FARMERS PLACE: AN ANDROID BASED MOBILE APPLICATION FOR SELLING FARMERS PRODUCTS

BY

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This Report Presented in Partial Fulfillment of the Requirements for the Degree of Bachelor of Science in Computer Science and Engineering

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APPROVAL

This Project titled "**FARMERS PLACE: AN ANDROID BASED MOBILE APPLICATION FOR SELLING FARMERS PRODUCTS**", submitted by Mozammel Hoshen Chowdhury to the Department of Computer Science and Engineering, Daffodil International University, has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of B.Sc. in Computer Science and Engineering and approved as to its style and contents. The presentation has been held on January 6, 2022.
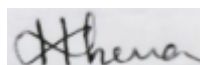
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DECLARATION

We hereby declare that this project has been done by us under the supervision of **Mr. Saiful Islam, Sr. Lecturer, Department of CSE** Daffodil International University. We also declare that neither this project nor any part of this project has been submitted elsewhere for award of any degree or diploma.

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ABSTRACT

The project name is Farmers Place. It's a mobile based android and iOS application which is made for farmers. The concept of this project is aimed at helping famers to get a fair price. The farmers didn't get fair price of their products they sell because of some brokers. With this project the farmers will get fair price by selling the products in one platform. The old manual system was suffering from a series of drawbacks. The present project is developed to meet the aspiration indicated in the modern age. Farmers can contact directly to the customer there will be no brokers. This project will help reduce the manual method and stress which is done by a person and that is a time consuming and lengthy process. The project will also help the buyer to buy the product at a perfect price. Big agro company like Swapna, Mina Bazar and others they can also buy from the farmers directly through the application. This project will be very helpful because it will maneuver the customer and farmer relationship in effective manner.

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CHAPTER 1
Introduction

1.1 Introduction

The project is a mobile based android and iOS application. Farmers Place is a mobile application which is made for farmers for selling their product online without any broker. The application will be helpful for the buyers also they can easily buy the authentic Argo products easily. As the application will be use by the farmers so the UI design must be user friendly, and the activities have too easily understandable. The project is divided into two parts. First part is the user app where anyone can register using email, phone number, google sign in or Facebook sign in. Second part is the admin panel where admin can create a shop assign the shop to a user and there will be shop admin login. Shop admin also can login to the admin panel as shop owner here they can track their sell. They can also track their orders. The users who will buy the products they can also track their order from the app.

1.2 Motivation

Our country is the land of farmers. But the farmers face a lot of problems for selling their products at good rate. They don't have any proper platform for selling their products. Most of the farmers sell their products to brokers and the brokers give them a low price. For that reason, the farmers don't get fair money for their products. After seeing these things, I got an idea to help the farmers and bring them in a single platform so that they can sell their products and get fair money. This is the reason the application is name is "Farmers Place". This platform will help the farmers and, they buyers to get authentic products directly from the farmers.

1.3 Objective

The main goals of the applications are:

I.   The main objective of this project is to build a platform for farmers to sell their product.
II.   Making a platform which can maneuver the customer-farmer relationship in an effective manner.
III. The farmer will get a unique interface where they can avail everything right from learning to the market information

IV.   Customers will get authentic products directly from the farmers.
V.   Gather all farmers in one place.
VI.   The farmers can easily track their sell and, they can also see their orders.
VII.   Customer can see their product delivery status.
VIII.   A user-friendly interface where anyone can register and login using mobile number, email, and their social media platform.

1.4 Expected Outcome

The expected outcome of this project is to help the farmers and bring them in one platform. Farmers can sell their products easily in perfect price. Farmers can also track their sale. The farmers don't have to sell their products to brokers. Farmers can easily contact with the customers. Customer can also get authentic products without any chemicals. Customer can easily track their orders products status. Big Agro company like Shawano, Mina bazar they can also easily buy products from the farmers directly.

1.5 Report Layout

A full description of our process and all other related work is described in the report. In chapter one I have discussed about the introduction, motivation, expected outcome of our project. In chapter two we have discussed about related work, comparative studies, scope of problems and the challenges.

Chapter 2
Background

2.1 Introduction

"Farmers Place" it's a mobile based application. This application is for famers. The farmers will use this application for selling their products. Farmers will be benefited from that project because they don't have to sell their products to any brokers, they can sell their products directly to the customers. First, I have worked on the front-end work how the app will look like, how the routes will be connected. After completing the front end then I have worked on the admin panel. The admin panel is web based and admin can control the whole thins admin can create shops and assign a shop owner on that app.

2.2 Related Work

In our country farmers always sell their products to the broker because they don't come the town for selling their products. Most of the farmers lives in a rural area so that they don't want to come town for that reason they don't get their proper price. As an example, the broker buys the products in low rate after that they shift the products to the town and sell them into a huge price. In my research I did not see any kind of projects in Bangladesh. But I have read some new in online that one farmers' market will be release name "Krishoker Bazar" but still It doesn't release yet. In other countries these types of projects are available. In "Farmers Place" everything will be in hand. Customers can easily buy products from farmers they can also go to spot and easily pick the product by themselves.

2.3 Scope of The Problem

Now we are living in a modern age. We can solve a lot of problem through the technology. Farmer's problem is a very big issue now a days. We depend on them for our food, so we have to give them proper respect and opportunity. So, for that I want to build a mobile application which will help them where farmers can easily sell their products without any problems or any brokers. People can also buy the authentic products without chemicals. The manual process was too much lengthy and big process. Now a days people are too much busy that everyone wants everything in their doors.

So, for that this is the best solution for everyone because now a days everything depends on technology so why not this? Anyone can use this mobile application easily.

2.4 Challenges

When we have built something or do some tasks, some difficulties must be faced. For this project I have also faced some problems. The main thing was the language part I must make the full app in "Bangla" language so that everyone can understand the whole part. As we think about the farmers most of them don't know English language for that I have to use Bangla for this app. Next thing was the database connection part, the app must relate to the web admin panel so that everything works perfectly. Admins need to control everything from web-based admin panel. Map integration part wasn't that much easy because exact location must be match. Payment method was also difficult because getting a payment gateway wasn't too much easy. So, I have integrated some payment method and there are cash on delivery also.

Chapter 3

Requirement Specification

The whole app made of using Flutter. Flutter is an open-source UI software development kit made by google. The language used in this project was Dart. Requirements are specific there are many types of models like use case diagram, business process modeling, UML diagram etc.

3.1 Business Process Modeling

The application begins from home page. In Figure 3.1, when a user opens the application, it will go to home page. After that a user can search for products also, they can select a product to buy from home page. After selecting a product to buy they can easily checkout, but they have to login or register before they checkout a product.
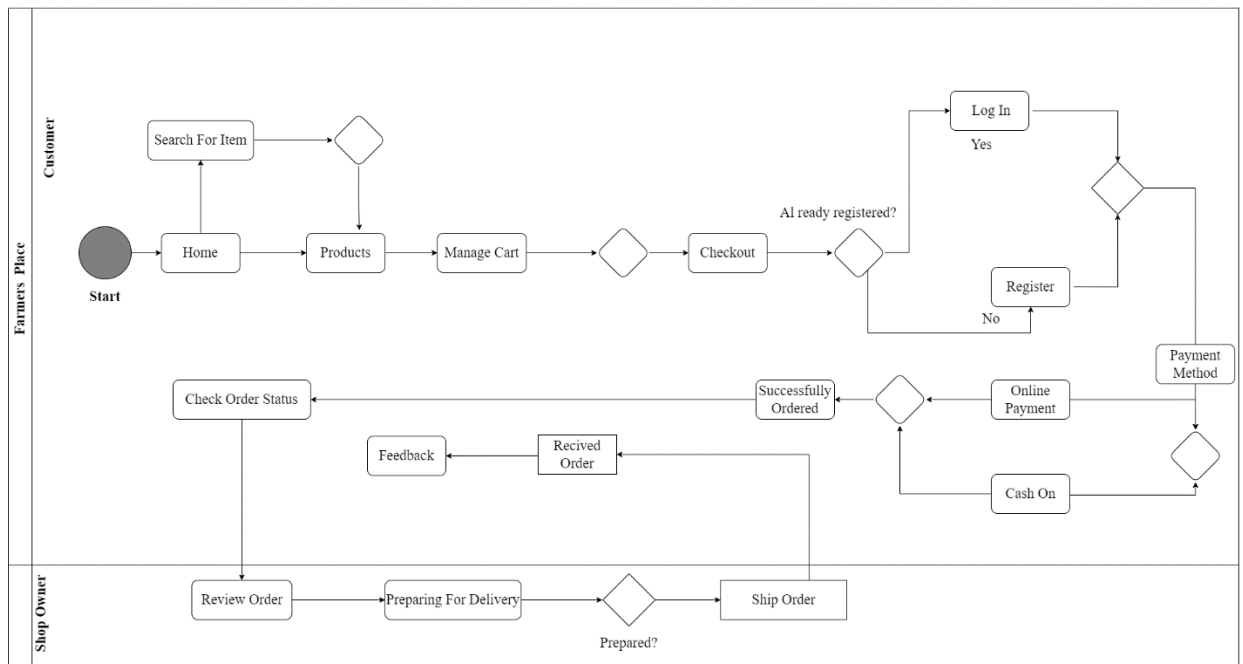

Figure 3.1.1 – The Business Process Model of Farmers Place

After ordering a products user can track their orders and the shop owner will see an order history in their shop panel. After that they can easily ship and deliver their products.

3.2 Use Case Modeling and Description

The use case modeling is a useful tool. It provides the visual overview of whole project. In figure 3.2 we can see the whole workflow of the application. After ordering a product how the payment system will work and how the shop will get the order status and do the shipping.
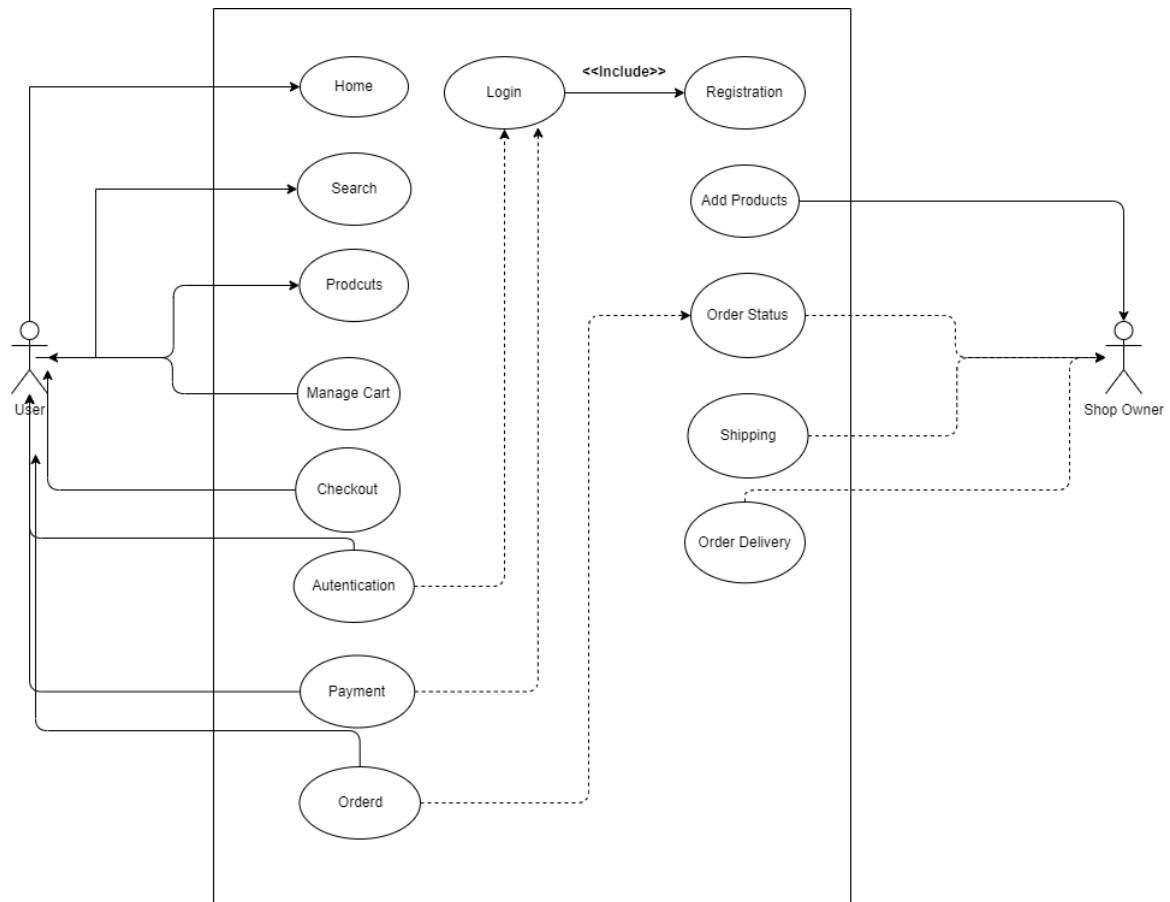

Figure 3.2.1 Use Case Modeling of Farmers Place

In figure 3.2.1, we can see that the user can access some features like homepage, product lists and the search feature. Those features can be accessed without login.

Table 3.2.1: Use Case Description for Registration

Use Case Name	Registration
Actor	Users
Precondition	N/A
Internal Path	1. Enter Name 2. Enter Email 3. Enter Password
Exceptional Path	1.1. Name Field can't be blank 2.1. Email Field can't be blank 2.2. Email must be valid email 4.1. Password must be unique

Table 3.2.2: Use Case Description for Sign In

Use Case Name	Sign In
Actor	Users
Precondition	N/A
Internal Path	1. Enter Email 2. Enter Password
Exceptional Path	1.1. Email Field can't be blank 1.2. Email must be valid email 2.1. Password Must Be Valid

Table 3.2.3 Use Case Description for Manage Cart

Use Case Name	Manage Cart
Actor	Users
Precondition	Sign In
Internal Path	1. Add Products Quantity 2. Update Cart 3. Click Checkout Button
Exceptional Path	1.1. Select Products Quantity

Table 3.2.4 Use Case Description for Checkout

Use Case Name	Registration
Actor	Users
Precondition	Sign In
Internal Path	1. Enter Phone Number 2. Enter Product Delivery time 3. Enter delivery address 4. Click on Next button
Exceptional Path	1.1. Number Field can't be blank 2.1. Delivery time Field can't be blank 3.1. Delivery address filed can't be blank

Table 3.2.5: Use Case Description for payment

Use Case Name	Payment
Actor	Users
Precondition	Sign In
Internal Path	1. Select Payment method 2. Write Memo 3. Accept privacy policy 4. Click on checkout
Exceptional Path	1.1. Payment method must be selected 3.1. Privacy policy must be accepted

Table 3.2.6: Use Case Description for Order Status

Use Case Name	Order Status
Actor	Users
Precondition	Sign In
Internal Path	1. Track Order status 2. Track Order timeline
Exceptional Path	1.1. Must be order products

3.3 UML Diagram

In the whole project the main features are the users and the shop owners. In figure 3.3 we can see that the user, shop admin and admin can login and logout. Here all classes have fields like email, password, name etc. Here I have used + sign that's means it is pubic and the – sign means its private.
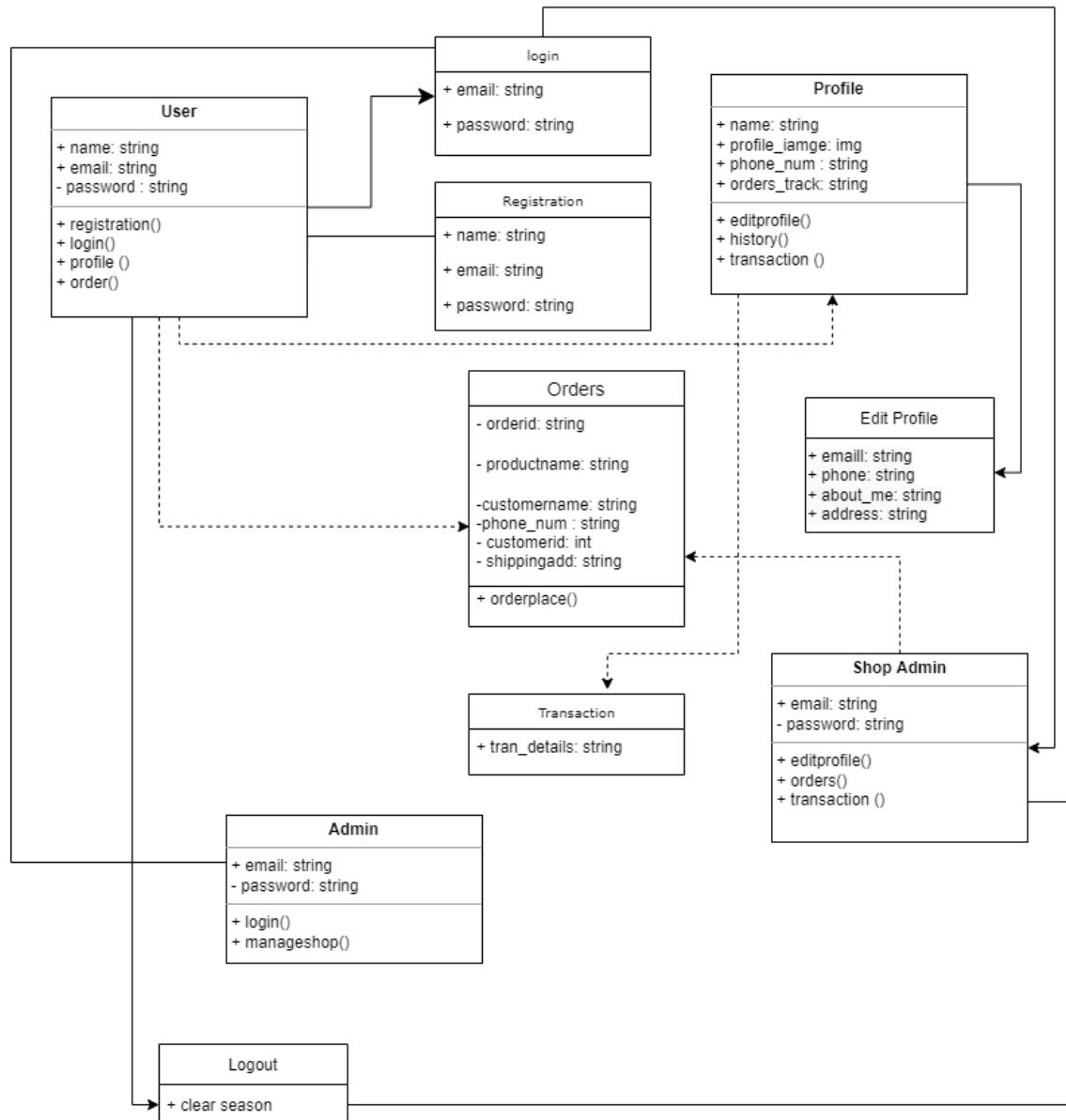

Figure 3.3.1 – UML Diagram of Farmers Place

3.4 Logical Data Model

In this project all the data will be stored in database. When a user will register a new account the user data will be store in the firebase database. The application will take all of user's data to firebase database. Users can login using email, phone number, and the social login system. All those data will be handled from the firebase database. As I am using the firebase the security is good enough to handle.

3.5 Design Requirements

The application is built with flutter open-source framework which is made by Google. The interface is designed by flutter. I have used the draw.io for designing the business processing modeling and other diagram like UML design, Flowchart etc.

The advantages of using the flutter below:

- If an application us build by flutter it can be used in Android and IOS all together.
- The designing of the interface looks beautiful.
- The flutter widgets are useful for developing a application.

Chapter 4

Design Specification

4.1 Front End Design

In this Farmers Place application, the front-end design was developed using flutter. I have designed the front-end design easy so that anyone can easily use this perfectly. In front end design my main intention was to make a good UI which will be easier for any type of user who are going to use this application.

Logo

Figure 4.1.1 is the main logo of the whole application. The logo was made using the Adobe Photoshop.

Figure 4.1.1: Main logo

Sign in Option

In this option user can easily sign in via their preferable option. Figure 4.1.2 represent the sign in option. User can easily sign in using the email and password. They must have to give the valid username and password if they give wrong username or password that will show wrong username and password. There is other login option also like they can easily login using the social media platform like Facebook, Google, and they can also login using the phone number if they have registered using phone number.

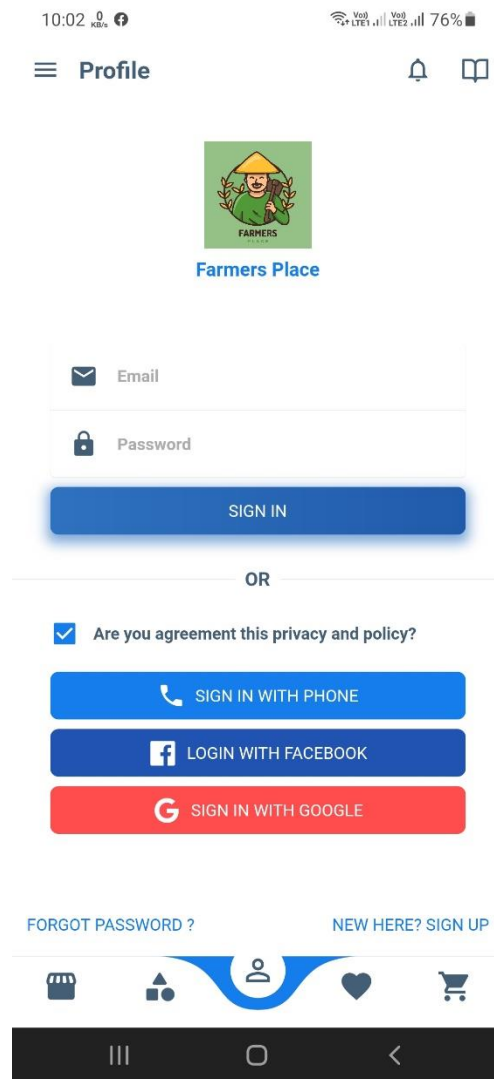Figure 4.1.2: User sign in option screenshot

Registration Option

In this activity user can registered into the application. Figure 4.1.3 represent the registration option. No one can buy anything from this application without registration, so they must be registered in this application. User can register into the application using their name email and password.

Figure 4.1.3: User registration Screenshot

Home Page

Figure 4.1.4 represent the homepage. In this homepage section user can see many options and may things. They will see the location in the first column it will be the user location. There are other options also like the search bar the category section. After the category section they can see shops, trending foods, discount food and trending shops also.
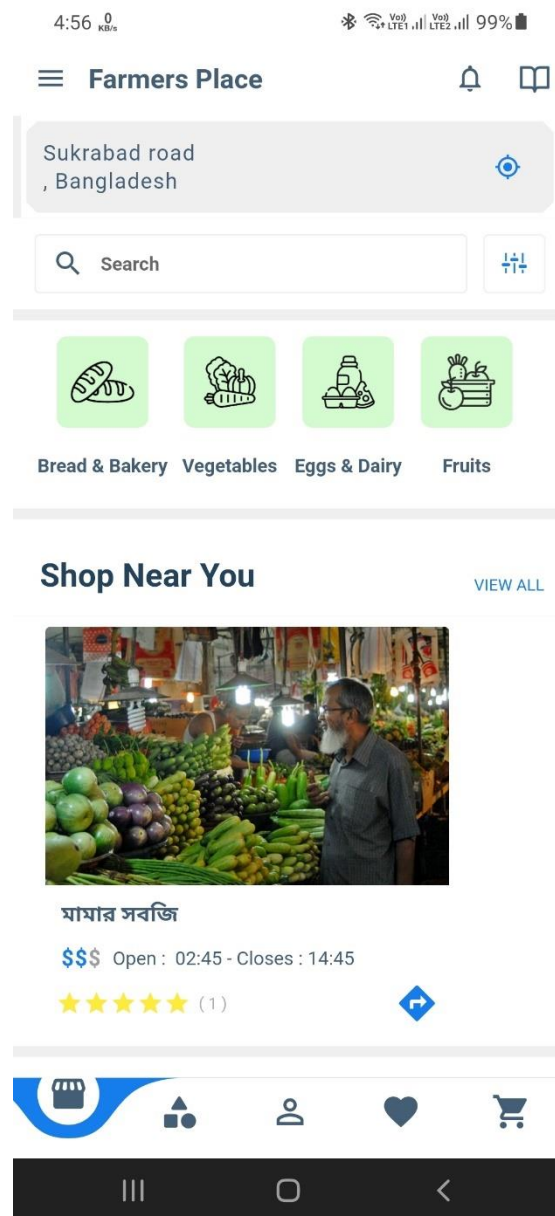

Figure 4.1.4: Home Page Screenshot

Shop Section

Figure 4.1.5 represent the shop product section. In shop section user can see the product lists and the categories. Every category has different products and different subcategories also.
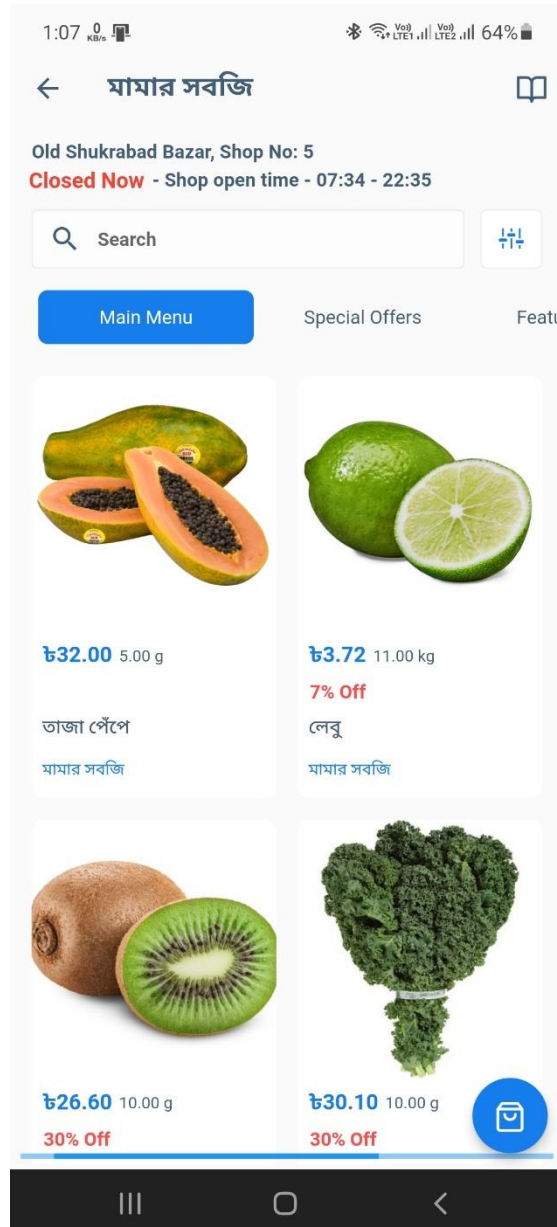
Figure 4.1.5: Home Page Screenshot

Products Section

Figure 4.1.6 represent the product details. In products section a user will see the products details. In details they will see like product name, product details, product price, other user comments also. There also a chat section if a user clicks on the chat section, they will see the WhatsApp and Call Phone option. They can direct contact to the seller easily.
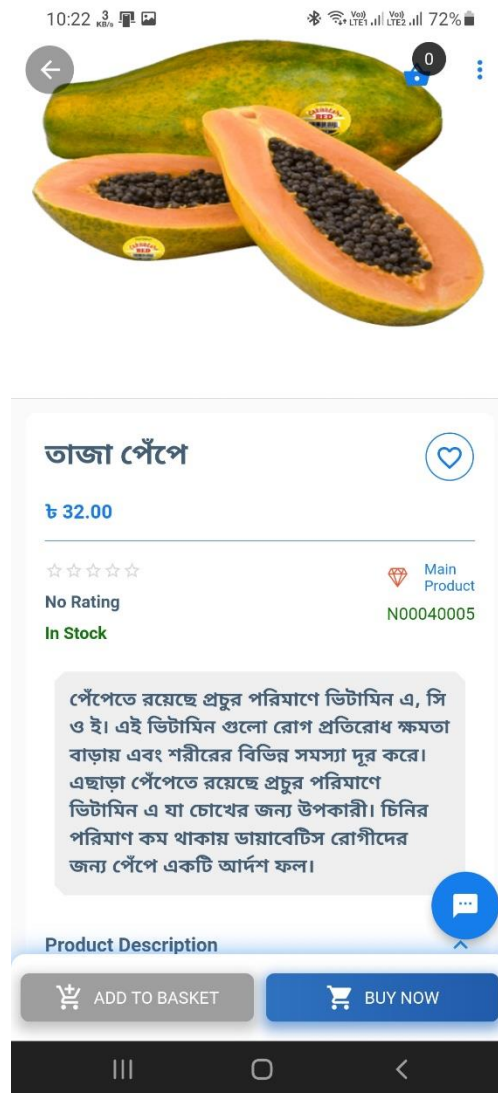
Figure 4.1.6: Products Details Screenshot

Basket List

Figure 4.1.7 represent the basket list section. In this section there will be the list of baskets where user will see their basket list and they can also go the checkout section.
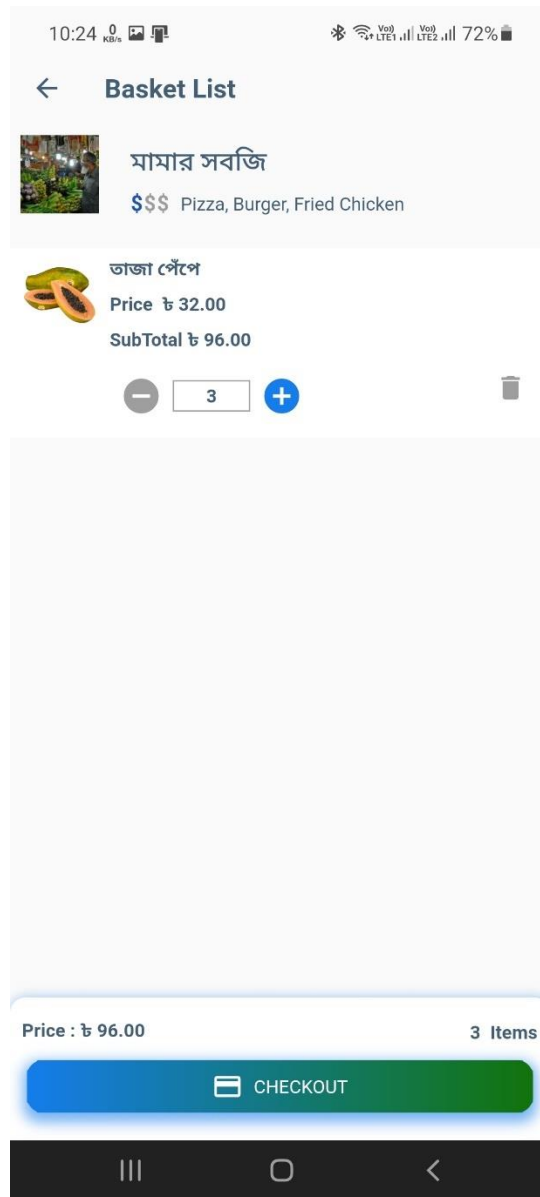
Figure 4.1.7: Basket List Screenshot

Checkout Section

Figure 4.1.8 represent the checkout section. In checkout section user will see the payment method and the total amount of their money. In this section they can use the payment methods and pay their money.

Figure 4.1.8: Screenshot of Checkout Section

Order Tracking

Figure 4.1.9 represent the order tracking system. In this order tracking activity user can track their orders and they will also see the progress of their orders.
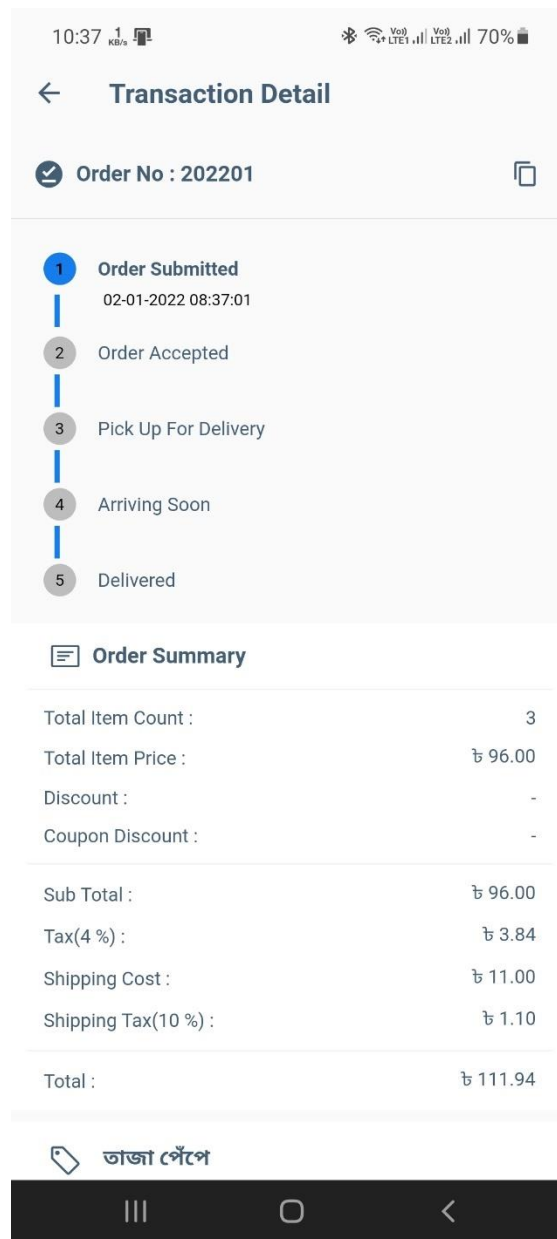
Figure 4.1.9: Screenshot of Order Tracking Section

Category Section

Figure 4.1.10 represent the category section. In this category section user will see all the categories. They can use this category section to buy specific products from a specific category.
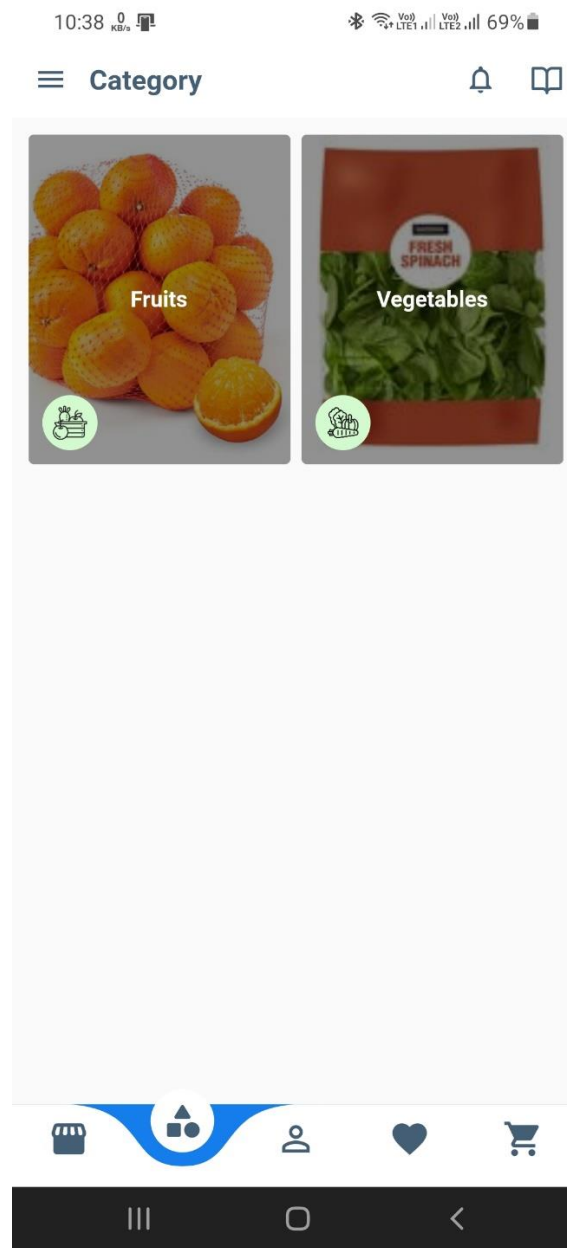
Figure 4.1.10: Screenshot of Category Page

User Profile

Figure 4.1.11 represent the profile section. In user profile section user can user will see many options. They can use these options to modify their profile. They can also see the orders list. They will also see transaction history and favorites section also.
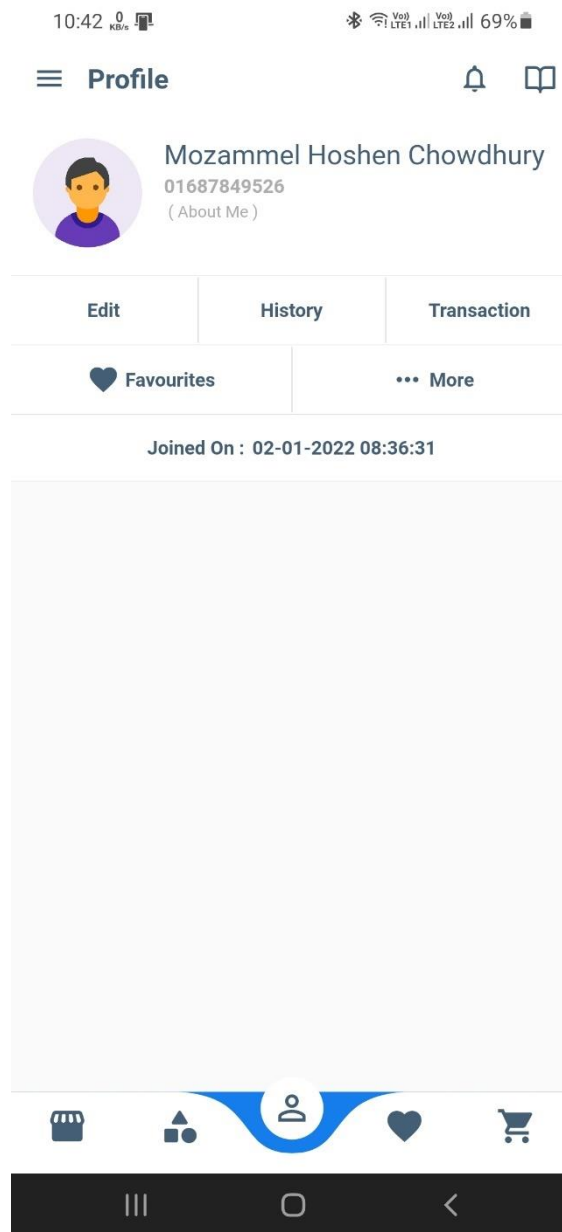
Figure 4.1.11: Screenshot of Profile Page

Sidebar

Figure 4.1.12 represent the sidebar section of the application. In sidebar there are a lot of options. User can navigate anywhere using the sidebar option. When user want to go home or profile or category section, they can easily go wherever they want to go.
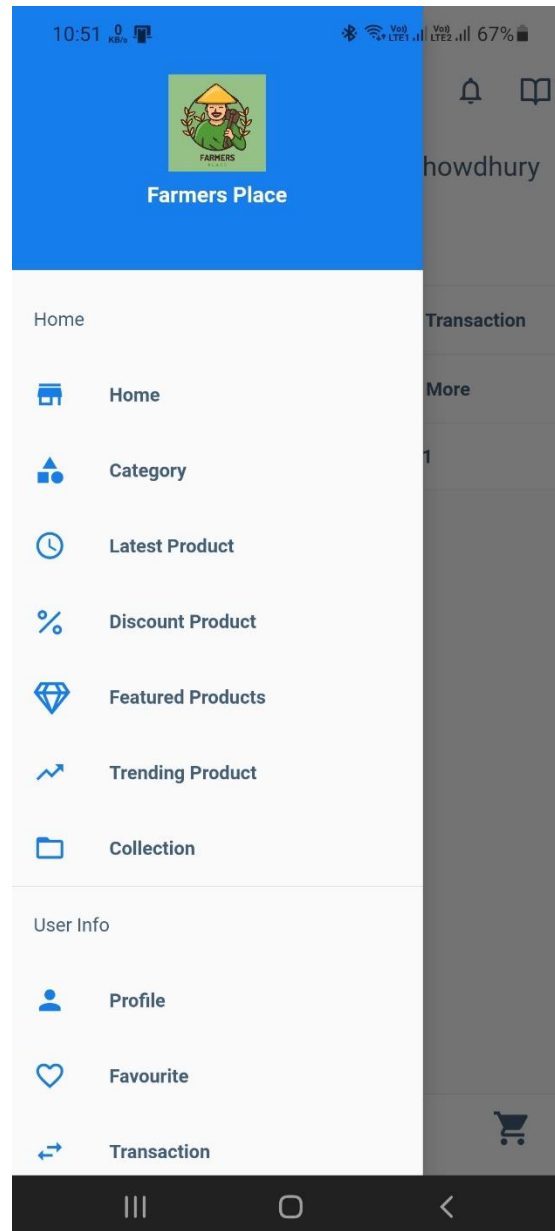
Figure 4.1.12: Screenshot of Sidebar Section

Admin Panel Landing Page

Figure 4.1.13 represent the admin panel landing page. In admin panel all the data is stored, and the admin can control the whole application.

Figure 4.1.13: Screenshot of Admin Panel Landing Page

Admin Panel Home Page

Figure 4.1.14 shows the admin panel homepage, here a admin can check the dashboard of shops and control the shops and the users.
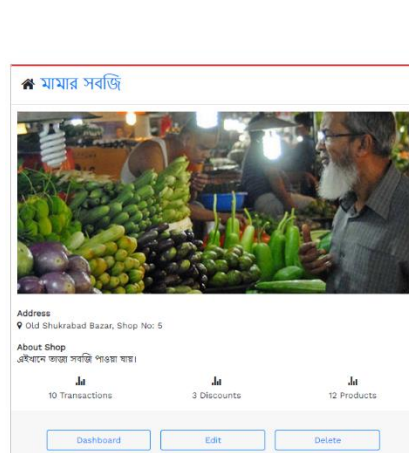
Figure 4.1.14: Screenshot of admin panel homepage

4.2 Back-End Design

The application is build using Flutter Framework [3]. The backend is the main backbone of the application. Backend is developed on different platform using php. The application and the backend system interact with each other using API. For user registration and the login system I have used the firebase login system. For database for the whole application, I have used the MySQL database. Here I have used MySQL for the API and the firebase for user login application.

4.3 Interaction Design and UX

Interaction design is the most important thing for an application. As the application is Realtime application so it needed to update all the time. The architecture of this application is easy so that anyone can use this easily. The UI is design user friendly it will be easy for the user to interact with the application. The UX is used for the front-end development. It allows a developer to fix the applications bugs and get feedback from the users.

4.4 Implementation Requirements

For this project many things need to be implemented. The main thing is the framework, and, in this project, I have used the Flutter Framework [3] which is the front end of this application. For database I have used the MySQL database. Dart [10] is the language of flutter framework. GitHub [8] is a very useful platform for managing the codebase and updating the application code.

Software Requirements

For completing the project, I needed the software for coding, developing, debugging and the testing the application.

- Vs Code – For Coding and testing the code [5]
- Android Emulator – for testing the application

Chapter 5

Implementation and Testing

5.1 Implementation of Database

In this project we will do transaction using payment method so for that the security should be best for this. In this project I have used the MySQL database and for user login and other features I have used the Google firebase. Hopefully using all these I will create a secure and stable database. I will precipitously make the database safer and faster. I must process a lot of data in this project. So, I have to choose the best server so that the database work fine when the application goes online.

5.2 Implementation of Frontend Design

The application is fully designed with Flutter framework. Flutter is an open-source UI kit made by Google. The UI must be good because most of the user will be farmers so they must understand everything easily. A user-friendly design is good for using the application. I have implemented a simple design which will help the user to interact with the application easily. Flutter ui design is far good then other framework as my thought. For that I have used flutter in this project.

5.3 Testing Implementation

After completing the app development, I have tested the app in various ways. I have acted as a user and tested the application and done everything a user do. After developing a feature, I have tested the feature. The login features the registration feature the buying feature and every other features also. Creation a new shop updating products giving price and all other features also. Overall, the application looks perfect and usable. Any normal person can use the application easily. The test result is appropriate, but I have worked hard to make them more precise.

5.4 Test Results and Reports

The reports are necessary to formally represents test results and to snappily calculate the results. We present the test case, test data, prognosticated issues, current affair, and ultimately find out what our operation is looking for. The test affects 96 percent that we're pleased with. Hope, we're going to be more successful. Main testing results are

simple to use operation, ameliorate contact stoner commerce, reduces hand cash and retail plutocrat, save times.

Table 5.3.1 Test Cases

No	Test Case	Input	Expected Outcome	Outcome	Test Pass/Fail
1	User Registration	Users must fill name, email, and unique password.	Registration Successful	Registration Done	Test Pass
2	User Sign In	Users need to fill email and password	User logged in successfully	User logged in successfully	Test Pass
3	User Sign In	Wrong user details	Email or password incorrect	Email or password incorrect	Test Pass
4	Search Products	Provide product name	Same products found	Same products found	Test Pass
5	Add Product to cart	Select Product and add to cart	Product added to cart	Product added to cart	Test Pass
6	Update Cart	Update cart details	Cart updated successfully	Cart updated successfully	Test Pass
7	Order Page	Fill up Details and order	Successfully Go to next step	Successfully Go to next step	Test Pass
9	Payment Checkout	Payment method and order	Successfully ordered	Successfully ordered	Test Pass

10	Order Tracking	Check order details	Successfully Updated	Successfully Updated	Test Pass
11	Order Timeline Update	Timeline Update	Timeline updated successfully	Timeline updated successfully	Test Pass
12	Update Profile Picture	Select new profile picture	Successfully profile picture updated	Successfully profile picture updated	Test Pass
13	Update Profile Details	Fill up new details	Successfully updated profile data	Successfully updated profile data	Test Pass
14	Password Change	Set new password	New Password changed	New Password changed	Test Pass
15	Logout	Click on logout button	Successfully logout	Successfully logout	Test Pass

Chapter 6

Impact on Society, Environment and Sustainability

6.1 Impact on Society

As this application is for the farmers it will be a huge impact on society. As we know the farmers face a lot of problem for selling their products for that reason this application will be helpful for them to sell the products easily. The main problem is the farmers did not get their fair price because they must sell their products to brokers and the broker doesn't pay them a fair price for that reason the farmers have to face a lot of problems. They face problem of transportation and as a result they can't go to town to sell products. This application will help them to sell their products all over the country. They can directly sell their products to big companies and big companies can easily buy products from them. In this modern age we are still using the old methods and as a result farmers are suffering. If we don't save the farmers, then it will be a very bad for our upcoming life. We will have to import our foods from abroad countries as a result it will be not good for our economies. Now a days people buy products from market and sometime the products aren't enough good because they are mixed with chemical for long lasting.

6.2 Impact on Environment

As this is not an application for environment it will not be helpful for the environment. But it will be helpful for society. It will be helpful for the farmers who didn't get fair price. If the farmers get fair price, they can easily earn more money, then they will grow more crops. Farmers are the backbone of a country if we give them proper treatment then they will give us proper foods. So, we have to give them a platform to grow themselves and get rid from the manual way and also from the brokers. We live in a society where everything is modern so this application will be a good impact for everyone.

6.3 Ethical Aspects

Our country is a land of farmers, lots of farmers live their life by this profession. Now a days we live in modern age, in this modern age we must move faster, and we must get rid from the manual process. This application will be a perfect movement for the farmers who are suffering. Every modern thing has good side and bad side, but we must adopt the good side. As farmers are the backbone and now a days educated persons are interested in farming so in future the farming sector will grow a lot. We have a create a space so they can take their proper help and their proper respect. Education is the main things which can change a society so we must have to show our interest in this farming sector for changing our ways.

6.4 Sustainability Plan

Every plan has ups and down, but we must update ourselves with this modern age. As this application will help the farmers then it will also affect others. Those who are broker they will not allow farmers to sell their products in a platform they will influence then not to sell their products in a platform. Farmers are not well educated, and they are very folksy so they will go after their words. So, for survival we must teach them how this system will work and what will be the benefits. Once farmers see them profit, they will easily agree to work with this plan. A simple plan can change a society and their way but for this we must stick on them.

Chapter 7

Conclusion and Future Scope

7.1 Discussion and Conclusion

The project would make our life easier in many ways. The farmers had to face a lot of problems. In Bangladesh we all are dependent on farmer for our food, they produce the foods and that's our responsibility to give them proper respect and proper opportunity. Most of the farmers sell their products in low rate because they don't have a proper platform. They must sell their products to broker so, and the broker buy the products in low rate and sell them in high price. Now a days people are too much busy with their work and family life and recent Covid-19 pandemic has taught us a lot. Now people want everything in their door and it's a great opportunity to get authentic and fresh products in their door. However, the design of the application is very simple that anyone can easily register in this app and buy what they want without any hassle. In this modern age people are struggling with the manual process this project will move them from a manual the automatic process and they will love that. The app is in Bangla language so that anyone can easily understand what they want to do. The admin panel is also easy any normal user can easily access to the admin panel with proper credential and control everything. I future I have a lot of plans with that project, and I will implement all of them and will make the application far better for everyone. The application will start on homepage in homepage the products will be shown anyone can easily access to every product but for buying them they have to login in the system. The application will ask to login before buying anything. All information will be shown in the in-user profile what products they have ordered and what is the status of their products. Any user can report any products if the product is bad, and the admin panel will handle the report and there also comment section so any user can ask anything in products comment section, and they can also give feedback of any product they have buyed. This project will be very helpful for everyone.

7.2 Limitation of Application

Everything has some limitation as this application also have some limitation. After developing a feature, a new problem will always show so it will be fixed day by days. Some of the most significant downsides are:

- The application must relate to good internet connection because there are a lot of data to process.
- As flutter is updating day by day so the application must have to update day by day.
- Everyone don't know English but I have used some English language in the application so it will be a problem and it will be fixed in future.
- Most of the farmers don't know how to use an android application it will be problem also.
- Some data are very sensitive, so I must give them proper security.

7.3 Scope for Future Developments

I have some plans for the application for future development. The scopes are written in below:

1. Making the whole app in Bangla and English language so that user can easily switch the language.
2. In future the delivery system will be added so that a smooth delivery can be done by the delivery persons.
3. Updating the admin panel in web-based and adding more function in the application.
4. As I am using a database on other servers who provide the service, so I have plan to deploy a personal server.
5. I will try my best to improve the design to make the application user friendly.
6. In the application I will add database level caching system so that user can access some more data without internet connection.
7. As there will be a lots of user data and transactions so I have improved the security system more.
8. The map is very important for this project so I will improve the map integration so that it can take the exact location.

Appendices

Name	Description
UI	User Interface
UX	User Experience
UML	Unified Modeling Diagram

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