on motorcycles as a means of transport aren't being implemented, the police usually turn a blind eye on riders making industry more user friendly for riders and dangerous for customers.

Daily growth has become the norm of the day in boda-boda sector occasioned by a large number of youth unemployed and constant demand for source of leaving. Cost of acquisition, customer demand, lack of law enforcement, unemployment for youths are some of the major driving force of the steady growth of the industry. Many riders find it easy to become riders since there are no strict formal requirements in venturing into business, the issue is to own motorcycle either through direct purchase or rent. These have made it more lucrative and easy for many youths to actively participate and earn a source of living but all these has brought forth worrying concerns as it is being associated with crime , traffic, accidents and impunity. Prevention is better than cure but when accidents and crime occur proper response and management is very crucial. Lack of first hand evidence and details can lead to defamation of the bodaboda riders. The government has developed a database to collect all riders details but lack of efficient communication channels when accidents, crime and impunities occur is a drawback to finding justice and formulating strategies to align this sector. The boda-boda community needs a safe haven

1.2Problem statement

The Kenyan road transport sector experiences a lot of accidents mostly caused by careless riders who are always in a hurry. Reporting these incidents can be a challenge when there are no emergency contacts available or a platform to relay the message. The boda-boda community hence become the most affected if there is delayed emergency rescue or inadequate equipment for first aid as a result of miscommunication. They also face a challenge accessing services such as getting in-touch with law enforcement officers and health specialists. This sector is rapidly growing and motorists are in operation all day hence allocating time to go to hospital becomes a challenge . The sector has also been on the spot for assault cases and crime hence the need for a proper communication channel with law enforcement departments

1.3Objectives

The project seeks to achieve its general objective of designing an application for the boda-boda community by focusing on the following specific objectives;

1. To provide immediate intervention and assistance to people in crisis
2. To create an easily accessible graphical user interface
3. To receive firsthand description of the scene from witnesses
4. To provide health services to the bodaboda community
5. To provide a communication channel with the law enforcers

1.4Scope of the study

The project aims to first gather information from target users on their preference regarding the interface ,simulate drills to evaluate how well the users would maximize the application ,develop the application as per the requirements formulated .

1.5Justification

The motivation of this project lies in the urgent need to ensure public safety in various bodaboda incidents by providing immediate help and gathering first hand data and provide services that are essential to the bodaboda community. This will help improve the operations in the sector as it is the fastest growing sector and is providing jobs to the youth hence a substantial growth in economy

1.6 limitation of the study

This is a volatile industry, many of the riders do not accept participation in the industry with the fear of being identified being they do not have recommended attire and documentation for operation.

The application needs access to the internet which is rather expensive to consumers since they need to purchase a data plan to access the service.

Chapter 2

2.0 Literature review

2.0.1 Introduction

(Howe, 2007) in his paper "boda-boda: Uganda's rural and urban low-capacity transport services" traced back boda-boda innovation to early 1960's when traders at the boarder of Kenya and Uganda in Busia town wanted cheaper and efficient way to transport goods from one border to another. The innovation made use of bicycles as means of transport with cushion at the back. In 1990 there was introduction of motorcycles that could be used to carry larger load compared to bicycles. Their capacities ranges from 50cc to 250cc with low fuel consumption. Motorcycles riders discovered that they can also use their motorcycles in transporting Customers to their destination, the innovation provided many youths with employment as they get their daily earning from the business (Olawo, 2014). The innovation spark rapidly to urban and rural areas receiving overwhelming support due to its capability of navigating paths, steep and hilly terrains. (Kenya Roads Board, 2013) estimated 89 percent of Kenyan roads aren't paved rendering them impassable by vehicles, providing good opportunity for boda-boda to become versatile, quick, and reliable means of transportation. In Kenya, it is estimated that 14.4 million people ride on motorcycles daily (motorcycle asocial limited of Kenya) and creating about 140 million job opportunities for the youth on daily basis, this industry has created big impact to economic development of low economically empowered members of communities, cutting down on social problems such as crime, promiscuity, and drug abuse.

2.0.2 Current Organizational and Regulatory structures

Boda-boda riders have organized themselves into Sacco's and Social welfares due to the harsh operation environment encountered to help them cope with situations, they collect monthly amounts agreed to help in running their welfare's. In Kenya, the government implemented laws that could help in regulating this industry, among the newly formulated regulations dated February 5th, 2015, includes:

- Riders are required to have Public Service Vehicle (PSV) insurance and Third party insurance
- They should have a Valid rider license
- They are also restricted from carrying loads which are 15 cm width beyond handle bars and 2m from the ground
- There should be no rare projection beyond 60cm off the length of the motocycle
- No load should be dragged on the ground
- Only one passanger at a time should be carried and the bodaboda should have footrests

These regulations formulated by the government are aimed at reducing major fatalities but the implementation of these new laws hasn't been fully embraced by boda-boda riders .once an operator acquires motorcycles they start the business, scramble for Customers without any order creating total menace in the industry.

In Uganda boda-boda riders are required to belong to associations which is an administrative tool created by the Ugandan Government to regulate the industry. Each member is required to contribute an annual membership fee ranging between $6 and $10 which comprises of a municipal operating license (plate) and actual association membership subscription. The associations act as an insurance agent and legally represent the riders in case of accidents. Good legislation has been passed in Kenya but sensitization to the community, implementation and adherence still remain a tall order, thus rendering them information poor, boda-boda riders take this advantage to continue with their daily routine business without following the due diligence of the laws. They used all means possible to invade the police hence resulting in lawlessness industry, promoting all kinds of mischief ranging from fatal accidents, source or lethal robbery.

2.1 Existing systems

2.1.1`Uber

Uber is a technology company that offers free software-platform available on mobile device for those wishing to request rides. At its core, Uber seeks to match passengers to drivers. The platform is able to track user's GPS coordinates, even if the user does not know where he/she is. The user is able to track arrival of her/his ride, and receives text message confirming when the Uber driver is arriving. From the driver's end, the driver is able to hit a button on his own app that says "Arriving Now" which sends the text message. The driver is never given the user's phone number directly, but is able to contact the user if he is unable to find the user. Uber typically costs less than a normal taxi in most markets. However, in times of high demand, like New Year's Eve prices goes high. No cash is exchanged when using Uber since signing up for an account requires providing credit card information. After the ride, the user is charged electronically and a receipt is immediately emailed, providing details of the trip. The user can then rate the driver (and the driver can also rate the user) and check a map of the route taken.

2.1.3 Boda fix

This innovation was invented in Uganda to bring safety to boda-boda riders and users, the application shows searches of all boda-boda according to names and location in Kampala and users can contact them for services. Security wise, the app has details of the boda-boda whereby it makes it easier to trace one in case of anything. This system has mobile money integration where fares can also be made directly to their mobile money accounts. The application is intended to save time, no need of going to the market, making payment of commodities electronically no need to carry cash.

2.1.3 Safeboda

Safe-Boda was a technological invention which was aimed to offer safe and secure moto-taxi experience in Uganda. It was believed that a market-based solution that incentivizes road safety can prevent injury and death and significantly reduce public health costs. Boda-boda riders were provided with trainings, quality helmets, and help users find the Safe-Boda drivers using a mobile application. Wearing a quality helmet reduces risks of death by 40% and risk of severe injury by 70% (WHO 2013). This model seemed to work because of aligned incentives of all stakeholders in the transportation market by increasing value, efficiency and safety. Safe-Boda provided a safe working environment for riders and increase their income. Safe transportation market was created for customers and support government authorities in improving transportation efficiency

2.2 Problems of the existing systems

Even with the existing systems greatly influencing the boda-boda sector many are the times when customers ,locals and even riders become victims of accidents ,crime or even impunity and they lack channels to alert responsible authorities. The transport sector has not yet implemented any technological way of reporting instances that are experienced in the daily operations of this sector.

The boda-boda community also lack efficient health care services due to their busy schedules

2.3 Proposed System

The proposed system will have;

- The simplest user interface that accommodates the targeted audience.
- Details of the user relaying the information will be collected as they sign-up to the site to ensure integrity .
- The user will send the incident details through the emergency report page
- The users will communicate with the rest of the community to alert each other regarding issues that affect them eg traffic .
- Emergency contacts will be available on the application
- The users will also have access to medical services and a trusted channel to communicate with law enforcers

Chapter 3

3.0 Methodology

3.1 introduction

The methodology chapter describes a model/framework under which the system has been developed. It addresses the following areas:-

- The techniques used to collect facts and data
- Tools used to analyse the data and the processes
- Tools to implement and test the system

3.2 System analysis

I performed a system analysis gathering requirements ,modeling the business needs and creating a blueprint of how the system will be built to interpret facts hence utilizing information to the full capacity.

The waterfall methodology was used as it is the most straight forward and easy to manage making it suitable for small projects where the requirements are well defined. It is a high risk methodology but the benefits outweigh the cons for the project at hand.

The steps followed are ;

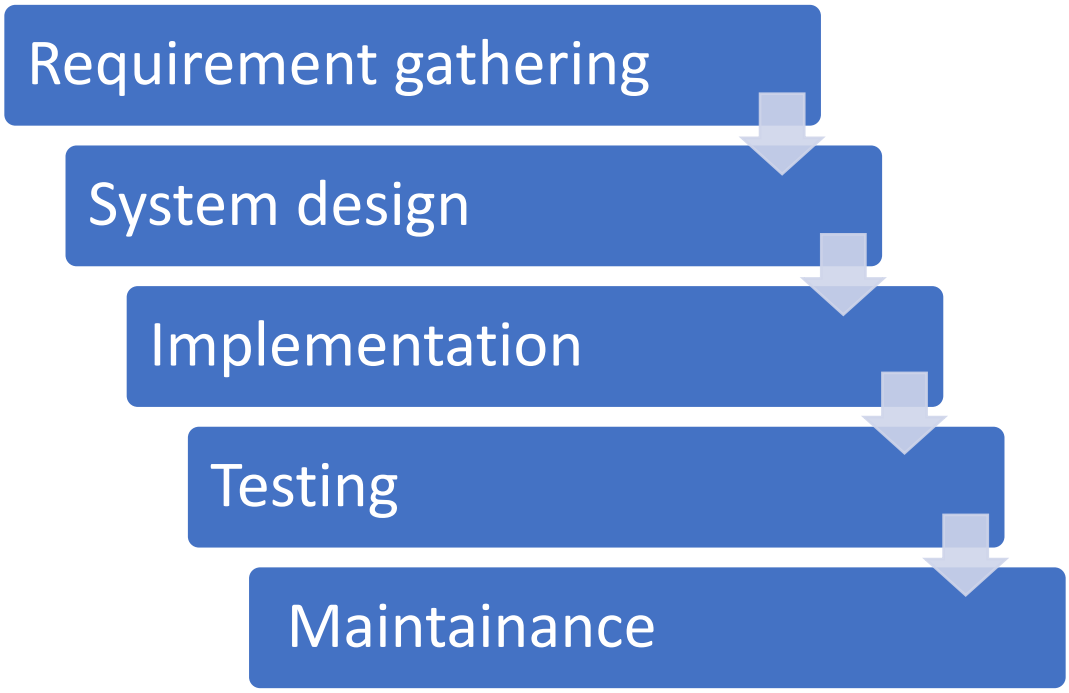

Figure 1

3.2.1 Requirement gathering

The existing system is evaluated. Deficiencies are identified. This can be done by interviewing users of the system and consulting with support personnel. The new system requirements are defined. In particular, the deficiencies in the existing system must be addressed with specific proposals for improvement. Other factors defined include needed features, functions and capabilities.

3.2.2 System Design

The proposed system is designed. Plans are laid out concerning the physical construction, hardware, operating systems, programming, communications and security issues.

3.2.3Implementation

The new system is developed. The new components and programs must be obtained and installed. Users of the system must be trained in its use.

3.2.4Testing

All aspects of performance must be tested. If necessary, adjustments must be made at this stage. Deployment: The system is incorporated in a production environment. This can be done in various ways. The new system can be phased in, according to application or location, and the old system gradually replaced. In some cases, it may be more cost-effective to shut down the old system and implement the new system all at once.

3.2.5Maintenance

This step involves changing and updating the system once it is in place. Hardware or software may need to be upgraded, replaced or changed in some way to better fit the needs of the end-users continuously. Users of the system should be kept up-to-date concerning the latest modifications and procedures.

3.3Feasibility Study of the proposed System

This is a study that was carried out to determine whether the proposed project should have proceeded or be discarded. It provided information to determine the benefits of the project and the disadvantages of the proposed system. Some of the areas which are covered are:

3.3.1 Economic Feasibility

The system is evaluated to find out whether the cost will be justified by the benefits. This feasibility was done to compare the cost of developing, operating and maintaining the proposed system rate of returns. It also involved looking into benefits the project would come along with. They include:

- Regulate the rate of crime
- Gather first hand information
- Reduce the rate of fatalities
- Provide services such as health care and law and order

3.3.2 Technical feasibility

This was carried out with the purpose of ensuring that the software and hardware requirements are available

It also made sure that the needed knowledge and technology were available.

3.3.3 Social Feasibility

This was based on the acceptability of the system by the users, it dealt with the willingness and ability of the government and boda-boda community to operate and support the proposed system.

The system is accepted by the users as it is a solution of a critical day to day challenge.

3.3.4 Operational Feasibility

This checks if the new system is in coordination with the ministry of transport ,health and law. The management was fully satisfied that the system would not affect any organizational structures but would instead scale up their performance and service to the Citizens.

3.4 Requirement gathering

The following methods were used to collect data;

3.4.1 Questionnaires

A group of respondents were issued with questionnaires seeking to find out how a user friendly application would be developed. The questions targeted the boda-boda community expectations and willingness to corporate .

i. Below is a list of questions asked ;
ii. Do you own a phone ?
iii. What is your best color ?
iv. Do you have a family ?
v. Would you be willing to report an accident through an application ?
vi. Would you be willing to book you hospital appointments through an application ?
vii. Would you be okay with booking an appointment with the law enforcement officers through an application ?
viii. How many hours do you spend chatting with colleagues ?
ix. Have you ever evaded traffic after being notified by your colleagues ?

3.4.2 Observation

Observation is way of gathering data by watching behavior, events, or noting physical characteristics in their natural setting. Observations can be overt (everyone knows they are being observed) or covert (no one knows they are being observed and the observer is concealed).I conducted an overt observation

A drill was conducted and the immediate response and procedures taken by witnesses was recorded

3.4.3 Interviews

An interview aims to find out what is in the person's mind that may not have been written down. The interviews are good tools for collecting rich, detailed information and allow exploration and follow-up.

This involved interviewing customers ,bodaboda riders and local citizens on the matter to get their thoughts on it. During the interviews the respondents were given a chance to enquire on the proposed project .

Chapter 4

4.0 System design

4.1Design tools

System design is going to be carried out to determine how the system will operate, in terms of the hardware, software and network infrastructure; the user interface, forms and reports that will be used and the specific programs, databases and files that are needed for the entire system. This provides crucial information needed to determine how the system will operate by the requirement specification worked out during the system analysis phase.

The major system analysis and design tools to be used include;

i. Use Case Diagram
ii. Data Flow Diagram(DFD)
iii. Entity Relationship Diagram(ERD)

4.2 Functional requirements

The system will have a user who is a member of the boda- boda community and an administrator. The user will be able to perfom the following actions ;

- Register for a Boda smart care account using an Email and a password .
- Log-in to their account
- Make emergency reports and calls
- Book appointments with specialists ie doctors, lawyers and police .
- Chat with the rest of the community

The administrator will ;

- Receive emergency alert , analyze the details and deploy necessary help
- They will receive appointments and make them happen
- They will manage the chat app database
- They will be in charge of the seamless operation of the application

4.4 system analysis

4.4.1 Use case

The use case diagram for the boda smart care shows the sample behavior of the software. It includes the project functions using use cases, actors, and their connections.

Moreover, the diagram assists in the definition and organization of project needs. This also provides a clear picture of the user and system relationships. Therefore, this diagram depicts the complex functions of a system including how the user reacts to it.

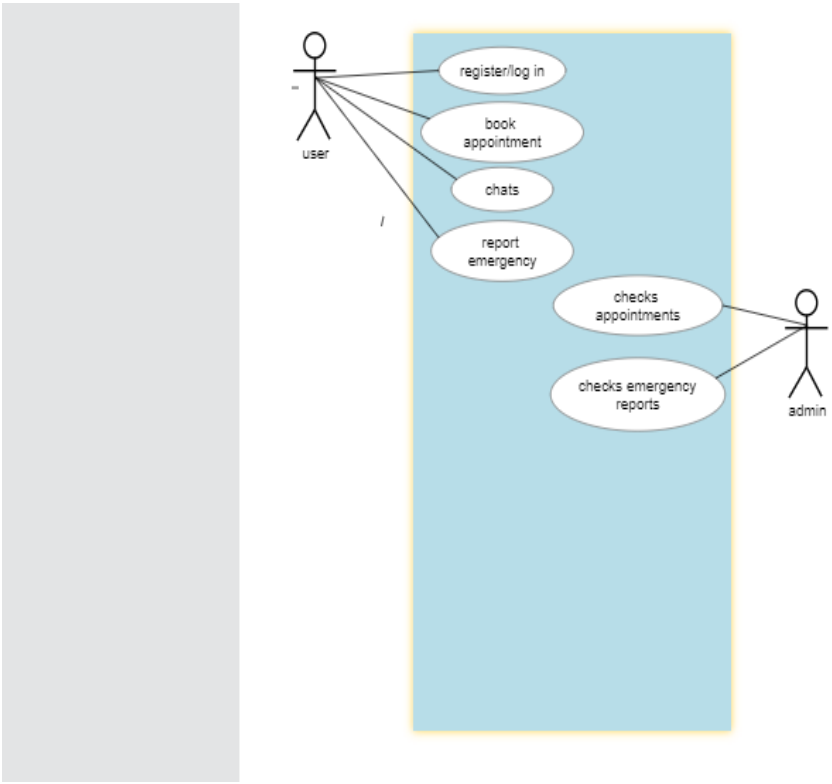

Figure 2

4.4.2 Data flow diagram

A data flow diagram shows the way information flows through a process or system. It includes data inputs and outputs, data stores, and the various sub processes the data moves through. DFDs are built using standardized symbols and notation to describe various entities and their relationships. Data flow diagrams visually represent systems and processes that would be hard to describe in a chunk of text. The diagram is used to map out a system and make it better or to plan out for implementation. Visualizing each element makes it easy to identify inefficiencies and produce the best possible system.

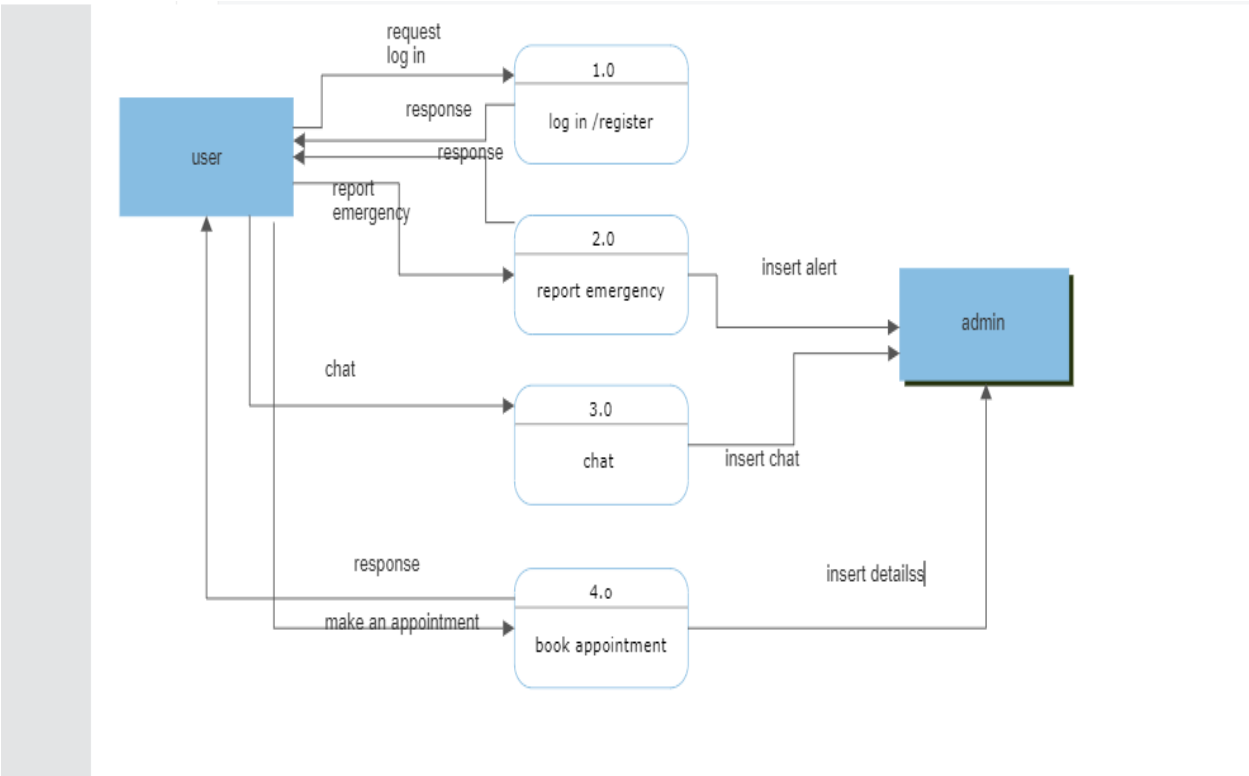

Figure 3

4.4.3 Entity relationship diagram

An entity relationship diagram (ERD), also known as an entity relationship model, is a graphical representation that depicts relationships among objects within an information technology (IT) system.

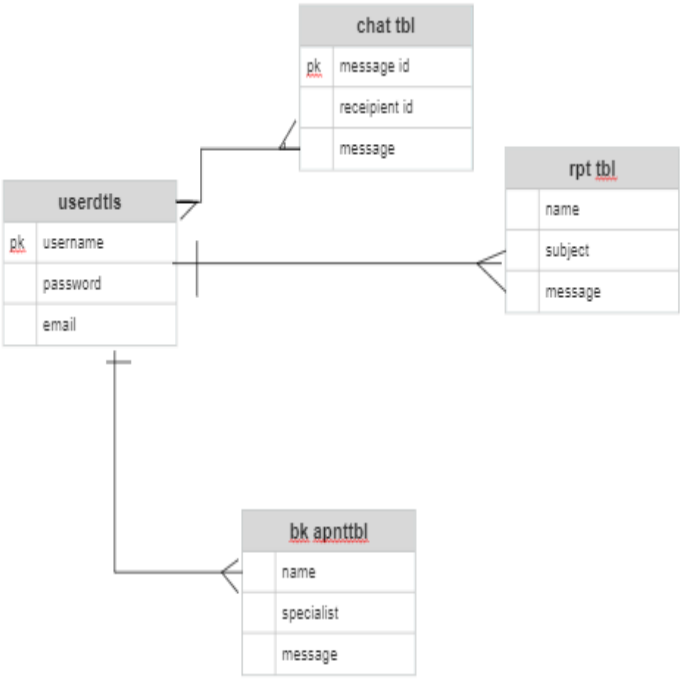

Figure 4

4.5 Non Functional Requirements

There are a lot of software requirements specifications included in the non-functional requirements of the boda smart care System, which contains various process, namely Security, Performance, Maintainability, and Reliability.

4.5.1 Security:

● user Identification: The system needs the user to recognize herself or himself .

● Modifications: Any modifications like insert, delete, update, etc. for the database can be synchronized quickly and executed only by the administrator.

● Administrator rights: The administrator can view as well as alter any information in the Hospital Management System.

4.5.2 Performance

● Response Time: The system provides acknowledgment of the user quickly

● Capacity: The system needs to support at a lot of people at once.

● User-Interface: The user interface acknowledges within five seconds.

4.5.3 Reliability:

● Availability: The system is available all the time.

Chapter 5

5.0 Implementation

The system which is a web application was developed using HTML,CSS and JAVASCRIPT .HTML is a markup language for describing web documents (web pages). HTML stands for Hyper Text Markup Language. A markup language is a set of markup tags. HTML documents are described by HTML tags. Each HTML tag describes different document content. I used HTML to create the actual content of the page and define the basic structure and the contents of a website.

Cascading Style Sheets, or CSS, allowed specification of things like the font, the size of text, whether the page is to have 2 columns, whether your text is to be in bold or italics, and so on. In other words, it allowed control the appearance of the web page.

JavaScript is the most popular programming language in the world, used to make web pages interactive. JavaScript support is built right into all the major web browsers, including Internet Explorer, Firefox and Safari. So, it runs on the visitor's computer and doesn't require constant downloads from your website. Provided that the visitors to your site are using web browsers that support JavaScript (most do) and have JavaScript enabled (it is by default), then the JavaScript will run when they visit the page.

On a server side and just before a page is delivered to the client browser, PHP makes it possible to create pages that changes depending on the data given to PHP.PHP is the code that is used to interface with the database

5.1 User interface

User Interface (UI) Design focuses on anticipating what users might need to do and ensuring that the interface has elements that are easy to access, understand, and use to facilitate those actions. UI brings together concepts from interaction design, visual design, and information architecture.

i)The log-in/register page

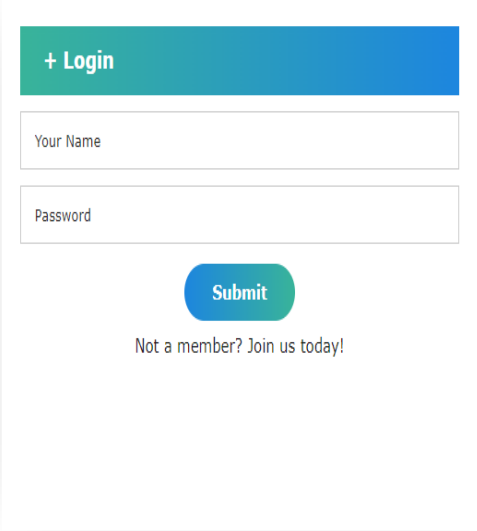

Figure 5

ii)The home page display

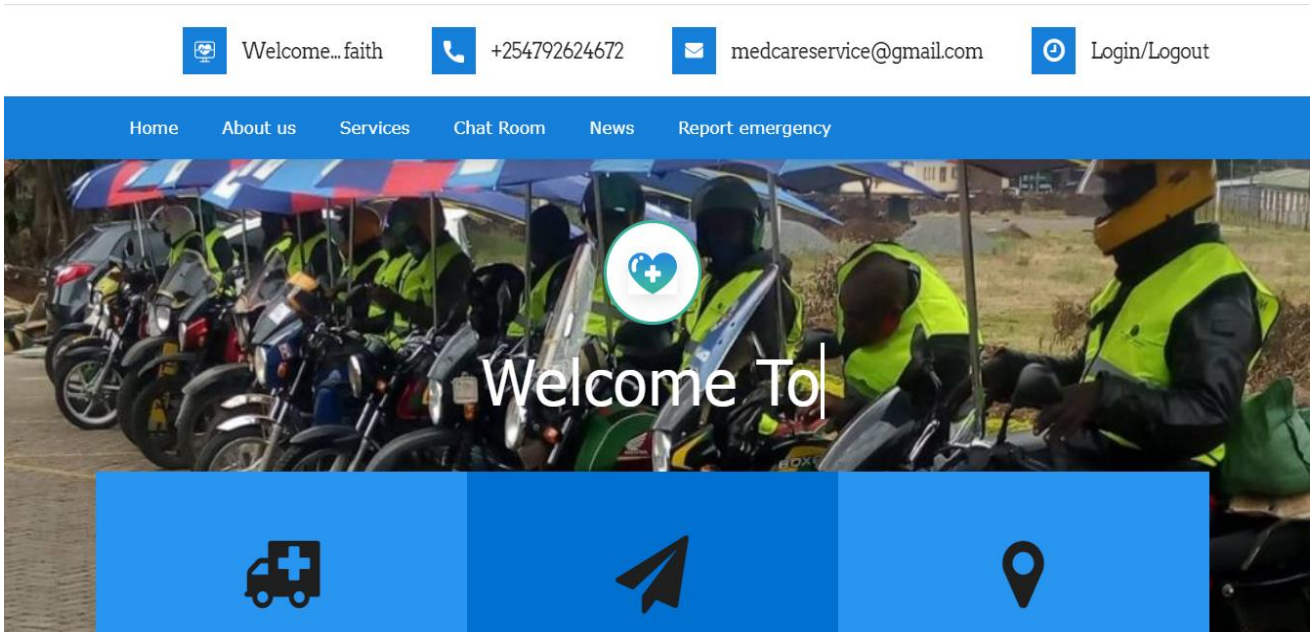

Figure 6

iii) The About us page

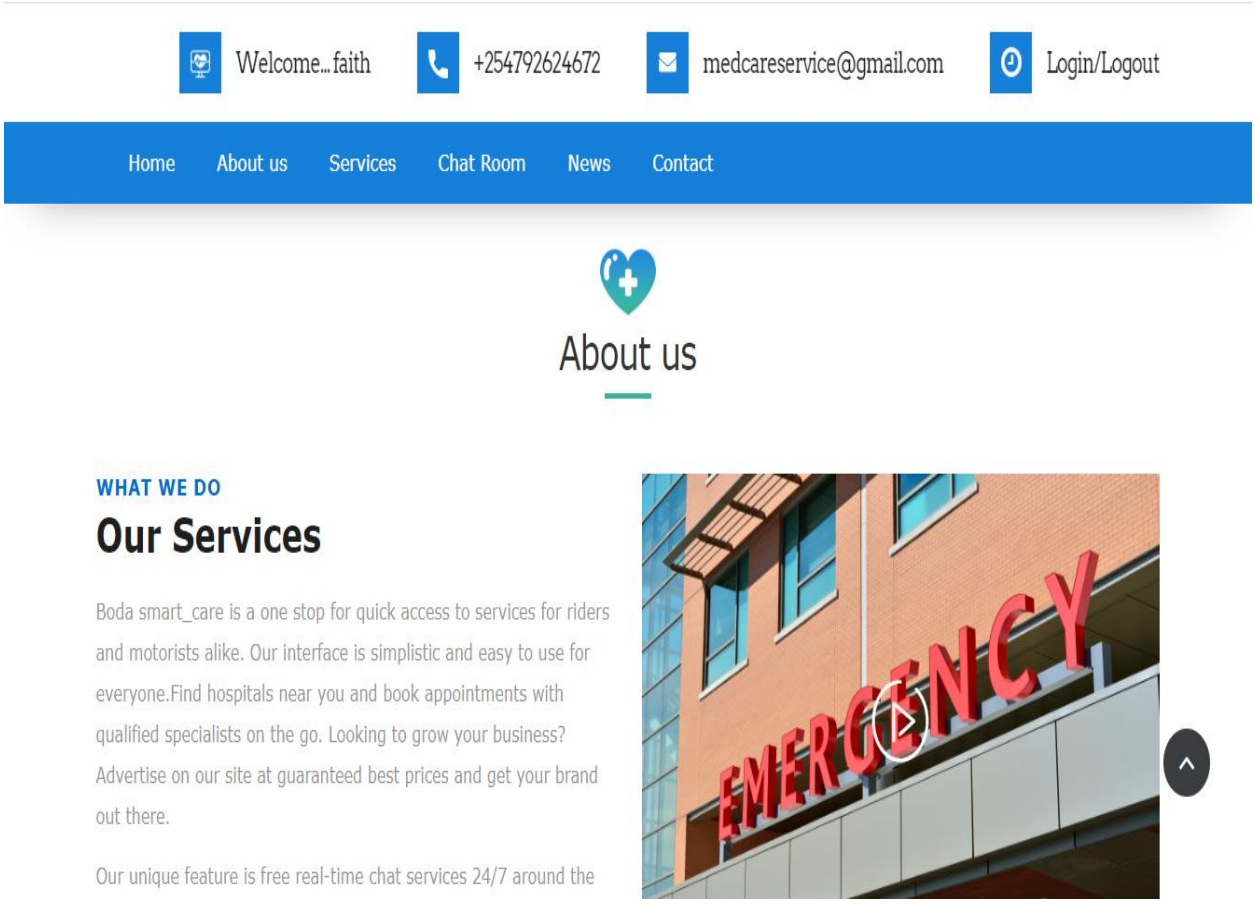

Figure 7

iv) Book appointment page

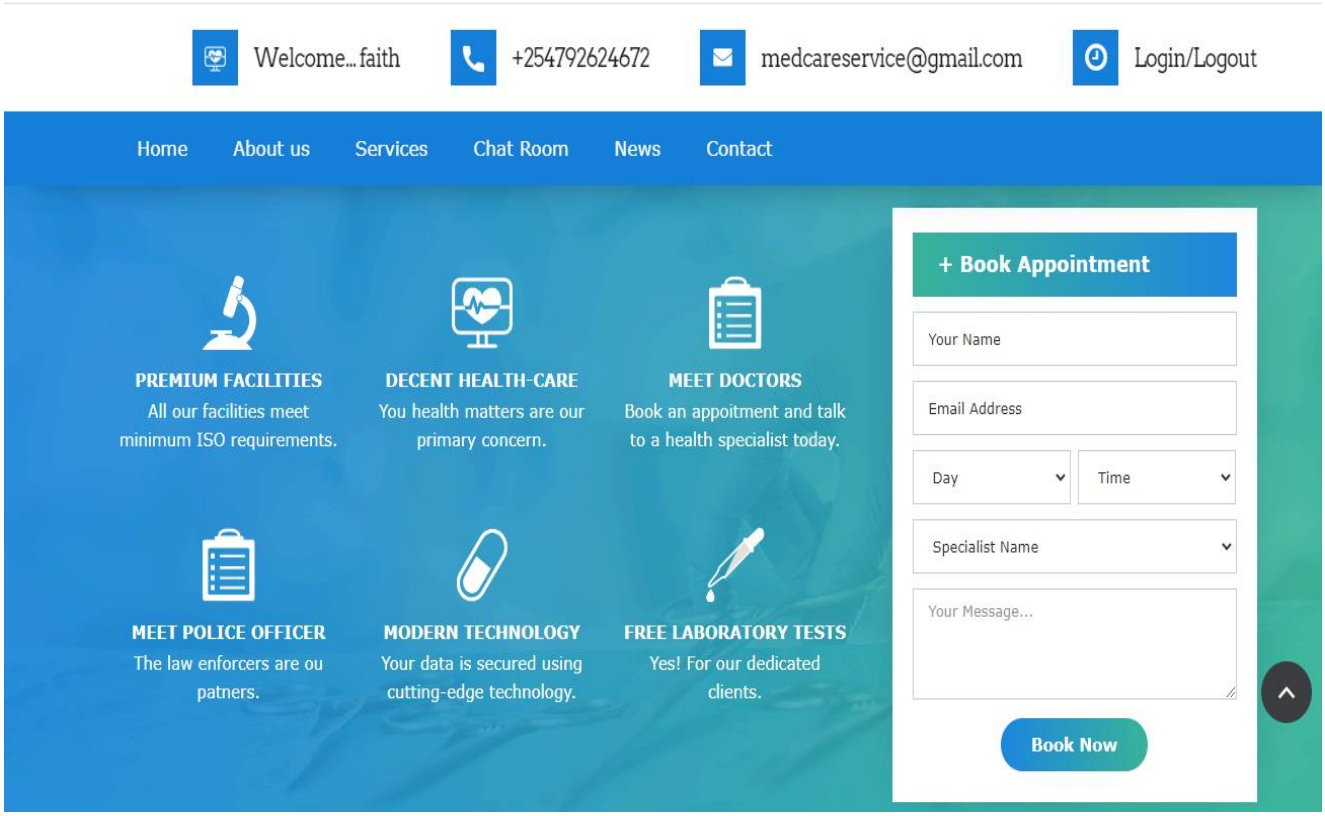

Figure 8

v)Chat room

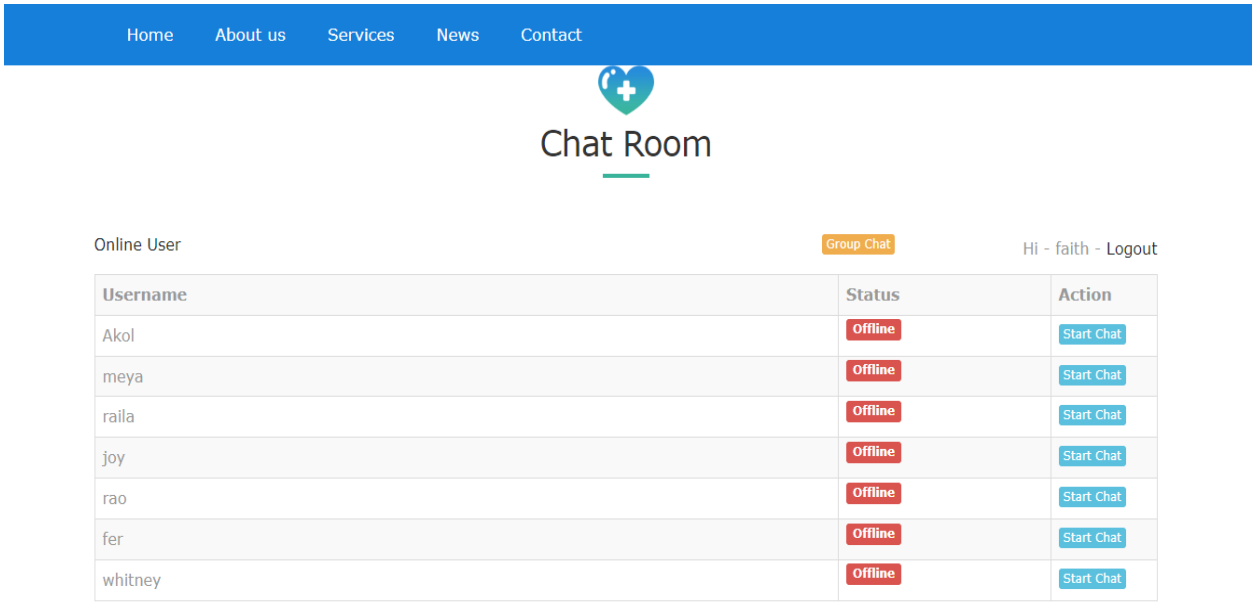

Figure 9

vi)Chat window with other users

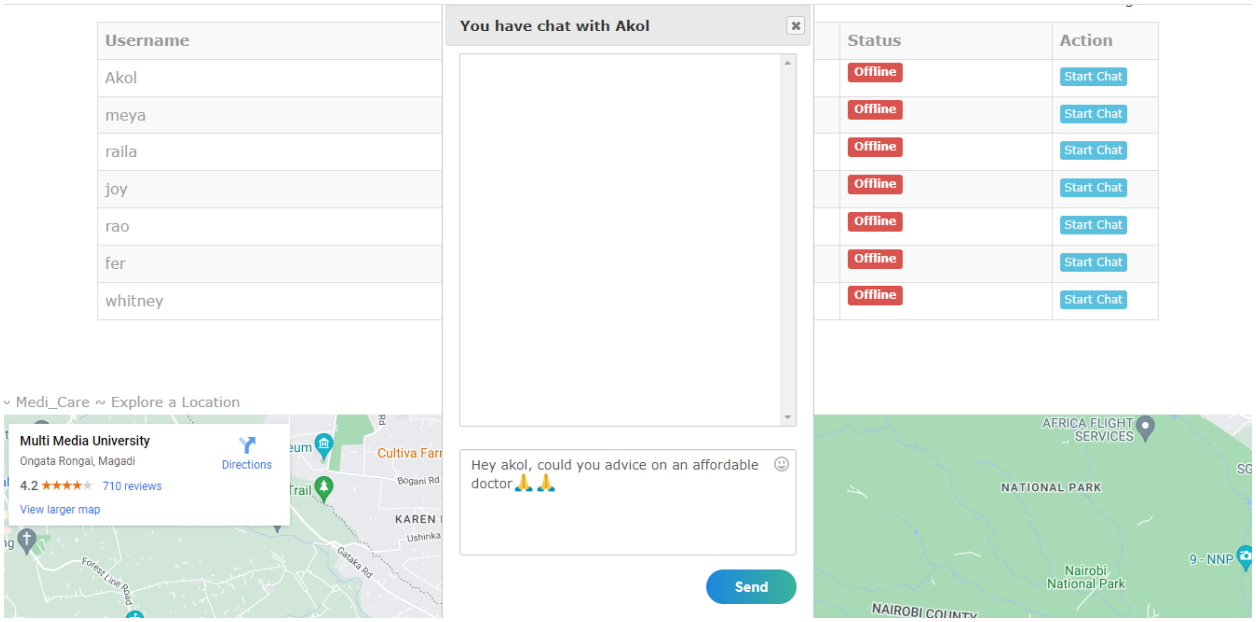

Figure 10

vii)Group chat window

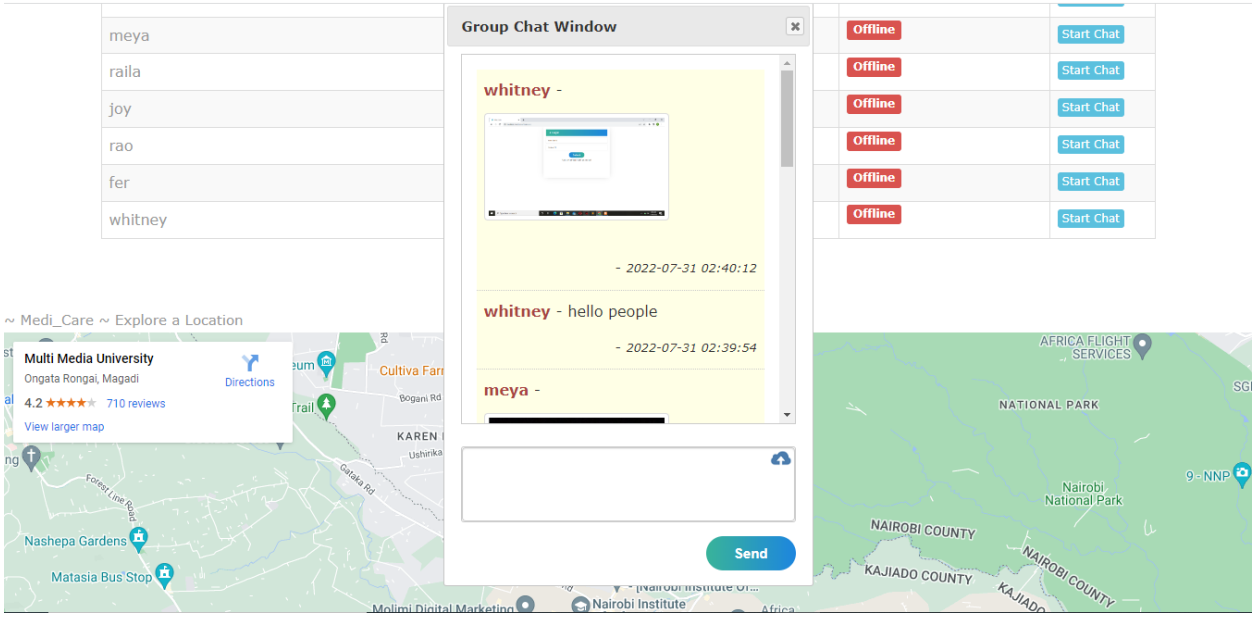

Figure 11

viii)The news page

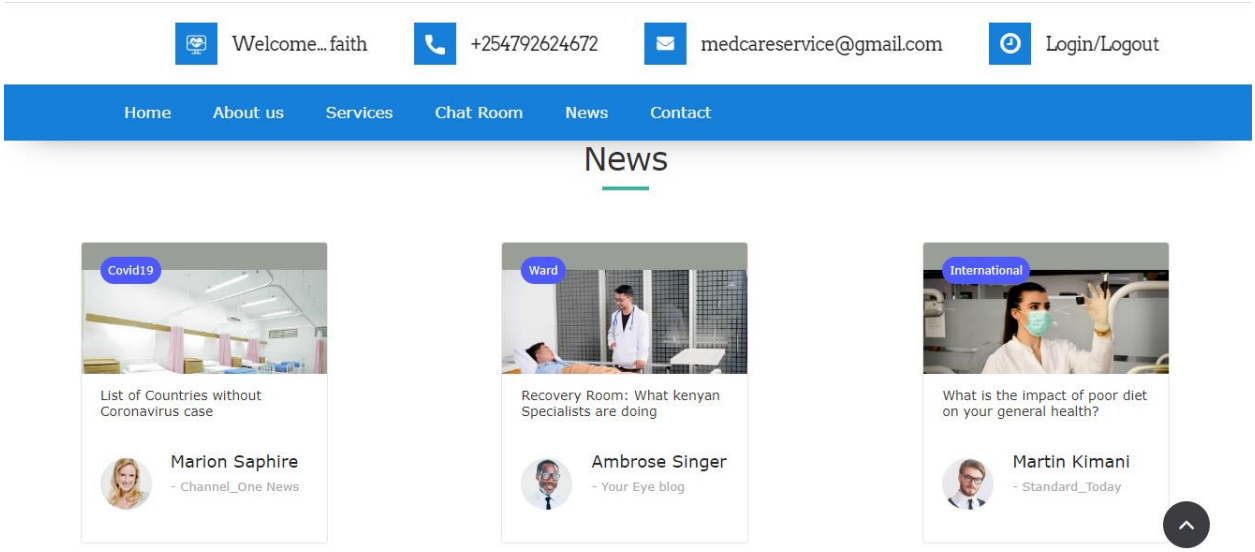

Figure 12

Report emergency page

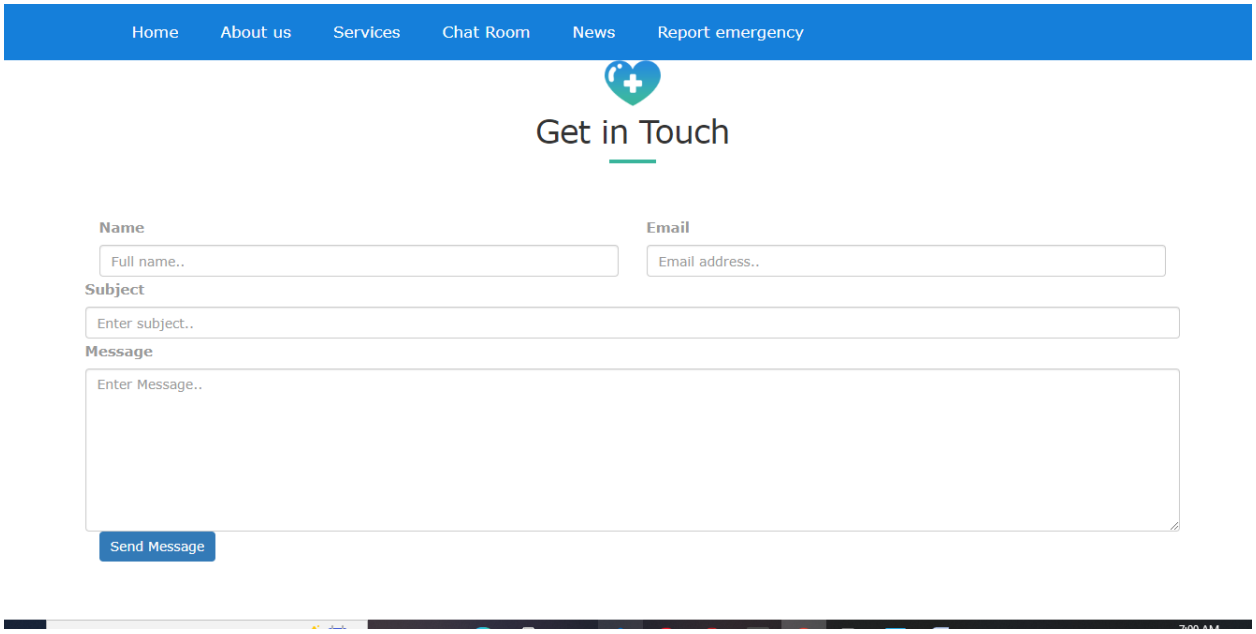

Figure 13

Chat database layout

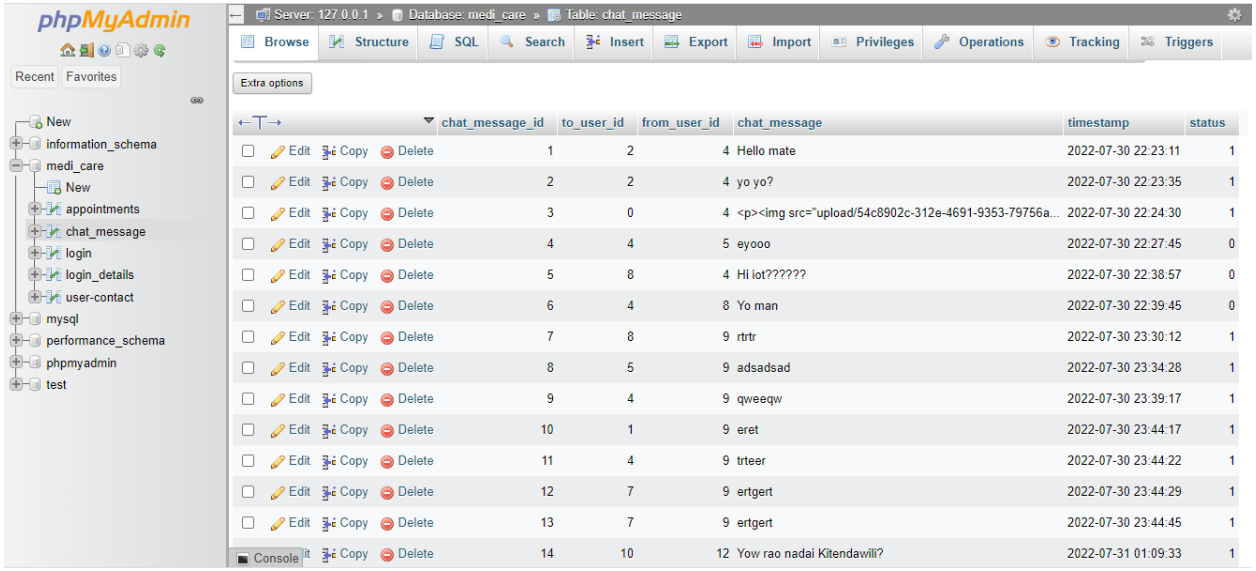

Figure 14

Book appointments database

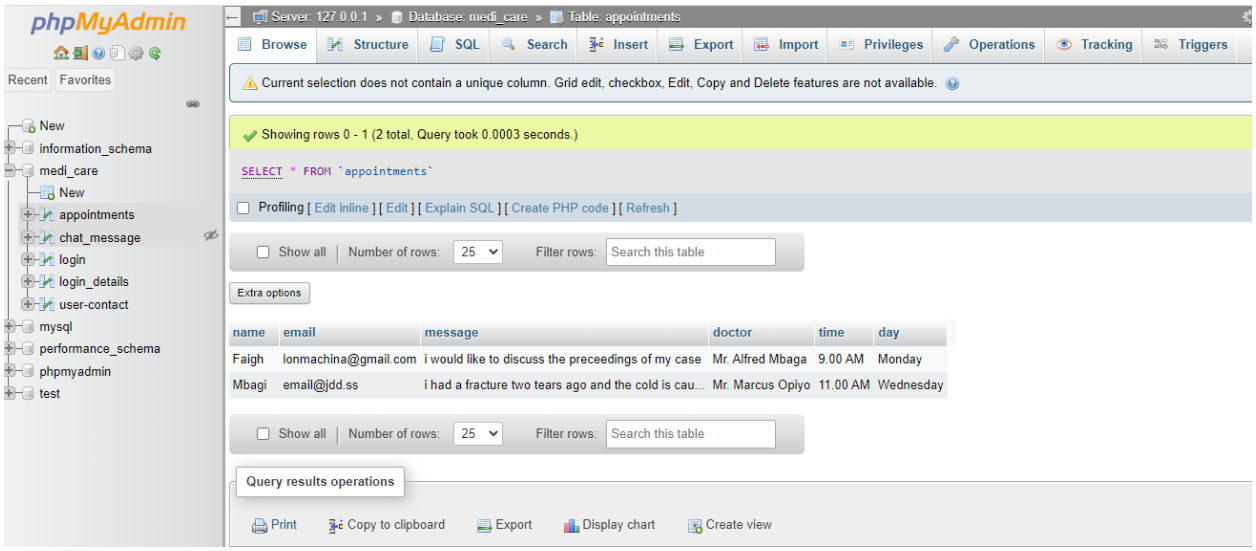

Figure 15

User details database

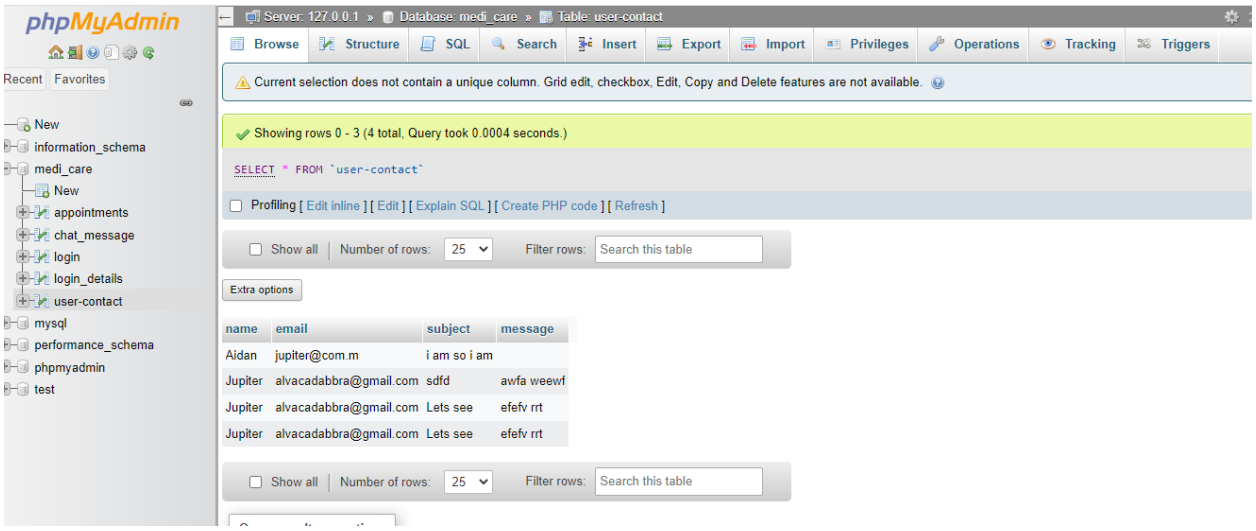

Figure 16

User log in details database

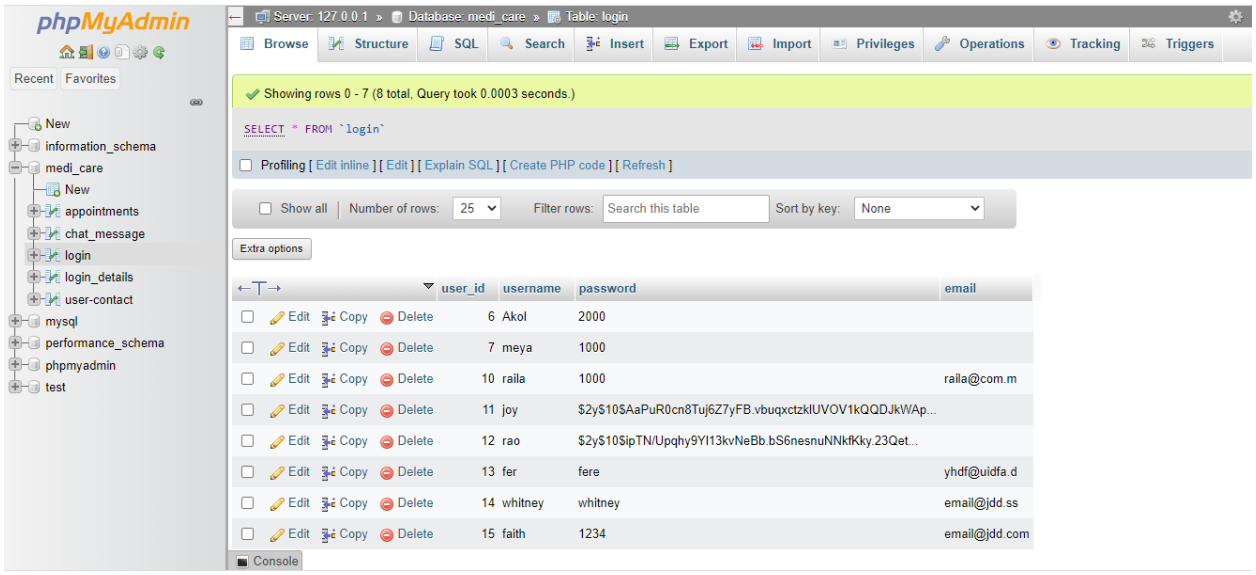

Figure 17

Admin dashboard

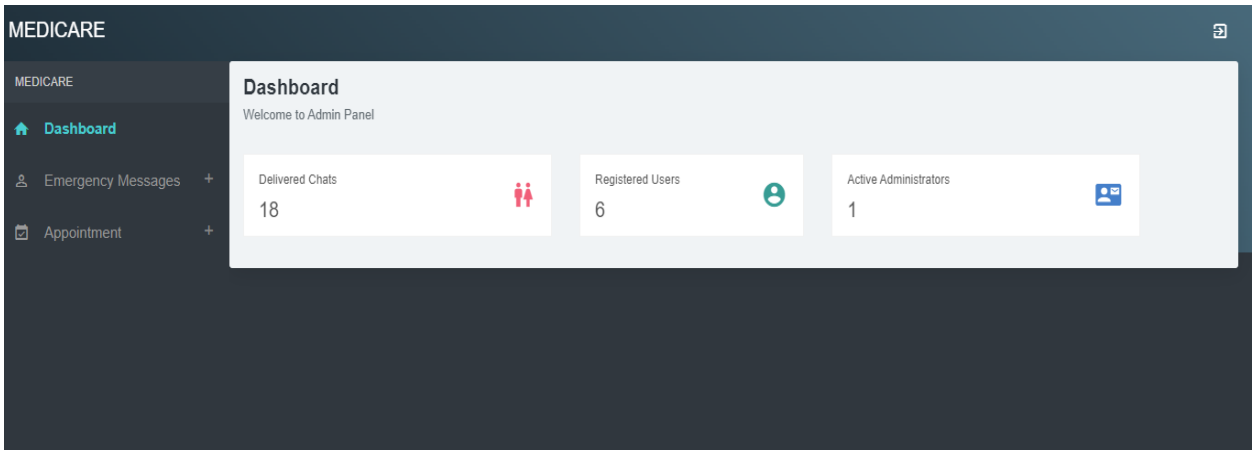

Figure 18

5.2Testing

Test number	Description	Expected outcome	Pass/fail
1	**Register the user with input data required and press submit**	**The user is redirected to the home page and their name displays at the nave bar**	**pass**
2	**Register the user with the wrong credentials**	**An error message pops up**	**pass**
3	**Click the contact us link**	**A form to fill emergency details pops up with a map below it**	**pass**
4	**Click the chat link**	**A chat interface displays**	**pass**
5	**Scroll down to book appointment**	**A form allows you to fill in details**	**pass**

5.3 Conclusion

The objective of this research was to analyze the problems encountered by the boda-boda community and the existing systems .The literature review investigated the existing models and frameworks in the boda-boda sector and analyzed the system architectures. With this information, the I developed a web based application to act as a solution to the challenges faced in the sector. The respondent's feedback about the application indicated that the boda-boda community is ready to incorporate the application into their day to day activities .

Recommendation

The purpose of all these works aims to provide user a pleasuring experience and great user interaction. Technology changes the life, so learning new techniques constantly is quite necessary and important.

Considering the inconvenience in remembering many website username and password, the account combining with some existed account of website and software such as Facebook is necessary. It will reduce the user's burden

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