

An online Grocery Shop Management System Using B2B Supply Chains
From Producers to Retailers

BY

Md:Abdur Rashed
ID: 201-15-3469

FINAL YEAR DESIGN PROJECT REPORT

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

Supervised By

Dr. Md. Ismail Jabiullah(MIJ)
Professor
Department of Computer Science and Engineering
Daffodil International University

Co-Supervised By
Mr. Md. Mahedi Hassan(MHS)

Lecturer
Department of Computer Science and Engineering
Daffodil International University



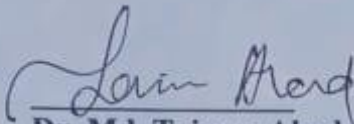
DAFFODIL INTERNATIONAL UNIVERSITY
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APPROVAL

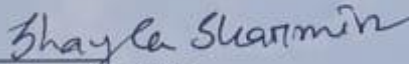
This Project titled “An online Grocery Shop Management System Using B2B Supply Chains From Producers to Retailers”, submitted by Md. Abdur Rashed to the Department of Computer Science and Engineering, Daffodil International University, has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of B.Sc. in Computer Science and Engineering and approved as to its style and contents. The presentation has been held on 15-07-2024.

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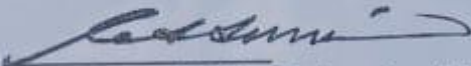
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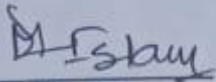
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Daffodil International University

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Mr. Mayen Uddin Mojumdar (MUM)
Sr. Lecturer
Department of CSE
Faculty of Science & Information Technology
Daffodil International University

Internal Examiner 2



Dr. Md. Manowarul Islam
Associate Professor
Department of Computer Science and Engineering
Jagannath University

External Examiner

DECLARATION

I hereby declare that this project has been done by me under the supervision of Dr. Md. Ismail Jabiullah(MIJ), Professor, Department of Computer Science and Engineering, Daffodil International University. We also declare that neither this project nor any part of this project has been submitted elsewhere for the award of any degree or diploma.

Supervised by:

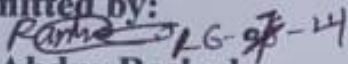


Dr. Md. Ismail Jabiullah(MIJ)
Professor
Department of CSE
Faculty of Science & Information Technology
Daffodil International University

Co-Supervised by:

Mr. Md. Mahedi Hassan(MHS)
Lecturer
Department of CSE
Faculty of Science & Information Technology
Daffodil International University

Submitted by:



Md. Abdur Rashed

ID: 201-15-3469
Department of CSE
Daffodil International University

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ABSTRACT

Online grocery shop management systems are growing day by day .Basically we focused B2B online grocery shop, integrated supply chain management systems. Bangladesh are suffering in Supply chain management systems because there's lots of price hacking that's reason we plan to reduce this B2B supply chain management systems integrated online grocery shop which is web based. There are several features make uses ReactJS, Tailwind CSS, Express.js, MongoDB, etc. Retailers can easily go to the categories option and can find out their desire specific product after cart product all of products add in dashboard .They can delete the product from cart option after this they can easily pay thorough payment gateway systems . On the other hand Admin can management all of this website information such as add product, manage item, update product and manage the all of management systems of online grocery shop.

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CHAPTER 1

INTRODUCTION

1.1 Overview

Onsite retail grocery shops are increasing day by day in Bangladesh. On the other hand, e-commerce is rapidly growing. It is still an early stage and growing smoothly, and many challenges exist [10]. Local small and medium retail shops rapidly contribute to our economy [2]. Currently, there are no digital tools or e-commerce for buying products from this, and we need e-commerce for local goods that provide groceries and vegetables from farmers and companies to retailers. Because there is a lot of price hacking across supply chain layers, 20% of the fault is on the authorities, 40% is on the suppliers, and 40% is on the wholesalers for the price hacking of consumer goods [3]. Besides this, many supermarkets exist in Bangladesh. They follow operational processes, are systematically organized, and provide quality products using information systems, but they face security problems.

1.2 Background and Present State

Many small supermarkets do not use information systems because traditional management is low in investing and using information technology [5]. E-commerce integrated online payment is better than the traditional approach, so e-payment uses all of this e-commerce [6]. E-commerce is multiplying the youngest men they businesses online, and that's a benefit to sell well than previous sales. Because of online marketing in 2013, 3G was introduced, making it easy to build online systems for retailers' business [9]. Worldwide, e-commerce is rapidly growing. It is better than in past times, and international super shop retailers are doing well separately. They are very passionate about their work, and their strategies are very impressive. They provide healthy diet products and strategic ways to like customers [15]. Currently, various grocery retailers' shops are interested in selling in e-commerce. Also, supermarkets use strategic ways to sell to customers interested in buying onsite. On the other hand, that is the reason many jobs are included in our industry; basically, b2b business marketing is growing marketing

in our Asia Pacific region [13]. B2B marketing focuses only on another business rather than the customer and specific products related to nature and mind. There are lots of opportunities in the B2B market. Places there are many kinds of situations where no one works. For example, many price hacks exist in the B2B and B2C markets. In the last stage, many authorities are included in price hacks. So it would be an efficiency platform not included in the price hack.

1.3 Problem Statement

E-commerce is proliferating and organized way, and it is selling better than in the past, but the main problem is that grocery retailers or e-commerce shop owners cannot product source the right way because there are lots of layers to saucing from the company and also vegetables and fruits from farmers that's why product price hacking across supply chain it's a big problem in Bangladesh also there's not a supply chain management system efficiency way to source from company and farmer and to sells retailers. There are lots of syndicate Exits in Bangladesh. Many kinds of wholesalers are included in syndicates. That's why price hacking probability is increasing day by day. On the other hand, its product retailers have to sell high prices to consumers, which is why middle-class and lower-middle-class families are not capable of buying from retailers, which impacts the economic system. E-commerce b2c is a smooth and organized way to sell to consumers, but b2b is the main problem of product pricing hacking because of the many layers included in b2b businesses in Bangladesh.

1.4 Objectives

Online grocery shop management (b2b one way, not the many-layer system) can reduce price hacking and also provide good products because of its work from companies and farmers to retailers for grocery products and also vegetables and fruits. That's why we plan a supply chain management system whole in Bangladesh, a delivery system from company to retailer with low prices that do not exist lots of layers without syndicate, and it helps to systematically price hacking systems also good pricing and best product supply its will increase empowerment to retailers also many people who are included job this sector on the other hand customer satisfaction can increase rapidly and they can also

low price buy product from ecommerce(b2c) or retailers .Mostly, we can reduce the price hacking system by delivering efficiency.

1.5 Scope and Limitations

This project focuses on a supply chain management system and e-commerce that is totally online. It focuses on good quality products, creating new jobs, and providing the best service. On the other hand, e-payment features are also included there, and an easily distributed system can smoothly grow the market. It will be an efficient platform for retailers who are interested in buying from the b2b e-commerce platform, which will contribute to our growing economic country. All the grocery items, vegetables, and fruits will exist there.

1.6 Report Organization

E-commerce is growing smoothly in Bangladesh, but it's totally a B2C platform. On the other hand, B2B businesses have lost a layer system to get products for retailers .B2C e-commerce platforms are increasing their sales, but B2B businesses are not growing in online platforms. Price hacking is the most common issue in B2B services because of the loss of layers. That's why one layer can integrate companies and retailers, which is our b2b online grocery shop and supply chain distributed system. Firstly, we will create many features in our online grocery shop: categorical items, search systems, a wholesale and low pricing section, an e-payment system, and so on. First, we collect groceries, vegetables, and fruits from companies and farmers and distribute them to our district warehouse, where we will collect all the products. We will order through apps from retailers and near district warehouses salesman packaging to distribute to retailers. We will follow marketing strategies offline rather than online because most retailers cannot spend time on social media, but we will do digital marketing through social media and television. First, we plan to build a pilot model, then we will progress our systems, and then we will collect investors for a growing e-commerce platform. Basically, all the processes in online b2b e-commerce are for retailers who can easily source products from our b2b e-commerce.

1.7 Summary

Online grocery is a common issue in Bangladesh, and it is growing, but B2B online grocery or e-commerce platforms are not growing in Bangladesh. That's why lots of layers exist there, and retailers cannot product source form directly. They have to source lots of layers of wholesale markets that have a lot of syndicates. Our main goal is to reduce this and distribute good products through an e-commerce platform, and price hacking can be reduced through one single-layer supply chain management system. It is beneficial to contribute to our economic empowerment. On the other hand, we will develop this e-payment system and cash-on-delivery system. There will be many features and categorical systems so retailers can easily find the exact products needed, and wholesale prices can smoothly reduce the price-hacking distribution system.

CHAPTER 2

LITERATURE REVIEW

2.1 Overview

Online shopping is a common issue in Bangladesh. Basically, b2C e-commerce's are growing. On the other hand, b2b e-commerce is not growing in Bangladesh, and b2c e-commerce strategies, online e-payment, and marketing models are really good. In this chapter, we focus on an online grocery e-commerce shop, which is b2b e-commerce. We will improve in this sector. Existing work analysis and aim to contribute to this sector E-commerce is growing, and supply chain management systems also contribute to this sector. Customer product sources can easily be accessed from e-commerce (b2c). On the other hand, retailers cannot directly source from company b2b e-commerce can help retailers and supply chain management systems handle and optimize all problems. On the other hand, we will contribute to and optimize the online platform and recent data saving in the future. We will use data to contribute to growth to sell all about systematic ways to analyze existing work and investigate research gaps in b2b e-commerce and integrated b2c systemically way and approach in b2b online grocery shop.

2.2 Related Works

Bangladesh retailers have to suffer many problems. They cannot produce sources directly, or one way, they have to produce sources from various sources that come from lots of layers on the other. That's why the price hacking problem rapidly increases day by day and causes supply chain problems. That's why we plan to reduce this problem and focus on online grocery shops (b2b), which is one layer between the company and the farmer. In Bangladesh, Small and medium businesses (SMBs) are growing rapidly. Retailers are contributing to our economy. On the other hand, the major problem is the lack of technologies and tools, and they are facing many problems. Redwanul Islam et

al.[2] that's why they are focusing on b2c types of e-commerce, which are provided online to consumers, and their aim is to connect retailers to consumers in one platform, which is e-commerce. Ayesha A. Asha et al.[3] are focused on price hikes in Bangladesh. Many layers of supply chain systems exist in Bangladesh, which is why retailers have to source products from many layers. According to their primary data, suppliers are 40% wholesalers, 40% authority, and 20% are included in price hacking corruption, which affects our economy. Md Thohidul Karim et al.[10] are focused on e-commerce development in Bangladesh, highlighting challenges in the e-commerce platform and present characteristics of e-commerce, and suggesting to the marketing sector to grow online stores. On the other hand, consumers' experiences are displayed in their work. Ahmed Ishtiaque et al.[9] are focused on transforming e-commerce in Bangladesh. When the 3g Internet was introduced in Bangladesh, the Internet rapidly increased. Consumers could easily buy products from e-commerce platforms, and sales rapidly increased. On the other hand, an improved payment system, which is the best security system in e-commerce, also provides onsite delivery within a period of time. Omar Faruque et al.[7] are focused on the grocery business. Of these challenges and opportunities in Rangpur City corporation, most of the shop businesses have sales and profits below 10 percent. On the other hand, their shortage of capital is the issue. They cannot grow their business, and it suggested marketing and quality products provided. Then, the market will be growth, and low-interest bank credit can contribute to their business.[4] Customer satisfaction is the most important factor in growing and contributing to e-commerce platforms. This paper invested in the correlation between customer satisfaction and website attributes. Customer loyalty and website qualities connected to e-commerce, on the other hand, provide improvement and customization using data from customer satisfaction and suggestions in this sector invested by MAHMOOD. Alzoubi Al et al.[6] are focused on e-payment systems and their contribution to the e-commerce sector. In banking industries, sales growth is contributed by e-payment systems. Electric payment systems and facilities are rapidly growing in the e-commerce sector and online payments. Also, biometric authentication systems secure

all user transactions, and their main advantage is high security. The most pre-parable system influences the users. Mohammad Hossain et al.[8] are focused on online group buying (OGB) in the agricultural business. A few researchers invested in orb as a commodity for agricultural businesses. They reported a unique orb model of how it can working developing countries. Md. Rubel et al.[5] are explored operational and strategic processes and information systems that work developed super shops, especially according to consumers' needs. They are conducted in a systematic way and organized super shops in Bangladesh. On the other hand, small supermarkets face many challenges because information systems are more costly than traditional ways. And they also described how Meena Bazaar works with information system and their strategic way of implementing an Electronic Point of Scale (EPOS).Md Al-Amin et al.[1] are investigating what influences' are exits to customer buy products from ecommerce and what's the factor to customer buying product also users age, salary and identify disadvantages of sites according to customers sentiments analysis and use this analysis for marketing which is good for growth level also focused delivery services, saving times, removing hassle and waste time to buying product form home and also reveals some problem slower delivery and so on. Gil-Saura et al.[11] are contributed to customer loyalty in b2b and good communication between retailers and suppliers. They explored brand, equity benefits growth, some factors contributing to growing relations with businesses and consumers affecting the brand, communication with b2b, and trusted relationships. The research considered B2B factors in economics and the benefit of psychological relationships. Kumar Saha[13] explored B2B marketing's impact on the Asia region .B2B marketing is totally different from B2C marketing. In the B2B market, growth impacts marketing. Its marketing is based on psychological, geographic, and so on. The Internet has commonly contributed to growing B2B marketing strategies and B2B transactions. Dhruv Grewa et al. [17] are introduced to a framework that contributes to the future of in-store technology. Developed a Typology of innovative technologies that are based on social presence and consumer involvement to contribute to increased sales. Kapoor et al .[19] are focused and invested in how mobile apps influence

consumers to buy products. Also, they focused on some attributes such as visuals, navigation, collaboration design, information, and so on. It is attributed to consumers buying products and payments online or on delivery.

2.3 Comparison between existing works

SL No	Author Name	Used Methods	Data
12.	Vakulenko. et al.[12]	Quantitative Method	252 responses in the analysis
14.	Kumar. et al.[14]	Triangulation approach	
15.	Martinez. et al.[15]	Thematic analysis of interview	Interviews with twenty supermarket retailers
16.	Shenle Pan. et al.[16]	VRP Model	Electricity consumption trace dataset
18.	Kamran-Disfan. et al.[18]	structural equation modeling	data from 505 Spanish shoppers
20.	SULAIMAN. et al.[20]		Secondary sources to collect data

2.4 Open Issues

E-commerce is growing in Bangladesh. When the 3G internet was available, consumers could easily find the exact product that they needed. From e-commerce, we are growing

rapidly in a strategic way, but it's totally B2C. B2B e-commerce is not growing in Bangladesh. That's why lots of layers exist here, and price hacking is the common issue, and price hacking increases day by day. It's a main problem and not a good supply chain; the e-payment system in Bangladesh's price hacking is so much on grocery products and vegetables. There are a lot of systems that are systematically running from retailers to consumers, and all are the e-payment system, good delivery, and easy-to-buy products from b2c e-commerce. That's why b2c ecommerce contributes smoothly to economics. On the other hand, b2b e-commerce, basically grocery and vegetable e-commerce did not grow in Bangladesh. Also, many price hacking problems exist in the b2b sector.

2.5 Summary

B2C e-commerce is a strategic way to serve consumers. Its supply chain management systems and e-payment system contributed to our banking sales growth, customer satisfaction, and e-commerce attributes are mostly correlated to growth in this sector; its totally online system and its biometric systems can also provide the best-authorized system, and quality data security system exists that's data uses for marketing to growth and sales increase that's why the consumer can easily without any hassle then can buy the product from e-commerce any time it's all about b2c e-commerce on the other hand retailers couldn't easily product form company lots of layer system exist that's why many price hacking system exist in Bangladesh. Our main goal is to reduce this and develop an online e-commerce grocery shop(b2b) where retailers can easily find their products and, without any hassle, they can easily buy products from a b2b grocery e-commerce shop.

CHAPTER 3

METHODOLOGY

3.1 Overview

An online grocery shop will be created as an e-commerce web application. Firstly, we will build connections between retailers and producers so they can communicate easily through an e-commerce web app, and retailers can easily buy from b2b online grocery e-commerce also will be completed by SDLC methodology and using b2b supply chain management systems also built by Mern stack technology (MongoDB, Express, React, Node). Retailers can easily find categorical items, and a products cart system is available with a real-time view of users on their screen. Also, they can manage their product cart system and then easily order the products they need. An online payment system will also be available, and the process will be easy to find direct products from companies and farmers. The supply chain management system will make it easier for retailers to use home-devilry systems.

3.2 Proposed Methodology/System Design

Online grocery shop management systems are increasing day by day, but they are totally a B2C platform. We want to establish Bangladesh, a B2B online grocery shop that will reduce price hacking. Firstly, we will follow the SDLC methodology to complete the online grocery management system. Mern stack technology (MongoDB, Express, React, Node) will be used to build an online grocery management system, and a b2b supply chain management system can provide the whole plan and collect goods from producers to retailers and reduce price hacking in Bangladesh.

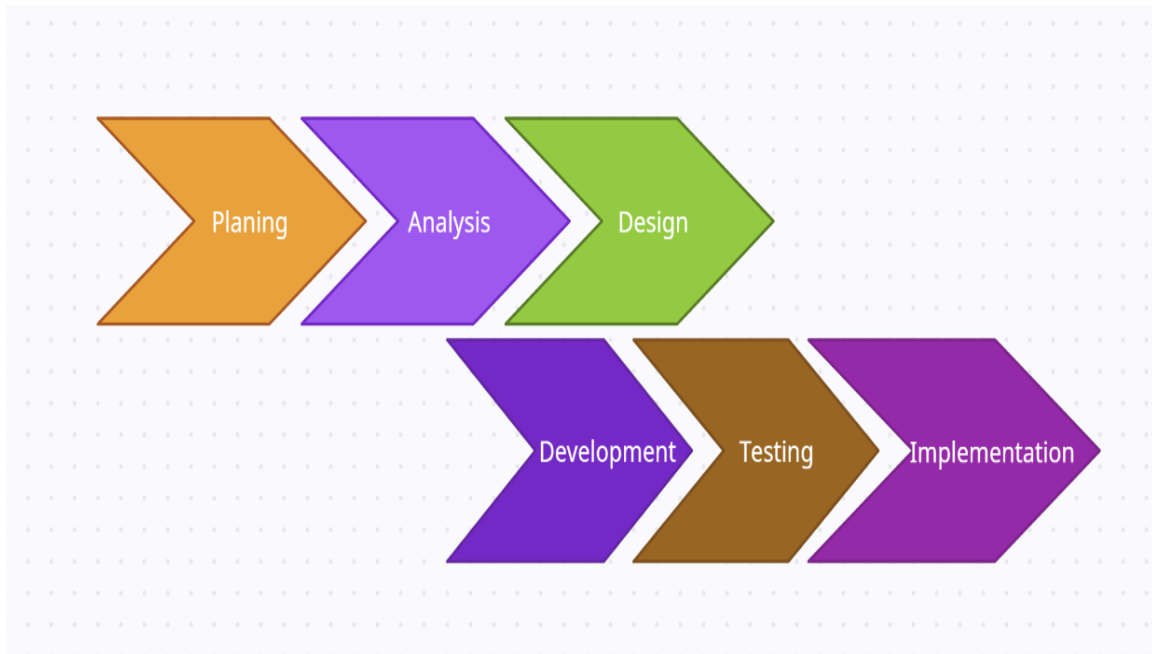


Figure 3.2.1: The SDLC.

Planning: This Phase defines user requirements needed at this moment, basically functional and nonfunctional requirements also features

Analysis: This Phase analyzes all the requirements, and all analysis reports existing diagram, which helps me develop this system

Design: According to user requirements, this phase will be designs the user interface

Development: The development part will be on two sides, the front end and the back part. Frontend part will be developed by (HTML, Tailwind CSS, Javascript, and React JS) and Backend part will be developed by (MongoDB, Nodejs, and Javascript)

Testing: Ensuring the systems if any bug or error, then it phase the error, and all the requirement tests will be done in this phase

Implementation: This phase delivers the website for the user, and the supply chain management system can also implement the whole process.

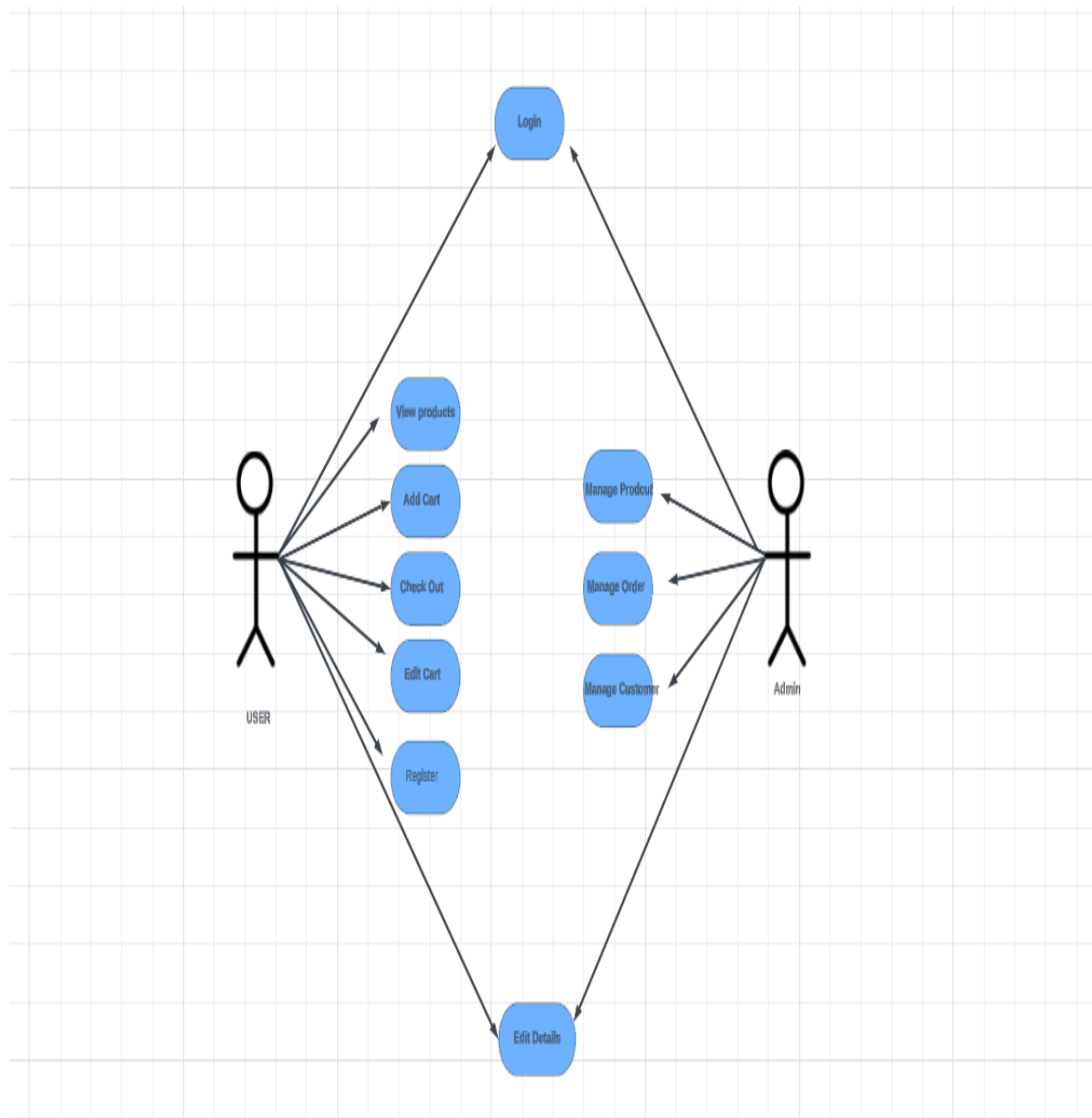


Figure 3.2.2: Use Case Diagram

The systems have two types of users: admin and customer. Customer means retailers who shop for various products from online grocery. Retailers can register. Their information must be sent to this form to be added to registration. After logging in, they can search for and view needed products. They can easily add a cart and display it on the dashboard, and they can edit this. Admin also can log in and products add, manage products, and manage customers. All are admin responsibilities.

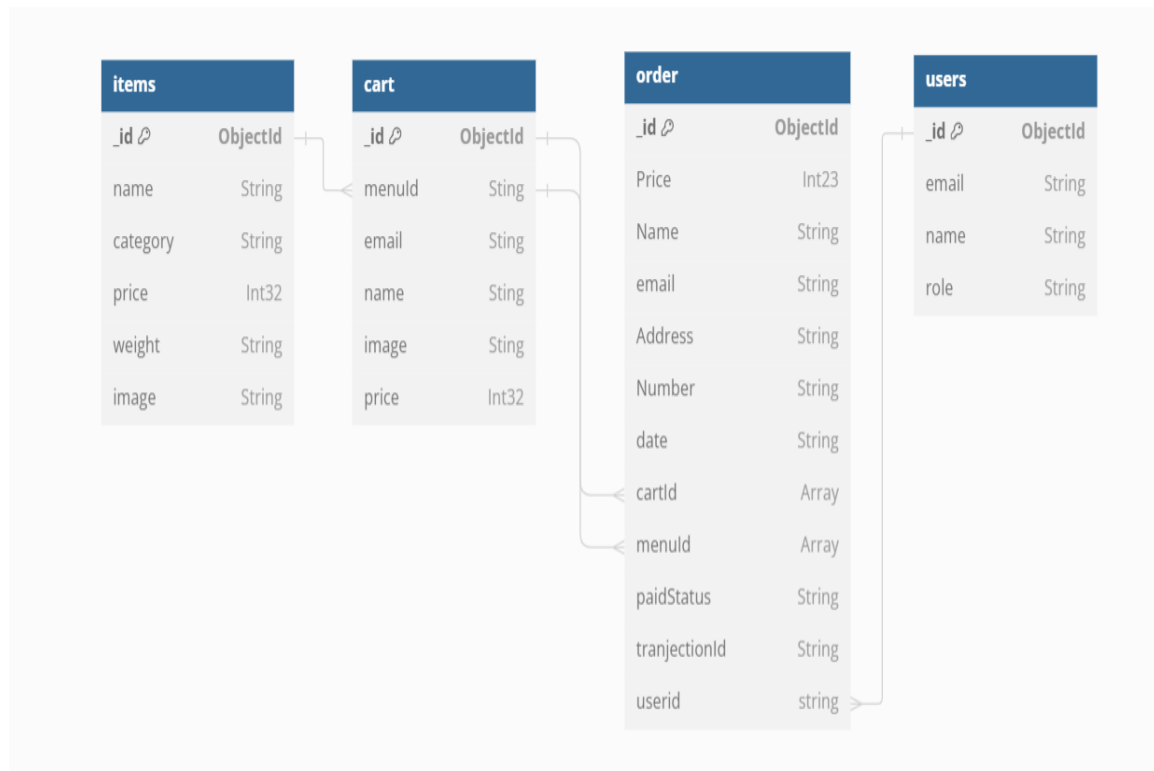


Figure 3.2.3: Logical Diagram

Fig. 3. This is the logical Diagram, which is also called ER Diagram. It especially defines the information of systems.

1. Items: There are details of imts information with a unique items_id, which identifies all the Items separately
2. Order: There are specific IDs that identify the order. Also, another information was added, which is user information
3. Users: This section focuses on the users information which data found from registration
4. Cart : This section about information of cart when user choose specific product that time store data.

On the other hand items provide information for user interfaces Category items There are 5 categories product sell to retailers also product information can see the user interface option. They can easily buy product form this after cart they can edit this when needed

added new items then payment option available for pay we integrated sslecommerce for payment systems .

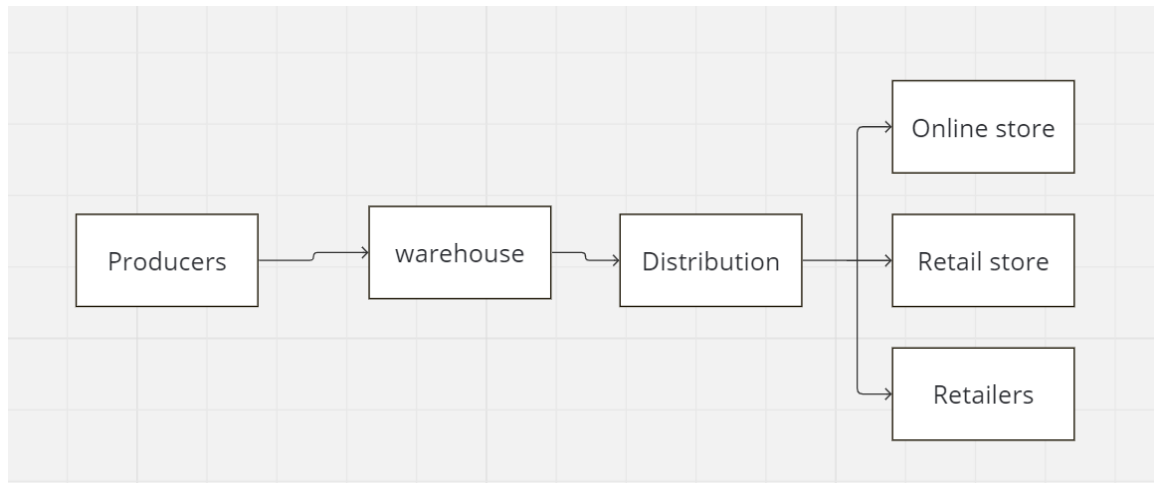


Figure 3.2.4: Supply Chain Diagram

We will implement the whole idea by B2B supply chain management systems. Firstly, we collect products from producers or where products are manufactured every time we Collect the product to bring product to the warehouse. When we get orders from our online grocery platform, our management department calls the warehouse manager, and the delivery man delivers the product to the right places, which is to retailers or retail stores.

3.3 Hardware and software requirement

A. Equipment and Tools:

- Development and Testing Servers
- High-performance Computers for Development Team Design Software (Adobe Creative Suite)
- Collaboration Tools (Slack)
- Version Control System (Git)

B. Software and Technologies:

- Front-End Technologies (HTML, Tailwind CSS, JavaScript, React,)
- Back-End Technologies (mongoose)
- Database Management System (MongoDB)
- Server Hosting (Cloud)

- Payment Gateway Integration (Ssl Ecommerce)

3.4 Project Management and Financial Analysis

Project Management

- **Project Objectives:**
 - A. To develop a ecommerce website which is b2b online grocery shop for retailers
 - B. To give an one solution of grocery products
 - C. To provide a platform retailers can be easily purchase any product from online grocery shop we will connect between producer and retailers through one platform
- **Project Timeline:**
 - A. Phase 1: Project Planning and Research (2-6 weeks)
 - B. Phase 2: Design and Prototyping (2-4 weeks)
 - C. Phase 3: Front-End Development (7-8 weeks)
 - D. Phase 4: Back-End Development (7-8 weeks)
 - E. Phase 5: Testing (4-6 weeks)
 - F. Phase 6: Deployment (2-4 weeks)
 - G. Phase 7: Post-Launch and Marketing (Ongoing)
- **Resource Planning:**
 - A. Data and Content:**
 - Product Data: Provide by producers
 - Product Images: Provided by producers
 - User Documentation: Prepared by me
 - B. Training and Skill Development:**
 - Specially I trained about development part to develop a online grocery shop
 - Development team are skillful for the requisite knowledge and expertise in online grocery shop development , security and database management

- **Risk Management:**

SWOT analysis entails evaluating the strengths, weaknesses, opportunities, and threats of a project. Here is a SWOT analysis for a business-to-business online grocery shop targeting retailers.



Figure 3.4.1: SWOT Analysis

- **Communication Plan:**

A. Stakeholder Meetings:

Purpose: All the time we informed to the stockholders about the process of requirement gathering for project

Participants: Investor and member of the team

Frequency: specified one day per week in the project plan.

B. Change Control Meetings:

Purpose: First I changed the title name when we meet our supervisor also change the supply chain model

Participants: Supervisor, and member of the team.

Frequency: all the time we change when we needed the change of any requirement for project.

Financial Analysis

Below the estimates cost for B2B online grocery shop

SN	Components	Estimated Cost (BDT)
01.	Domain and Hosting	3000-5000
03.	Visiting Stakeholders	500-1000
06.	Documentation and Report Writing	500-1000
05.	Miscellaneous (e.g., licenses, tools)	3000-4000
06.	Contingency (10% of total)	1000-2000
Total Estimated Cost		8000-13000

Table 3.4.1: Estimated Cost for b2b online grocery shop

3.4 Summary

B2C e-commerce is a strategic way to serve consumers. Its supply chain management systems and e-payment system contributed to our banking sales growth, customer satisfaction, and e-commerce attributes are mostly correlated to growth in this sector; its totally online system and its biometric systems can also provide the best-authorized system, and quality data security system exists that's data uses for marketing to growth and sales increase that's why the consumer can easily without any hassle then can buy the product from e-commerce any time it's all about b2c e-commerce on the other hand retailers couldn't easily product form company lots of layer system exist that's why many price hacking system exist in Bangladesh. Our main goal is to reduce this and develop an online e-commerce grocery shop(b2b) where retailers can easily find their products and, without any hassle, they can easily buy products from a b2b grocery e-commerce shop.

CHAPTER 4

IMPLEMENTATION

4.1 Overview

Implementation Data base to server side. Server side controls the systems some queries we pass data server side to database. All of the queries maintain in database first data collect from client side from user then its data passing thorough API to sever side then server side execute the data and pass those data to database Grocery shop management system backend design covered by JavaScript language also express.js and database used in Mongoddb ,NPM package also uses MVC framework for interactive all the component connection between user and sever .First user can request for view and that time server can response for view and the request data response from data base

4.2 Prototype Design

The front-end design of “online grocery shop management systems“focusing of the online grocery features, navigation, banner and color sense of any website. This navigation are really smoothly also its features. It’s really smooth we management in dashboard part whole the customer order and order and sells analysis will be exist here and its design really amazing and there 5 banner we can change the banner image instantly because of its make by swapping. Online Grocery Shop management systems frontend design UI and UX all the component user friendly also all the component needed specific design also added button and navigation design for user which is really user friendly and interactive all component on the other hand live data showing in dashboard which is also user friendly design . Home page, categories items are responsible on the other cart system are really interactive design used in UI and UX also integrated payment gateway systems

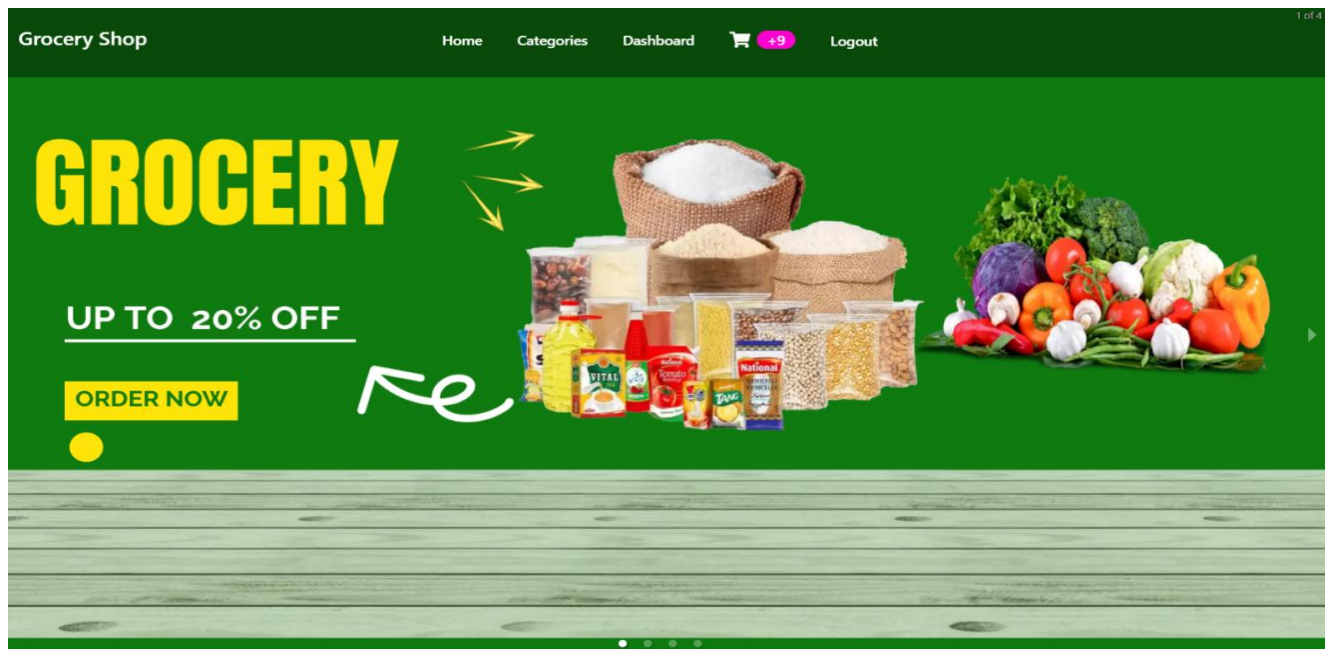


Figure 4.2.1: Landing Page Design.

There is home page of online grocery shop here are some navbar home, categories , dashboard and logout.

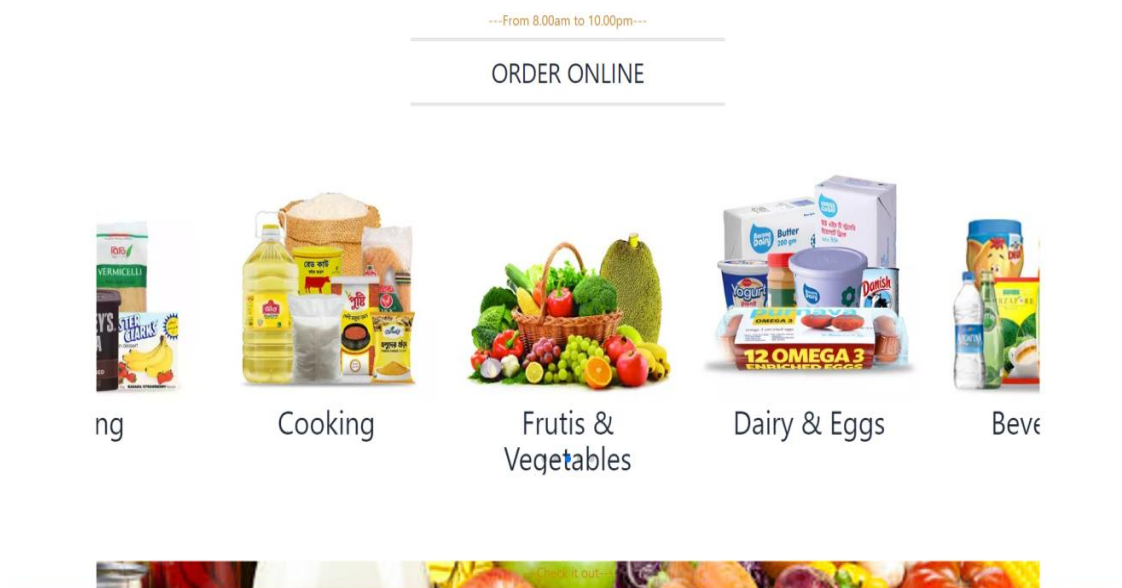


Figure 4.2.2: Categories

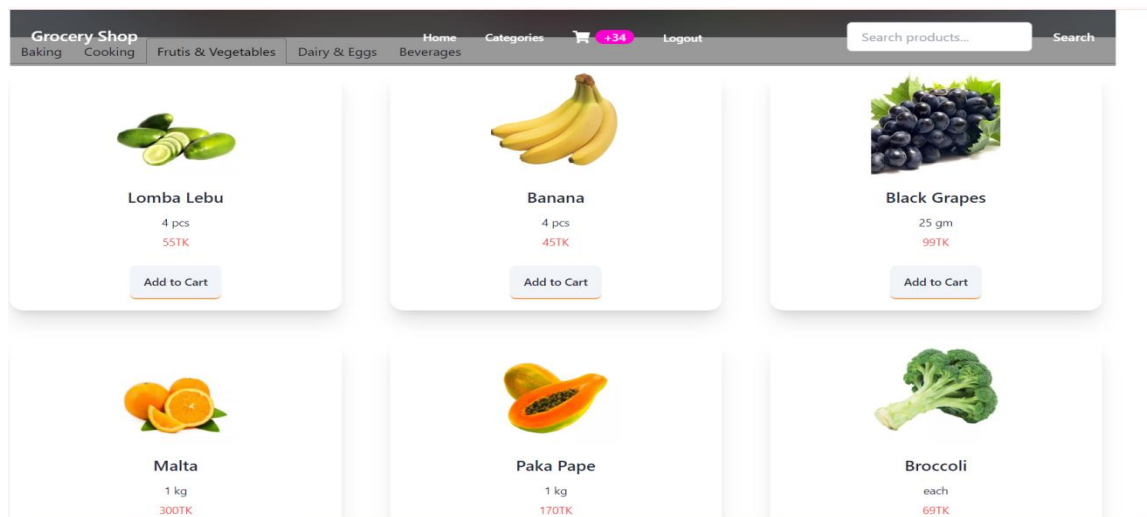


Figure 4.2.3: Items Cart

Here are some items cart customer can easily find out those product which their needed. Can buy easily when their needed cart product all the cart will be show in dashboard cart.

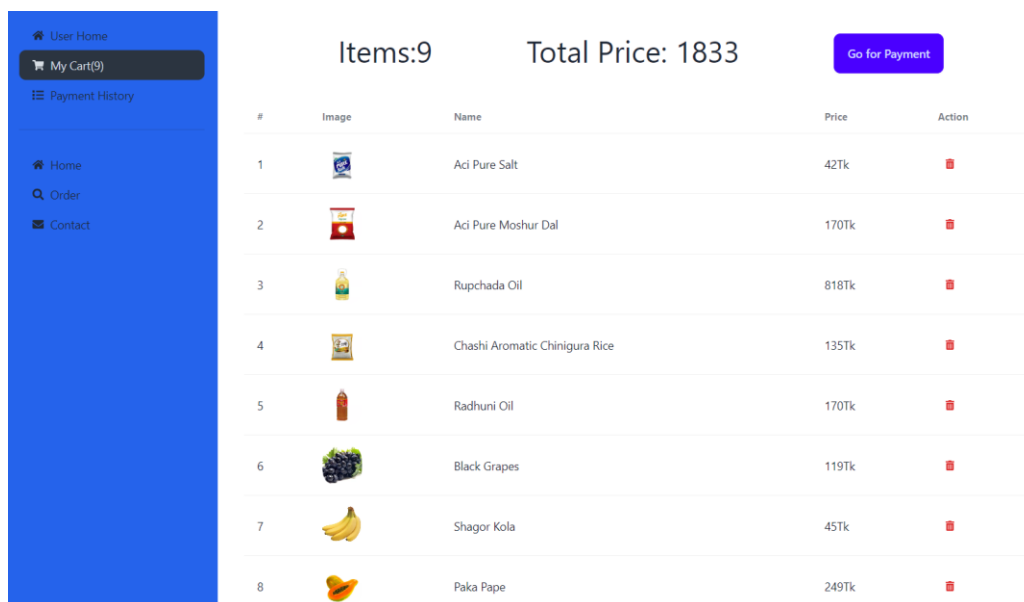


Figure 4.2.4: User Dashboard

Its user's dashboard user can see their cart product also they can delete from cart option. Payment options are exist here. User can see payment history and user home.

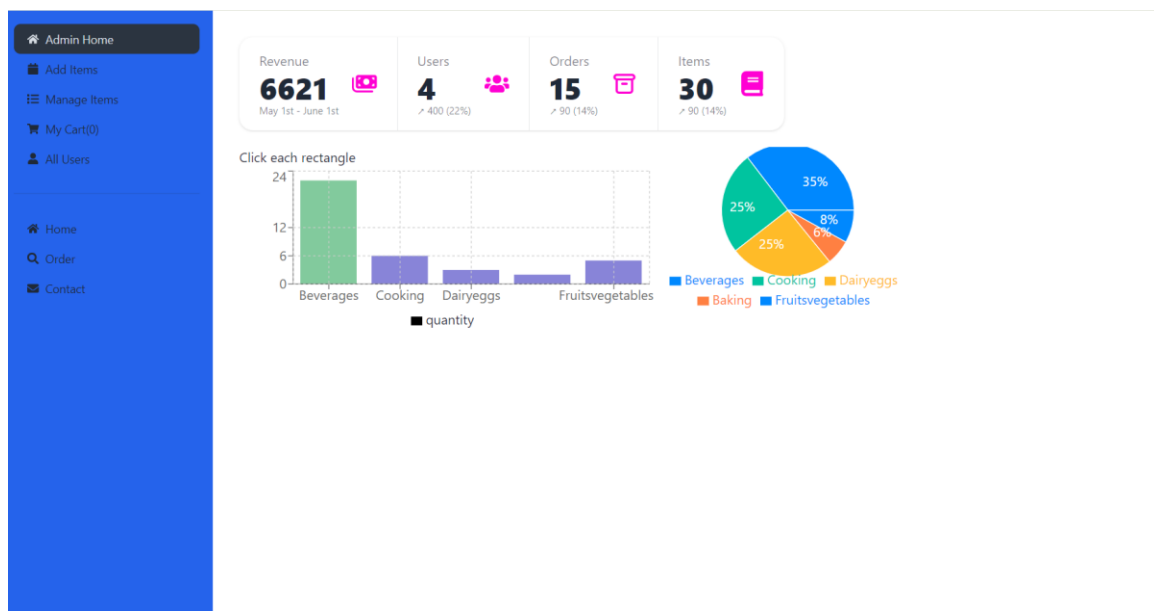


Figure 4.2.5: Admin Dashboard

Admin Can see all user information also add items, manage items, manage booking, only admin can delete user information can make another admin also all of the management systems can manage

5.3 System Testing

Online grocery shop management system ensures all of security testing implementation and ensures security, usability, usefulness.

Testing Types:

- ❖ Unit testing: Verify the entire component of the online grocery shop also each module and feature.
- ❖ Integrity testing: Verify all different modulated who are interact with another also its functionality and integration are really smoothly
- ❖ System Testing: Also we verify all the behavior and systems general functionality
- ❖ User Acceptance Testing (UAT): Make sure this platform of stockholders also user satisfied based on real-world scenario
- ❖ Security testing: Make sure all of weakness finds and there are strong securities systems intergraded

which can against any attack.

- ❖ Performance testing: we test the all of the performance of this website which are really amazing performance test

Testing Procedures:

- ❖ Test Case Development: created all types of test case which are covered all of the testing procedures.
- ❖ Execution and Reporting: Execute the test case systematically also its reporting and execution of testing are really smoothly.
- ❖ Bug Tracking: Use many types of bug tracking tools which are identified issued also tracking and priorities assigning
- ❖ Regression Testing: Existing functionality when exist that's time it remain unaffected that's time regression testing is most important we ensure this
- ❖ User Feedback Incorporation: UAT integrated for user feedback into testing cycle and improve the user experience.

Testing Environments:

- ❖ Development Environment: All of the individual component developers test in development environment
- ❖ Staging Environment: Environmental production exist all of the testing and all of the systems functionalities.
- ❖ User Testing Environment: Stakeholders and user actual involve UAT testing environment

Automation:

- ❖ Automated Testing: Use Automated testing also repeated and regression test(jest for JavaScript and selenium for testing
- ❖ (CI/CD): Ensure smooth deployment and testing also automated testing continuous integration and continues deployment (CI/CD)

3.4 Summary

According to the test findings and reports, the online grocery store's system, integration, and unit testing were all completed successfully. They demonstrate strong functionality, adherence to security protocols, and positive user feedback, resulting in a stable and excellent platform. Test results and reports provide crucial documentation of the testing .

CHAPTER 5

RESULT AND ANALYSIS

5.1 Overview

Online grocery shop management systems integrated b2b supply chain management systems. This chapter we analysis and result of online grocery shop management systems its included system performance, operational efficiency also user feedback .Experimental and comparative analysis below of online grocery shop

5.2 Experimental

Firstly online grocery shops user have to registration before login that's time have to submit their information with name, Gmail, number and etc . After Login they can access in website that's time easily they can explore all the features. Our shop features, Dashboard, Home also they can cart product which's they needed all the product will be display in dashboard. After Login users they can explore all the features when they click home that's time server find out their request as a output server responses then they see the home page as a output also same type of all features all they request or click button then as a output they can see specific features also .why the cart any product all the product view in dashboard and its price will be update as a output also we included testing result of online grocery shop

- **Response Time:** Measurements of user action what's time responses all are really smoothly
- **System Reliability:** During testing that's time measurement error rates and statistics rates
- **Load Testing:** Online grocery shop management systems lots of users load handle

5.3 Performance

Traditional B2B are existing in Bangladesh but there's lots of price hacking systems also many layers in supply chain management systems. On the other hand B2B online grocery

shop management system totally online and its supply chain management systems are efficiency and price hacking systems will be closed.

- **Order Processing Efficiency:** Online grocery shop management systems are efficiency than other b2b grocery shop they gave payment traditional processed on the other hand we ensure all the order system through online payment gateway systems

- **Cost Analysis:** Traditional B2B grocery shop lots of price hacking but we don't have price hacking systems.

- **User Satisfaction:** User Satisfaction on online grocery shop than traditional grocery shop.

5.5 Summary

Online grocery shop management system performance and experimental result better than traditional grocery shop .Basically we efficiency in supply chain management systems. Bangladesh has lots of price hacking systems in supply chain management systems also b2b traditional market lots of layer to reach retailers. Retailers can easily product buy from online grocery shop. Its responses time, payment systems, loading time, and cost analysis also user satisfactions are really amazing.

CHAPTER 6

IMPACT ON SOCIETY, ENVIRONMENT AND SUSTAINABILITY

6.1 Impact on Life

B2B Online grocery management systems ensure efficiency with supply chain management systems on the other hand traditional grocery shops retailers product buy from wholesalers. There lots of wholesalers in supply chain management system that's why day by day price hacking rise but b2b online grocery shop efficiency in supply chain management systems also retailers can easily product buy from online and instant can payment thorough online payment gateway systems. Our delivery man reaches the all product to retailers that's why retailers life are really smoothly they don't spend time to buying product also there's not any hassle to payment .

6.2 Impact on Society & Environment

Online Grocery shop management systems will be impact several on society because of retailers can easily find out product without lots of layer.

- ❖ Enhanced Efficiency: Retailers can easily buy product from online grocery shop before that B2B supply chain management was not efficiency.
- ❖ Enhanced Accessibility: All of these person can easily access online grocery shop management because of internet are available
- ❖ Supply chain: The platform directly source product from company and buy to retailers
- ❖ Economic Impact: Its growing day by day that's many job opportunities will be create and its contributed in our economics
- ❖ Technology use: Technology day by day developing in our country and people can used in growing technology and they really interested and use technology smoothly and easily.
- ❖ Reduce syndicate: when many layers are available in b2b marketplace that's time may syndicate are existing and its will be reduce in shortly when we introduce b2b online grocery shop for retailers

6.3 Ethical Aspects

Online grocery shop management systems can ensure the many types of ethics and strongly maintain all the ethical aspects

- ❖ Ensuring security and protocols also safe user data, such as payment information, all the privacy laws and ethics are following
- ❖ Transparency and User Consent: when we use data of users that time before permission of users also all the perspective are clear.
- ❖ Fair and unbiased suggestions: our all suggestion of any kind of problem we can solved of retailers but all are the fair suggestion
- ❖ Ensuring all users whose data are strongly maintain in protocol and all are safe
- ❖ Responsible AI and personalization: using machine leaning algorithms we provide many suggestions for users that's all eligible entire ethics.
- ❖ Accountability and Transparency in Company Practices: we are focusing fear pricing systems that is not a corruption that's the system retailers are easily trust to our grocery shop
- ❖ Environmental Impact Consideration: Our all products are in warehouse which are good environment and clean before product delivery we ensure the product quality and warehouse environment because all are products in this.
- ❖ Recommendation systems are using all the security problem and consideration ethics which must be follow and ensure for users
- ❖ Ensuring the marketing strategies which are follow moral ethics also marketing TVC ensuring ethics of the culture and religious matters
- ❖ Respect for Cultural Sensitivities: There are lots of religious person stay in country we don't against to the religious matter some case we follow Islamic suggestion.

We implementing between stack holder and retailers bonding and we ensure all the ethics and others important things will be consider in this platform retailers can believe our all

services we ensure this importantly all the retailers needed and ethics related work services.

6.4 Sustainability Plan

We want to develop an online grocery shop which will be sustainability and long time can services to retailers and supply chain management will be stronger day by day.

❖ Environmental Sustainability:

- Reducing Carbon Footprint: we ensure all the environment of product in warehouse also supply chain management created.
- Optimal Routing: when we delivery product that time we follow optimal routing which are very shortly to reach our main place for delivery that's all point are exist using algorithm.
- Eco-Certified Partnerships: All our whole system are eco-friendly also our warehouse, packaging systems and supply chain management
- Carbon Offset Programs: All the product available show in our website retailers can easily cart products from website.

❖ Responsible Data Handling:

- Privacy Compliance: we make sure update rules of privacy and international way any privacy and security will update in all time and all rules follow international privacy.
- Data Encryption and Security Measures: All data of users we can make sure data are encrypted and all the time it will measures
- Data Minimalism: we ensure the data minimalism all about user data and product data we can minimize on our hosting site. So user can easily smoothly use the website for buying product.

❖ Social Responsibility:

- Enhance accessibility: Continuously improvement user perspective and what's the needed we consider all the things all the time we update this.
- ❖ Community Engagement: Community Engagement is most important that's why we created a for users community group then can easily share their problem

❖ Continuous Improvement:

- Integration of User Feedback: Continuously user feedback what's features they are

comparable what's the needed at this that's all are consider for update

- Innovation and Adaptation: we believe innovation mainly we update features with our technology department
- Monitoring and Reporting: Continues update and monitoring report to the stockholders security report and others.

❖ **Ethical Business Practices:**

- Transparent Practices: Preserves are not disclose with anyone and product cost, benefit and other things ensure for users also user locality.
- Fair Partnerships: we ensure all the moral ethics between stockholders and retailers not only ethics but also we consider all the retailers benefit.

❖ **Employee Engagement:**

- Training and Awareness: we ensure our employees are skillful if any training is needed that's time we arrange for their skill they can updated this.
- Well-being Programs: We offer lots of well-being program our employee can learn from this it's a most important for skills development.

6.5 Summary

Online grocery shop management systems ensure efficiency in supply chain management systems it's reducing lots of layer supply chain management systems. On the other hand it's a online grocery shop that's why retailers can easily buying product from this and that's all are cost efficiency and hassle free also its impact society many jobs are created for this also delivery and management systems required lots of employee . We are hiring employee from our society also retailers are benefit mostly.

CHAPTER 7

CONCLUSION AND FUTURE WORK

7.1 Conclusion

B2C e-commerce is a strategic way to serve consumers. Its supply chain management systems and e-payment system contributed to our banking sales growth, customer satisfaction, and e-commerce attributes are mostly correlated to growth in this sector; its totally online system and its biometric systems can also provide the best-authorized system, and quality data security system exists that's data uses for marketing to growth and sales increase that's why the consumer can easily without any hassle then can buy the product from e-commerce any time it's all about b2c e-commerce on the other hand retailers couldn't easily product form company lots of layer system exist that's why many price hacking system exist in Bangladesh. Our main goal is to reduce this and develop an online e-commerce grocery shop(b2b) where retailers can easily find their products and, without any hassle, they can easily buy products from a b2b grocery e-commerce shop.

7.2 Further Suggested Works

"Online grocery shop management systems" there's a lot scope to develop special it's a b2b online grocery and it's added another option b2c.

- ❖ Integration of AI and Machine Learning: Integration AI model for analysis because of we collect lots of product from farmer that's the point what's the needed actually product that's analysis most important we can predict this by machine learning.
- ❖ B2B and B2C two types systems can integrated one website
- ❖ Block chain Technology Integration: Block chain technology can ensure high level security of users and payment systems.
- ❖ Continuers Security Measures: Artificial intelligent can ensure this part. Ai can easily find out the security measures and vulnerable points.

7.3 Limitations

Online grocery shop are totally b2b its most limitation we cannot product sell to b2c also its not integrated machine learning for data analysis also further decision . Mostly online grocery's product will collect from farmer we have to analysis what's needed goods in one week for sale that's work in future.

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Appendix A

Course Outcomes, Complex Engineering Problems (EP) and Complex Engineering Activities (EA) Addressing

Title: An online Grocery Shop Management System Using B2B Supply Chains
From Producers to Retailers

Student ID: [201-15-3469]

CO Description for FYDP

CO	CO Descriptions	PO
Phase -I		
CO1	Integrate recently gained and previously acquired knowledge to identify An online grocery shop management systems problem for the Final Year Design Project (FYDP)	PO1
CO2	Analyze different aspects of the goals in designing a solution for this FYDP	PO2
CO3	Explore diverse problem domains through a literature review, delineate the issues, and establish this goals for the FYDP	PO4
CO4	Perform economic evaluation and cost estimation and employ suitable project management procedures throughout the development life cycle of the FYDP	PO11
Phase -II		
CO5	Design and develop technical solutions and system components or processes that meet specified requirements, ensuring compliance with public health and safety standards, as well as considering cultural, socioeconomic, and environmental factors in this FYDP	PO3
CO6	Choose and apply appropriate methodologies, resources, and contemporary engineering and IT technologies to address complex engineering processes, encompassing prediction and modeling, while adhering to relevant constraints in this FYDP	PO5

CO7	Analyze societal, health, safety, legal, and cultural considerations, along with associated responsibilities, in the context of professional engineering practice and the resolution of this problem, employing logical reasoning guided by contextual understanding.	PO6
CO8	Comprehend and evaluate the enduring sustainability and impact of professional engineering endeavors in addressing intricate engineering challenges within social and environmental frameworks.	PO7
CO9	Implement ethical principles and adhere to professional standards and norms in this FYDP	PO8
CO10	Capable of operating proficiently both individually and as a team member or leader across diverse teams and interdisciplinary settings in this FYDP.	PO9
CO11	Proficiently communicate with the engineering community and broader society regarding complex engineering endeavors, including the ability to comprehend and generate comprehensive reports and design documentation, as well as provide and receive clear instructions throughout this FYDP.	PO10
CO12	Acknowledge the importance of self-directed and life-long learning within the evolving landscape of technology, and possess the readiness and capability to engage in lifelong learning endeavors.	PO12

Addressing CO (1 to 8), Knowledge Profile (K), Attainment of Complex Engineering Problems (EP), and Attainment of Complex Engineering Activities (EA)

Addressing CO (1 to 8), Knowledge Profile (K), Attainment of Complex Engineering Problems (EP):

SN	EP Definition	Attainment	CO	Justification (with Knowledge Profile)	References
1.	EP1: Depth of Knowledge required	Yes	CO1, CO2, CO3, CO5, CO6, CO7 and CO8	The project covers Engineering Fundamentals (K3) SDLC model followed for development , also logical data design , front-end development ,Database implementation	Page no: [10,12-13], Section:

				The project tackles Specialist Knowledge (K4) integrated front-end, backend, design, UX , UI, for design we used in html ,CSS, JavaScript, for development we used in express , Mongoddb.	[3.2] Page no: [13-14], Section: [3.3, 3.4]
				The project applies engineering practice & design (K5) My Project requires different components, which is why I have to build the frontend and backend and also build the design diagram. K6 engineering practice & technology (K6) Uses HTML, CSS, MONGODB, EXPRESS	Page no: [17-20], Section: [4.2] Page no: [13-14], Section: [3.3,3.4]
				The project covers research literature K8 I have discussed and studied similar projectwhich covers K8	Page no: [5-9], Section: [2.2]

2.	EP2: Range of Conflicting Requirements	Yes	CO2, and CO7	In my project, I know there will be challenges connecting third-party payment gateway systems in payment components.	Page no: [17] Section: [4.2]
3.	EP3: Depth analysis required	Yes	CO2, and CO6	The project tackles EP-3 by prioritizing B2B online grocery shop implementation is very challenging at this moment. But for an in-depth analysis of a solution, we follow a supply chain management system. It smoothly helps to implement this project.	Page no: [13], Section: [3.2]
4.	EP4: Familiarity of Issues	Yes	CO8	The project fulfills EP-4 by Retailers face many issues as syndicates cannot directly source products from producers. Then, I planned a B2B online grocery shop and figured out how to implement it and develop it.	Page no: [4-6], Section: [2.1, 2.2]
5.	EP5: Extends application codes	No	CO5	N/A	N/A

6.	EP6: Extends o stakeholders involve and conflicting requirements	No	CO8	I discussed the senior software engineer for the development of a web-based online grocery shop and which technology would be best to develop these online grocery management systems	Page no: [13],
7.	EP7: Interdependence	Yes	CO5	The project meets CEP, EP-7 by addressing high-level problems across stages My Project is correlation all the process first I analysis the gap the selected SDLC Methodology , Created Use Case Diagram ,Logical Diagram then I will developed this by mern stack technology and implementation using supply chain management systems	Page no: [10-13], Section: [3.2]

Addressing CO11 with Complex Engineering Activities (EA) [Some or all of the following]:

SN	EA Definition	Attainment	CO	Justification	References
1.	EA1: Range of resources	Yes	CO11	The development of this system are resource from various kind of infrastructure , management etc	Page no: [14-15], Section: [3.4]

2.	EA2: Level of interaction	No		N/A	N/A
3.	EA3: Innovation	No		N/A	N/A
4.	EA4: Consequences for society and environment	Yes		This project ensure and priorities social and environmental impact also sustainable ,privacy , strong security and business practices	Page no: [23-26], Section: [6.1,6.3,6.2, 6.4]
5.	EA-5: Familiarity	Yes		The Comparative Analysis for "online grocery shop" assesses market competition.Highlight unique features, security, personalisation, and consumer engagement to improve market insight and influence strategic decisions for greater competitiveness and value proposition.	Page no: [7-8], Section: [2.1, 2.3]

Addressing CO (4, 9, 10, and 12):

SN	COs	Attainment	Justification	References
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1	CO4	Yes	The project captures CO4 Ensure of financial issue such as budgeting , cost management ,risk management ,resource allocation etc	Page no: [14-16], Section: [3.4]
2	CO9	Yes	The project follows ethical standards We implementing between stack holder and retailers bonding and we ensure all the ethics and others important things will be consider in this platform retailers can believe our all services we ensure this importantly all the retailers needed and ethics related work services	Page no: [24-24], Section: [6.3,6.4]
3	CO10	No	N/A	N/A
4	CO12	Yes	The project implementation lots of testing procedures also automated, and CI/CD pipelines implemented in this. its ensure continuous improvement .	Page no: [20-21], Section: [5.3]

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