# An Ecommerce Mobile Application for Store Management

**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 **"An Ecommerce Mobile Application for Store Management"**, submitted by Shakil Khan, ID: 191-15-2397 and Azizur Rahman, ID: 191-15-2533, to the Department of Computer Science and Engineering, Daffodil International University has been accepted as satisfactory for the partial fulfilment 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 *30/01/2023*.

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## DECLARATION

We hereby declare that, this project has been done by us under the supervision of **Amit Chakraborty Chhoton, 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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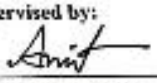

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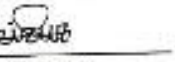

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Finally, we must acknowledge with due respect the constant support and patients of our parents.

# ABSTRACT

Ecommerce mobile apps have revolutionized the way we shop and make purchases. Our application is an ecommerce mobile application. It is built for our client to establish their business online. By using the admin application, the client will be able to post their product to the consumer application. It will enable our clients to make a wide array of products available. With just a few clicks on a smartphone, consumers can browse and buy products from our store at any time and from any location. One of the key benefits of ecommerce mobile apps is their convenience and accessibility. Consumers no longer have to go to physical stores or wait for their computers to power on to make a purchase. They can easily compare prices, read reviews, and make informed decisions from the palm of their hand. Additionally, our app offers fast and secure payment options, which makes the checkout process quick and hassle-free. Refund abuse occurs when a customer uses the returns policy of a merchant so much that it becomes unprofitable. It will make advertising and marketing affordable. The demerit of our application is lack of in-store engagement with customers. A diminished sales flow can pose a great disadvantage to the business and thus acts as one of the limitations of our application's usage. Our main application is retail and wholesale online.

**CHAPTER**

## LIST OF FIGURES

# CHAPTER 1

# Introduction

## 1.1 Introduction

Ecommerce mobile apps have become an increasingly popular and convenient way for consumers to shop and make purchases. With the proliferation of smartphones and the accessibility of the internet, more and more people are turning to their devices to browse, compare, and buy products from their favorite stores and brands. Our app provides businesses with new opportunities to reach and engage with their customers through featured products and targeted marketing campaigns.

However, the rise of ecommerce mobile apps has not been without its challenges. The highly competitive nature of the retail industry has led to intense pressure on businesses to provide the best possible user experience and maintain customer satisfaction. This has required them to constantly innovate and adapt to the changing needs and preferences of their customers.

In this report, we will delve into the current state of our app, including its benefits and challenges, as well as its impact on the retail industry. We will examine the various features and functionality of our app, such as payment options and marketing strategies. We will also explore the future of Ecommerce App and its potential improve business in the digital age. Through this report, we hope to provide a comprehensive overview of the role and importance of our app in the modern retail landscape.

## 1.2 Motivation of this project

The motivation for Ecommerce App is to provide a comprehensive overview of the current state of the industry and its impact on the retail landscape. In recent years, the use of ecommerce mobile apps has become increasingly prevalent as more and more consumers turn to their smartphones to shop and make purchases. Our apps will provide businesses with new opportunities to reach and engage with their customers.

However, the rise of ecommerce mobile apps has also brought with it a number of challenges, including the need to constantly innovate and adapt to changing consumer needs and preferences. It is important for businesses to understand these challenges and be aware of the various features and functionality of these apps in order to effectively compete in the market and provide the best possible user experience.

In this project, we aim to provide a thorough analysis of the benefits and challenges of ecommerce mobile apps, as well as their impact on the retail industry. Through this report, we hope to provide valuable insights and information to businesses seeking to leverage the power of these apps in their operations and marketing efforts.

### 1.3 Objectives

The primary objective of our app is to provide a convenient and accessible platform for consumers to shop and make purchases from our client's store. Our app allows consumers to browse and buy products at any time and from any location, making it easier for them to find the products they want and complete their purchases quickly and easily.

In addition to providing convenience and accessibility for consumers Ecommerce App also serve as a valuable marketing and sales tool for businesses. This app will allow businesses to reach and engage with their customers through featured products and targeted marketing campaigns.

Overall, the objective of Ecommerce App is to create a seamless and enjoyable shopping experience for consumers, while also providing businesses with the tools and data they need to effectively reach and engage with their customers.

### 1.4 Features

These are the features for client app:

- Client will have authentication system for login in the client app.
- Client will be able to add product in consumer app from the product section.
- Client will be able to add categories in consumer app from the category section.
- Client will be able to handle orders of the consumer app from the order section.
- Client will be able to change or modify setting from the setting section.

These are the features for consumer app:

- Users will have authentication system for login and registration in the consumer app.
- Allows consumers to browse and search for products by category.
- Provides consumers with detailed information about products, including descriptions, images, pricing and customer reviews.
- Allows consumers to add products to a virtual shopping cart and keep track of their purchases.

- Provides well trusted payment options which is cash on delivery to make the checkout process quick and hassle-free
- Allows consumers to create and manage their accounts, view their order history, and track their shipments status.
- Allows businesses to send targeted marketing campaigns and promotions to their customers.

### 1.5 Report Layout

- Chapter 1: We must first describe the project's goals, objectives, traits, description of the problem, and societal impact.
- Chapter 2: The context, scope, and issues of the concerns are covered in the section that follows.
- Chapter 3: We will cover use case modeling, descriptions, data flow diagrams, requirements analysis, design requirements, and descriptions of advanced features.
- Chapter 4: We assess the front-end, back-end, and implementation needs.
- Chapter 5: We will cover configuration of the database, the front-end design, the interface design, the testing, the test results, and the reporting. Finally, a summary of the findings and their implications for the future are provided.
- Chapter 6: In this chapter, we'll talk about the impact on society and the environment, ethical aspects, and sustainability plan.
- Chapter 7: We will recap the application conversation. We'll explore how it has evolved throughout the paper's main body, provide a concise summary of the most important points made there, explain how each one contributes, and go through the application's future ambitions.

# CHAPTER 02

# BACKGROUND

The project was created with Android Studio. For this project, we used the dart and flutter frameworks, which are tools for creating scalable, slick cross-platform apps. Our database was Firebase. The software development platform Firebase makes it easier to create both online and mobile applications with its 18 services. This BaaS solution also includes four beta products, useful APIs, and 18 services. Additionally, it might be connected to iOS and Android.

## 2.1 Existing System

There are a number of existing ecommerce mobile applications that are widely used by consumers and businesses around the world. Some examples include:

- Amazon: One of the most popular ecommerce mobile apps, Amazon offers a wide range of products and services, including books, electronics, clothing, and home goods.
- eBay: An online marketplace that allows consumers to buy and sell a variety of products, including new and used items.
- Alibaba: A Chinese ecommerce company that offers a wide range of products and services, including wholesale and retail items.

## 2.2 Purpose of the System

The main purpose of our application is to provide consumers with a convenient and accessible platform for shopping and making purchases. This app will allow consumers to browse, compare, and buy products at any time and from any location, making it easier for them to find the products they want and complete their purchases quickly and easily.

In addition to providing convenience and accessibility for consumers, Ecommerce App also serve as a valuable marketing and sales tool for businesses. This app allows businesses

to reach and engage with their customers through featured products and targeted marketing campaigns. They also provide businesses with the opportunity to collect data on consumer purchases, which can be used to improve the overall shopping experience and drive sales.

Overall, the purpose of our application is to create a seamless and enjoyable shopping experience for consumers, while also providing businesses with the tools and data they need to effectively reach and engage with their customers.

### 2.3 Advantages

- Convenience and accessibility: Ecommerce App allow consumers to shop and make purchases at any time and from any location. This makes it easy for them to find the products they want and complete their purchases quickly and easily.
- Targeting audience: Ecommerce App can provide featured products and targeted marketing campaigns based on the consumers purchasing history. This helps businesses effectively reach and engage with their customers.
- Customer tracking and analytics: Ecommerce App provide clients with data on consumer preferences, including what products are being purchased. This information can be used to improve the overall shopping experience and drive sales.
- Increased sales: By providing a convenient and enjoyable shopping experience, Ecommerce App can help the client's business to increase sales and reach a wider audience.

### 2.4 Disadvantages

- Security and privacy concerns: There are concerns about the security and privacy of personal and financial information on ecommerce mobile applications. Ensuring the safety and protection of this sensitive data is crucial in building trust and maintaining customer loyalty.
- Dependence on technology: Ecommerce mobile applications rely on technology, such as smartphones and internet connectivity, which can be prone to glitches and disruptions. This can lead to frustration for consumers and impact their shopping experience.
- Limited product selection: Depending on the size and scope of the ecommerce mobile application, the product selection may be limited compared to traditional brick and mortar stores or other online retailers.
- Limited tactile experience: Ecommerce mobile applications do not allow consumers to physically touch or interact with products before purchasing them.

This can make it difficult for consumers to fully assess the quality and suitability of a product.

- Competition with physical stores: Ecommerce mobile applications may face competition from traditional brick and mortar stores, which can offer a more tactile and immersive shopping experience.
- Complexity of implementation: Ecommerce mobile applications can be complex to develop and implement, requiring businesses to invest significant time and resources.

# CHAPTER 03

# REQUIREMENT SPECIFICATION

## 3.1 Business Process Modeling

Business process modeling is the process of identifying, analyzing, and documenting the steps and activities involved in a business process.

### 3.1.1 Business Process Model

In the context of an ecommerce mobile application, the business process modeling might include the following steps:

- Product selection: Consumers browse and search for products using the app's product browsing and search features. They may also view detailed information about products, including descriptions, images, pricing, and customer reviews.
- Add to cart: Consumers add products to a virtual shopping cart and keep track of their purchases.
- Checkout: Consumers provide their payment and shipping information and select a payment method. Ecommerce App offers cash on delivery which is a trusted payment option to make the checkout process quick and hassle-free.
- Order processing: Once the order is placed, the client processes the order and prepares it for shipping.
- Order tracking: Consumers can track the status of their orders and shipments through the app.

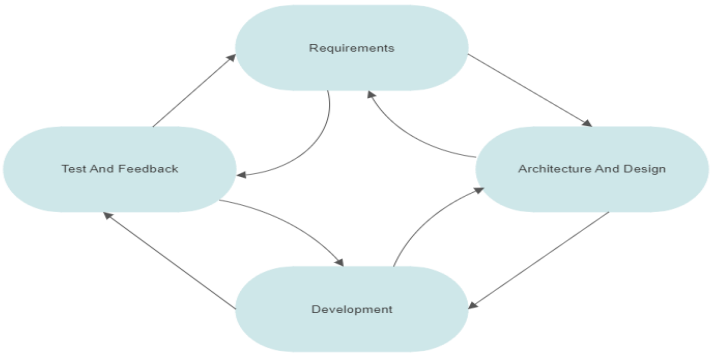


Fig 3.1.1: Business Process Model

### 3.2 Requirement Collection and Analysis

Analysis is an essential part of every project. A project cannot be successfully completed without adequate analysis and planning. The project's delivery date has already been determined while we are still developing it. Project work must therefore be planned out and finished by the deadline. Our project is an ecommerce cross-platform application. Analysis was a significant challenge when we first began to consider this project. When we start the inquiry, we identify a number of key characteristics that will benefit our project.

**Software Requirements**

- Language: Dart
- Framework: Flutter
- Integrated Development Environment (IDE): Android Studio
- Database Platform: Firebase
- Designing Tool: Figma

**Software Requirements**

- Windows Operating System

**Requirements for User**

- Smartphone (Both Android and IOS)
- Internet Connection

### 3.3 Use Case Modeling and Design

Use case modeling and design is the process of identifying, analyzing, and documenting the steps and activities involved in a specific task or goal. In the context of our application, use case modeling and design might include the following steps:

- Identify the task or goal: The first step in use case modeling and design is to identify the task or goal that the app is intended to achieve. For our application, this includes task such as browsing and purchasing products, tracking orders and shipments.
- Define the actors: The next step is to define the actors involved in the task or goal. For our application, these includes consumers and business clients.
- Identify the steps and activities: The next step is to identify and document the steps and activities involved in the task or goal. For example, in the case of purchasing products, this might include browsing and searching for products, adding products to the shopping cart, completing the checkout process, and tracking the order and shipment.

- Design the user interface: The next step is to design the user interface for the app, including the layout, navigation, and visual design elements. This should be done in a way that is intuitive and easy for users to understand and use.
- Test and iterate: Once the use case modeling and design is complete, the app should be tested and refined based on user feedback and performance data. This helps ensure that the app is user-friendly and effective at achieving its intended task or goal.

Overall, use case modeling and design is an important step in the development of an ecommerce mobile application, as it helps ensure that the app is user-friendly, intuitive.

The following figure 3.3.1 shows the Use Case Diagram of the project.

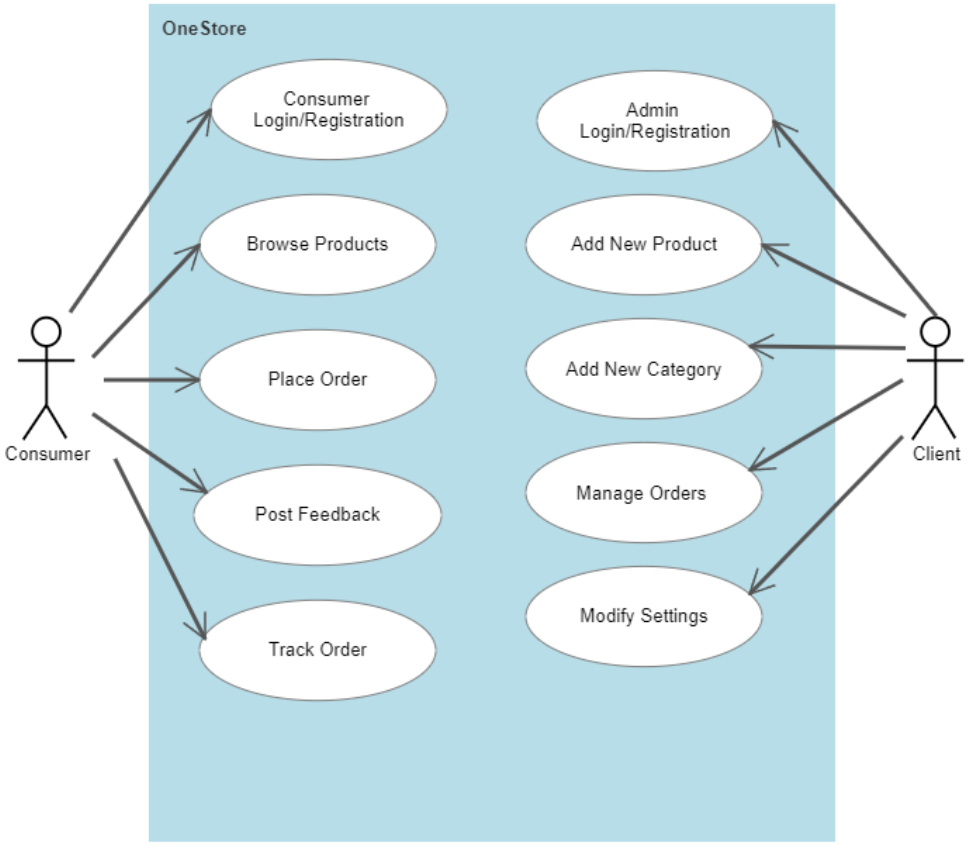


Fig 3.3.1: Use Case Diagram of Ecommerce App

### 3.4 ER Diagram

An entity relationship diagram, or ERD for short, is a diagram that shows the entity sets in a database. In other words, ER diagrams aid in describing a database's logical layout. Entity relationship diagrams are created using the three fundamental concepts of entities, characteristics, and relationships. In ER Diagrams, several symbols are used to represent entities, characteristics, and relationships. Rectangles are used to depict entities, ovals are used to define attributes, and diamond-shaped forms are used to illustrate relationships. An ER diagram initially looks like a flowchart. On the other hand, the ER Diagram employs a large number of specialized symbols, each of which has a distinct meaning. The ER Diagram displays the entity framework's infrastructure. The following figure 3.4.1 shows the Entity Relationship Diagram of the project.

**Fig 3.4.1: ER Diagram of Ecommerce App**

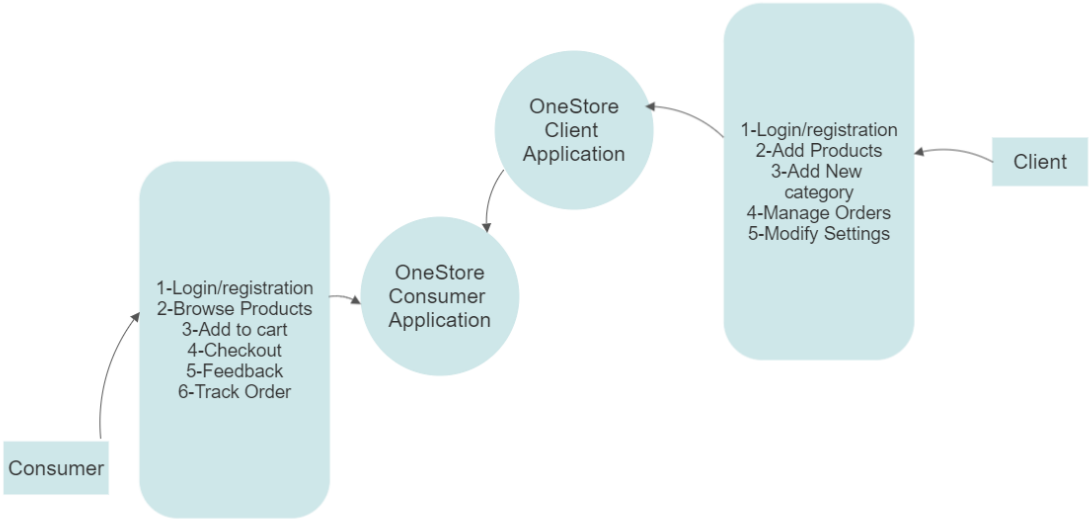


Fig 3.4.1: ER Diagram of Ecommerce App

### 3.5 Flow Chart Diagram

A graph that illustrates a procedure or demonstrates preparation is an example of a flowchart. A diagrammatic description of a flowchart could also be used to explain how to understand a step-by-step assignment. On the steps, the flowchart appears as a collection of boxes that are connected together by bolts to form an organized whole.

**Login for both Client and Consumer:**

A common computer usage method for accessing a working framework or application, typically on an inaccessible workstation, is to log on. Most of the time, in order to log in, a user must have both a user ID and a password. The following figure 3.5.1 shows the flowchart of login page.

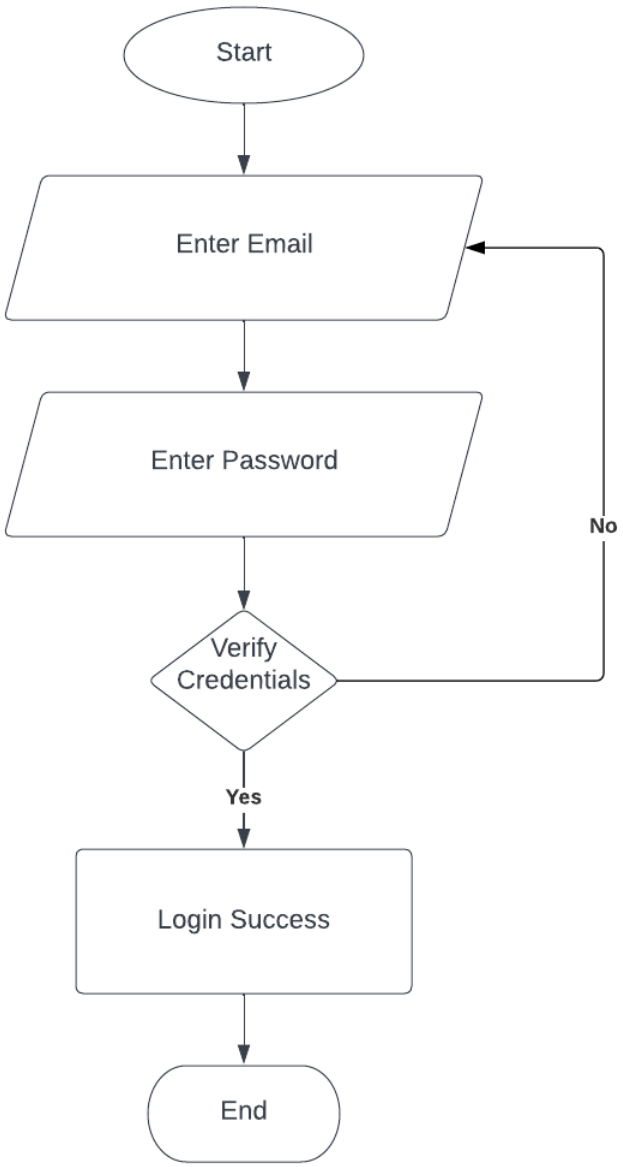


Fig 3.5.1: Log in Flow Chart Diagram

**Registration for Consumer:**

To complete registration user has to first enter their phone number and verify using the verification code sent by the authentication system of fireAuth. After that they will need to enter full name, phone number, email and password. After successful registration they will be redirected to homepage. The following figure 3.5.2 shows the flowchart of Registration page.

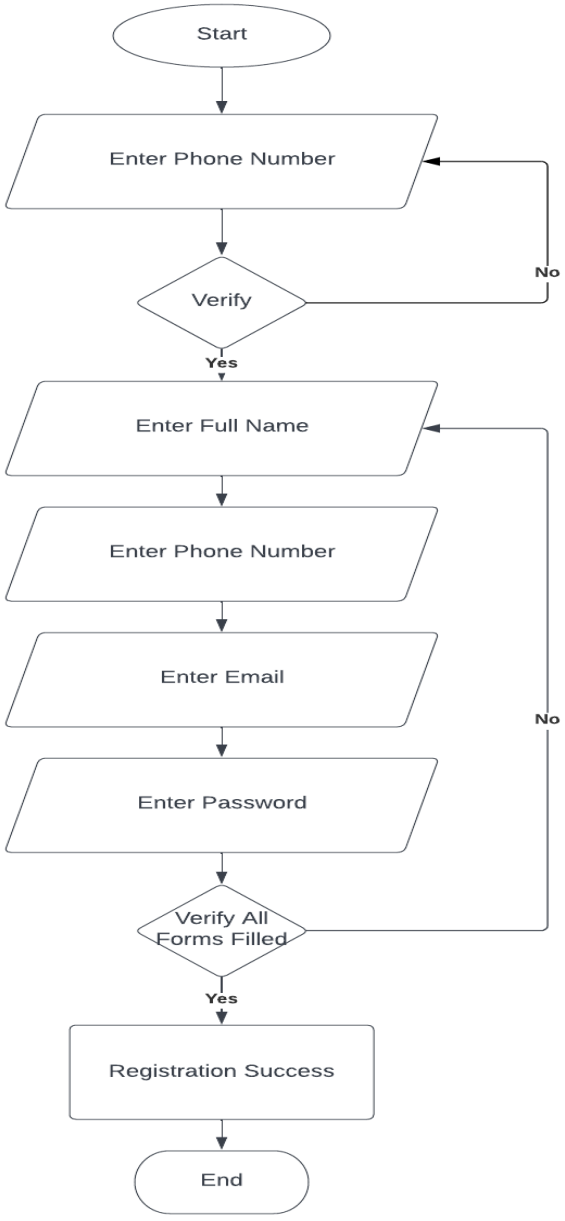


Fig 3.5.2: Client Registration Flow Chart Diagram

### 3.6 Design Requirement

For Client Application

1. Login page
2. Home page
3. Add new product page
4. Add new category page
5. Orders page
6. Settings page

For Consumer Application

1. Login/Registration page
2. Home page
3. Sidebar
4. Single product page
5. Cart page
6. Checkout page
7. Profile page
8. Orders page

### 3.7 Database Design

This app is run by Google's Firebase database. Firebase is Google's Backend-as-a-Service (BAAS) tool for creating mobile applications. Firebase provides extensive documentation and cross-platform SDKs to help you build and distribute Android apps. A quick, dependable database with user authentication and use monitoring is Firebase. We made use of this platform to add or remove product data. Additionally, we may view our user information and, if necessary, remove users from the database.

# CHAPTER 04

# DESIGN SPECIFICATION

## 4.1 Design Specification

Ecommerce App is a cross-platform application that offers ecommerce business opportunity for the client. For making this easy for client to maintain this app there are two separate applications.

- Client Application
- Consumer Application

## 4.2 Client Application

The client can login and access the home page. Client can add new product, new category, manage orders and modify settings of the consumer application.

## 4.3 Consumer Application

If a user has existing account, they can login via login page or they can register using registration button in login page. To register user has to verify their phone number and after that they have to fill the forms such as full name, phone number, email and password. After login or registration user will be directed to homepage from where they will be able to browse products, add product to cart, proceed to checkout, give feedback on purchase, track order and modify user profile.

# CHAPTER 05

# IMPLEMENTATION & TESTING

## 5.1 Implementation

We have added some sample of our project to show implementation and testing.

### 5.1.1 Client Application

### Login Page

In the page following fig 5.1.1.1 the client can login to the client application. The account will be provided by us which have their email and password.

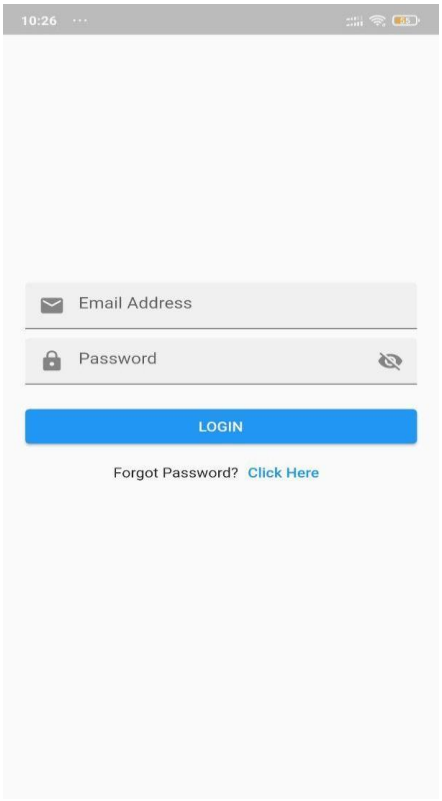


Fig 5.1.1.1: Login page of Ecommerce App Client App

**Dashboard**

In the page following fig 5.1.1.2 client will be redirected after login. Client will have access to all the features of the app from this page.

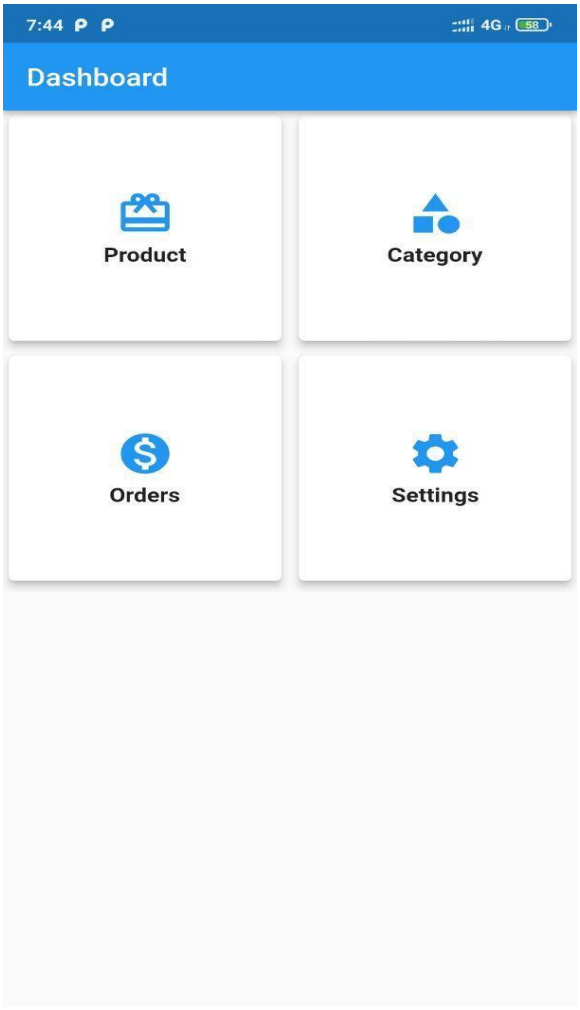


Fig 5.1.1.2: Client Dashboard Page

**Product Page**

In the page following fig 5.1.1.3 client will be able to see all the products he/she added and will also be able to add new product.

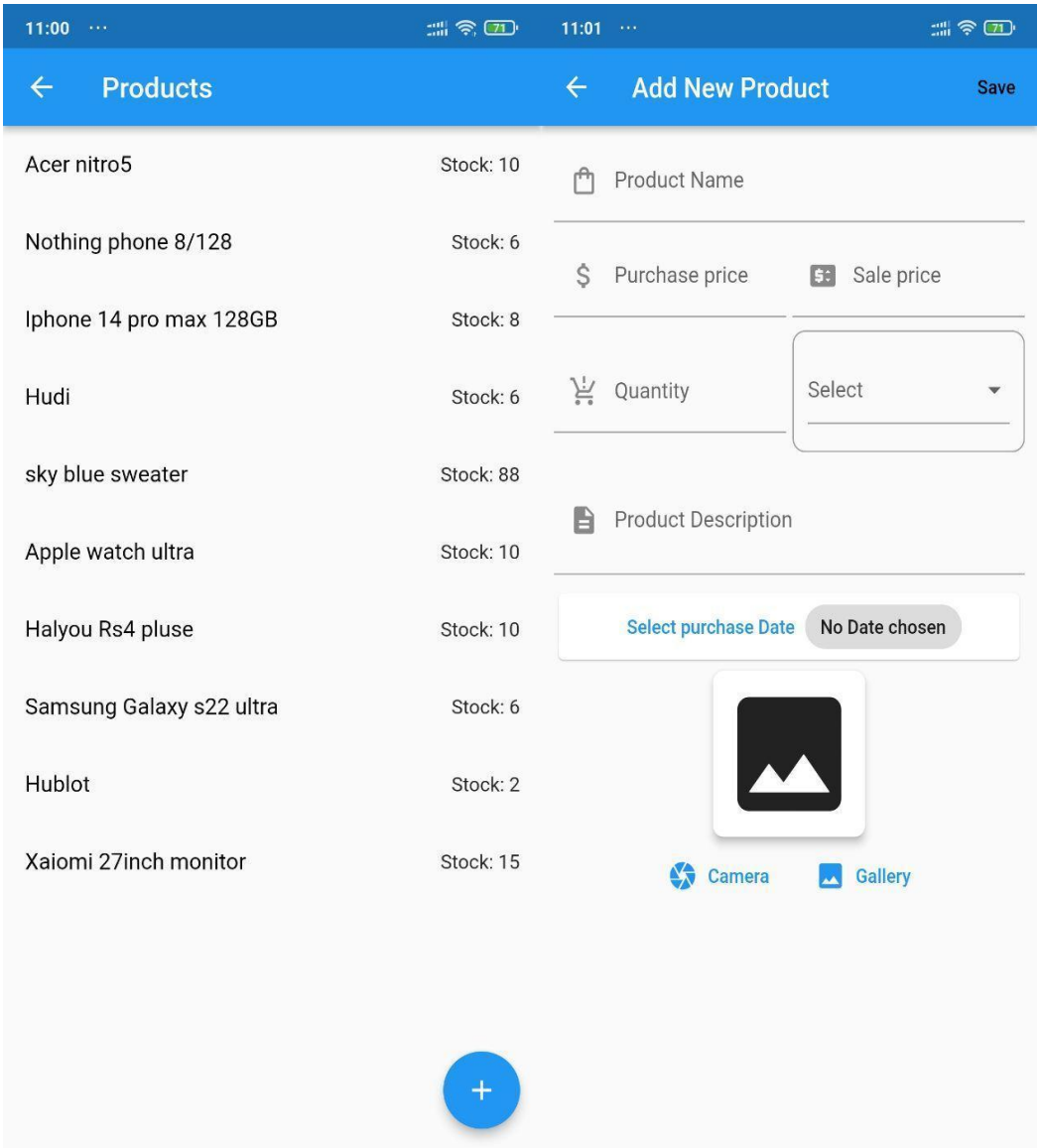


Fig 5.1.1.3: Product Page

**Category Page**

In the page following fig 5.1.1.4 client will be able to see the categories he already added and also be able to add new category.

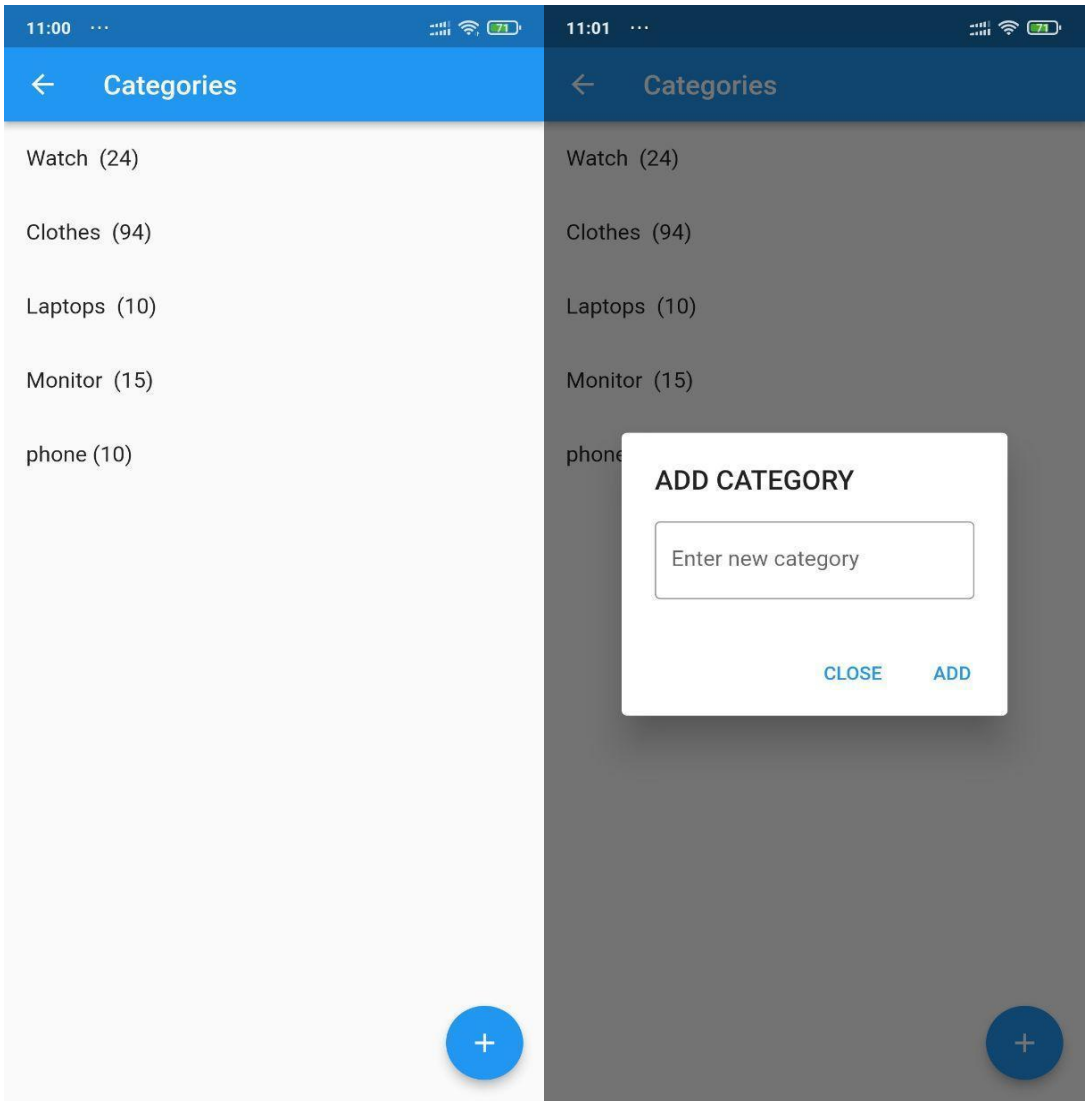


Fig 5.1.1.4: Category Page

**Order Page**

In the page following fig 5.1.1.5 client will be able to see the orders he got from consumers and also be able to change the state of order status.

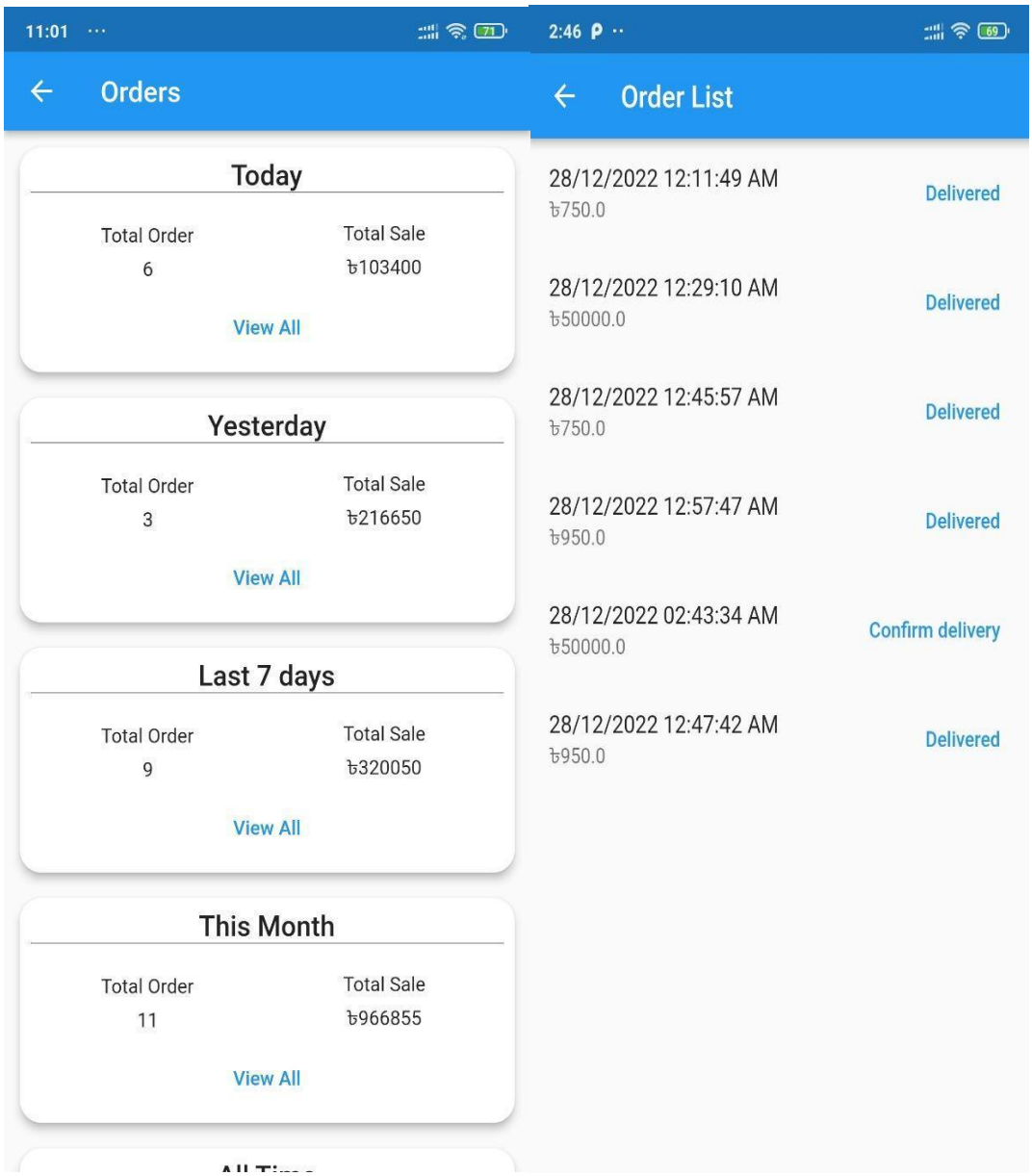


Fig 5.1.1.5: Order Page

**Settings Page**

In the page following fig 5.1.1.6 client will be able to set delivery charge, add discount and vat for the consumer application.

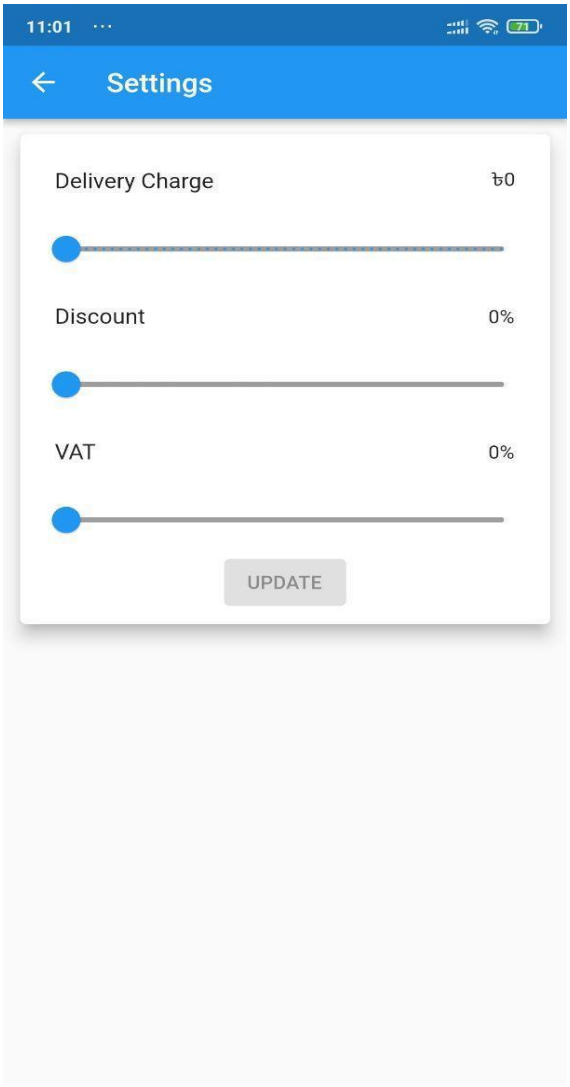


Fig 5.1.1.6: Setting page

### 5.1.2 Consumer Application

### Login Page

In the page following fig 5.1.2.1 the consumers can login if they are registered. If the user forgets their password they can recover their account using forget password button. User that are not registered will use register button to be directed to registration page. User can also login using google account if registered.

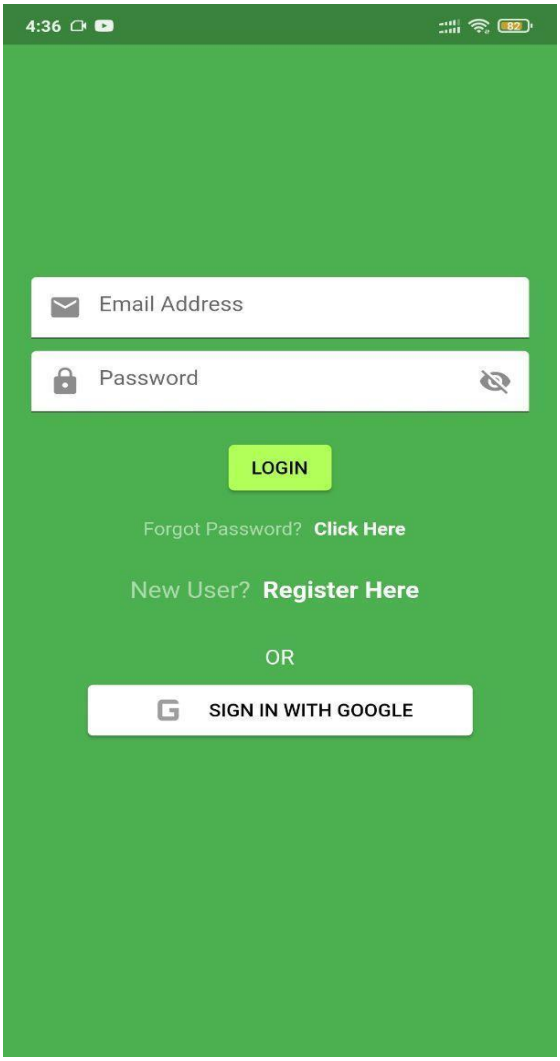


Fig 5.1.2.1: Login page

**Register Page**

In the page following fig 5.1.2.2 users can register in the store using this page. First they will be asked to enter their phone number which will verified using fireAuth that sends verification code to that number and app will ask for that code. After verifying the number user will get a form in which user need to input full name, phone number, email and password.

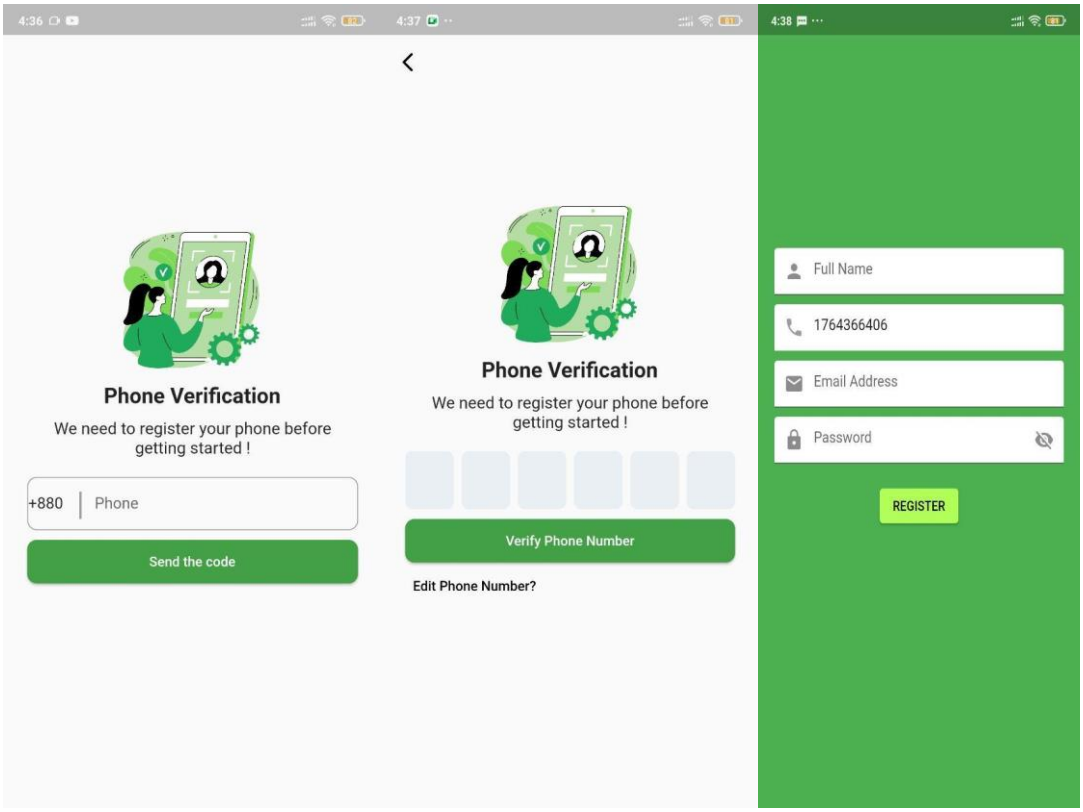


Fig 5.1.2.2: Register page

**Home Page**

After login or registration user will be directed to the page following fig 5.1.2.3. From this page user will be able to access all the features of our application.

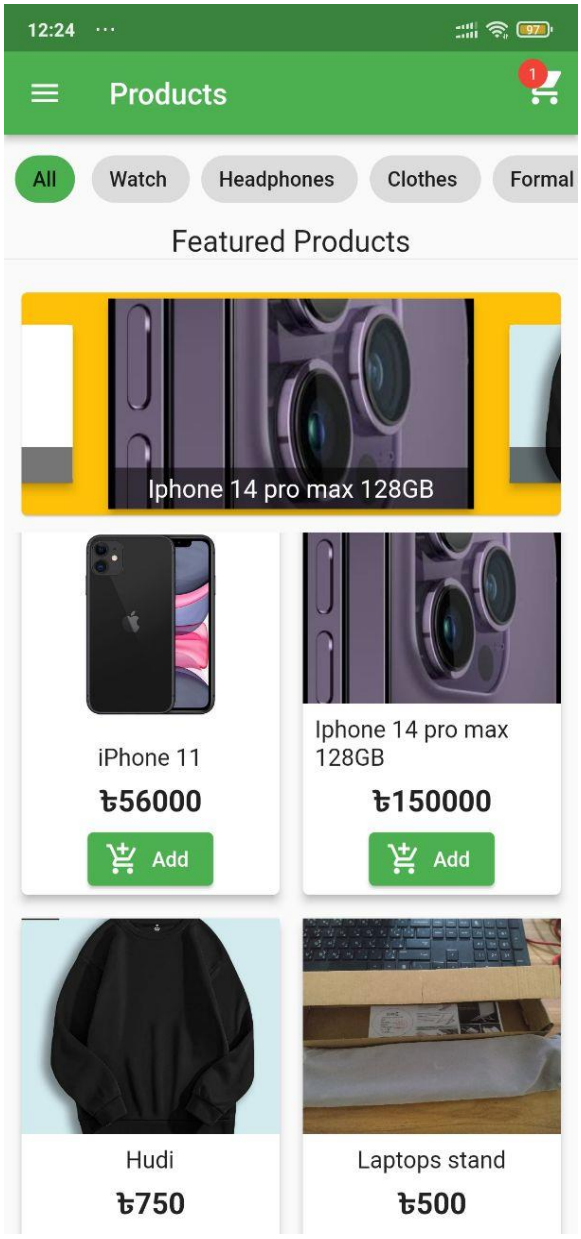


Fig 5.1.2.3: Home page

**Sidebar**

In the page following fig 5.1.2.4 user can access profile page, order page and can logout.

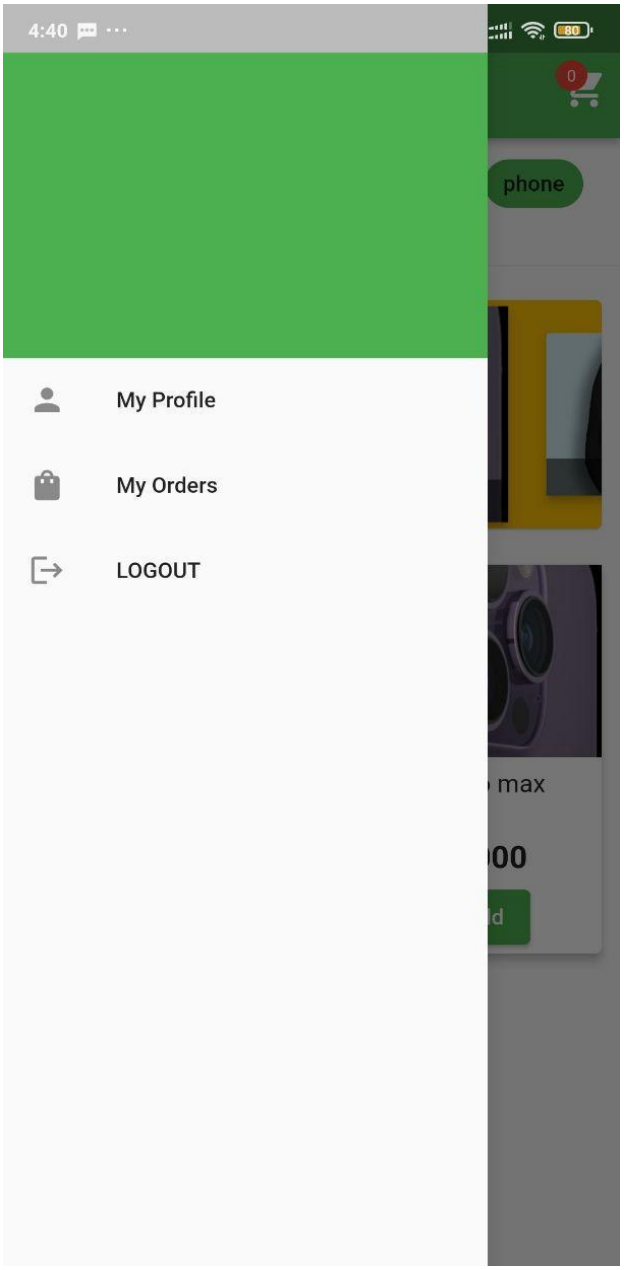


Fig 5.1.2.4: Sidebar

**Profile Page**

In the page following fig 5.1.2.5 user can change their profile photo, name, phone number and email.

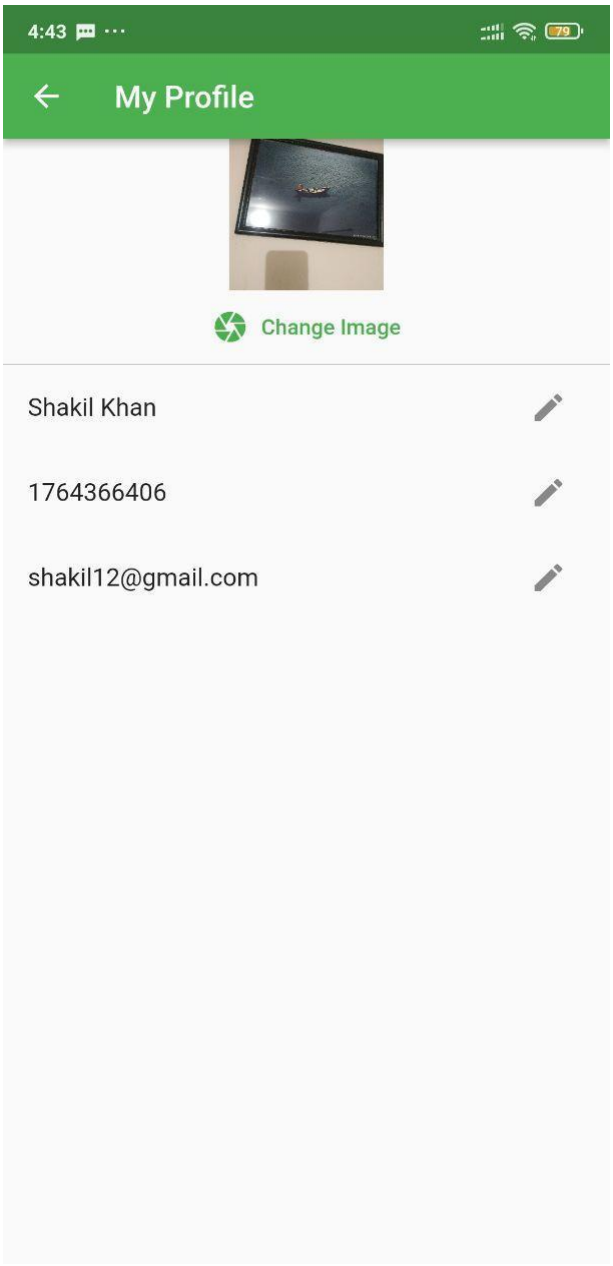


Fig 5.1.2.5: Profile Page

**My Orders Page**

In the page following fig 5.1.2.6 user will be able track their order and see order history and order status.

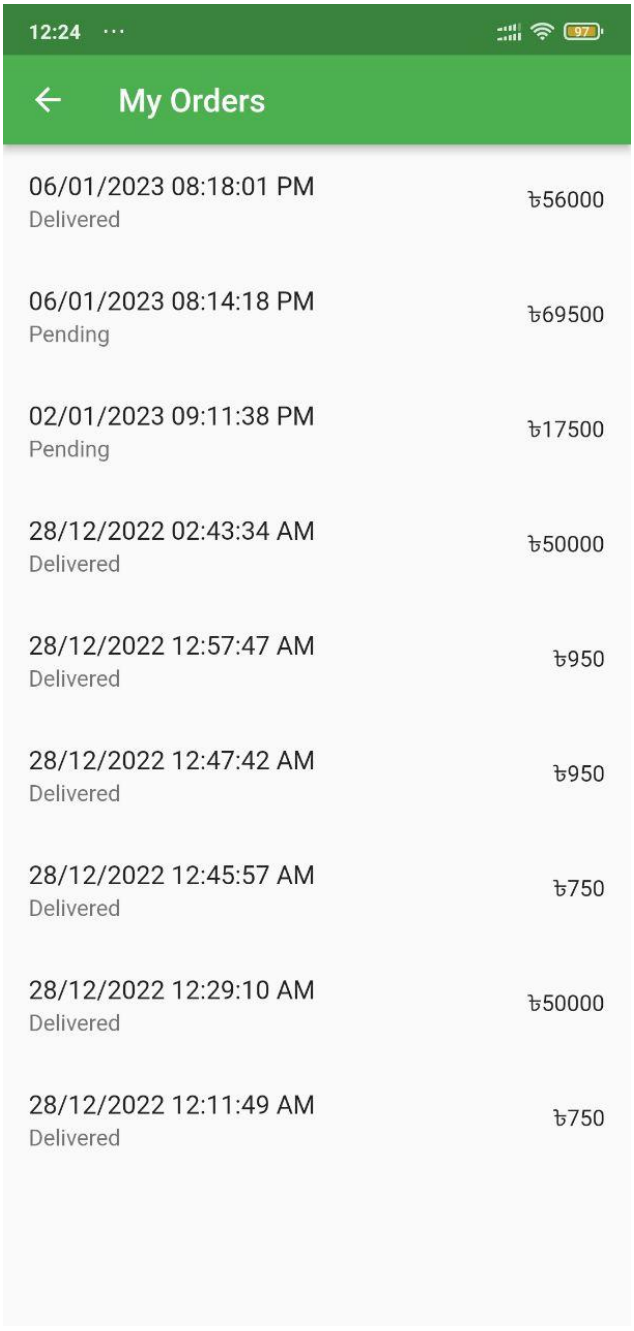


Fig 5.1.2.6: My Orders Page

**Single Product Page**

In the page following fig 5.1.2.7 user will see product description and after purchasing a product user can add a comment about the product and can also rate it at their satisfaction.

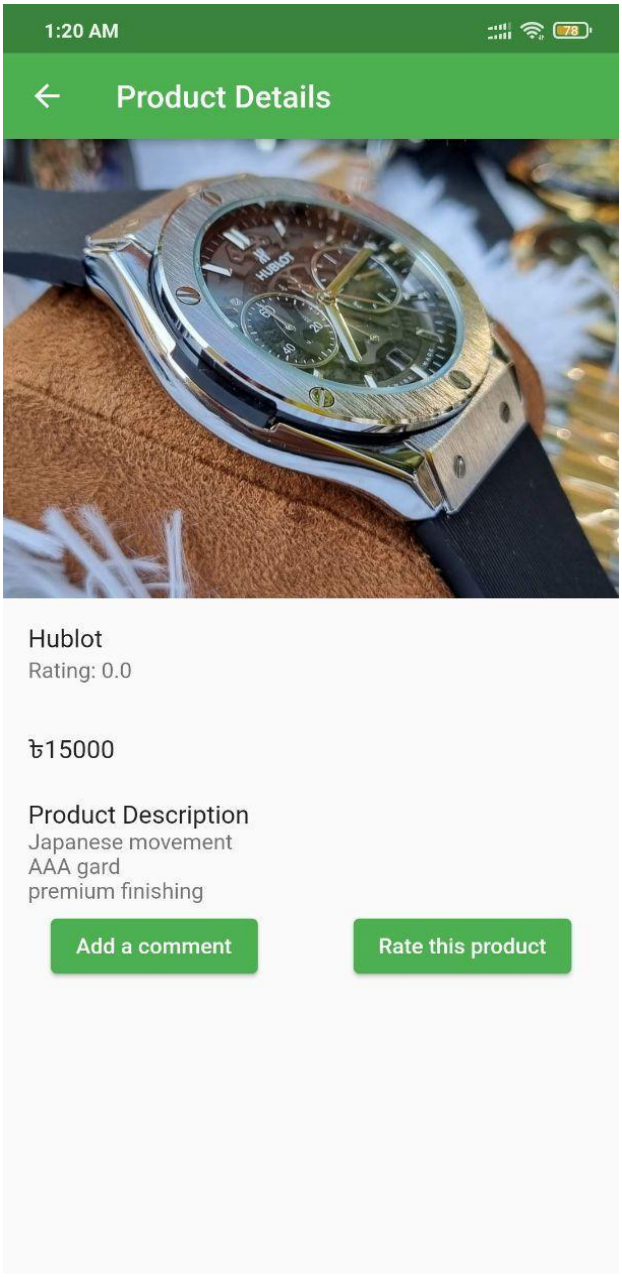


Fig 5.1.2.7: Single Product Page

**Cart Page**

In the page following fig 5.1.2.8 user will be able to see the products they added to their cart and can go for checkout to complete their transaction. User can change the quantity of the product with buttons beside the quantity number and can also delete a product using the delete button. At bottom there is subtotal for the products selected and a button to redirect to checkout page.

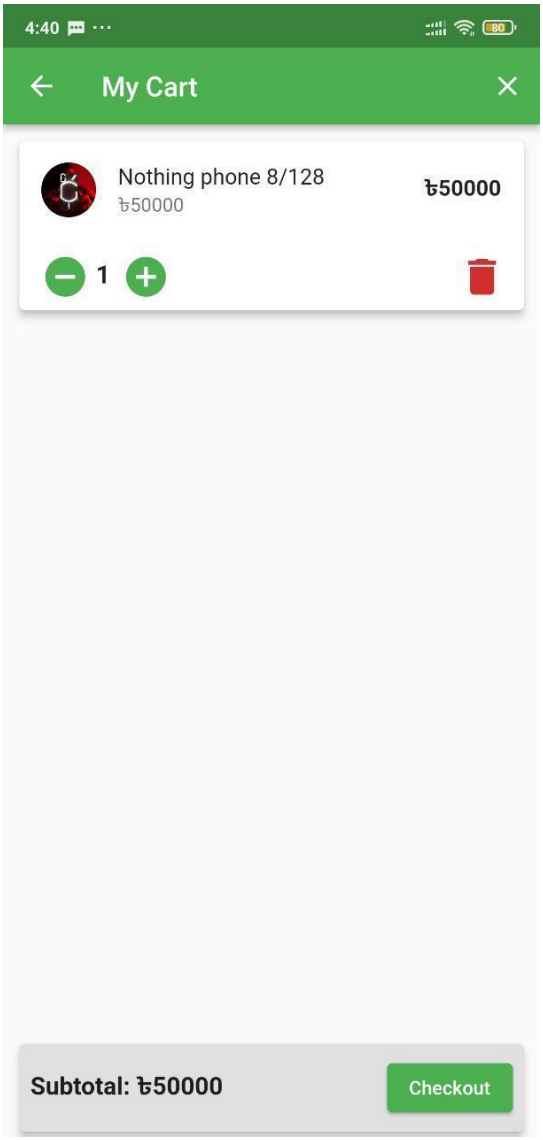


Fig 5.1.2.8: Cart Page

**Checkout Page**

In the page following fig 5.1.2.9 the user will see product and payment info and can set address or change address. Currently we only have cash on delivery as payment option. At the bottom there is a button to complete their purchase.

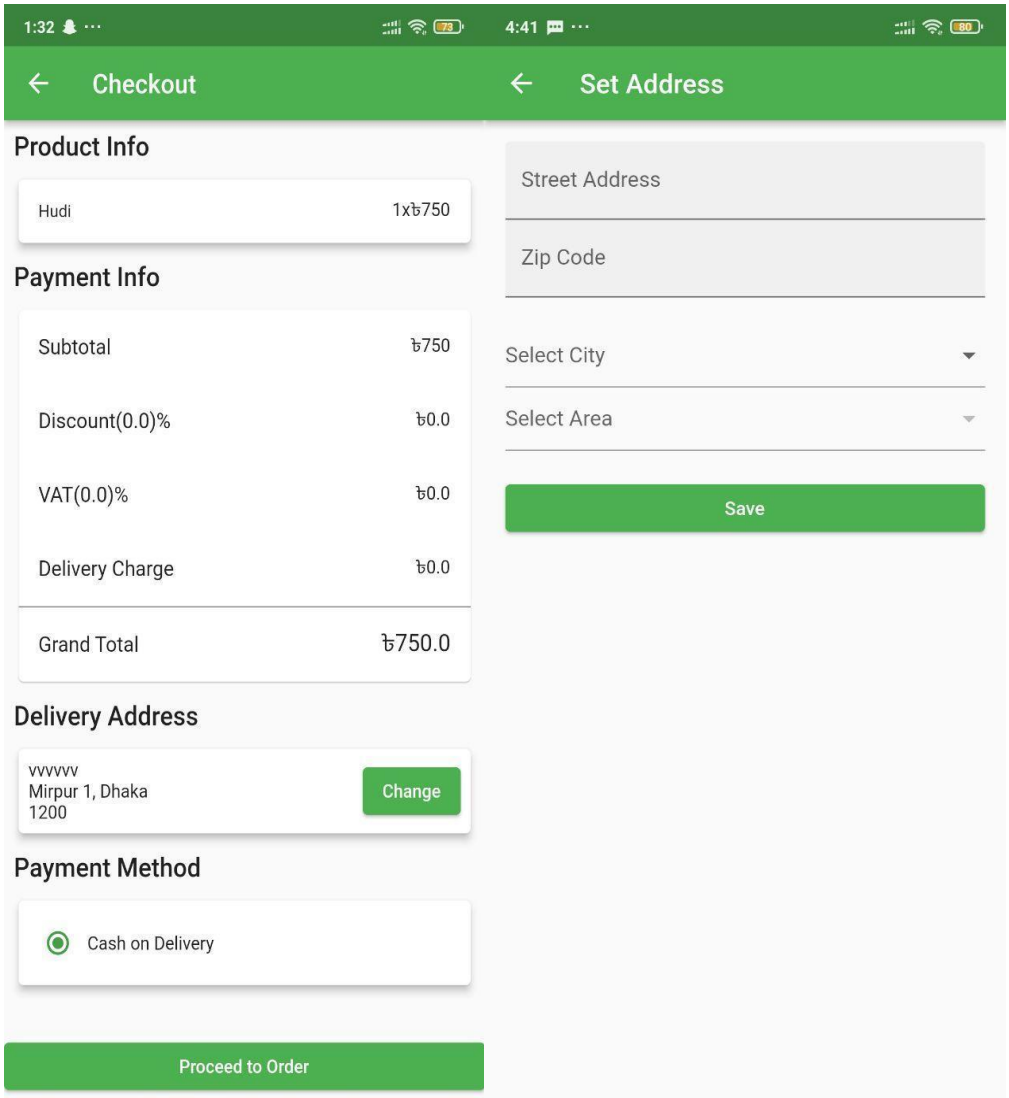


Fig 5.1.2.9: Checkout Page

## 5.2 Database Implementation

The following Fig 5.2.1 and Fig 5.2.2 shows the use of Firestore database and authentication services of Firebase for this project.

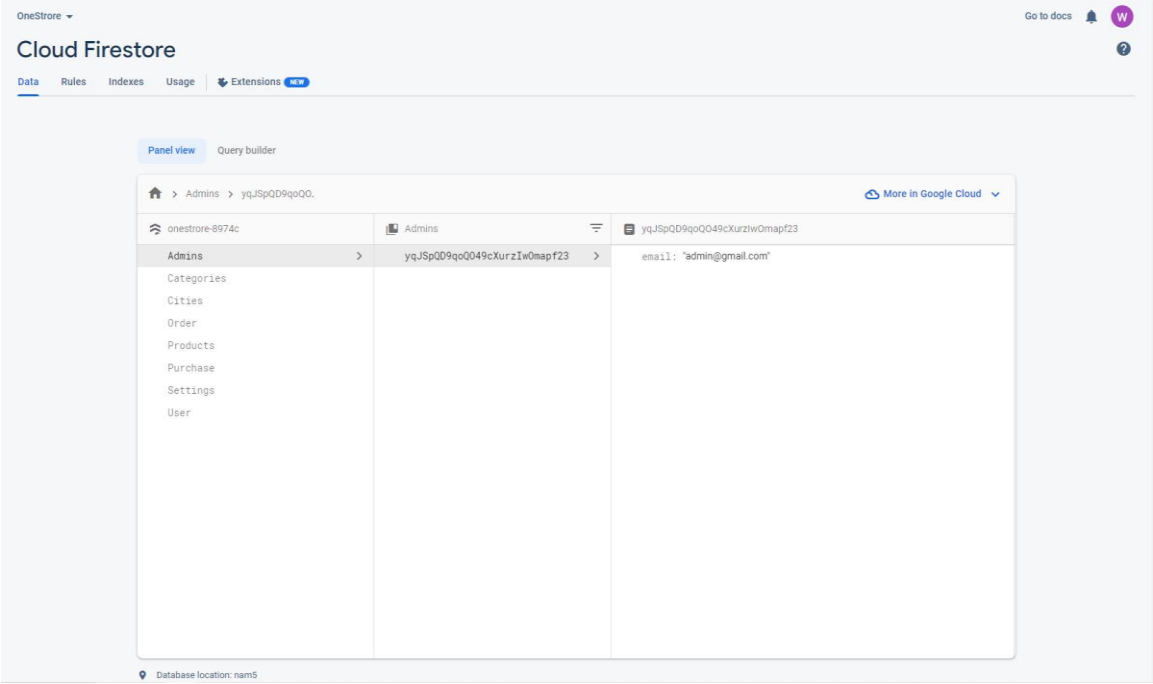


Fig 5.2.1: Firestore Database

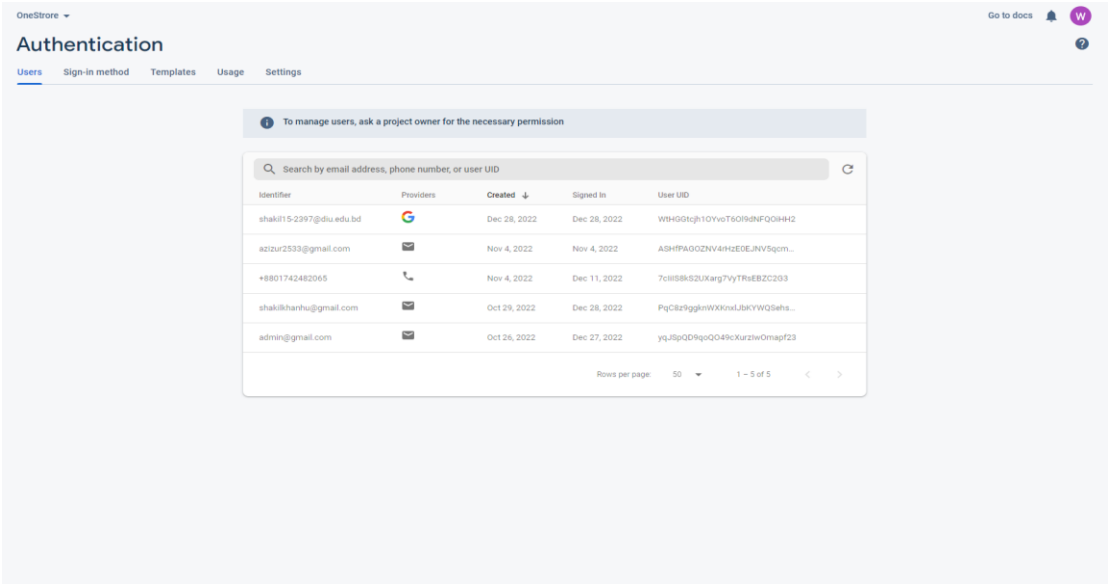


Fig 5.2.2: Firebase Authentication

# CHAPTER 06

# IMPACT ON SOCIETY, ENVIRONMENT & SUSTAINABILITY

## 6.1 Impact on Society

Ecommerce mobile applications have had a significant impact on society by providing consumers with a convenient and easy way to shop from their mobile devices. Some of the specific ways in which ecommerce mobile apps have impacted society include:

- Increased accessibility: Ecommerce App will make it easy for consumers to shop online from anywhere, at any time. This can be especially helpful for people who live in rural areas or who have mobility issues that make it difficult to go to physical stores.
- Greater convenience: Ecommerce App allow consumers to shop quickly and easily, without the need to go to a store or wait in line. This can save time and effort, especially for busy people who have little time to spare.
- Improved customer experience: Ecommerce App offer wide range of products, easy payment options, and other features that enhance the shopping experience. This can lead to greater customer satisfaction and loyalty.
- Boosted sales: By making it easier for consumers to shop, Ecommerce App can help client's business to increase their sales. This can lead to economic growth and job creation in the retail sector.
- Changes in consumer behavior: The convenience and accessibility of Ecommerce App may have led to changes in consumer behavior, with more people opting to shop online rather than in physical stores. This has had an impact on traditional brick-and-mortar retailers, who may have had to adapt their business models in response.

## 6.2 Impact on Environment

There are both positive and negative impacts of ecommerce mobile applications on the environment.

Positive impacts:

- Ecommerce mobile applications can reduce the need for physical stores, which can reduce energy consumption and greenhouse gas emissions associated with transportation, heating, and lighting.

- Ecommerce mobile applications can make it easier for consumers to purchase products from environmentally-friendly or sustainable brands, as they can easily search for and compare products online.
- Ecommerce mobile applications can also facilitate the sale and reuse of secondhand or refurbished products, which can reduce waste and pollution from the production of new products.

Negative impacts:

- The production and use of mobile devices and ecommerce mobile applications can contribute to environmental degradation, as they require the extraction of raw materials and the generation of electronic waste.
- The delivery of online orders can contribute to greenhouse gas emissions and air pollution, especially if they are not properly managed.
- Ecommerce mobile applications may also encourage overconsumption and the disposal of products, as it becomes easier to purchase and dispose of products without physically seeing them.

### 6.3 Ethical Aspect

There are several ethical aspects to consider when developing and using an ecommerce mobile application:

- Privacy: Ecommerce apps often collect personal information from users, such as name, address, and payment details. It is important to have strong privacy policies in place to protect this information and ensure that it is not shared with third parties without user consent.
- Security: Ecommerce apps handle sensitive financial transactions, so it is crucial to ensure that the app is secure and that data is encrypted to prevent fraud or hacking.
- User consent: It is important to clearly communicate the terms and conditions of using the app and obtain user consent before collecting any personal information.
- Fair pricing: Ecommerce apps should be transparent about pricing and avoid hidden fees or deceptive pricing practices.
- Accessibility: The app should be accessible to users with disabilities and comply with accessibility standards.
- User experience: The app should be easy to use and provide a positive experience for users.
- Data collection and usage: The app should be transparent about the data it collects and how it is used, and users should have control over their data and the ability to opt out of data collection.

- Spam and unwanted emails: The app should respect user preferences and not send spam or unwanted emails.

### 6.4 Sustainability Plan

- Use of renewable energy sources: We will ensure that all of our data centers and server facilities are powered by renewable energy sources such as solar or wind power.
- Reduction of carbon emissions: We will work to reduce the carbon emissions associated with the transportation of goods by implementing efficient shipping and transportation methods, as well as encouraging the use of eco-friendly delivery options such as electric vehicles.
- Minimization of waste: We will work to minimize waste throughout all aspects of our business operations, including the use of eco-friendly packaging materials and the implementation of recycling programs.
- Support of local businesses: We will prioritize the inclusion of locally-sourced products on our platform in order to support local businesses and reduce the environmental impact of transportation.
- Community engagement: We will actively engage with the local community through partnerships and initiatives that promote sustainability and environmental stewardship.
- Transparency: We will regularly report on our sustainability efforts and progress in order to ensure transparency and accountability.
- Continuous improvement: We will continuously review and assess our sustainability efforts in order to identify areas for improvement and implement new initiatives as needed.

# CHAPTER 07

# CONCLUSION & FUTURE PLAN

## 7.1 Conclusion

In conclusion, Ecommerce App can help the way client's business connect with their consumers. By providing a user-friendly and convenient mobile cross-platform application, Ecommerce App has made it easier for consumers to shop and make purchases on the go. This, combined with its focus on security and protection for both businesses and consumers, can help to make Ecommerce App a trusted and reliable platform for online commerce. As the use of mobile commerce continues to rise, it is likely that Ecommerce App will play a role in the industry and continue to provide value to its clients. Overall, Ecommerce App can be a valuable tool for businesses and consumers looking to engage in online commerce, and its success is likely to continue in the future.

## 7.2 Future Work

- Dynamic search bar
- Online payment gateway
- Sorting products
- Customer service
- Better UI/UX

## 7.3 Future Plan

In the coming years, Ecommerce App plans to continue expanding its reach and connecting more businesses with consumers through its mobile application. In addition, Ecommerce App plans to continue innovating and improving its platform to provide an even better shopping experience for customers. This may include introducing new features and functionality, as well as improving the overall user interface and design. Additionally, Ecommerce App plans to continue prioritizing security and protection for both businesses and consumers, as this is essential for building trust and maintaining its reputation as a reliable platform for online commerce.

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