E-Mart for Bangladesh

BY

NAME: MD.MEHEDI HASSAN
ID: 191-15-12314

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Supervised By

Name: Professor Dr. Md. Fokhray Hossain
Professor
Department of CSE
Daffodil International University

DAFFODIL INTERNATIONAL UNIVERSITY

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APPROVAL

This Project/internship titled **"E-Mart for Bangladesh"**, submitted by Md. Mehedi Hassan, ID No: 191-15-12314 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 29 January 2023.
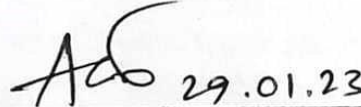
BOARD OF EXAMINERS

30/01/23

Dr. Touhid Bhuiyan
Professor and Head
Department of Computer Science and Engineering
Faculty of Science & Information Technology
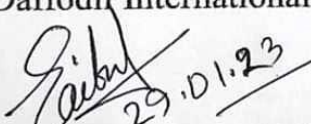Daffodil International University

Chairman

29.01.23

Arif Mahmud
Assistant Professor
Department of Computer Science and Engineering
Faculty of Science & Information Technology
Daffodil International University
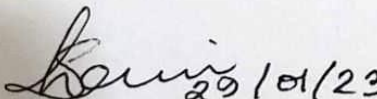
Internal Examiner

29.01.23

Saiful Islam
Assistant Professor
Department of Computer Science and Engineering
Faculty of Science & Information Technology
Daffodil International University

Internal Examiner

29/01/23

Dr. Shamim H Ripon
Professor
Department of Computer Science and Engineering
East West University

External Examiner

DECLARATION

We hereby declare that, this project has been done by us under the supervision of **Professor Dr. Md. Fokhray Hossain, Professor, 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.

Supervised by:

Hossain

Name: Professor Dr. Md. Fokhray Hossain
Dean & Professor
Department of CSE
Daffodil International University

Submitted by:

Mehedi

Name: Md. Mehedi Hassan
ID: 191-15-12314
Department of CSE
Daffodil International University

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ABSTRACT

E-Mart is basically a multi-vendor e-commerce platform Using MERN Stack. If we think then we can understand that after Covid-19 e-commerce has taken a new form in our country. Which was not seen much before 2018. Corona virus has shown us how technologically backward we are. And taught us that we need to improve our ideas and technology to move forward. From this line of thinking our E-Mart is going to start a new horizon with new ideas and new technology. E-Mart to improve our shopping experience. Because we have given the same flexibility to the merchant as we have thought about the user experience here. Here a customer can buy any product online or offline from any shop of his choice from any shopping complex. Here as a customer will regain his loyalty, merchants will also be able to do their business offline and online. We have to search a lot to buy something we need and sometimes we can't even trust the current e-commerce. The idea of E-Mart is very effective to solve this problem of customers. So I think the idea of e-mart is a modern idea now.

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INTRODUCTION

1.1 Background of the project

Bangladesh is a developing country. At present, technology is deeply involved with the people of this country. In addition, technology makes people's lives easier. Whether it is for the daily needs of the people of our country or for luxury, we have to go to some market every day. According to a report, there are about 15 large shopping malls in Dhaka only. Of which only in New Market the main customers are middle class women and students. About 20-30 thousand customers come here every day. On national holy days about 40-50 thousand peoples gather here. E-mart for this huge people. E-Mart is an online marketplace where all markets are combined. For example Dhaka New Market, Bashundhara, Rajdhani Super Market. E-mart mainly consists of various types of shop where a customer can find their shop as they need. Nowadays we see that people have become very comfortable. Most of the people now don't want to go out to buy anything. Also many don't trust online shopping. Our e-mart has brought a great solution for these two types of customers. A customer can buy his product from a physical shop if he wants and he can also order online. In this case, a customer does not have to go to different shopping complexes for a product. He can select the product of his choice from any shopping complex at home. And he can buy what he wants by physically going to the shop or ordering online.

1.2 Motivation

E-Mart is here to make people's lives a little easier. Where people can save money and time. E-Mart is the first online market in Bangladesh where the customer can physically buy his product. In this case, the customer will get rid of the deceived hand. They can compare products and prices of different shops. In addition, they can be able to buy their products from the market of their choice.

1.3 Problem statement

We need many things every day. We have to go to different markets to buy them. No market gets what we need again. If not, we have to go to another market.

1. In this case, we will waste a lot of time.

2. Our time is being wasted.

3. The road is jammed.

4. Our suffering is increasing.

E-Mart has come up with a great solution to solve this problem. Before you go to the market for your essentials, you need to know which stores your products are available in. On the other hand, what is the price of your product in any market shop? Here E-Mart has come up with this solution. E-Mart works with shops in a big market. The market shops there will create an online store with their products at e-mart. Customers will be able to find the items they need before going to that market from the stores of the shops. They will be able to go to that market and buy their products if they find the product they need in that shop and at a reasonable price. If the shop wants to give their product to the customer, then they can. In this case, the customer has to decide whether to go to the market or buy their product online.

Despite the growth of e-commerce and the convenience of online shopping, many customers still prefer to make their purchases in physical stores. Our business aims to bridge the gap between online and offline shopping by providing a seamless and convenient shopping experience for customers through a combination of both channels. The problem we aim to solve is how to effectively integrate online and

offline shopping options to provide customers with the best of both worlds, while also increasing sales and improving customer satisfaction.

1.4 Objectives

Our goal is to save a customer time and money. Also, avoid extra crowds in the market during this time. We will first bring the shops of different markets to our platform. The shops will create an online shop for them on our platform. There they will be able to arrange their products as their choice. They will give their product home delivery or they will have to take the product in person when the shop comes. These are the two options. Customers can go to their required product shop or take online home delivery.

1.5 Expected Outcome

As far as expected results are concerned, we are concerned about both sellers and buyers. Because both sellers and buyers can benefit from using ecommerce platforms. Sellers can sell more of their products and buyers can easily buy their products from anywhere using their MasterCard and Visa cards. We know, Alibaba, AliExpress, Amazon, these companies are huge companies, and people order products from anywhere in the world. This is the advantage of e-commerce websites. Also we are working on a new idea which no e-commerce company has started yet. Hope this idea will be a unique idea in our country and even in the world.

1.6 Conclusion

E-commerce, or electronic commerce, refers to the buying and selling of goods or services over the internet. It has grown rapidly in recent years, with many businesses now conducting a significant portion of their sales online. E-commerce allows for greater convenience for consumers and can also offer cost savings for businesses. However, it also brings new challenges, such as the need for strong cybersecurity measures to protect customer data. Overall, e-commerce is a rapidly growing industry that is changing the way businesses and consumers interact. And with Set I'm not limiting this to just online. This I am taking offline so that a customer does not lose his trust in any way.

After all I think my idea and logic is unique. A-mart is not only for the people of Bangladesh but it will be a big company in the world. If I can keep up with the times and the era, my A-Mart will be a popular e-commerce destination today.

CHAPTER 2
LITERATURE REVIEW

2.1 Introduction

E-commerce, also known as electronic commerce, refers to the buying and selling of goods and services over the internet. It includes a wide range of activities, from buying products online to conducting business-to-business transactions using electronic data interchange (EDI) [1]. Online/offline e-commerce refers to the integration of traditional brick-and-mortar retail with online sales channels. This type of e-commerce allows consumers to shop both online and in-store, and often includes features such as online ordering and in-store pickup. It is becoming more popular as retailers look for ways to bridge the gap between online and offline shopping experiences [2].

2.2 Online and offline integration

Online and offline integration in e-commerce refers to the combination of both online and physical store sales channels to create a seamless shopping experience for customers. This can include features such as in-store pickup for online orders, online returns at physical stores, and the ability to purchase online and pick up in-store [3].

Multivendor e-commerce refers to an e-commerce platform where multiple vendors or sellers can sell their products through a single website. Some examples of multivendor e-commerce platforms include Amazon, Etsy, and Alibaba [4].

In a multivendor e-commerce platform, the platform owner typically handles tasks such as website maintenance, marketing, and customer service, while vendors are responsible for managing their own inventory, pricing, and shipping [5].

There are several benefits to using a multivendor e-commerce platform for both vendors and customers. For vendors, it provides a wider reach and exposure for their products, as well as a lower cost of entry compared to setting up their own e-commerce website. For customers, it provides a greater variety of products to choose from, as well as the convenience of being able to purchase from multiple vendors in one place [6].

There are a few potential disadvantages to using a multi-vendor e-commerce platform:

I. **Competition:** With multiple sellers offering similar products, it can be more challenging for individual sellers to stand out and attract customers.

II. **Lack of control:** Sellers on a multi-vendor platform may have less control over their sales and customer interactions than they would on their own e-commerce website.

III. **Fees**: Many multi-vendor platforms charge fees for listing products or for successful sales. These fees can cut into a seller's profits.

IV. **Quality control:** It can be more difficult for the platform to ensure the quality and authenticity of products from multiple sellers. This can lead to customer dissatisfaction and may harm the reputation of the platform.

V. **Fraud and disputes:** With multiple sellers and customers interacting on the platform, there is a risk of fraud or disputes arising. The platform may need to have policies and procedures in place to address these issues.

That being said, many sellers find that the benefits of using a multi-vendor platform outweigh these potential disadvantages, and are able to successfully sell their

products on these platforms. It's important for sellers to carefully consider their options and weigh the pros and cons before deciding which platform is right for them. All the disadvantages of a multi-vendor website have been removed with our website. Besides, our e-mart is basically a vendor, so our idea is different from all e-commerce [8].

Now we will see how we tackled these challenges:
We used these methods to solve competition among its sellers:

- ✓ **Offer additional marketing and promotion options:** The platform could offer sellers the ability to promote their products through sponsored listings, banner ads, or other types of marketing. This could help sellers to reach a larger audience and stand out from the competition.

- ✓ **Implement a review or ratings system:** Allowing customers to rate and review products can help buyers to make informed decisions and can also provide valuable feedback to sellers. This can help to differentiate products and create a sense of trust and reliability for customers.

- ✓ **Offer tools and resources to help sellers improve their products and customer service:** Providing sellers with access to resources such as product photography, packaging materials, or customer service training can help them to improve the quality and appeal of their products and stand out from the competition.

- ✓ **Implement policies and procedures to ensure fairness and prevent fraud:** Ensuring that all sellers are held to the same standards and that fraudulent or unethical behavior is not tolerated can help to create a level playing field and build trust with customers.

- ✓ **Offer a variety of product categories and price points:** Having a wide range of products available can help to attract a diverse customer base and ensure that there are opportunities for sellers at different price points.

We used these methods to solve lack of control for sellers:

- ✓ **Implement clear policies and procedures:** Having clear guidelines and expectations for sellers can help to reduce confusion and ensure that everyone is on the same page. This could include policies on pricing, shipping, returns, and other key areas.

- ✓ **Offer tools and resources to help sellers manage their business:** Providing sellers with access to tools such as inventory management, order tracking, and customer service resources can help them to have more control over their business and better serve their customers.

- ✓ **Allow sellers to customize their listings and storefronts:** Giving sellers the ability to customize their product listings and storefronts can help them to differentiate their products and better control their brand image.

- ✓ **Offer multiple pricing and commission structures:** Providing sellers with options for different pricing and commission structures can help to give them more control over their profits and allow them to choose the structure that best fits their needs.

- ✓ **Provide customer support:** Offering customer support and dispute resolution services can help to ensure that sellers have a way to address any issues that may arise and can help to build trust with customers.

2.3 User experience

The user experience (UX) for e-commerce websites and applications, including E-Mart, refers to the overall satisfaction and ease of use of the platform for the end user. This can include elements such as the website or app's layout, navigation, search functionality, and checkout process [9]. The user experience refers to the overall satisfaction and perception of the users while interacting with a website or application. It includes factors such as ease of use, design aesthetics, and functionality [10].

2.4 Logistics and fulfillment

Context of e-commerce, logistics and fulfillment are crucial for the success of an online business like E-Mart. It includes the process of receiving and processing orders, managing inventory, and physically delivering the products to the customers.

Proper logistics and fulfillment management ensures that E-Mart is able to meet customer demands in a timely and efficient manner. This includes having a well-organized warehouse and inventory management system, as well as reliable and cost-effective shipping and delivery options. Additionally, E-Mart may need to consider implementing a system for tracking and monitoring orders and shipments, and providing customers with updates on their orders.

Effective logistics and fulfillment is a key factor in building customer loyalty and satisfaction, and can also have a significant impact on E-Mart's bottom line [12].

2.5 Comparative Studies

The MERN stack, which stands for MongoDB, Express, React, and Node.js, is a popular technology stack for building e-commerce websites. It allows developers to create a fast, scalable, and responsive web application that can handle the demands of both customers and retailers. By using a combination of these technologies, developers can create an e-commerce website that is easy to use, secure, and reliable [23].

E-commerce has come a long way since its inception in the late 1960s. With the rise of smartphones, social media, and other communication technologies, it has become easier for businesses and consumers to connect and conduct transactions online. Today, e-commerce is a vital part of the global economy, with billions of dollars in sales taking place every year [21].

The aim of E-Mart n ae-commerce website that is user-friendly and solves the problems of online shopping. By using the MERN stack, developers can create a website that is easy to use, fast, and responsive. They can also use it to create a platform that is able to distinguish between users and sellers, allowing each group to access the features and functions they need. By focusing on user-friendliness, the development process can be made more efficient and responsive to the needs of different user groups.

2.6 Scope and problem

The scope of the problem for E-Mart, as an online and offline e-commerce platform, includes providing a seamless shopping experience for customers, ensuring the security and privacy of customer data, and effectively managing inventory and shipping logistics. Additionally, as a multi-vendor platform, E-Mart must also provide efficient tools for vendors to manage their products and sales. User experience is a critical factor in the success of an e-commerce platform, as it directly impacts customer satisfaction and conversion rates. Therefore, it is important for E-Mart to prioritize user-centered design in the development and implementation of the platform. Additionally, as more and more businesses shift towards an online presence, E-Mart must also consider the integration of online and offline channels to provide customers with a variety of options for shopping and fulfilling orders. This includes providing options for online ordering and in-store pickup, or online browsing and offline purchasing [23]. This requires effective coordination and communication between the online and offline channels, as well as effective inventory management and logistics.

Furthermore, as a multi-vendor platform, E-Mart must also ensure that vendors are able to easily and effectively manage their products and sales, and that there are clear and fair guidelines for vendors to follow. This includes providing vendor management tools, as well as ensuring that all products sold on the platform meet certain quality standards.

In terms of why Node can be used for e-commerce, it can be a powerful tool for building fast and scalable e-commerce websites and applications. Its non-blocking, event-driven architecture makes it well-suited for handling a large number of concurrent requests, such as those that might be generated by customers browsing and purchasing products online. It can also be used to build server-side applications and APIs that support e-commerce functionality, such as managing orders, tracking shipments, and processing payments [25].

Overall, Node is a popular and powerful choice for building e-commerce applications, and is widely used in a variety of different industries and applications.

2.7 Conclusion

We are building a MERN stack development with the all-possible requirements possible. Creating a user-friendly UI and comfortable system can be a challenge, but there are many resources and tools available that can help. For example, you can use libraries and frameworks such as ReactJS and Bootstrap to help you build a modern, responsive, and easy-to-use interface. You can also use tools such as testing frameworks and usability testing to ensure that the application is intuitive and easy to use. Overall, building a user-friendly MERN stack development project will require careful planning, design, and testing. By using the right tools and resources, and by focusing on the needs of your users, you can create a successful and satisfying application that meets the requirements of your project.

CHAPTER 3
REQUIREMENT SPECIFICATION

3.1 Introduction

The requirement specification for E-Mart outlines the functional and non-functional requirements for the e-commerce platform. It serves as a blueprint for the development, testing, and maintenance of the system. The introduction of the requirement specification should provide an overview of the project and its objectives, as well as the scope of the requirements covered in the document.

An introduction for the requirement specification of E-Mart might include the following:

E-Mart is a new e-commerce platform that aims to provide customers with a seamless online and offline shopping experience. The platform will allow customers to browse and purchase products from a wide range of categories, including fashion, electronics, home goods, and more. Additionally, E-Mart will provide customers with the option to pick up their purchases from physical locations or have them delivered to their doorsteps.

The requirement specification for E-Mart covers both functional and non-functional requirements for the system. Functional requirements include the features and functionality that the system must provide, such as browsing products, adding items to a cart, and processing payments. Non-functional requirements include performance, security, scalability, and usability requirements.

The scope of the requirement specification includes the design and development of the front-end and back-end of the system, as well as the integration with other systems such as payment gateways and inventory management. This document

will serve as a guide for the development team and will be used to ensure that the final product meets the needs of the customers and the business.

3.2 Process Modeling

E-Mart system requirement specification (SRS) is a document that provides a detailed description of the features, functions, and constraints of E-Mart's system. It serves as a blueprint for the development of the system and is used to communicate the requirements to the development team.

The SRS should include a clear and detailed explanation of the system's functional requirements, such as user registration and login, product browsing and searching, shopping cart functionality, and checkout process. It should also include information on the system's non-functional requirements, such as security, performance, scalability, and usability.

Other important components of an SRS for E-Mart system include:

➢ **User roles and permissions:** Defines the different types of users and their associated privileges and permissions within the system.

➢ **Payment processing:** Describes the methods and systems used to process and authorize payments.

➢ **Inventory management:** Explains how the system will track and manage product inventory.

➢ **Shipping and tax calculations:** Outlines how shipping and taxes will be calculated and applied to orders.

➢ **Search engine optimization (SEO):** Describes how the system will be optimized for search engines to improve visibility and drive more traffic to the site.

➢ **Reporting and analytics:** Describes how the system will collect and present data on user behavior and sales.

> ➢ **Security:** Explains how the system will protect sensitive customer data and prevent unauthorized access.

In summary, E-Mart system requirement specification is an important document that outlines the functional and non-functional requirements for E-Mart system and is used to guide its development and ensure that it meets the needs of the business and its customers.

It is true that many e-commerce sites, such as Amazon, eBay, and Facebook, have become popular platforms for buying and selling goods online. However, these sites can be overwhelming for customers due to the vast selection of products available, and it can be difficult for small businesses to compete with larger sellers who may have more resources for advertising and marketing.

One way that small grocery stores can overcome these challenges is by implementing their own e-commerce website. By building their own online store, small businesses can have more control over the products they offer and how they are presented to customers. They can also avoid paying fees or commissions to third-party platforms, which can help to reduce costs.
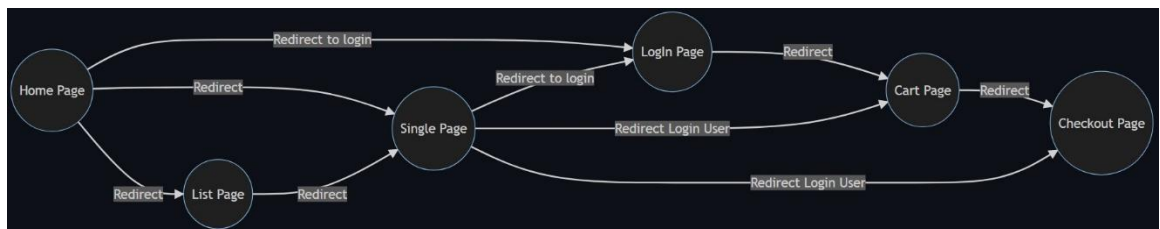
Figure 3.2.1: Business Process Model

In addition, building an e-commerce website can help small grocery stores to reach a wider audience and attract new customers. By offering an online shopping option, small businesses can make it easier for customers to find and purchase their products, and can also expand their customer base beyond their local area. Overall, building an e-commerce website can be a valuable tool for small grocery stores to grow their business and reach more customers.

3.3 E-commerce

E-commerce can be categorized into different forms based on the types of parties involved in the transaction. The four main types of e-commerce are:

- ✓ **B2B (Business to Business):** This refers to the exchange of goods and services between businesses. This is the most common form of e-commerce, and it includes transactions between manufacturers, wholesalers, and other businesses.

- ✓ **B2C (Business to Consumer):** This refers to the sale of goods and services directly to consumers by businesses. This includes traditional online retail stores, as well as other types of businesses that sell products or services directly to consumers through the internet.

- ✓ **C2B (Consumer to Business):** This refers to a model where consumers sell products or services to businesses. This might include individuals who create and sell products through an online marketplace, or who offer their services as freelancers or independent contractors.

- ✓ **C2C (Consumer to Consumer):** This refers to a model where consumers sell products or services directly to other consumers. This might include individuals who sell items through an online marketplace, or who sell products or services directly to other consumers through social media or other online platforms.

	Targeted to consumers	Targeted to businesses
Initiated by business	B2C (business-to-consumer)	B2B (business-to-business)
Initiated by consumer	C2C (consumer-to-consumer)	C2B (consumer-to-business)

Figure 3.3.1: Flow of E-commerce
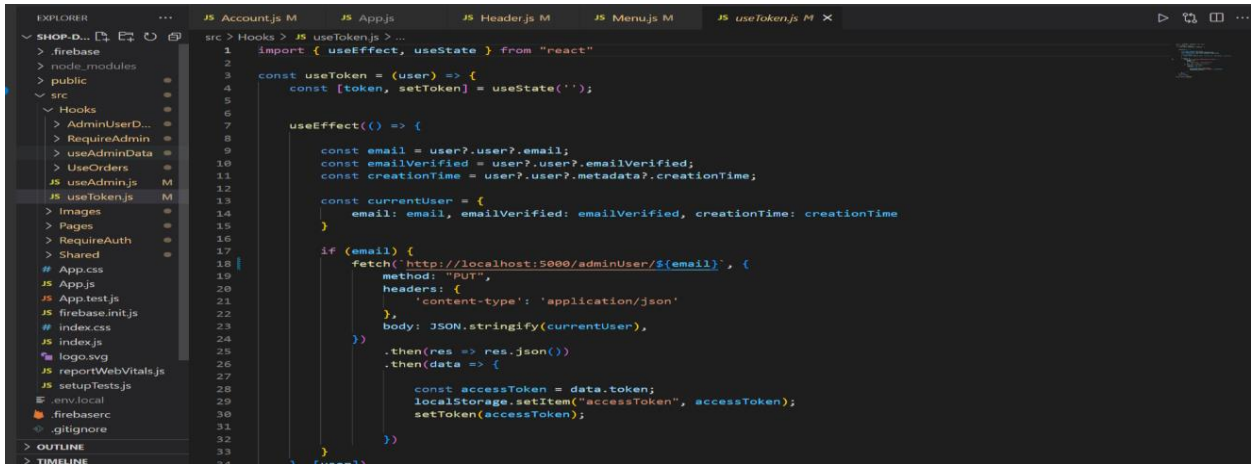
In addition to these four main types of e-commerce, there are also other variations, such as G2C (Government to Consumer), G2B (Government to Business), and others. These types of e-commerce are used less frequently than the four main types, but can still be important in certain contexts.

3.4 MERN libraries

Client-side code:

Client-side JavaScript is a type of JavaScript that is executed by the web browser on the client side (i.e., on the user's computer) rather than on the server. It is typically used to create interactive and dynamic features on web pages, such as form validation, animations, and more.

Figure 3.4.1: MERN libraries

3.5 Logical Data Model

Logical data modeling is a process used to analyze and document the data requirements of a business in order to support the business processes within the scope of a corresponding data system. Entity-Relationship (ER) modeling is one approach to logical data modeling, and it involves identifying the entities (i.e., objects or concepts) that exist within a system, as well as the relationships between those entities.

In an ER diagram, entities are represented by rectangles, and attributes (i.e., the characteristics or properties of an entity) are represented by ellipses. Relationships between entities are represented by lines connecting the entities, and the cardinality of the relationship (i.e., the number of entities involved in the relationship) is indicated by the use of symbols such as arrows or diamonds.

ER diagrams are useful for visualizing and understanding the structure and relationships within a system, and can be used to design and implement a corresponding database. They are also helpful for communicating the data requirements of a system to stakeholders and for documenting the design of a database. The Entity Relationship diagram that we used in our project is given below:

Figure 3.5.1: Logical Data Model (E-R Diagram)

3.6 Use Case Modeling

A use-case model is a way of representing the interactions between different types of users (also known as actors) and a system in order to achieve specific goals. It

is a useful tool for understanding and documenting the functional requirements of a system, and can be used to identify and describe the different ways that a system can be used by its users.

A use-case model typically consists of a number of use cases, which are individual scenarios or sequences of interactions between actors and the system. Each use case typically describes a specific goal that the user is trying to achieve, the steps involved in achieving that goal, and the interactions between the user and the system.

Use-case models can be represented using a variety of techniques, such as text descriptions, flowcharts, or UML (Unified Modeling Language) diagrams. They can be used to help design and develop a system, and can also be used to communicate the functional requirements of a system to stakeholders. Overall, use-case modeling is a useful tool for understanding and documenting the functional requirements of a system, and can help to ensure that a system meets the needs of its users. The Use Case model that we have used in our project is given below.
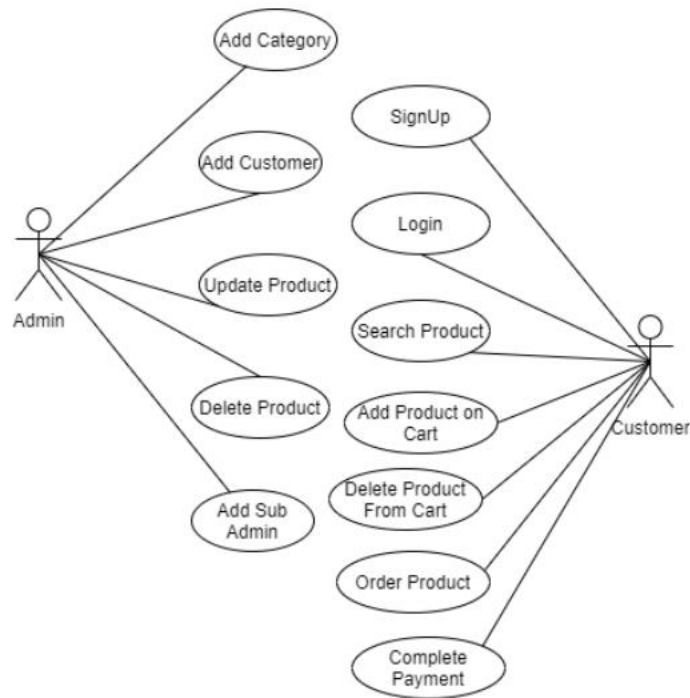
Figure 3.6.1: Use Case Model

3.7 Conclusion

E-Mart is a popular e-commerce platform that allows users to purchase a wide variety of goods and services online. Some key features of E-Mart include:

A user-friendly interface that makes it easy to browse and search for products

A wide range of products, including electronics, home goods, clothing, and more

Secure payment options, including credit card and online banking

Fast and reliable shipping

Customer support through online chat, email, and phone

In conclusion, E-Mart is a comprehensive e-commerce platform that offers a great user experience, a wide range of products, and secure payment options. It is a reliable and trustworthy choice for anyone looking to shop online.

CHAPTER 4
DESIGN SPECIFICATION

4.1 Introduction

E-Mart is a cutting-edge e-commerce platform that combines the convenience of online shopping with the tactile experience of brick-and-mortar stores. Our unique online-offline hybrid model allows customers to browse and purchase products online, as well as pick up their purchases at a physical retail location. Our mission is to provide customers with a seamless shopping experience that combines the best of both worlds.

Our platform is designed with the user in mind, featuring an easy-to-use layout, intuitive navigation, and a wide range of products. Our responsive design ensures that the website can be accessed from any device, and our color scheme, typography, and images have been carefully selected to create a visually appealing and professional look.

We have also placed a strong emphasis on security, scalability, and performance optimization in our back-end design. Our back-end utilizes state-of-the-art technology to ensure that customer data is protected, and our APIs are designed to provide a smooth and efficient flow of information between the front-end and back-end.

In summary, E-Mart is a revolutionary e-commerce platform that offers customers the convenience of online shopping with the added benefit of being able to physically touch and see the products before making a purchase. We are dedicated to providing an exceptional user experience and continually improving our platform to meet the changing needs of our customers.

4.2 Front End Design

Front-end design, also known as user interface (UI) design, is the process of creating the visual and interactive elements of a website or application that users interact with. It is a crucial aspect of web development, as it plays a key role in the user experience and usability of a website or application.

Front-end design involves creating the layout, look, and feel of a website or application, as well as the navigation and interaction elements. It typically involves creating HTML, CSS, and JavaScript code to define the structure and style of the user interface, as well as any interactive elements such as buttons, forms, and menus.

When designing a front-end, it is important to consider the usability and user-friendliness of the interface. The design should be simple, easy to understand, and intuitive for users. This can be achieved through careful planning, user testing, and the use of design principles such as simplicity, consistency, and feedback.

Overall, front-end design plays a crucial role in the success of a website or application, and it is important to invest time and effort in creating a well-designed and user-friendly interface.

List	Description
Home Page	In home, customer can find out all shopping complex of the website.
Cart	In this feature, customer can add his/her closable product
Login	In this feature, customer can login his/her own account
Shipping Address	In this feature, customers have to fill up his/her shipping address

Profile	In this feature, customer can edit his/her own profile
Payment	In this feature. Customer can pay his/her total amount

4.3 Back End Design

Back-end design for E-Mart includes the technical requirements and functionality of the server-side of the platform. This includes the architecture of the back-end, the design and structure of the database, security measures, and application programming interfaces (APIs), scalability, performance optimization, and integration with other systems such as payment gateways, inventory management, and shipping. The back-end design is responsible for the smooth and efficient functioning of the website or application, and plays a critical role in the overall user experience.
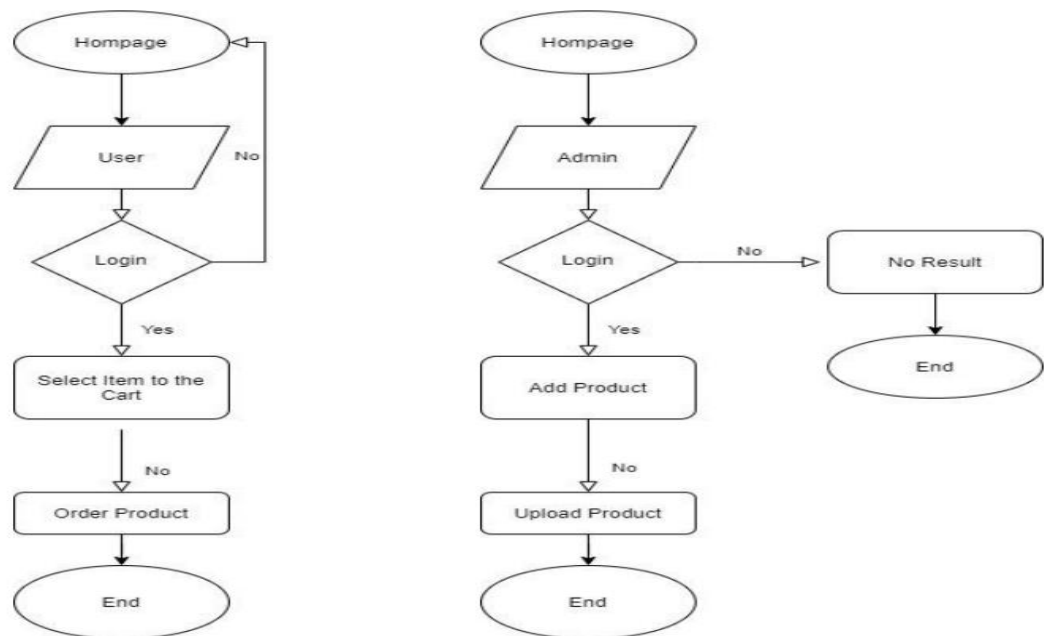
Fig 4.3.1: User And Admin Back-end Design

4.3.1 Admin Panel Interaction Design and UX

This is admin panel user interface design
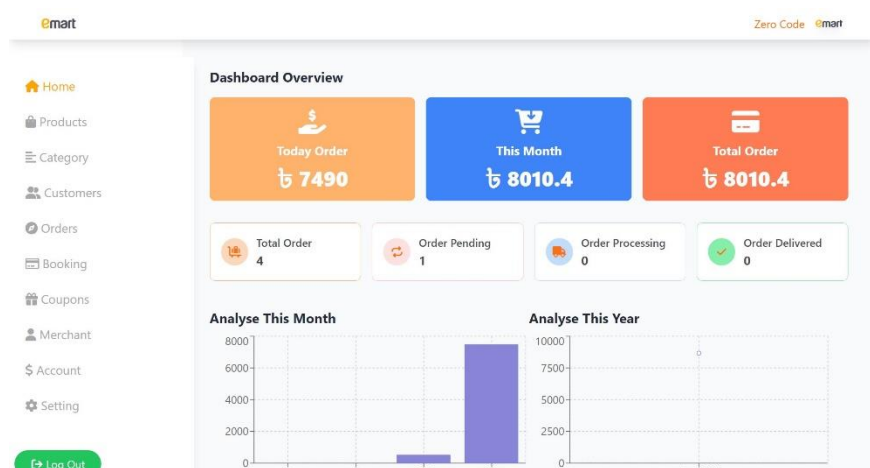
Fig 4.3.2: Admin Panel UI/UX Design

4.3.2 home page Interaction Design and UX

Client side home page design
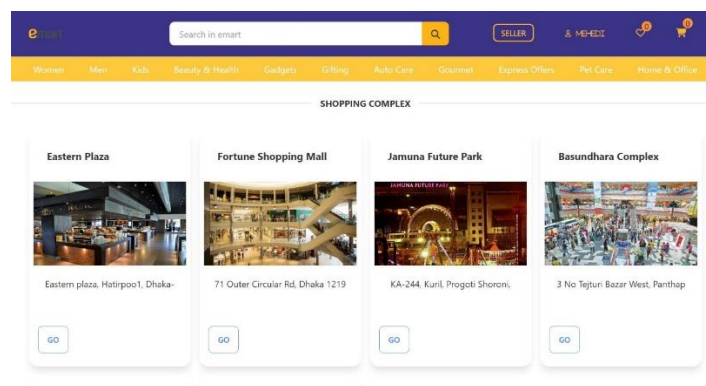
Fig 4.3.3: home page UI/UX Design

4.3.3 Product page Interaction Design and UX

Product details Page design
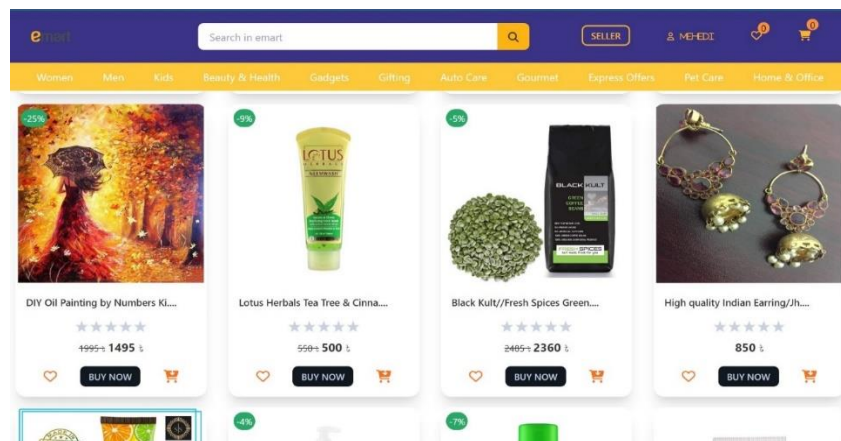
Fig 4.3.4: Product page UI/UX Design

4.4 Implementation Requirement

Implementation refers to the process of putting a plan or design into action and making it a reality. It involves taking the ideas and concepts that have been developed during the planning and design phase, and turning them into a functioning system or product.

In the context of software development, implementation involves writing code and building the various components of a system or application. This may include creating the user interface, connecting to databases or other data sources, implementing logic and functionality, and testing and debugging the system to ensure that it works as intended.

To implement a software application, you will typically need a range of tools and technologies, such as an operating system, an integrated development

environment (IDE), and various programming languages and frameworks. In your case, you mentioned using HTML, CSS, the Django framework (based on Python), and sqlite3 database to implement your application.

Overall, the implementation phase is an important step in the software development process, as it is where the ideas and concepts developed during the planning and design phase are turned into a working system or product.

To fulfil this project. I used HTML, CSS, Django Framework based on Node JS And mongo DB Database.

Software requirements for my application
- ➢ Operating System Windows (XP or Higher).
- ➢ IDE (Atom/Sublime/VS)

4.5 Database Design

MongoDB is a popular open-source NoSQL database that is designed for storing and processing large volumes of data in a flexible, JSON-like format called BSON. It is known for its scalability, performance, and flexibility, and is often used for building modern, data-driven applications.

In the context of e-commerce, MongoDB can be used to store and manage a wide range of data types, including product information, customer profiles, orders, and more. Its flexible data model and ability to scale horizontally make it well-suited for handling the large and complex datasets that are common in e-commerce applications.

To use MongoDB in an e-commerce application, you will need to install and set up a MongoDB server and client library. You can then connect to the database

from your application and use it to store and retrieve data as needed. There are also various tools and frameworks available that can make it easier to work with MongoDB in an e-commerce context, such as ORMs (Object-Relational Mappers) and e-commerce platforms that support MongoDB integration.

Overall, MongoDB can be a powerful and flexible tool for building and managing an e-commerce application, and can help you to store and process large volumes of data efficiently and effectively.
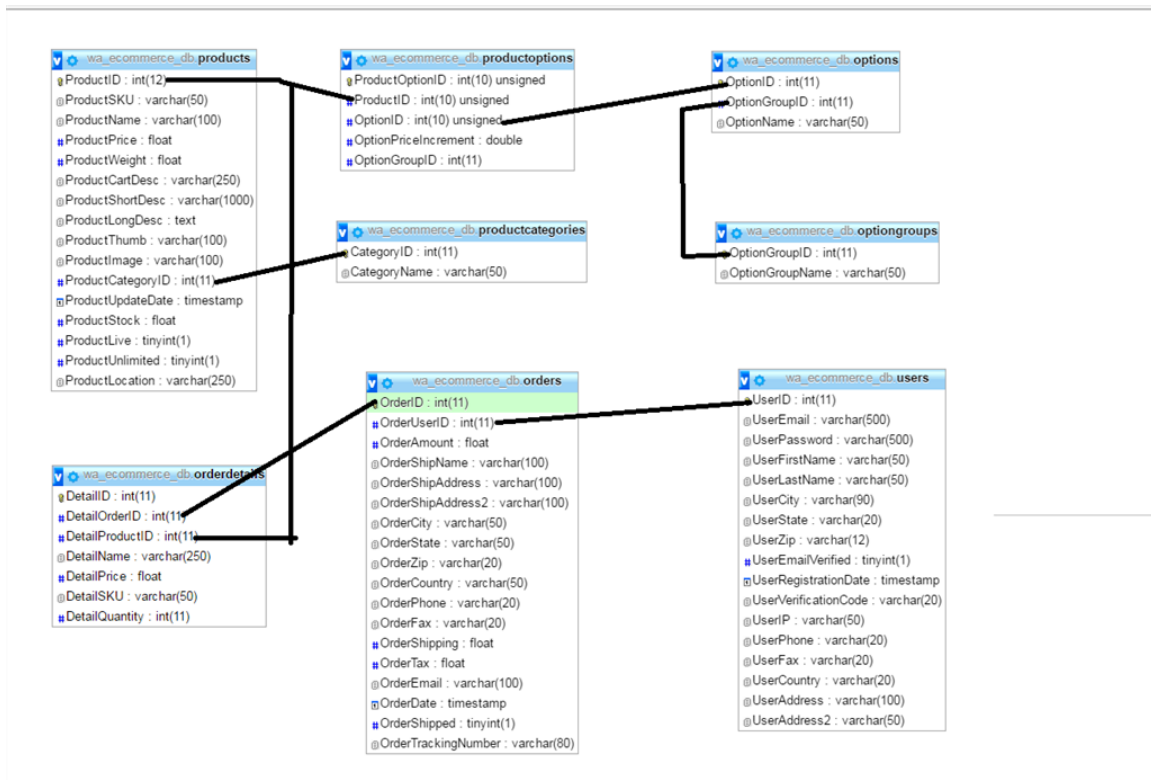
Figure 4.5.1: Database Design

4.6 Conclusion

In conclusion, the design specification is an essential document for any e-commerce project as it outlines the visual and functional elements of the website or application. The front-end design specification includes details such as layout,

navigation, color scheme, typography, images, and buttons, as well as information about the user experience. The back-end design specification outlines the technical requirements and functionality of the server-side of the platform, including the architecture, database design, security, APIs, scalability, and performance optimization. It's important that both the front-end and back-end design specifications are reviewed and approved by the project stakeholders before development begins to ensure that the end result meets their needs and expectations.

CHAPTER 5
IMPLEMENTING AND TESTING

5.1 Introduction

E-Mart implementation involves setting up the technical infrastructure and integrating various systems such as payment gateway, inventory management, and shipping to create a seamless shopping experience for customers. Testing is a crucial step in the implementation process as it helps identify and fix any bugs or issues before the site goes live. This can include functional testing to ensure that all features work as intended, usability testing to evaluate the user experience, and performance testing to measure the site's speed and scalability.

In addition to functional, usability, and performance testing, there are several other types of testing that may be used during e-commerce implementation:

Security testing: This ensures that the site is protected against potential security breaches, such as hacking or data theft.

Compliance testing: This checks that the site adheres to relevant laws and regulations, such as the Payment Card Industry Data Security Standard (PCI DSS) for online payments.

Integration testing: This verifies that all the different systems and components of the e-commerce platform work together correctly, such as the integration between the website and the inventory management system.

User acceptance testing (UAT): This is typically done by a group of end-users or stakeholders to evaluate the system's functionality and usability.

A/B testing: This is a method of comparing two versions of a web page or feature to see which performs better.

5.2 Implementation of Front-end design

The MERN stack (MongoDB, Express, React, and Node.js) can be used to build image recognition applications. One such application is a face recognition website, which allows users to upload images and have the system identify and classify the faces in the images.

To build a face recognition website using the MERN stack, you would typically use React for the front-end user interface, Node.js and Express for the back-end server and API, and MongoDB for storing and managing the data. You would also need to use an image recognition library or API to provide the actual face recognition functionality. There are a number of libraries and APIs available that can be used for this purpose, such as OpenCV, TensorFlow, or AWS Recognition.

Overall, the MERN stack is a powerful set of technologies that can be used to build a wide range of applications, including image recognition applications. Its flexibility and scalability make it well-suited for building complex and data-driven applications, and its popularity means that there is a wealth of resources and support available for developers.

5.3 Testing Implementation

Before user can use our application/services one needs to sign up in the system first, which is very obvious. He She'll be providing some basic information in the application to begin the signup process. If he is merchant then he has to sign in admin panel and if he is customer then he has to sign in client side. For example:
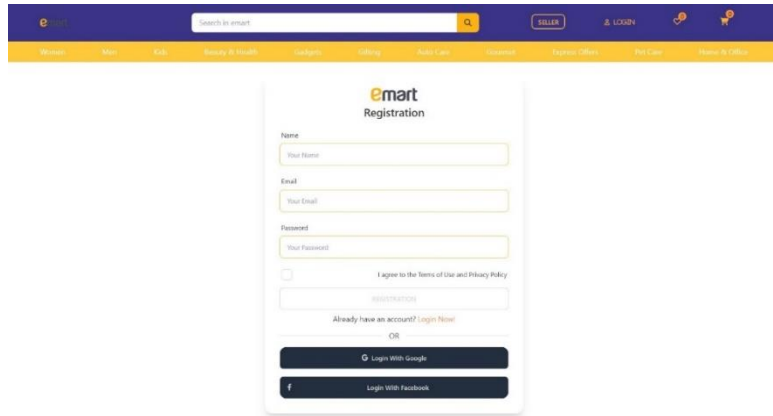
Figure 5.3.1: Client Side Signup and sign in Screen
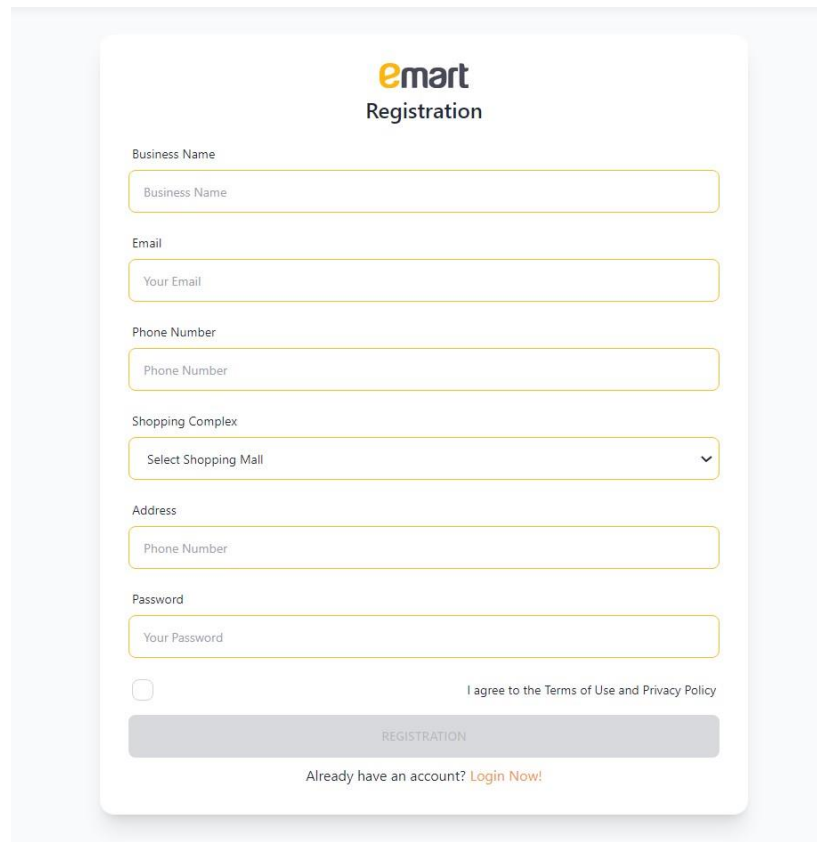
Figure 5.3.1: Admin Side Signup and sign in Screen

The information we collect are: Email (will be used for order or buy any product),

Password (At least 8 Characters, can't be common, can't be numeric only). Once those information are filled up and proceeded user will easily can buy are choose their need product.

5.3.3 CHECKOUT

After clicking buy now button processed to Checkout Button user can see this Checkout form and user have must field everything (Address, Zip code, City, Country) then have to save Address.

Figure 5.3.3: Checkout Page

After pressing "Make Payment" button user will get payment page of SSLCOMMERZ.
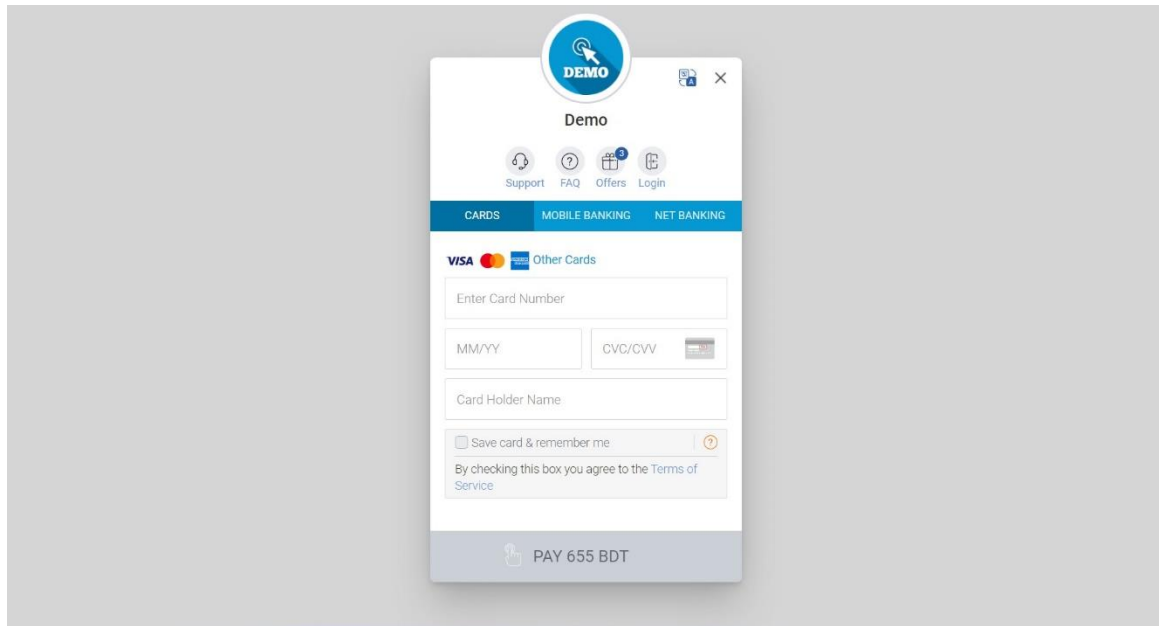
Figure 5.3.4: Payment Page

This is the SSLCOMMERZ payment page. Here use can choose their payment method. He or she can pay their total amount by using Bkash/Nagad/Rocket/Mastercard.
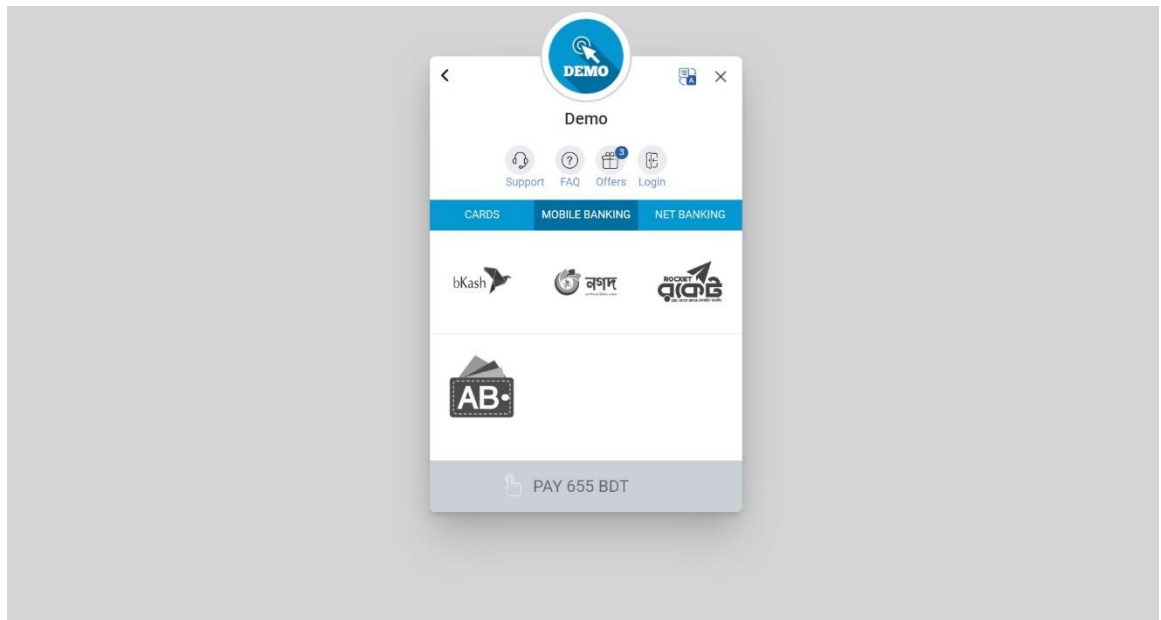
Figure 5.3.5: Payment Page (Bkash/Nagad/Rocket)

After choosing payment gateway user will get this form. This is the OTP page and user can see Invoice number, Total amount etc.

Figure 5.3.6: Payment Page (OTP)

After successful the payment user will redirected to the confirmation. And user go to product page or order page.
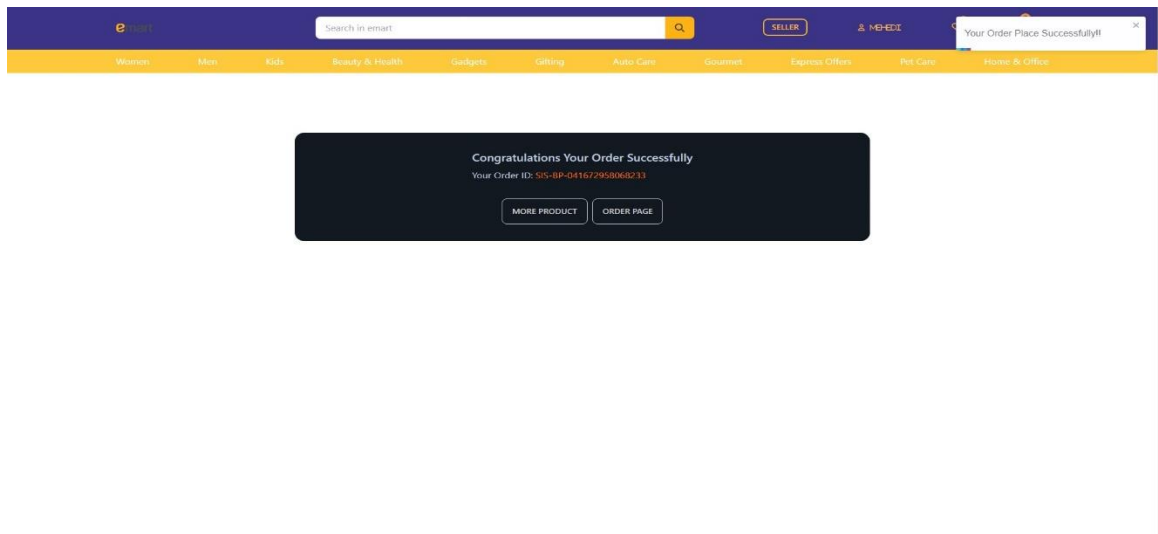
Figure 5.3.7: After Successful Payment.

5.4 Test Results and Reports

When we upload a product from admin panel then customer can see its details
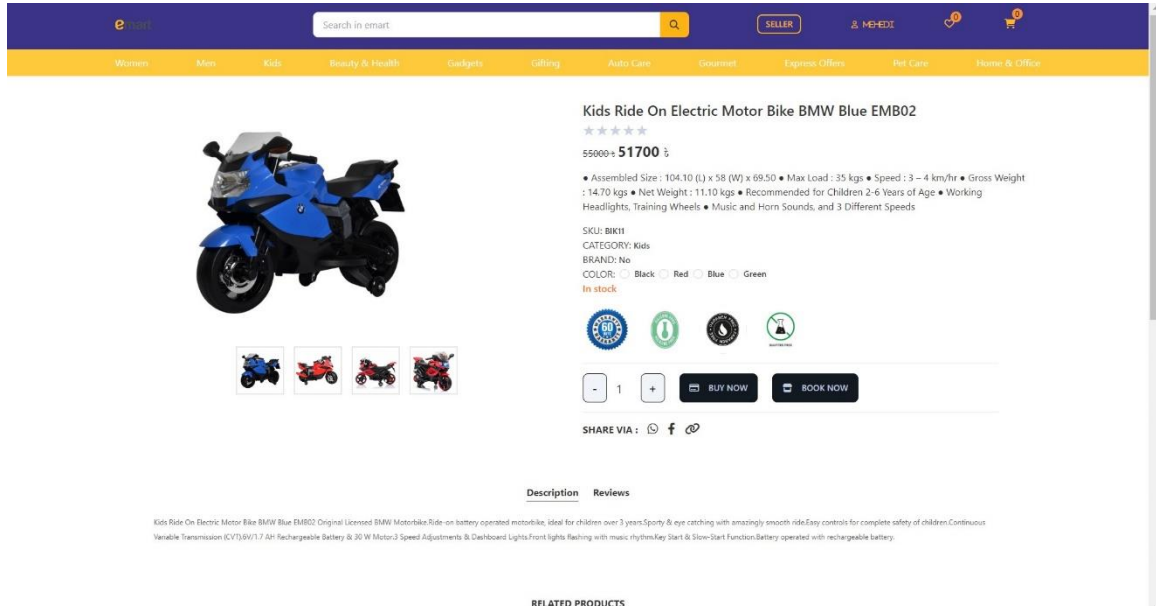
This product show the client site like this:

Now from here the customer can buy this product online and can make a booking so that he can visit the shop and buy it. After clicking on buy now he has to give some information. Such as

Clicking on order will complete his order and he will be provided with an order ID. Which may take later.
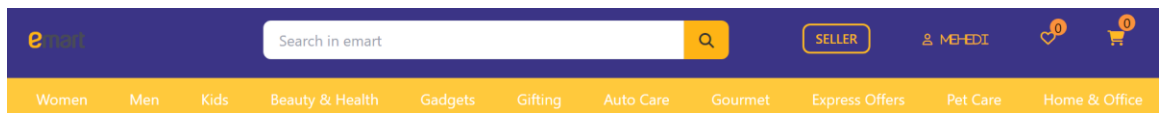
When he goes to the order page, he will see all the orders

5.5 Implementation of Requirement

MERN system is focused on JavaScript web development; thus, we will require MERN

Stack to complete it. It's a JS- application that we constructed with a JS field. Several

Prerequisites must be met for this project to be implemented. They are as follows:

We have used an environment for MERN that is VScode.

- Import and download MERN libraries.
- React, Node, Express libraries should be imported.
- Website can be viewed in all platforms.
- User can open two tabs in the browser for UI and database management.
- Laptop/Desktop computer with 4GB RAM and an idle CPU.

5.6 Conclusion

Implementing an e-commerce platform involves setting up the technical infrastructure and integrating various systems to create a seamless shopping experience for customers. Testing is a crucial step in the implementation process,

as it helps identify and fix any bugs or issues before the site goes live. Different types of testing such as functional, usability, performance, security, compliance, integration and user acceptance testing should be performed to ensure the platform is fully functional, user-friendly, and secure. Having a well-defined testing strategy that covers all the necessary aspects of the e-commerce platform is essential for the successful launch of an e-commerce website.

CHAPTER 6

IMPACT OF ENVIRONMENT AND SUSTAINABILITY

6.1 Introduction

The introduction of environmental and sustainability considerations in E-Mart can have a positive impact on both the environment and the companies implementing these practices. For example, implementing sustainable packaging and shipping methods can reduce waste and carbon emissions. Additionally, promoting and selling environmentally friendly products can increase consumer awareness and drive demand for sustainable goods. However, it also can increase the cost and complexity of doing business, and it will require e-commerce companies to consider the full lifecycle of their products and operations.

There are a number of ways that e-commerce companies can introduce environmental and sustainability considerations into their operations. Some examples include:

Implementing sustainable packaging: This can include using biodegradable or recycled materials for packaging, and reducing the amount of packaging used overall. Using sustainable shipping methods: This can include using electric vehicles for delivery, or working with shipping companies that have committed to reducing their carbon emissions.

Offering eco-friendly products: This can include selling products made from sustainable materials, or products that are designed to be more energy-efficient.

Optimizing logistics: This can include reducing the number of unnecessary shipping and transportation, and consolidating deliveries to reduce emissions.

Investing in renewable energy: This can include installing solar panels or wind turbines to power warehouses, or purchasing renewable energy certificates to offset the carbon emissions associated with electricity use.

6.2 SWOT Analysis

SWOT Analysis for e-Mart:

Strengths:

- ✓ E-Mart's combination of online and offline presence allows for convenience and accessibility for customers. Customers can shop online and pick up their purchases in-store, or vice versa. This allows for a seamless shopping experience and can attract customers who prefer the convenience of online shopping but also value the ability to physically see and touch products before purchasing.

- ✓ E-Mart offers a wide range of products available for purchase, from groceries to electronics to clothing and more. This wide product selection can attract a diverse customer base and increase the chances of customers finding what they are looking for.
- ✓ The online platform has the potential to increase e-Mart's sales by reaching a larger customer base and making it easier for customers to shop at any time and from any location.

- ✓ E-Mart's online presence also allows them to expand into new markets and reach customers they otherwise wouldn't be able to.

E-Mart has established a strong brand in the e-commerce market, which can help attract customers and increase customer loyalty. E-Mart offers a wide range of products, which can help attract customers who are looking for a specific item or who want to browse a variety of options.

E-Mart has a well-organized logistics and fulfillment system, which ensures that orders are processed and delivered promptly and efficiently.

Weaknesses:

- ✓ E-Mart's online platform is dependent on technology and internet connectivity. If the website or mobile application experiences technical difficulties or there are issues with internet connectivity, it can negatively impact the customer experience and sales.

- ✓ E-Mart may face increased competition from solely online retailers who may have lower overhead costs and can offer lower prices.

- ✓ Personal customer service may be lacking in the online platform as compared to in-store.

E-Mart's online-offline integration model may not have as many physical locations as other e-commerce retailers, which can limit its reach and accessibility for customers. E-Mart may rely on third-party logistics providers for the delivery of goods, which can lead to issues with timely delivery and customer satisfaction. Without a strong understanding of customer preferences and behavior, E-Mart may not be able to provide the same level of personalization as other e-commerce retailers.

Opportunities:

- ✓ E-Mart can expand into new markets and reach new customers through targeted online marketing and advertising. By targeting specific demographics or geographic regions, e-Mart can increase brand awareness and attract new customers.

- ✓ E-Mart can develop a mobile application for increased convenience for customers. A mobile application can make it easy for customers to shop on the go and can increase sales.

✓ E-Mart can increase sales by offering online-only deals or promotions.

✓ Threats:

✓ E-Mart faces increased competition from other online and offline retailers, which can make it difficult to attract and retain customers.

✓ With the shift towards online shopping, e-Mart may experience decreased sales in brick and mortar locations. This can be mitigated by offering unique in-store experiences or services that cannot be replicated online.

✓ Economic downturns may result in decreased consumer spending on non-essential items. This can negatively impact e-Mart's sales and profitability.

There are many opportunity Expanding into new markets and geographic regions Developing partnerships and collaborations with other businesses or organizations Offering new or additional products or services. Implementing new technologies to improve customer experience and enhance competitiveness .Leveraging data and analytics to personalize the shopping experience and improve marketing efforts. Building a strong mobile presence to reach a wider audience. Offering same-day or faster delivery options to attract more customers

Threats:

✓ Strong competition from other e-commerce companies

✓ Changes in consumer preferences and shopping habits

✓ Economic downturns and market fluctuations

✓ Regulations and laws related to e-commerce

✓ Cybersecurity threats and data breaches.

Threats for E-Mart can include competition from other e-commerce companies, changes in consumer behavior and preferences, government regulations and laws affecting e-commerce, and technological advancements that may make E-Mart's platform or offerings obsolete. Additionally, economic downturns can negatively

impact e-commerce sales, as well as potential security breaches or data privacy concerns that can damage the company's reputation and trust with customers.

6.3 Conclusion

Introducing environmental and sustainability considerations in E-Mart can have a positive impact on the environment and on the companies implementing these practices. By implementing sustainable packaging and shipping methods, promoting and selling eco-friendly products, optimizing logistics, and investing in renewable energy, e-commerce companies can reduce their environmental footprint and improve their reputation and brand image. However, it's important to note that these efforts can be complex and require significant investment, and companies must carefully evaluate the costs and benefits of different sustainability initiatives. Additionally, as the customer awareness and demand for sustainable goods increases, it will be important for e-commerce companies to stay up-to-date on the latest sustainability trends and regulations, in order to remain competitive in the market.

CHAPTER 7

CONCLUSION AND FUTURE WORK

7.1 Conclusion

E-Mart is an e-commerce platform that allows customers to purchase products online and offline. It is a multivendor platform, where multiple vendors can sell their products through the E-Mart website or application. The platform has a user-centered design, with a focus on providing a positive user experience and easy navigation. It offers a variety of products, including electronics, fashion, home goods, and more. E-Mart also has a strong logistics and fulfillment system in place, ensuring timely and efficient delivery of products to customers. The platform faces competition from other e-commerce companies and is also subject to various industry-specific threats such as changing consumer preferences and economic conditions. In order to maintain its competitive edge, E-Mart must continue to innovate and adapt to the changing market.

E-Mart typically includes features such as a product catalog, shopping cart, and checkout process. E-Mart can also include additional features such as customer accounts, order tracking, and product reviews. The platform can be accessed through a website or mobile application and can be integrated with various payment gateways, shipping providers, and inventory management systems. The back-end of E-Mart is designed to handle a high number of requests and users, and is optimized for performance and scalability. The front-end of E-Mart is designed to provide a seamless and user-friendly experience for customers.

E-Mart is a large retail chain that operates both physical stores and an e-commerce platform. The company offers a wide range of products, including groceries, electronics, clothing, and home goods. One of the reasons for E-Mart's success is its ability to provide customers with a convenient and easy shopping experience, both in-store and online. Additionally, E-Mart's competitive prices,

wide product selection, and strong logistics and fulfillment capabilities have helped it to attract and retain customers. E-Mart's e-commerce platform also provides customers with the flexibility to shop from anywhere and at any time, which is particularly important in the current digital age. In summary, E-Mart's convenience, competitive prices, wide product selection, and strong logistics and fulfillment capabilities are the main reasons for its success.

7.2 Further Suggested Work

We may want to have carried out some more work; we need to maintain with it.

- Convert it into Android Application.
- Give more security in future.
- Add more interesting features.
- Increased the accuracy of system performance.

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APPENDIX - A

Project Reflection:

The MERN stack (MongoDB, Express, React, and Node.js) is a popular stack for building web applications, including e-commerce systems. It is known for its flexibility, scalability, and performance, and can be used to build a wide range of applications.

Now I need to add the tracking system to E-Mart. This can be a challenging project, as it will require you to design and implement a system that is able to track attendance accurately and efficiently. You may need to consider factors such as how to capture attendance data, how to store and manage the data, and how to provide access to the data for different users.

Overall, building an attendance tracking system using the MERN stack will likely be a rewarding and challenging experience. It will give you the opportunity to apply your skills and knowledge in a real-world setting, and can help you to develop new skills and knowledge along the way.

APPENDIX - B

PLAGIARISM

http://dspace.daffodilvarsity.edu.bd:8080

<1% match (Internet from 04-May-2020)
http://dspace.daffodilvarsity.edu.bd:8080

<1% match (Internet from 25-Oct-2022)
http://dspace.daffodilvarsity.edu.bd:8080

<1% match (Internet from 20-Nov-2022)
http://dspace.daffodilvarsity.edu.bd:8080

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http://dspace.daffodilvarsity.edu.bd:8080

<1% match (Internet from 25-Oct-2022)
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<1% match (Internet from 20-Nov-2022)
http://dspace.daffodilvarsity.edu.bd:8080

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Submitted to Daffodil International University on 2022-08-26

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