

**DESIGN AND IMPLEMENTATION OF E-COMMERCE
WEBSITE
(A CASE STUDY OF ONLINE GROCERY STORE)**

BY

BAMGBOSE PRECIOUS FOLAKUNMI

PSC2008118

**DEPARTMENT OF COMPUTER SCIENCE,
FACULTY OF PHYSICAL SCIENCES,
UNIVERSITY OF BENIN,
BENIN CITY.**

20th of January 2025

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**SUBMITTED TO THE DEPARTMENT OF COMPUTER
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OF THE REQUIREMENTS FOR THE AWARD OF
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COMPUTER SCIENCE.**

20th of January 2025

CERTIFICATION

This is to certify that this research work was carried out by **BAMGBOSE PRECIOUS FOLAKUNMI** with matriculation number **PSC2008118**, Faculty of Physical Sciences, Department of Computer Science, University of Benin, Benin city under my supervision.

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DR. (MRS). R. OSASERI

(Project Supervisor)

.....

Date

APPROVAL

This project report written by **BAMGBOSE PRECIOUS FOLAKUNMI** with matriculation number **PSC2008118**, in partial fulfillment of the requirement for the award of the University of Benin Bachelor of Science (B.Sc.) degree in Computer Science, is adequate both in scope and content and it is hereby approved for presentation.

.....

Prof. G. O. EKUOBASE

(Head of Department)

.....

Date

DEDICATION

This project work is dedicated to God Almighty, for providence, guidance, and grace in seeing me through this study; I give Him all the glory. I also dedicate this project to my parents **MR AND MRS BAMGBOSE** and my **UNCLE ENGR. BABATUNDE**, I would not have come this far.

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ABSTRACT

The Internet-based electronic commerce environment has been widespread developed, which provides consumers with a convenient platform to search for information interact with retailers and purchase products online. The aim of the study is to design and implement a web based software that will eradicate the problems or the existing E-Commerce Website System stated above. The motivation that led to the implementation of the proposed system is that alot of customers have to queue for a long period of time before getting their desired product or goods from the grocery seller, which makes shopping within the store very stressful, and the customers have to spend all their time just to purchase an item in the store shop which is not right, all because of the manual approach towards grocery shopping. The methodology adopted in this study is the structure system analysis and design methodology (SSADM) which is a technical approach for analyzing and designing an application or system by applying object oriented programming as well as visual modeling throughout the software development process. The programming language used is HTML, CSS, JAVASCRIPT, PHP, SQL and JQUERY. The reason why web programming languages was used is because, it is platform independent and it is a web based application. Based on the findings of this study, recommendations made are that formal analysis and design were used to give adequate understanding to the object-oriented technique used. The major quest is to ease the problem and stress encountered in customer's grocery shopping experience and keeping records of stock list, customer lists, sales volume, and summary report. The expected result is a web based E-Commerce software that will apply cyber security features to the e-Commerce application for a grocery store online shopping and also updates new products like grocery items and other related items online.

CHAPTER ONE

INTRODUCTION

1.1 Introduction

The Internet-based electronic commerce environment has been widespread developed, which provides consumers with a convenient platform to search for information, interact with retailers and purchase products online. According to data collected in 2013, Nigeria has owned around 8.7 million internet users. That corresponds to over 94% of the population, which makes Nigeria become one of the greatest countries in the world in terms of internet use (E-commerce News, 2016). Furthermore, the report brings up the fact that the dominating categories of products that are traded online in Nigeria are travels, clothing and shoes, but also electronics and entertainment/media and it also mentions Adlibris, Cdon, Ellos and H&M as some of the most popular stores for online shopping within the different categories. Besides, the product categories earlier mentioned as the leading ones, there are those which are not yet there due to low consumer adoption. One of those is the grocery segment, which hence makes this to an interesting area for further development.

As a prelude to other parts of this study, this chapter will discuss the background upon which this study was initiated, the statement of problems that led to this study, the Aim and Objectives of the study. Others are Significance of the study, Scope of work, Limitation of the study and Definition of technical terms.

1.2 Background of Study

Although online purchasing tool should be suitable for all kinds of products, however, in terms of the worldwide aspects, online grocery purchasing still has low competition compared to other kinds of products. Although Nigeria has a high percentage of Internet users as well as a well-developed e-commerce market there are e-commerce markets that are still lagging. Recent years, the online grocery market in Nigeria has been developing. Since

2013, an increasing number of online sales of food products starts to grow. Online grocery sales raised by 38 percent compared to previous year and there are more than one in five Swedish consumers has experienced purchasing grocery products online (E-commerce News, 2014). Besides, the leading grocery retail in Nigeria ICA launched their new online store at the end of 2014 and COOP also updated their online stores to expand product categories and range to attract more potential consumers. Although the many options given to the consumers, PostNord states in the report E-commerce in the Nordics 2016 that “While sales of daily commodities have grown very strongly in recent years, the category remains small.” Therefore, one can easily see that the online grocery industry is developing and popularizing, but still seems limited while looking at other industries (PostNord, 2016).

Internet today has a great importance in a lot of people's everyday lives, not least for pleasures such as shopping. Among Swedish consumers online shopping is something frequently used, and statistics from 2016 show that nine out of ten Internet users have at some time used Internet for a purchase (E-commerce News, 2016). A huge amount of previous research focused on some fashionable industries such as clothing, cosmetics, books, electrical appliance etc, which are frequently ordered products (Young Kim, E. & Kim, Y, 2004; Bian, Q. & Forsythe, S, 2012). Compared to these types of products, online grocery shopping has not grown so big and few previous literature has been explored in this field, which arises our interests in devoting a not so developed area. The low level of consumer adoption makes it interesting to explore different factors that could affect consumers' choices on online grocery shopping in Nigeria. What makes people prefer going to a grocery store, pushing a trolley through the crowded aisles, stand in long queues, just to later carry their groceries home themselves? Besides, when it comes to online shopping, mostly research put emphasis on Generation Y or focused on only the female (Sullivan, P. & Heitmeyer, J, 2008; Bakewell, C. & Mitchell, V, 2003; Belleau, B.,et al, 2007), however, the range of previous research target

is broad and in this study, the authors aim to narrow the range of explored group. Therefore, Swedish families with children constitute the target group for this study. The characteristics of families with children would have distinct buying intention compared to other type of groups as the desired need for them would change.

This paper seeks to understand what factors could possibly affect consumers' purchase intention for online grocery shopping. Some studies focused on online purchasing do exist and have some helpful findings. The research conducted by Chocarro summarized that previous reviews of literature about the relationship established between situational variables and channel choice and they find out there are seven situational factors concerned with product categories affect the possibility of online/offline purchase, such as distance to store, time pressure and so on. The study by Chung-Hoon Park also revealed that product information quality, user interface quality and other three factors would influence consumer purchase behavior. General factors was studied from some previous literature, and we eventually gather several important factors based on the questionnaire we designed. Factors influence customers' purchasing online grocery shopping are various, however, the degree of importance are different. We make use of the questionnaire to analyze the difference among each other. In our questionnaire, we set in total of 11 situational factors that we consider might be possibly influential for our targeted group to choose, most of them have the evidence to prove that there is a relationship with online grocery purchasing intention, however, the authors need to do the research to support that the relevance between Swedish consumers and Swedish online grocery environment do exist. In the end, based on interviewees' choice result, 8 of these selected potentially situational factors are considered necessary to analyze our study (Appendix) , which are the perceived product quality, perceived product price, weather, delivery time, delivery cost, type of products, perceived

potential risks and time saving. All of these factors will be respectively explained and analyzed in the theoretical framework and discussion.

This study could generate relevant knowledge for grocery retailers, since offering online grocery shopping could be a new way for retailers to make money. More knowledge about what their potential customer's value could therefore help them boosting their sales and profitability. This arouses an interest for taking the understandings about consumers' online grocery shopping preferences one step further.

1.3 Statement of the Problems

Investigation reveals the following problems of the existing E-commerce online grocery store;

- a) Lack of inadequate facilities for shopping, customers have to visit shops within the store premises to purchase an item and inadequate attention will be giving to them because of crowd due to the manual of selling grocery.
- b) The customers have to queue for a long period of time before getting their desired product or goods from the grocery seller, which makes shopping within the store very stressful.
- c) Most of the customers prefer shopping outside the grocery store, maybe where they come from they have not witness queuing to shop,
- d) The customers have to spend all their time just to purchase an item in the store shop which is not right, all because of the manual approach towards grocery shopping.

1.4 Aim and Objective of the Study

The aim of the study is to design and implement a web based software that will eradicate the problems or the existing E-Commerce Website System stated above. In achieving this aim, the following specific objectives were laid out as follows:

- a) To design application software that will be used to purchase an item online by the interested personnel;

- b) To design software that will be used to make series of grocery shopping online by the several personnel;
- c) To design software that will be used to research about products and make purchases for desired item;
- d) To develop a system that will be used for automated system for the grocery store online shopping; and
- e) To design application software that will update new products like grocery items and other related items online.

1.5 Significance of the Study

The importance of this study is to use object oriented development processes and techniques in the E-commerce online grocery store system. Formal analysis and design were used to give adequate understanding to the object-oriented technique used. The major quest is to ease the problem and stress encountered in customers' grocery shopping experience and keeping records of stock list, customer lists, sales volume, and summary report.

This project will be of benefit to:

1. Enterprises.
2. Shopping Malls/Supermarkets.

Besides, the study will serve as reference material for subsequent researcher in the field or related topics.

1.6 Scope of Study

This research work will concentrate on e-commerce online grocery store, marketing, and delivery of purchased products.

1.7 Limitations of the Study

During the course of this study, many things militated against its completion, some of which are:

1. **Time Constraint:** The time frame given to accomplish this project was very short due to school academic calendar and it was carried out under pressure which made the researcher not to implement some necessary features.
2. **Establishment Policies:** Establishment policies posed a serious limitation as most staffs are not ready to release information needed for this project work. There were lots of information needed from the staffs of this institution to enhance the study which took them time to release or they did not release at all for security purposes, hence the scope was reduced.
3. **Research material:** availability of research material is a major setback to the scope of the study.
4. **Frequent power failure:** This made the researcher append more money on fuel to ensure sustainable power.
5. **Financial Constraint:** Insufficient fund tends to impede the efficiency of the researcher in sourcing for the relevant materials, literature or information and in the process of data collection (internet).

1.8 Definition of Terms

1. **Online grocery shopping:** Online grocery shopping is an e-commerce based approach to order groceries through Internet. The online grocery stores take advantage of the interface to pick and deliver the online-ordered products to the consumers.

2. **Application Service Provider (ASP):** Is defined as an enterprise that delivers application functionality and associated services across a network to multiple customers using a rental or usage-based transaction-pricing model.
3. **E-commerce:** Electronic commerce, commonly written as e-commerce, is the trading in products or services using computer networks, such as the Internet.
4. E-commerce can be described as the using of electronic networks, such as Internet, as a distribution channel. The involved parties can be either individuals or organizations and a common sectioning to do is to differ between business-to-consumer and business-to-business (Khosrow-Pour, M. 2006).
5. **Electronic data interchange (EDI):** Electronic data interchange (EDI) is an electronic communication method that provides standards for exchanging data via any electronic means.
6. **Merchant:** A person or company involved in wholesale trade, especially one dealing with foreign countries or supplying goods to a particular trade.
7. **URL:** Is an acronym for Uniform Resource Locator and is a reference (an address) to a resource on the Internet
8. **Shopper:** A person who is shopping.
9. **Web hosting service (WHS):** Is a type of Internet hosting service that allows individuals and organizations to make their website accessible via the World Wide Web.
10. **Web server:** Are computers that deliver (serves up) Web pages
11. **Expert system:** This is a computer system that emulates the decision-making ability of a human expert.
12. **Research methodology:** The process used to collect information and data for the purpose of making decision.

13. **Coding:** This means writing a list of instructions that will enable the computer to perform any specified operation.
14. **MySQL:** This is relational database server that is ideal for both small and large applications.
15. **ICT:** Information and communication technology refers to technologies that provide access to information through telecommunication.
16. **Programming:** Is the process of taking an algorithm and encoding it into a notation, a programming language, so that it can be executed by computer.
17. **Methodology:** A collection of methods, practices, procedures and rules used by those who work in some field.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter focuses on the review of related literature. A literature review includes the current knowledge as well as theoretical and methodological contributions to a particular topic. It documents the state of the art with respect to the topic you are writing. It surveys the literature in the topic selected. In this research work the literature review includes the theoretical framework, theory of planned behavior, E-commerce, situational factors, definition of shop, concept of shopping, history of e-commerce, consumer needs and expectations, and advantages and disadvantages of e-commerce.

2.2 Theoretical Framework

The following section consists of a compilation of relevant theories, key concepts and previous research, which aim to provide the reader with sufficient knowledge to understand the problem, purpose and the research questions of the thesis. That is, by reading this chapter, one will be able to create an accurate picture of the already existing knowledge within the field of study.

2.2.1 Marketing

According to Keller et al., (2011), one marketer once claimed that the role of marketing is to “deliver a higher standard of living” (Keller et al., 2011). But what is marketing? There are a great many definitions, whereof one, presented by The American Marketing Association, is following: Marketing is the activity, set of institutions, and processes for creating, communicating, delivering, and exchanging offerings that have value for customers, clients, partners, and society at large. In recent years, the traditional marketing has met a competition that no one could have predicted. According to the report “ICT Facts and Figures – The world in 2015” by International Telecommunication Union in 2000 the Internet penetration in

the world amounted to 6.5 percent. 15 years later, in 2015, the statistics show a corresponding percentage of 43. Moving on to Europe, the report also shows that 82.1 percent of the households had access to the Internet in 2015, and the Internet use rate for individuals was 77.6 percent. The incredible digital development has lately created an opportunity that almost resembles a revolution in the marketing area where new distribution channels have appeared. This creates a need for constantly updated research that can follow the pace of development.

2.3. Theory of Planned Behavior

According to Ajzen, (2005), to understand consumers' behavior, a frequently used model is the theory of planned behavior (TPB). So will this study do, since it seeks to understand the consumer behavior behind online grocery shopping. TPB is an extension of theory of reasoned action (TRA), (Ajzen, 2005 ; Ajzen, 1991) which helps program implementers design interventions that effectively address a particular behavior (Ajzen. I, 1991). TPB illustrates the relations between beliefs and behaviors by applying three types of terms: attitude toward behavior, subjective norm and perceived behavior control to shape the consumers' purchasing intention and behavior.

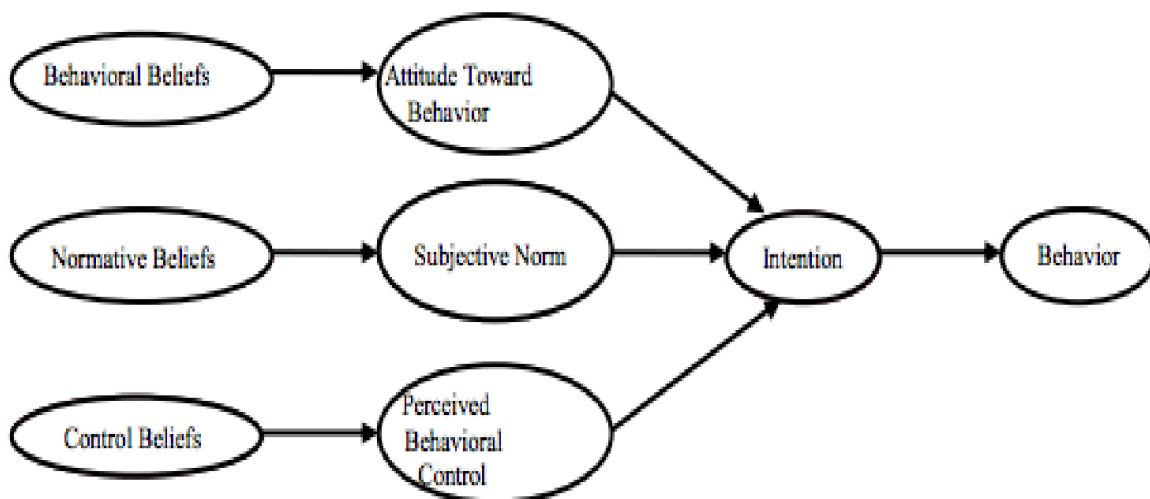


Figure 2.1: Theory of Planned Behavior

2.3.1 Consumers' Purchasing Intention

Consumers' purchasing intention refers to an individual's plan on buying something in the future. The purchase taking place can be a good, as well as a service. The higher the intention is, the more likely it is for the action or behaviour to take place (Ajzen, 1991).

2.3.2 Attitudes

According to Ajzen (1991), Attitude toward behavior is the degree to which performance of the behavior is positively or negatively valued. It depends on behavioral beliefs which provide a favorable or unfavorable attitude towards the various kinds of positive or negative possible outcomes.

2.3.3. Subjective Norm

Subjective norm is the perceived social pressure to engage or not to engage in a behavior (Ajzen, 1991), which is determined by normative beliefs that the perceived behavior expectations of important referent individuals and population.

2.3.4. Perceived Behavior Control

Perceived behavioral control refers to people's perceptions of their ability to perform a given behavior, which is access to the control beliefs, for example, beliefs about the presence of factors that may facilitate or impede performance of the behavior (Ajzen, 1991).

2.3.5. Intention

Intention is an indication of a person's readiness to perform a given behavior, and it is considered to be the immediate antecedent of behavior (Ajzen, 1991), which is based on attitudes, subjective norm and perceived behavior control.

2.3.6. Behavior

Behavior is the manifest, observable response in a given situation with respect to a given target (Ajzen, 1991), which is a combination of intentions and perception of behavior control.

The single behavior control can be considered across contexts and times to present a more broadly representative measure of behavior (Ajzen, 1991). Concerned with this study, the theory of planned behavior described that attitudes toward any behavior is determined by one factor, called as behavior beliefs (Rahman, M, 2013). For example, if one has positive beliefs towards purchasing groceries online and believe it is convenient than traditional stores then he/she would have positive attitudes towards that behavior, vice versa. Normative beliefs in this study can be demonstrated that people surrounding you such as your friend, families, colleges would leave positive or negative suggestions and influence on your decision-making. For example, if your friends tend to buy groceries on Internet and they have excellent experience, when they suggest you and tell you it is a good choice, you will be positively motivated by their suggestions to fulfill subjective norms, “optimistic motivation leads positive subjective norms and intention” to purchase groceries on the Internet (Rahman, M, 2013). Last but not least, control beliefs in this study perform like some people consider shopping groceries online would cost some extra service expenses, however, people who have positive control beliefs would still go for choosing online shopping although it may charge extra delivery cost. The possibility of using the TPB framework would be connected into interviews which we use as our method of primary data collection. The interview questions that are listed in Appendix are basically designed in accordance to the theory by Ajzen to explore what kind of factors would influence consumers’ purchase intention when they shop groceries on the Internet.

2.4 E-commerce

The Internet-based electronic commerce is becoming an increasingly popular approach and a channel for people to search for information and purchase products or services through direct interaction with the online store. (Park, C. & Kim, Y. 2003) From the Global B2CE-commerce Report 2016 by Ecommerce Foundation one can read that 26 percent are

e-shoppers worldwide. An e-shopper is here defined as “an individual who regularly bought or ordered goods or services through the Internet”. In this report the definition of B2C e-commerce sales, as another highly relevant concept, reads: Any B2C contract regarding the sale of goods and/or services, fully or partly concluded by a technique or distance communication. Further, the report stated that the e-commerce year amounted to 3.11 percent of the GDP, globally, in 2015. By studying the report one can also find it clear that E-commerce is not just a temporary era we can wait for to pass and which will turn into another one, characterized by something significantly different. We can observe a constantly ongoing development which indicates the opposite. The statistics show that, compared to the 1% growth on the overall retail in Europe, the E-commerce growth reached a percentage of 13.3%. Even though the high growth rate is forecasted to slow down, it is no doubt that E Commerce is here to stay, and it is not unlikely that the success stems from the ever-growing demand for comfort and efficiency in everyday life (ECommerce Europe, 2016). Although Europe in its whole is moving upwards when it comes to E-retailing, one should not forget that there are probably variations between member countries in terms of shopping behaviour, habits and values. To narrow the field of study further and make it more manageable the focus will be on Nigeria, where 75 percent of the population aged 18-79 made online purchases during 2015 according to PostNord (2016). The fact that the Swedish e-commerce grocery market is still not very developed makes this highly relevant to explore further. To understand a consumer market one also needs to understand how consumers behave. A model for this is shown above.

2.5 Situational Factors

According to Zeithaml, (2006), to understand the consumers' behaviour, this paper will get help from studying various types of factors. Situational factors could be explained as temporary conditions that have any influence on how consumers behave (Zeithaml, 2006). A

consumer can choose to buy nothing at all or to buy a certain product, but also to buy additional products. In the following a description of some situational factors that play a role for the behaviour of the buyers.

2.5.1. Perceived Product Quality

Product quality is a collection of characteristics and features of a product to meet given requirements. Quality can be defined broadly as superiority or excellence (Zeithaml, 2006). Product quality is divided into objective and perceived quality. In this study, the main focus will be on the perceived quality. Perceived quality can be defined as the consumer's judgment about a product's overall excellence or superiority (Zeithaml, 2006). According to Kotler and Armstrong (2004) “product quality is the ability to demonstrate a product in its function, it includes the overall durability, reliability, accuracy, ease of operation and repair products are also other product attributes”. Perceived product quality has directly influence on purchase intention (Saleem, Abdul Ghafar, et al, 2015). Based on A. Saleem et al (2015), the purchase intention increases or decreases after using the product, which is directly related to the quality of products. If the product quality is high, the consumer purchase intention is also high, and vice versa. In addition, Dunk (2002) also states that product quality can contribute to strategic competitive advantage, and the design and manufacture of product is purposed for meeting customer requirements. The study conducted by Rao, S., Raghunathan, T., & Solis, L. (1997) also illustrates that providing the kind of quality product and services that is required by demanding customers could gain the competitive edge and wider market share. And once the requirements of demanding customers are reached, their customer satisfaction will be improved. Previous experiment showed that product quality is considered as one of dimensions of customer satisfaction as long as it meet final system criteria (Elliott, J.2002). “Customer satisfaction with an online store positively influences purchase intentions” (Lee, G., & Lin, H, 2005). Therefore, amounts of previous literature supported that the product

quality is a significant element of consumer satisfaction and as for online shopping, customer satisfaction also leaves a positive impact on final purchase intention.

2.5.2. Perceived Product Price

Price is the amount of money a consumer sacrifices to obtain a product, which can further be classified into objective and perceived product price (Zeithaml, 2006). In this case only perceived product price will be used, since the purpose of the thesis is to get the consumers' point of view on the different factors and in this case the product's price. Perceived price is the individual belief of the price in relation to the quality of the product (Nguyen, T., & Gizaw, A. 2014). The study by Chang, T., & Wildt, A. (1994) demonstrates that "purchase intention is shown to be positively influenced by perceived value, which mediates the influence of perceived price and perceived quality", Between this relationship, which also includes that the perceived value is positively influenced by product quality and negatively influenced by product price, and purchase intention is positively influenced by the perceived value (Chang, T., & Wildt, A. 1994). From this it reveals that purchase intention is negatively influenced by product price which means when customer perceived price of goods goes up, their purchase intention will decrease. As for the grocery products, sometimes the online selling products may have a discount that the physical store does not own. Thus the perceived price is different between online shoppers and offline shoppers and their purchase intention is changed as well.

2.5.3. Perceived Potential Risks

The theory of perceived risk has been applied to explain consumer's behaviour in decision making since the 1960s (Hsin Chang, H., & Wen Chen, S. 2008). Perceived risk can be defined as "the nature and amount of uncertainty perceived by consumers in contemplating a particular purchase decision" (D. F. Cox & Rich, 1964). Therefore, it can be one of the most important factors that could affect customer purchase intention as consumers are used to

avoiding risks when purchasing. Mitchell (1999) states that perceived risks have a powerful impact on consumer behavior due to people are more motivated to avoid risks than maximum utility when purchasing products. In the past, the perceived risks were mainly concerned with product quality. However, nowadays in terms of online grocery shopping, more types of risks appear. Another important element that consumers emphasize is the security of the purchasing approach, in other word, is the website security. The web perceived security is “the extent to which one believes that the Web is secure for transmitting sensitive information (e.g. credit card or social security number)” (Salisbury, W. et al, 2001). Bennett, P., & Harrell, G. (1975) also tested the relationship between confidence and purchase intention, which justifies that buyers’ confidence in brand of products is relevant to predicting purchase intention and also to their actual purchase behavior. Besides the specific figures show that the lower perceived risks lead to higher purchase intention. 2.5.4. Time Saving Time pressure are described as the degree of consumers consider themselves to be busy (Srinivasan and Ratchford, 1991). Busy consumers would be willing to save time from doing the shopping activities and they take consuming time and energy on the grocery shopping as disadvantages. Therefore time saving is usually regarded as one of the shopping convenience elements when people choose to shop online or offline with two different forms of expressions. Firstly, conventional grocery stores generally have the limited opening hours shorter than 24h, which restricts consumers shopping flexibility. However, online grocery shopping allows you to shop anytime at the day or night, which provides fewer external restrictions and more convenience (Schröder and Zaharia, 2008) Chocarro also verified the assumption that the nearer it is close to store closing-time, the greater possibility of online purchase (Chocarro, R, 2013) On the other hand, time-related factors also perform in whether you need to leave home to get grocery products.

Time-saving plays a vital role in online and offline grocery shopping, as you can have direct

access to all of the grocery products on the website, which saves unnecessary time to sort wanted goods among clusters of products. In addition, according to Chocarro, the greater the time pressures, the higher the probability of online purchase (Chocarro, R, 2013), thus if there is no need for you to spend time in a physical store, shopping grocery products online would save time. Furthermore, in the light of Verhoef, P. and Langerak, F. (2001), they expect consumer who suffered more time pressure to perceive the relative advantage and compatibility of electronic grocery shopping as higher, and they support their assumption that the larger the time pressure they receive, the larger the perceived relative advantage and compatibility of electronic grocery shopping will be. Hence, time-saving factors have a close relationship in shopping grocery online.

2.5.5. Delivery Costs

Delivery costs are viewed as a factor to be considered when ordering, to some extent, which largely depends on different retailers and it may exist in the following structures: unconditional is the characteristics of the product, which is not commonly explored by previous literature before and few research can be found. But in this study, we want to explore the impact of the type of grocery product on consumer purchase intention. Usually the groceries that we generally mention includes beverages, fruits, canned and packaged food, bakery and so on. Here in order to easily analyze and distinguish, we divide groceries categories into dry and fresh and a clear difference between dry groceries and fresh groceries is provided. Dry groceries are generally defined as non-perishable grocery products, and be considered to include items that are non edible but be stocked at the grocery shelf, for example, some goods which can last for a long time like bathroom commodities, bottles of drinks, frozen food etc. While fresh goods, the other way round, are food that is not preserved by canning, dehydration or freezing and is easily perishable if you do not finish it in time. Such as bread, fruit, and fresh vegetables. Due to this difference, when it comes to purchasing

groceries online, the different characteristics of the product would affect consumers' choice. Consumers would be more willing to buy dry groceries online because it can store for a longer time and would not be easily ruined during delivery. However, if the delivery duration is not clear, fresh food has high possibilities to be ruined or become perishable in the end, which would be taken hidden risks. Therefore, the categories of grocery should be considered when a consumer decides to buy through the Internet.

2.5.7. Weather

Weather is considered as the only external environment and non-human factor. Weather constantly has an unexpected important influence on consumers' purchasing intention and behavior. A report (2016) by the United States Department of Commerce implied that the cold winter had a negative impact on retailer profit. During February, the sales volume declined 0.6% and the largest reason is the severe cold winter in some areas (Times commerce, 2016). Besides, the famous tech website (The Next Web) did an interesting analysis about the cars sales and weather. They got a result that the degree of temperature has an impact on different kinds of car sales. The weather does not only have effects on retailers and cars, but also all our purchasing behavior. As the weather gets warmer, the motivation of consumers' intentions become more active, however, the prerequisite is as long as the temperature is not so high and we can totally accept it. When the temperature gets too high or too low, people prefer not to go outside and under the burning sun, they would rather shop groceries online in the air conditioned room. Therefore, the weather would have an influence on shopping groceries intentions.

2.5.8. Delivery Time

Last but not least, delivery related issues are always closed to online shopping due to it being one of the key necessary nodes during the whole process. Except for delivery cost, delivery time might also affect online shopping. The duration of the shipping period is quite different

among distinct online shopping platforms. For example, the Chinese online shopping platform JD is famous for its quick delivery period. Usually once you purchase before 23:00, the products you ordered would be estimated to be received the next day. Other online competitive platforms such as Tmall and Taobao usually need 2-3 days or even more. Thus, with regards to the similar product with similar quality and price, the majority of consumers would be willing to choose JD. So the shipping period would also be one of the key factors for customers shopping for groceries on the Internet.

2.6 Definition of Shop

A shop is a business that presents a selection of goods and offers to trade or sell them to customers for money or other goods, where the customer browses the available goods or services presented by one or more retailers with the intent to purchase a suitable selection of them. In some contexts it may be considered a leisure activity as well as an economic one.

2.7 Concept of Shopping

Shopping is the process of purchasing items in exchange for money. *Shopping* is an activity in which a customer browses the available goods or services presented by one or more retailers with the intent to purchase a suitable selection of them. A higher end product occasionally bought by consumers that are usually compared for their appropriateness, quality, cost and features before purchase occurs (Foucault, 2000). Consumers tend to take more time when purchasing a *shopping* product produced by a business, and they might even travel to buy such goods. The activity of buying things from shops means shopping.

2.7.1 Types of Shopping

The followings are the four main types of shopping:

1. **Home shopping:** Home mail delivery systems and modern technology such as television, telephones, and electronic commerce allow consumers to shop from home. Intranet shopping has completely redefined the way people make their buying decisions. Intranet

shopping allows the buyer to save the time and expense, which would have been spent traveling to the store or mall.

2. **Neighborhood shopping:** Neighborhood shopping areas and retailers give value to a community by providing various community services and a social place to meet. Neighborhood retailing differs from other types of retailers such as destination retailers because of the difference in offered products and services, location and popularity.
3. **Party shopping:** The party plan is a method of marketing products by hosting a social event, using the event to display and demonstrate the product or products to those gathered, and then to take orders for the products before the gathering ends.
4. **Online shopping:** The act of purchasing products or services over the Internet. Online shopping has grown in popularity over the years, mainly because people find it convenient and easy to bargain shop from the comfort of their home or office. One of the most enticing factors about online shopping, particularly during a holiday season, is it alleviates the need to wait in long lines or search from store to store for a particular item.

2.7.2 Shopping Participants / Clients

The labor force participation rate of women and men in industrialized countries is converging, but disparities in participation in unpaid activities nevertheless remain. Although women were still found to shop more than men, the evidence indicated that the differential narrowed in recent years, particularly in couples with children. Shopping for household maintenance is a time-consuming out-of-home activity that continues to be undertaken primarily by women, regardless of their employment status. The present study uses panel methods to analyze, descriptively and econometrically, gender disparities in shopping behavior of couples through the use of data (Forrester, 2006). Several individual and household characteristics were found to be significant determinants of shopping behavior, whereby employment status and children emerged to be the most important single factors. In

addition, the possession of a driver's license, coupled with unrestricted car availability, increased the amount of time that each partner spent shopping.

2.7.3 Location of Shopping Site

Shopping can be done in different ways such as face-to-face shopping or via online shopping techniques which is the exchange of information across electronic networks at any stage in the supply chain to the consuming purposes of public consumers between businesses and consumers whether paid or unpaid. In face-to-face shopping, customers visit their desired shops in search and buying of their goods while in Online Shopping customers order items via the internet with the support of online shopping charts that keep track of all items ordered. Online shopping enhances the experience of shopping, area of shopping, comfort level and products variety (Feinberg, 2000). It widens the customer's imagination towards products and inducing them to look for varieties and satisfying their hunger for fun and pleasure.

2.7.4 Process of Shopping

Depending on what you want to shop for, before going shopping, gather enough money for your shopping items and have in mind everything you needed during the shopping proper, you may also write a list or write it on the Memo Pad in your phone to control your spending estimate before going out for the shopping. Before going out for shopping, consider the shop to make shopping of which were to make shopping depends on individual needs. For example if you're going to a bunch of outlets they most likely won't have as much of these stores, whereas shopping malls will (Jobber, 2006). It is highly recommended to try newly opened stores. If you're walking and see a store that looks good during shopping, go in it. There are tons of stores you've probably never heard of at outlets, and most of them are good.

2.7.5 Time of Online Shopping

Shopping is usually done when the buyers are in need of some consumable goods of which the medium of exchanging goods for money is required. All shopping activities require

buying and selling. This can be done in two ways that is through the traditional mode or modern mode. The traditional mode of commerce involves the display of goods on shelves, hawking of goods etcetera for the buyers to make their shopping choice (Choi, 2003). The modern mode of commerce is done electronically online over the internet to online buyers where you can select and purchase your desired item and it will be delivered at your location within a short period of time.

2.8 History of E-commerce

According to Geena (2010), online shopping or e-shopping is a form of electronic commerce which allows consumers to directly buy goods or services from a seller over the Internet using a web browser. Alternative names are: e-web-store, e-shop, e-store, Internet shop, web-shop, web-store, online store, online storefront and virtual store. Mobile commerce (or m-commerce) describes purchasing from an online retailer's mobile optimized online site or app.

Electronic Commerce (e-commerce) applications support the interaction between different parties participating in a commerce transaction via the network, as well as the management of the data involved in the process.

An online shop evokes the physical analogy of buying products or services at a bricks-and-mortar retailer or shopping centre; the process is called business-to-consumer (B2C) online shopping. In the case where a business buys from another business, the process is called business-to-business (B2B) online shopping. The largest of these online retailing corporations are Alibaba, Amazon.com, and eBay (Geena, 2010). Retail success is no longer all about physical stores. This is evident because of the increase in retailers now offering online store interfaces for consumers. With the growth of online shopping, comes a wealth of new market footprint coverage opportunities for stores that can appropriately cater to offshore market demands and service requirements (Geena, 2010).

English entrepreneur Michael Aldrich invented online shopping in 1979. His system connected a modified domestic TV to a real-time transaction processing computer via a domestic telephone line. He believed that videotex, the modified domestic TV technology with a simple menu-driven human-computer interface, was a 'new, universally applicable, participative communication medium — the first since the invention of the telephone.' This enabled 'closed' corporate information systems to be opened to 'outside' correspondents not just for transaction processing but also for e-messaging and information retrieval and dissemination, later known as e-business. His definition of the new mass communications medium as 'participative' [interactive, many-to-many] was fundamentally different from the traditional definitions of mass communication and mass media and a precursor to the social networking on the Internet 25 years later (Geena, 2010).

In March 1980 he went on to launch Redifon's Office Revolution, which allowed consumers, customers, agents, distributors, suppliers and service companies to be connected on-line to the corporate systems and allow business transactions to be completed electronically in real-time (Jarvenpaa et al., 1997).

During the 1980s he designed, manufactured, sold, installed, maintained and supported many online shopping systems, using videotex technology. These systems which also provided voice response and handprint processing pre-date the Internet and the World Wide Web, the IBM PC, and Microsoft MS-DOS, and were installed mainly in the UK by large corporations (Jarvenpaa et al., 1997).

The first World Wide Web server and browser, created by Tim Berners-Lee in 1990, opened for commercial use in 1991. Thereafter, subsequent technological innovations emerged in 1994: online banking, the opening of an online pizza shop by Pizza Hut, Netscape's SSL v2 encryption standard for secure data transfer, and Intershop's first online shopping system (Jarvenpaa et al., 1997).

2.8.1 International E-Commerce Statistics

Statistics show that in 2012, Asia-Pacific increased their international sales over 30% giving them over \$433 billion in revenue. That is a \$69 billion difference between the U.S. revenue of \$364.66 billion. It is estimated that Asia-Pacific will increase by another 30% in the year 2013 putting them ahead by more than one-third of all global ecommerce sales (Jarvenpaa et al., 1997).

2.8.2 Customers

Online customers must have access to the Internet and a valid method of payment in order to complete a transaction. Generally, higher levels of education and personal income correspond to more favourable perceptions of shopping online. Increased exposure to technology also increases the probability of developing favourable attitudes towards new shopping channels (Jarvenpaa et al., 1997). In a December 2011 study, Equation Research surveyed 1,500 online shoppers and found that 87% of tablet owners made online transactions with their tablet devices during the early Christmas shopping season (Jarvenpaa et al., 1997).

2.8.3 Logistics

Consumers find a product of interest by visiting the website of the retailer directly or by searching among alternative vendors using a shopping search engine. Once a particular product has been found on the website of the seller, most online retailers use shopping cart software to allow the consumer to accumulate multiple items and to adjust quantities, like filling a physical shopping cart or basket in a conventional store. A "checkout" process follows (continuing the physical-store analogy) in which payment and delivery information is collected, if necessary. Some stores allow consumers to sign up for a permanent online

account so that some or all of this information only needs to be entered once. The consumer often receives an e-mail confirmation once the transaction is complete (Peterson et al., 1997). Less sophisticated stores may rely on consumers to phone or e-mail their orders (although full credit card numbers, expiry date, and Card Security Code, or bank account and routing number should not be accepted by email, for reasons of security) (Peterson et al., 1997).

2.8.4 Payment

According to Peterson et al., (1997), online shoppers commonly use a credit card or a PayPal account in order to make payments. However, some systems enable users to create accounts and pay by alternative means, such as:

- a) Billing to mobile phones and landlines
- b) Cash on delivery (C.O.D.)
- c) Cheque/ Check
- d) Debit card
- e) Direct debit in some countries
- f) Electronic money of various types
- g) Gift cards
- h) Postal money order
- i) Wire transfer/delivery on payment
- j) Invoice, especially popular in some markets/countries, such as Switzerland
- k) Bitcoin or other cryptocurrencies

Some online shops will not accept international credit cards. Some require both the purchaser's billing and shipping address to be in the same country as the online shop's base of operation. Other online shops allow customers from any country to send gifts anywhere. The financial part of a transaction may be processed in real time (e.g. letting the consumer know

their credit card was declined before they log off), or may be done later as part of the fulfillment process (Peterson et al., 1997).

2.8.5 Product Delivery

Once a payment has been accepted, the goods or services can be delivered in the following ways (Peterson et al., 1997):

- a) **Downloading/Digital distribution:** The method often used for digital media products such as software, music, movies, or images.
- b) **Drop shipping:** The order is passed to the manufacturer or third-party distributor, who then ships the item directly to the consumer, bypassing the retailer's physical location to save time, money, and space.
- c) **In-store pick-up:** The customer selects a local store using a locator software and picks up the delivered product at the selected location. This is the method often used in the bricks and clicks business model.
- d) Printing out, provision of a code for, or e-mailing of such items as admission tickets and scrip (e.g., gift certificates and coupons). The tickets, codes, or coupons may be redeemed at the appropriate physical or online premises and their content reviewed to verify their eligibility (e.g., assurances that the right of admission or use is redeemed at the correct time and place, for the correct dollar amount, and for the correct number of uses).
- e) **Shipping:** The product is shipped to a customer-designated address.
- f) **Will call, ICOBO (in Care Of Box Office), or "at the door" pickup:** The patron picks up pre-purchased tickets for an event, such as a play, sporting event, or concert, either just before the event or in advance. With the onset of the Internet and

e-commerce sites, which allow customers to buy tickets online, the popularity of this service has increased.

2.8.6 Shopping Cart Systems

Simple systems allow the off-line administration of products and categories. The shop is then generated as HTML files and graphics that can be uploaded to a webspace. The systems do not use an online database (Peterson et al., 1997).

A high-end solution can be bought or rented as a stand-alone program or as an addition to an enterprise resource planning program. It is usually installed on the company's webserver and may integrate into the existing supply chain so that ordering, payment, delivery, accounting and warehousing can be automated to a large extent (Peterson et al., 1997).

Other solutions allow the user to register and create an online shop on a portal that hosts multiple shops simultaneously from one back office. Open source shopping cart packages include advanced platforms such as Interchange, and off-the-shelf solutions such as Magento, nopCommerce, osCommerce, Shopgate, PrestaShop, Shopify, Zen Cart, OpenCart. Commercial systems can also be tailored so the shop does not have to be created from scratch. By using an existing framework, software modules for various functionalities required by a web shop can be adapted and combined (Kumar et al., 2004).

2.8.7 Online Gift Shops

Online gift shops are websites which have the primary objective of selling products online that will be given to others. These online retailers may or may not be associated to a physical shop (Kumar et al., 2004).

2.8.8 Design

Customers are attracted to online shopping not only because of high levels of convenience, but also because of broader selections, competitive pricing, and greater access to information. Business organizations seek to offer online shopping not only because it is of much lower cost compared to bricks and mortar stores, but also because it offers access to a worldwide market, increases customer value, and builds sustainable capabilities (Kumar et al., 2004).

2.8.9 Information Load

Designers of online shops are concerned with the effects of information load. Information load is a product of the spatial and temporal arrangements of stimuli in the web store. Compared with conventional retail shopping, the information environment of virtual shopping is enhanced by providing additional product information such as comparative products and services, as well as various alternatives and attributes of each alternative, etc. Two major dimensions of information load are complexity and novelty. Complexity refers to the number of different elements or features of a site, often the result of increased information diversity. Novelty involves the unexpected, suppressed, new, or unfamiliar aspects of the site. The novelty dimension may keep consumers exploring a shopping site, whereas the complexity dimension may induce impulse purchases (Kumar et al., 2004).

2.9 Consumer Needs and Expectations

A successful webstore is not just a good looking website with dynamic technical features, listed in many search engines. In addition to disseminating information, it is also about building a relationship with customers and making money (Kumar et al., 2004).

Businesses often attempt to adopt online shopping techniques without understanding them and/or without a sound business model; often, businesses produce webstores that support the organizations' culture and brand name without satisfying consumer expectations. User-centered design is critical. Understanding the customer's wants and needs is essential. Living up to the company's promises gives customers a reason to come back and meeting

their expectations gives them a reason to stay. It is important that the website communicates how much the company values its customers (Campbell, 2006).

Customer needs and expectations are not the same for all customers. Age, gender, experience and culture are all important factors. For example, Japanese cultural norms may lead users there to feel privacy is especially critical on shopping sites and emotional involvement is highly important on financial pension's sites. Users with more online experience focus more on the variables that directly influence the task, while novice users focus on understanding the information (Campbell, 2006).

To increase online purchases, businesses must use significant time and money to define, design, develop, test, implement, and maintain the webstore. Truly said, it is easier to lose a customer than to gain one. Even a "top-rated" website will not succeed if the organization fails to practice common etiquette such as responding to e-mails in a timely fashion, notifying customers of problems, being honest, and being good stewards of the customers' data. Because it is so important to eliminate mistakes and be more appealing to online shoppers, many webshop designers study research on consumer expectations (Campbell, 2006).

2.9.1 User Interface

The most important factors determining whether customers return to a website are ease of use and the presence of user-friendly features. Usability testing is important for finding problems and improvements in a web site. Methods for evaluating usability include heuristic evaluation, cognitive walkthrough, and user testing. Each technique has its own characteristics and emphasizes different aspects of the user (Campbell, 2006).

2.9.2 Market Share

E-commerce B2C product sales totaled \$142.5 billion, representing about 8% of retail product sales in the United States. The \$26 billion worth of clothes sold online represented about 13% of the domestic market, and with 72% of women looking online for apparel, it has

become one of the most popular cross-shopping categories Forrester Research estimates that the United States online retail industry will be worth \$279 billion in 2015. There were 242 million people shopping on-line in China in 2012 (Campbell, 2006).

For developing countries and low-income households in developed countries, adoption of e-commerce in place of or in addition to conventional methods is limited by a lack of affordable Internet access (Huang, 2000).

2.10 Advantages and Disadvantages of E-commerce

2.10.1 Advantages of E-commerce

There are various advantages of E-commerce which includes:

- a) **Convenience:** Online stores are usually available 24 hours a day, and many consumers have Internet access both at work and at home. Other establishments such as internet cafes and schools provide internet access as well. In contrast, visiting a conventional retail store requires travel and must take place during business hours (Huang, 2000).

In the event of a problem with the item (e.g., the product was not what the consumer ordered, the product was not satisfactory), consumers are concerned with the ease of returning an item in exchange for either the correct product or a refund. Consumers may need to contact the retailer, visit the post office and pay return shipping, and then wait for a replacement or refund. Some online companies have more generous return policies to compensate for the traditional advantage of physical stores. For example, the online shoe retailer Zappos.com includes labels for free return shipping, and does not charge a restocking fee, even for returns which are not the result of merchant error. (Note: In the United Kingdom, online shops are prohibited from charging a restocking fee if the consumer cancels their order in accordance with the Consumer Protection (Distance Selling) Act 2000).

b) Information and Reviews: Online stores must describe products for sale with text, photos, and multimedia files, whereas in a physical retail store, the actual product and the manufacturer's packaging will be available for direct inspection (which might involve a test drive, fitting, or other experimentation). Some online stores provide or link to supplemental product information, such as instructions, safety procedures, demonstrations, or manufacturer specifications. Some provide background information, advice, or how-to guides designed to help consumers decide which product to buy. Some stores even allow customers to comment or rate their items. There are also dedicated review sites that host user reviews for different products. Reviews and even some blogs give customers the option of shopping for cheaper purchases from all over the world without having to depend on local retailers. In a conventional retail store, clerks are generally available to answer questions. Some online stores have real-time chat features, but most rely on e-mails or phone calls to handle customer questions (Huang, 2000).

c) Price and selection: One advantage of shopping online is being able to quickly seek out deals for items or services provided by many different vendors (though some local search engines do exist to help consumers locate products for sale in nearby stores). Search engines, online price comparison services and discovery shopping engines can be used to look up sellers of a particular product or service (Huang, 2000).

Shipping costs (if applicable) reduce the price advantage of online merchandise, though depending on the jurisdiction, a lack of sales tax may compensate for this. Shipping a small number of items, especially from another country, is much more expensive than making the larger shipments bricks-and-mortar retailers order. Some retailers (especially those selling small, high-value items like electronics) offer free shipping on sufficiently large orders. Another major advantage for retailers is the

ability to rapidly switch suppliers and vendors without disrupting users' shopping experience (Huang, 2000).

2.10.2 Disadvantages of E-Commerce

The disadvantages of e-commerce include:

- a) **Fraud and security concerns:** Given the lack of ability to inspect merchandise before purchase, consumers are at higher risk of fraud than face-to-face transactions. Merchants also risk fraudulent purchases using stolen credit cards or fraudulent repudiation of the online purchase. However, merchants face less risk from physical theft by using a warehouse instead of a retail storefront (Huang, 2000). Secure Sockets Layer (SSL) encryption has generally solved the problem of credit card numbers being intercepted in transit between the consumer and the merchant. However, one must still trust the merchant (and employees) not to use the credit card information subsequently for their own purchases, and not to pass the information to others. Also, hackers might break into a merchant's web site and steal names, addresses and credit card numbers, although the Payment Card Industry Data Security Standard is intended to minimize the impact of such breaches. Identity theft is still a concern for consumers. A number of high-profile break-ins in the 2000s have prompted some U.S. states to require disclosure to consumers when this happens. Computer security has thus become a major concern for merchants and e-commerce service providers, who deploy countermeasures such as firewalls and anti-virus software to protect their networks (Huang, 2000).

Phishing is another danger, where consumers are fooled into thinking they are dealing with a reputable retailer, when they have actually been manipulated into feeding private information to a system operated by a malicious party. Denial of service

attacks are a minor risk for merchants, as are server and network outages (Huang, 2000).

Quality seals can be placed on the Shop web page if it has undergone an independent assessment and meets all requirements of the company issuing the seal. The purpose of these seals is to increase the confidence of online shoppers. However, the existence of many different seals, or seals unfamiliar to consumers, may foil this effort to a certain extent. A number of resources offer advice on how consumers can protect themselves when using online retailer services. These include:

- Sticking with known stores, or attempting to find independent consumer reviews of their experiences; also ensuring that there is comprehensive contact information on the website before using the service, and noting if the retailer has enrolled in industry oversight programs such as a trust mark or a trust seal.
- Before buying from a new company, evaluate the website by considering issues such as: the professionalism and user-friendliness of the site; whether or not the company lists a telephone number and/or street address along with e-contact information; whether a fair and reasonable refund and return policy is clearly stated; and whether there are hidden price inflators, such as excessive shipping and handling charges.
- Ensuring that the retailer has an acceptable privacy policy posted. For example note if the retailer does not explicitly state that it will not share private information with others without consent.

- Ensuring that the vendor address is protected with SSL (see above) when entering credit card information. If it does the address on the credit card information entry screen will start with "HTTPS".
- Using strong passwords, without personal information. Another option is a "pass phrase," which might be something along the lines: "I shop 4 good a buy!!" These are difficult to hack, and provides a variety of upper, lower, and special characters and could be site specific and easy to remember.

Although the benefits of online shopping are considerable, when the process goes poorly it can create a thorny situation. A few problems that shoppers potentially face include identity theft, faulty products, and the accumulation of spyware. If users are required to put in their credit card information and billing/shipping address and the website is not secure, customer information can be accessible to anyone who knows how to obtain it. Most large online corporations are inventing new ways to make fraud more difficult. However, criminals are constantly responding to these developments with new ways to manipulate the system. Even though online retailers are making efforts to protect consumer information, it is a constant fight to maintain the lead. It is advisable to be aware of the most current technology and scams protect consumer identity and finances. Product delivery is also a main concern of online shopping. Most companies offer shipping insurance in case the product is lost or damaged. Some shipping companies will offer refunds or compensation for the damage, but this is up to their discretion (Jarvenpaa et al., 1997).

- b) **Lack of full cost disclosure:** The lack of full cost disclosure may also be problematic. While it may be easy to compare the base price of an item online, it may not be easy to see the total cost up front. Additional fees such as shipping are often not be visible until

the final step in the checkout process. The problem is especially evident with cross-border purchases, where the cost indicated at the final checkout screen may not include additional fees that must be paid upon delivery such as duties and brokerage. Some services such as the Canadian based Wishabi attempts to include estimates of these additional cost, but nevertheless, the lack of general full cost disclosure remains a concern.

- c) **Privacy:** Privacy of personal information is a significant issue for some consumers. Many consumers wish to avoid spam and telemarketing which could result from supplying contact information to an online merchant. In response, many merchants promise to not use consumer information for these purposes; many websites keep track of consumer shopping habits in order to suggest items and other websites to view. Brick-and-mortar stores also collect consumer information. Some ask for a shopper's address and phone number at checkout, though consumers may refuse to provide it. Many larger stores use the address information encoded on consumers' credit cards (often without their knowledge) to add them to a catalogue mailing list. This information is obviously not accessible to the merchant when paying in cash or through a bank (money transfer, in which case there is also proof of payment) (Jarvenpaa et al., 1997).

CHAPTER THREE

SYSTEM ANALYSIS AND DESIGN

3.1 Methodology Adopted

The structured system analysis and design methodology (SSADM) was adopted for the analysis, design and implementation of this system. Structured systems analysis and design methodology (SSADM) is a set of standards for systems analysis and application design. It uses a formal methodical approach to the analysis and design of information systems.

SSADM follows the waterfall life cycle model starting from the feasibility study to the physical design stage of development. One of the main features of SSADM is the intensive user involvement in the requirements analysis stage. The users are made to sign off each stage as they are completed assuring that requirements are met. The users are provided with clear, easily understandable documentation consisting of various diagrammatic representations of the system. SSADM breaks up a development project into stages, modules, steps and tasks. The first and foremost model developed in SSADM is the data model. It is a part of requirements gathering and consists of well defined stages, steps and products. The techniques used in SSADM are logical data modeling, data flow modeling and entity behavior modeling.

- a) **Logical Data Modeling:** This involves the process of identifying, modeling and documenting data as a part of system requirements gathering. The data are classified further into entities and relationships.
- b) **Data Flow Modeling:** This involves tracking the data flow in an information system. It clearly analyzes the processes, data stores, external entities and data movement.
- c) **Entity Behavior Modeling:** This involves identifying and documenting the events influencing each entity and the sequence in which these events happen.

3.1.1 Problem Identification Using SSADM

The SSADM was used to discover some problems;

- a) **Feasibility Study:** This assumes that the proposed project has been identified as a result of an exercise such as strategic planning and sets out to evaluate the various technical, organizational, financial and business options available. The aim is to establish whether the direction and requirements of the project are feasible. The aim is to evaluate the feasibility of the proposal, involving an analysis of the problem and determination of the best solution; usually a range of potential solutions are presented.
- b) **Investigation of the Environment:** The process of identifying, modeling and documenting the data requirements of the system being designed. The result is a data model containing entities (things about which a business needs to record information), attributes (facts about the entities) and relationships (associations between the entities).
- c) **Business System Option (BSO):** A BSO defines the functional scope of a proposed solution. At its most basic level it consists of textual descriptions of those requirements satisfied by the solution. All BSOs must satisfy the minimum requirement as identified by user representatives.
- d) **Requirement Certification:** Requirement Certificate aims to equip the learner or end user (client) with the advanced knowledge of project management and will enable the learner to understand the system requirement to uphold the project management required parameters.
- e) **Technical System Option (Implementation):** There is availability of software, hardware and technical man power for the development and running of the new system. Hence the system is technically feasible as the requirement can be met without stress and much financial input. The software and hardware requirements include an Integrated Development Environment for web based applications, a standard PC for

running this application, a local server and an up to date web browser for testing. As a programmer, the researcher can provide these requirements with ease and as such, this project is technically feasible.

- f) **Logical Design:** Technical system options are production and logical design updates and query processing and system dialogue.
- g) **Physical Design:** physical database design and a set of program specifications Program specifications are using the logical system specification and the technical system specification.

3.2 Analysis of the Existing System

The operations of the E-commerce Website were analyzed, and some drawbacks were detected which led to the initiation of the new E-commerce Website. In the old system the end users who usually make their shopping by visiting respective shop within and outside the online grocery store which usually involved end user queuing and congest to buy an item of their choice and they are been attended manually, and it usually bring confusion between the sellers and customer due to lack of automated documentation, and in this case there is for need automated machines for an immediate prove for any confusion or mistake when matters like this arise.

3.2.1 Dataflow of the Existing System

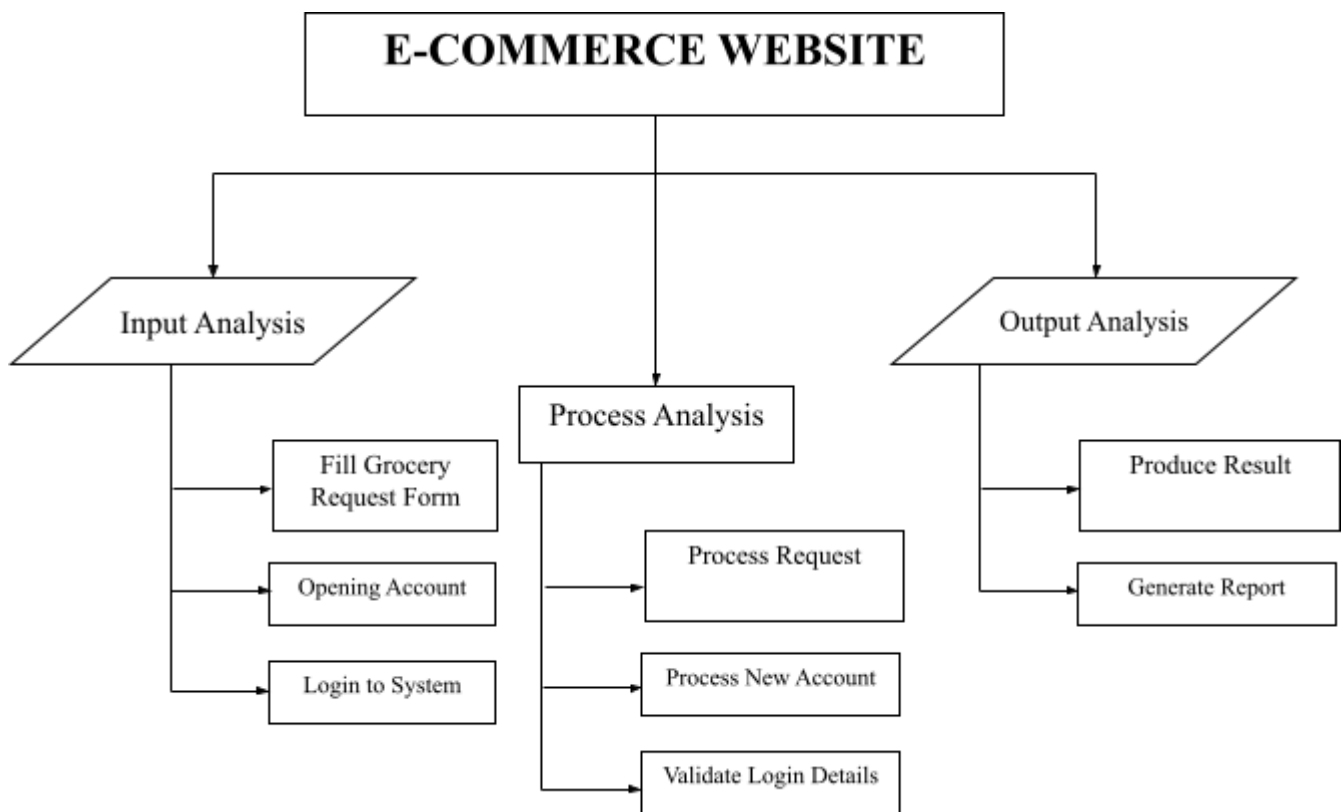


Figure 3.2.1: Dataflow of the Existing System

3.2.2 Disadvantages of the Existing System

Some of the problems identified in the present system include:

1. Lack of inadequate facilities for shopping, customers have to visit shops within the store premises to purchase an item and inadequate attention will be giving to them because of crowd due to the manual of selling grocery.
2. The customers have to queue for a long period of time before getting their desired product or goods from the grocery seller, which makes shopping within the store very stressful.
3. Most of the customers prefer shopping outside the grocery store, maybe where they come from they have not witness queuing to shop,

4. The customers have to spend all their time just to purchase an item in the store shop which is not right, all because of the manual approach towards grocery shopping.

3.2.3 Weakness of the Existing System

The following are the weakness of the existing system;

- a) The grocery store lacks standard shops, as well inadequate operation; everything there is done manually using paper and pen.
- b) No effort time to offer effective services to the customer, the overlook some customers who came to shop, due to crowd mounted on them.
- c) Goods are not properly kept, it can be tampered by anybody due to the security is very low, no good account of goods sold or remaining due to manual documentation.

3.3 Analysis of the Proposed System

An overview of the proposed system flow chat has a relationship between an object to another just like the entity. Relationship diagram, the object relationship pair can be graphically represented by a diagram called entity relationship diagram (Entity Relationship Diagram). It is mainly used in database applications but now it is more commonly used in data design. The primary purpose of ERD is to represent the relationship between data object.

3.3.1 Data Flow Diagram of the Proposed System

This is a data flowchart of the proposed system as shown in figure 3.2.

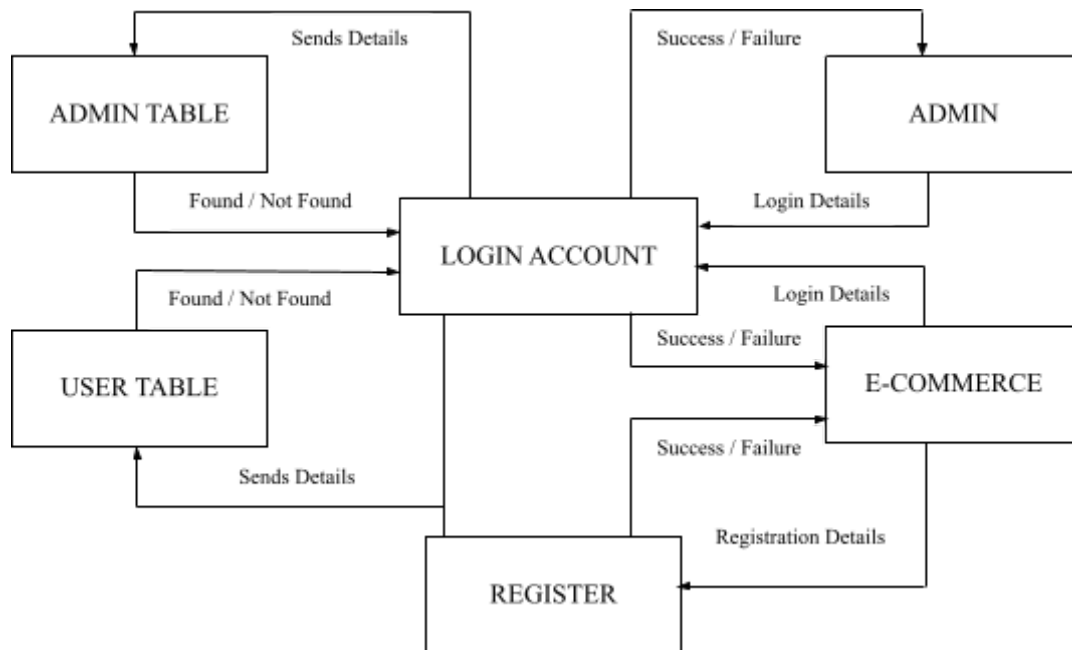


Figure 3.2: Data Flow Diagram of the Proposed System

3.3.2 Advantages of the Proposed System

The following are the advantages of the proposed E-commerce Website;

- The proposed system will be used to purchase an item online by the interested personnel.
- It will update new products like grocery items and other related items online.
- It will be used to make series of grocery shopping online by the several personnel.
- It will be used to research about products and make purchases for desired item.
- It will also be used for automated system for the grocery store online shopping.

3.3.3 Justification of the Proposed System

The importance of this study is to use object oriented development processes and techniques in the E-commerce online grocery store system. Formal analysis and design were used to give adequate understanding to the object-oriented technique used. The major quest is to ease the

problem and stress encountered in customer's grocery shopping experience and keeping records of stock list, customer lists, sales volume, and summary report. This paper seeks to understand what factors could possibly affect consumers' purchase intention for online grocery shopping. Some studies focused on online purchasing do exist and have some helpful findings. The research conducted by Chocarro summarized that previous reviews of literature about the relationship established between situational variables and channel choice and they find out there are seven situational factors concerned with product categories affect the possibility of online/offline purchase, such as distance to store, time pressure and so on.

3.4 Functional Requirements

The following figure 3.4 shows the various modules involved in the system and available to users who have limited access and to the Admin who have full access to the system.

3.4.1 Use Case Diagram of the Admin / User Privileges

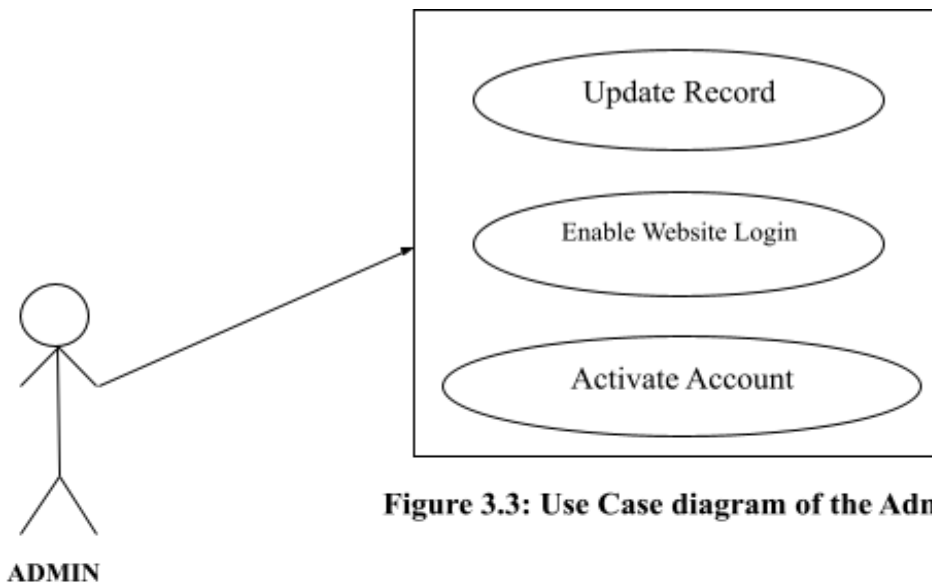


Figure 3.3: Use Case diagram of the Admin

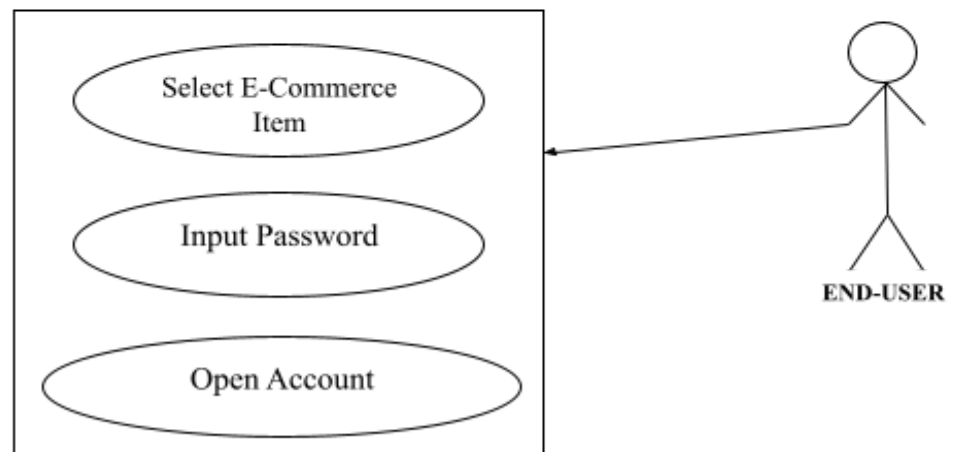


Figure 3.4: Use Case diagram of the User (Client)

3.5 Data Requirements

The following are the data requirements of new and existing users in the system. New users are required to create an account by providing some necessary information such as:

- a) **Email Address:** The user's email address is required during registration and subsequent login on the system.
- b) **Password:** The user is required to enter a secured password or pin during registration and subsequent login on the system

- c) **User Name:** The user is required to enter a nickname which he/she will be addressed as subsequently for security reasons.
- d) **Passport:** This field contains the photograph or picture of the account holder or system user.
- e) **Address:** This field contains the address of the system user.

3.6 High Level Model of the Proposed System

The high level model of the proposed system is illustrated below;

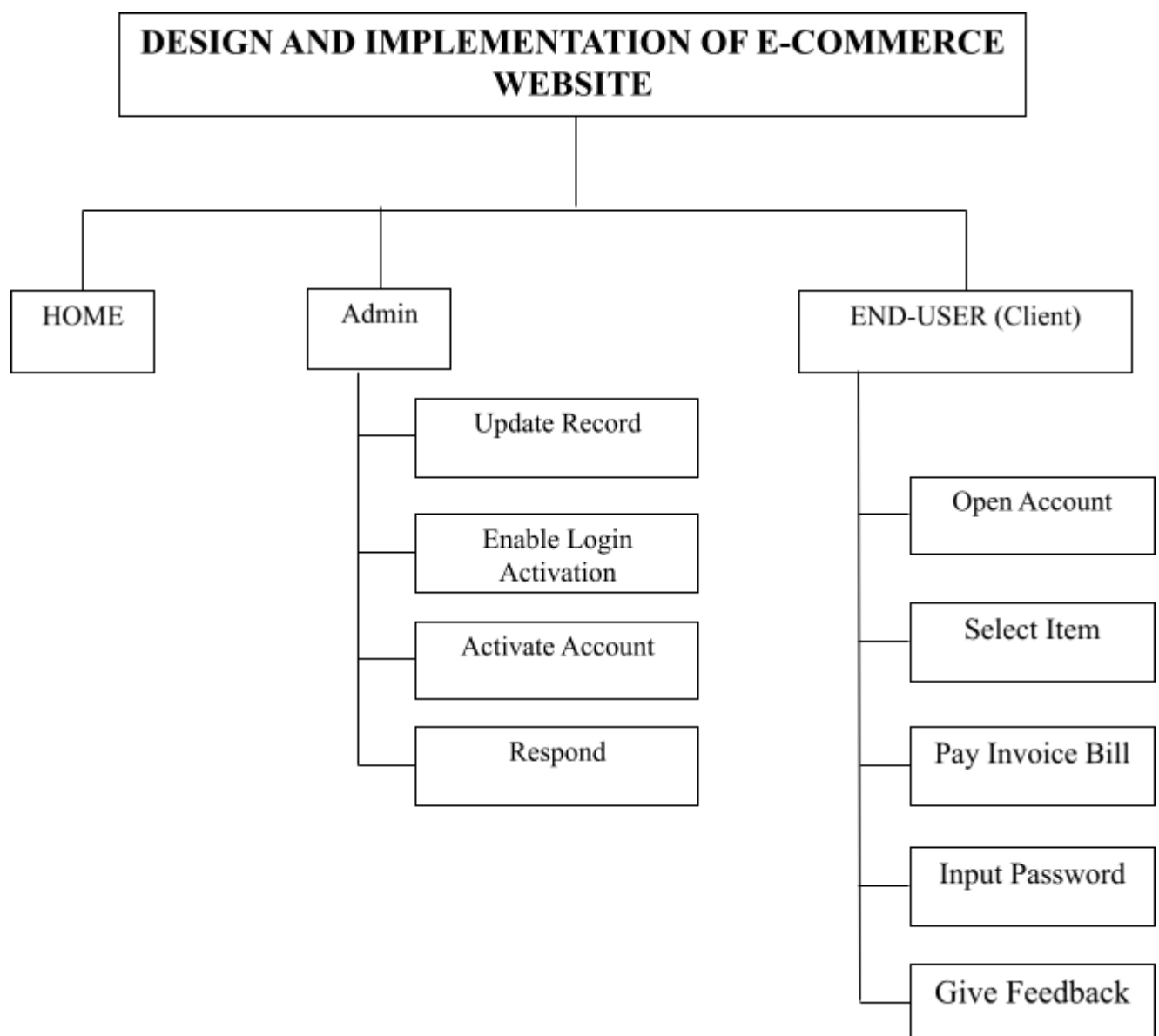


Figure 3.5: High Level Model of the Proposed System

CHAPTER FOUR

SYSTEM DESIGN AND IMPLEMENTATION

4.1 Objectives of the Design

The following are the objectives of the proposed E-commerce Website design;

1. To design application software that will be used to purchase an item online by the interested personnel;
2. To design software that will be used to make series of grocery shopping online by the several personnel;
3. To design software that will be used to research about products and make purchases for desired item;
4. To develop a system that will be used for automated system for the grocery store online shopping; and
5. To design application software that will update new products like grocery items and other related items online.

4.2 Cohesion and Decomposition High level Model

Description: This is a cohesion and Decomposition High level Model

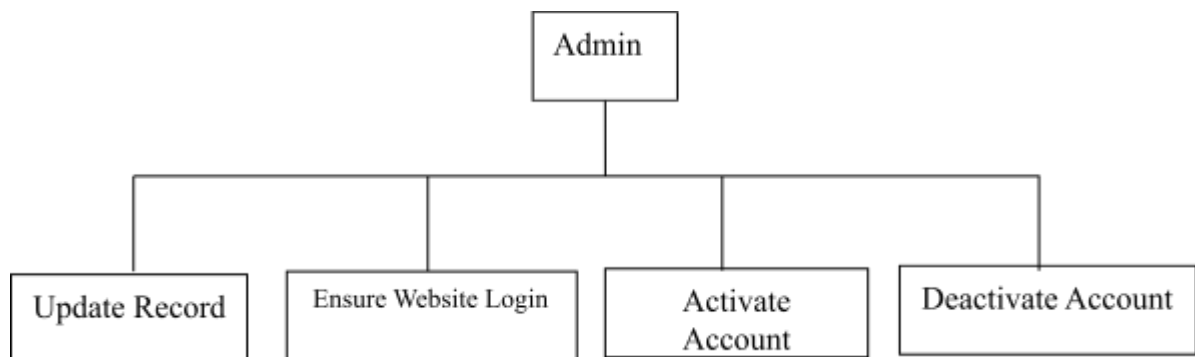


Figure 4.1: Admin User Privileges

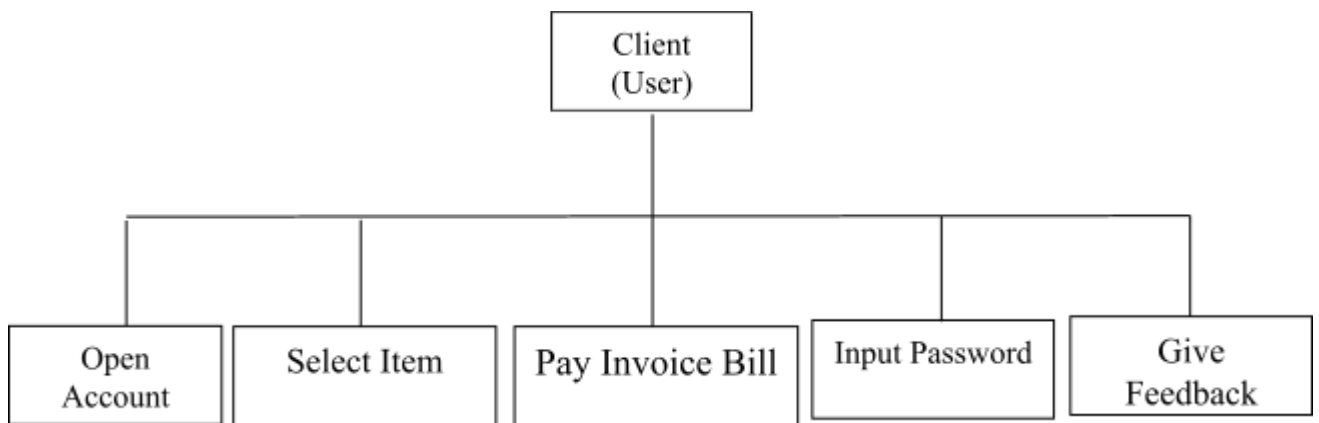


Figure 4.2: Client (User) Privileges

4.3 Control Center / Overall Dataflow Diagram

Description: This is a control center / overall dataflow diagram

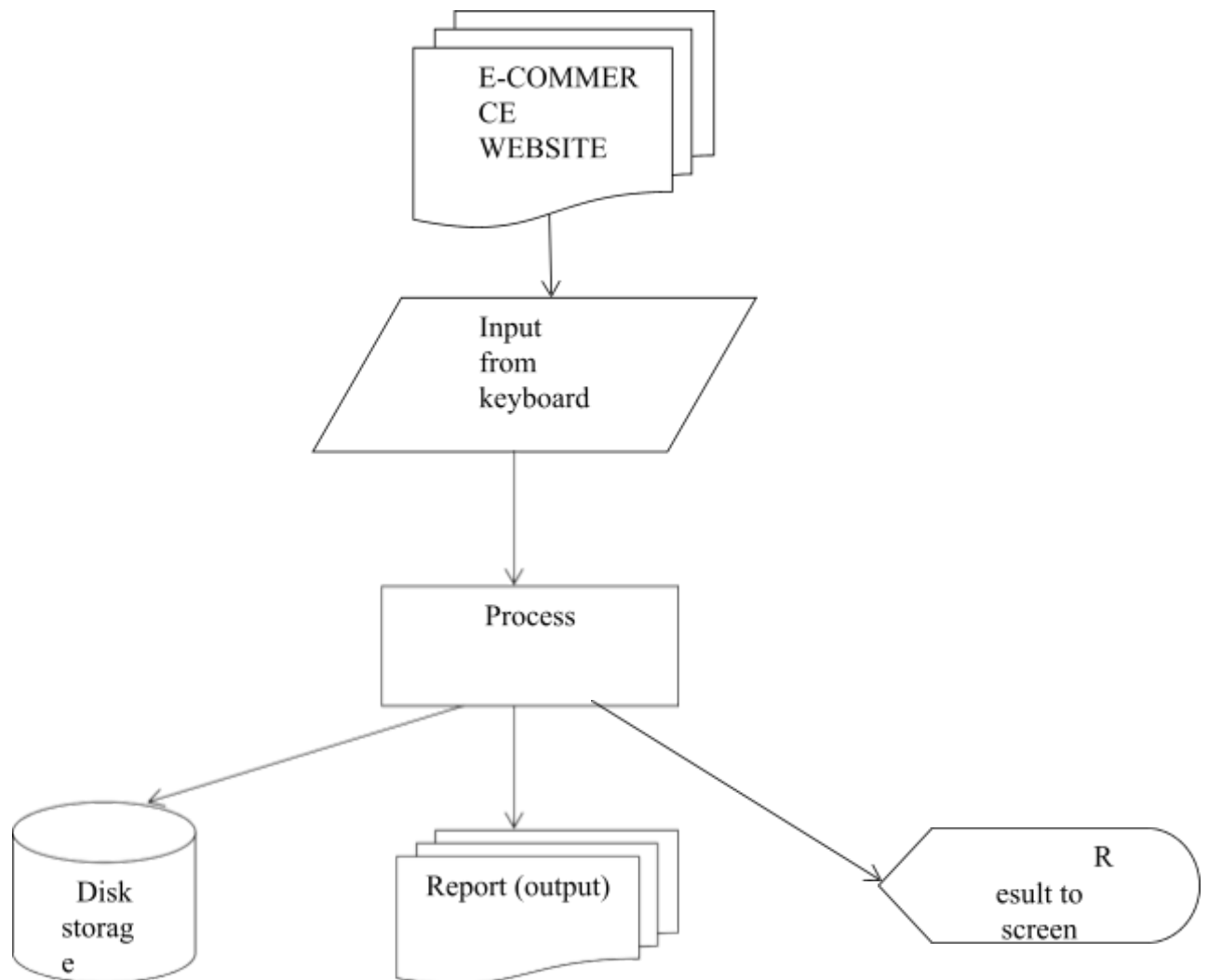


Figure 4.3: Control Center / Overall Dataflow Diagram

4.3.1 Proposed System Operation Flowchart

Description: The diagram below entails the proposed system operation flowchart

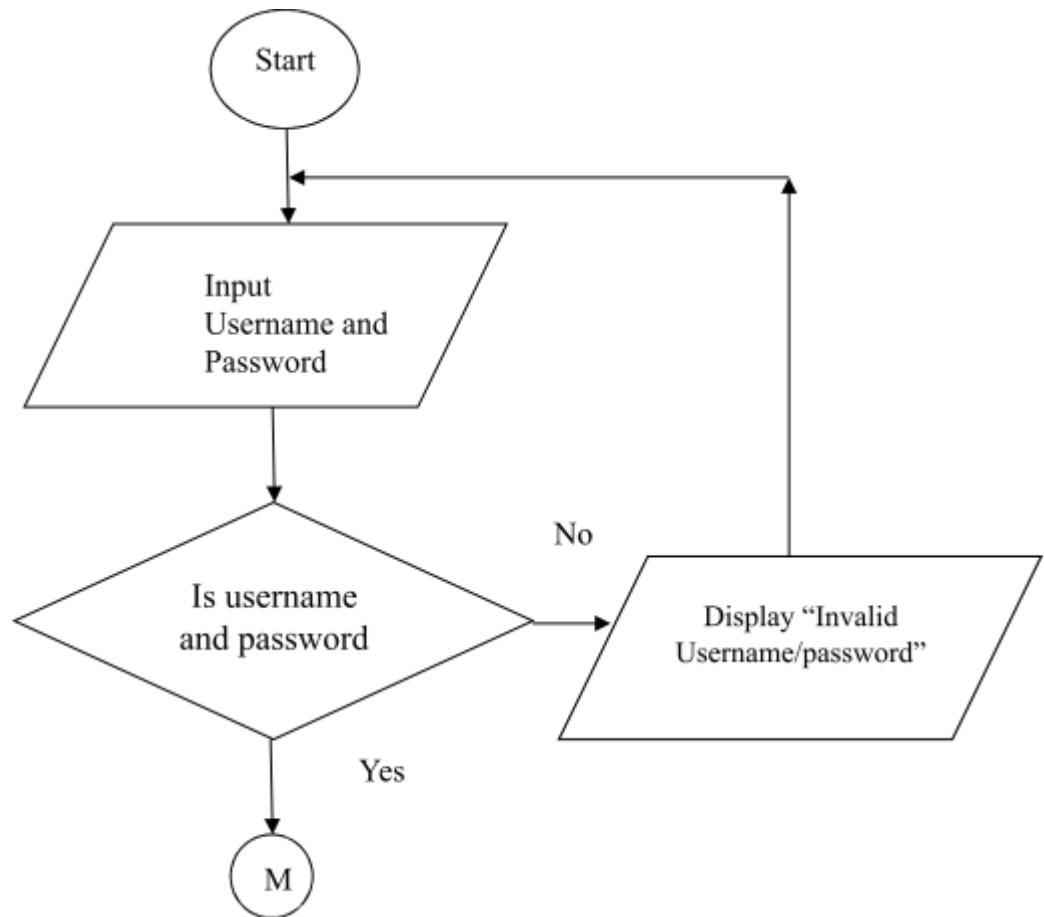


Figure A: Login flowchart

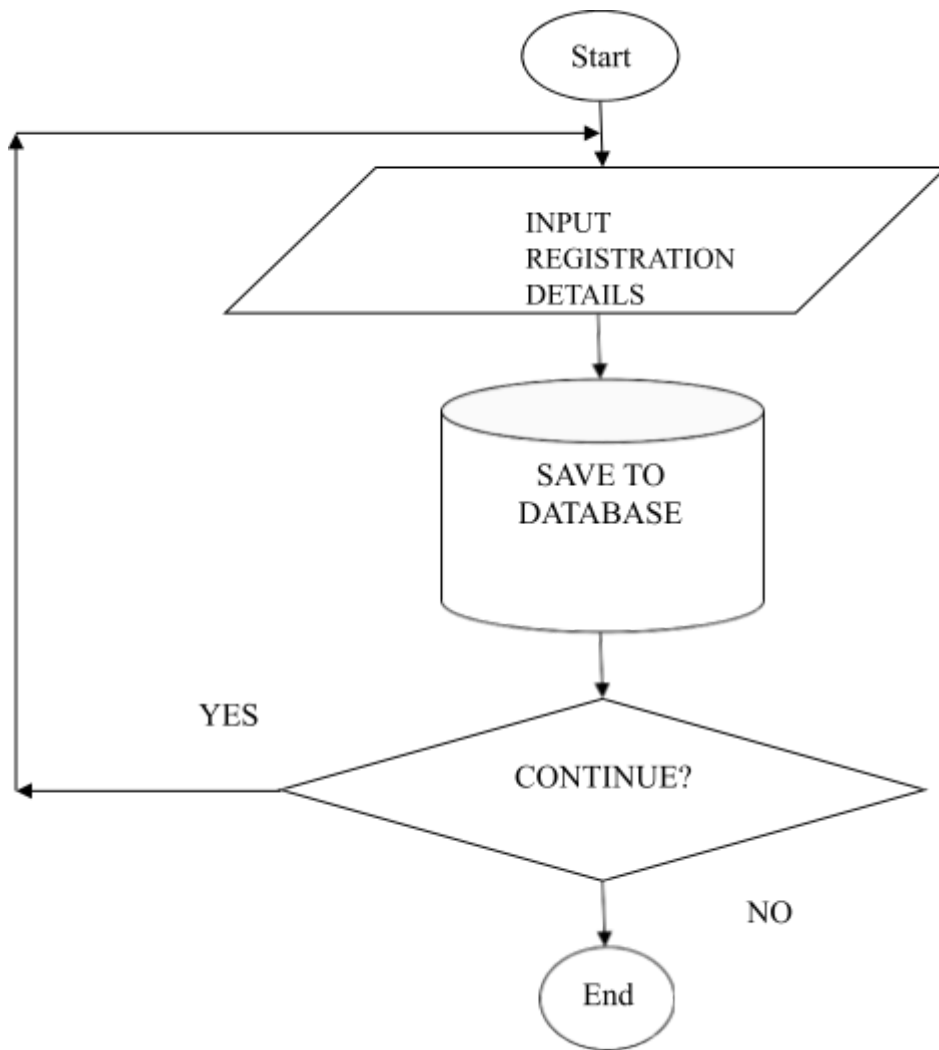


Figure B: Registration Flowchart

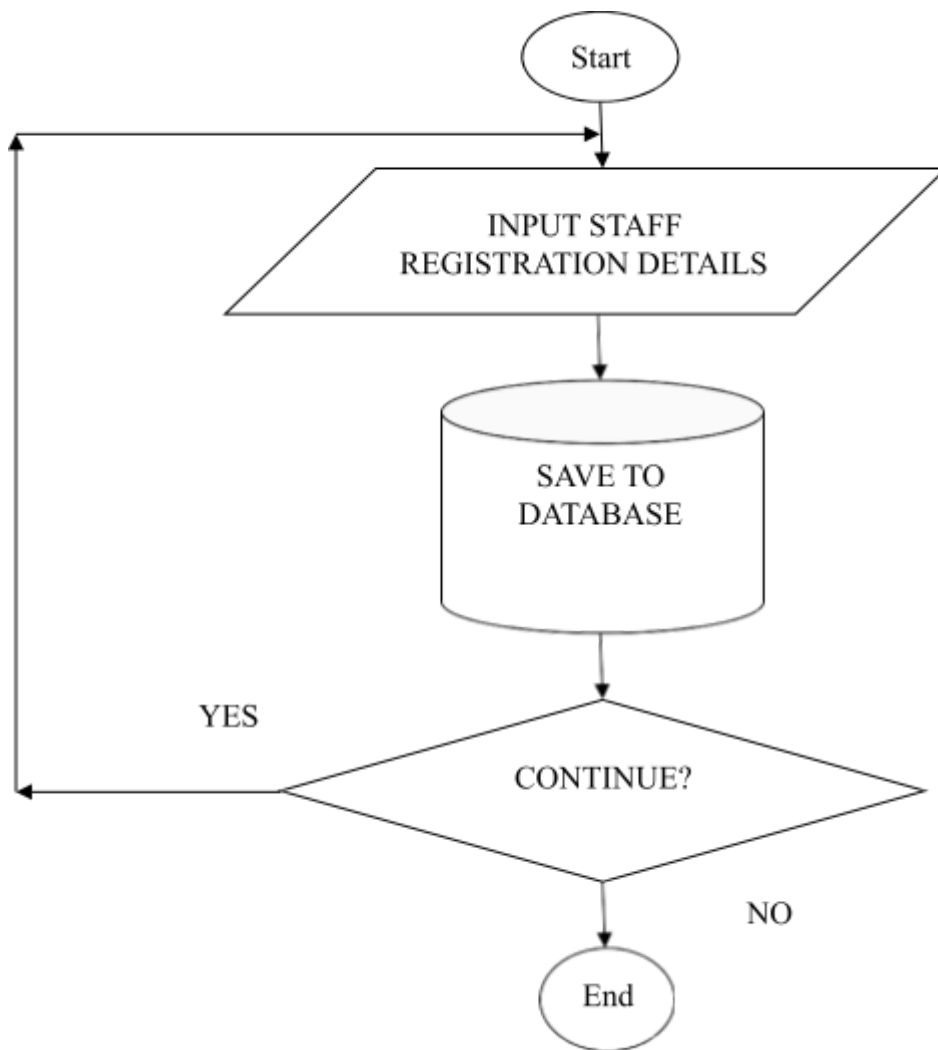


Figure C: Staff Registration Flowchart

Grocery Page Flowchart

Grocery Algorithm:

Step 1: Launch the application and the home screen will appear.

Step 2: Enter username and password.

Step 3: Click on the All Products buttons or select a desired category.

Step 4: Then you look for your desired product and click on it to view details and add to cart

Step 5: Fill the order form page and click the order now button below.

Step 6: Then, you print out the information of your purchase

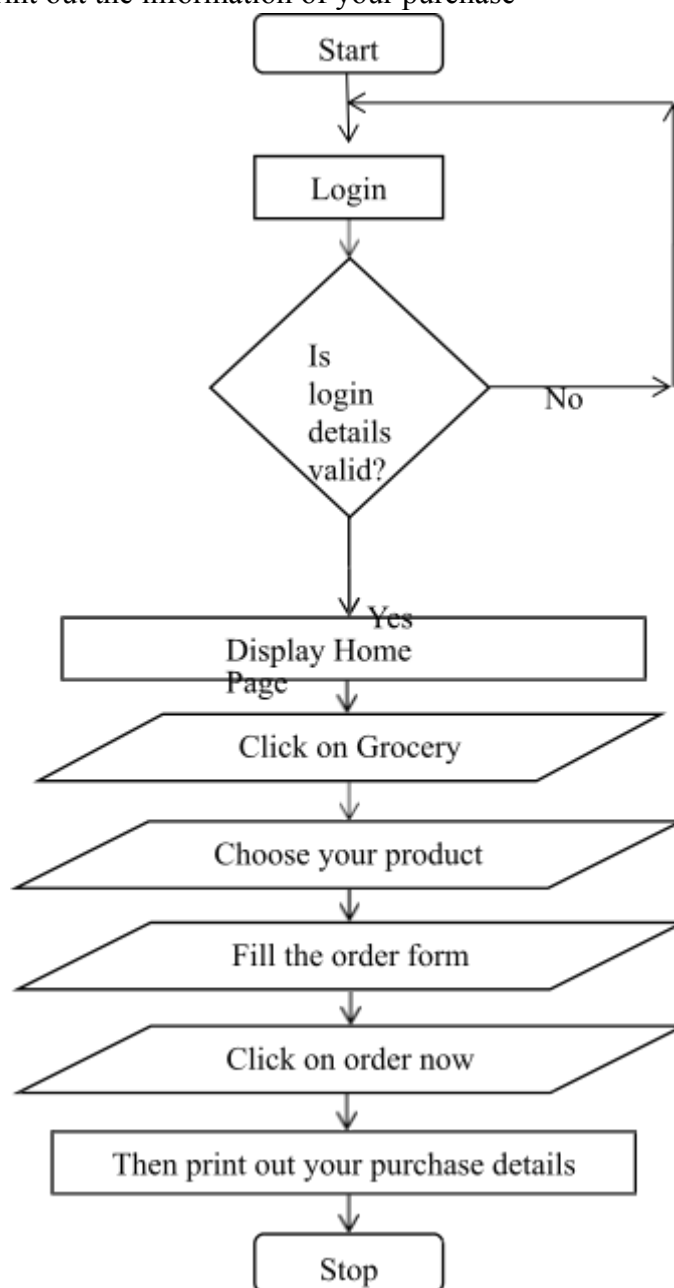


Figure 3.3: Grocery Flowchart

In figure 3.4 is the grocery flowchart of the new system where the user will start the software and click on the grocery link and buy his or her desired items

4.3.1 System Specification and Design

4.3.2 Input and Output Specification

Description: The diagrams below entails the Input and Output Specification of the proposed system.

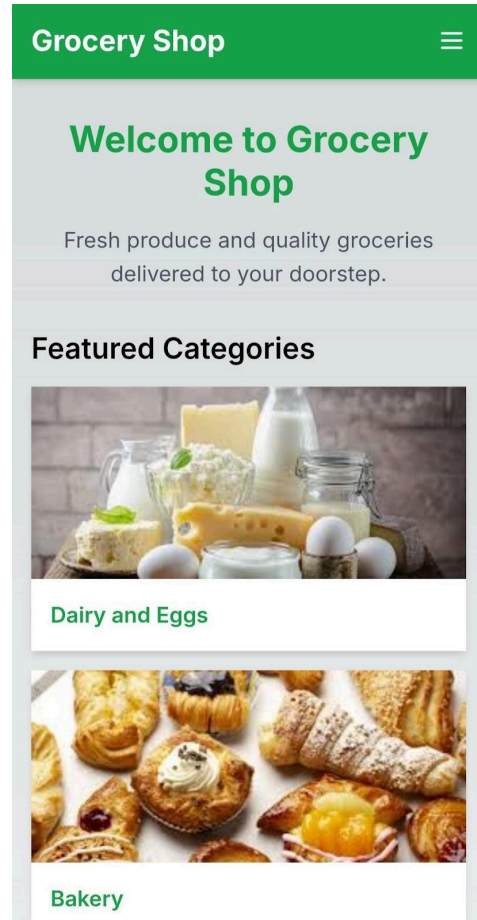
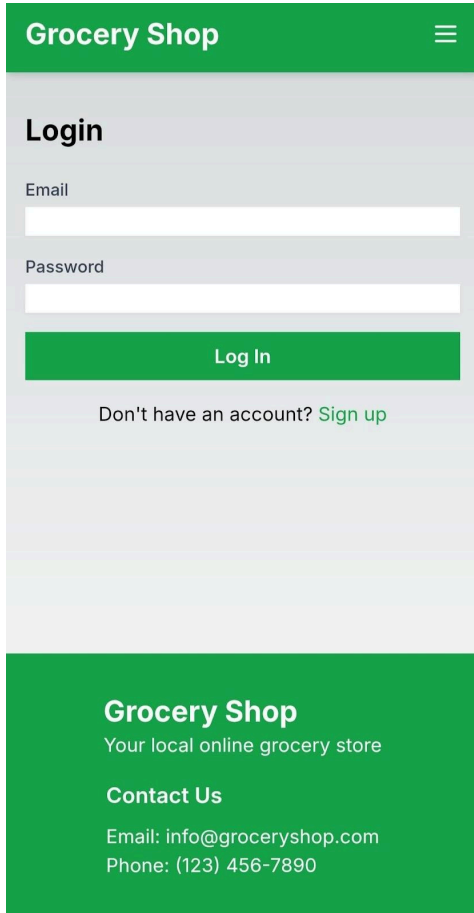


Figure 4.5: Input Specification for Loginpage **Figure 4.6:** Output Specification for Homepage

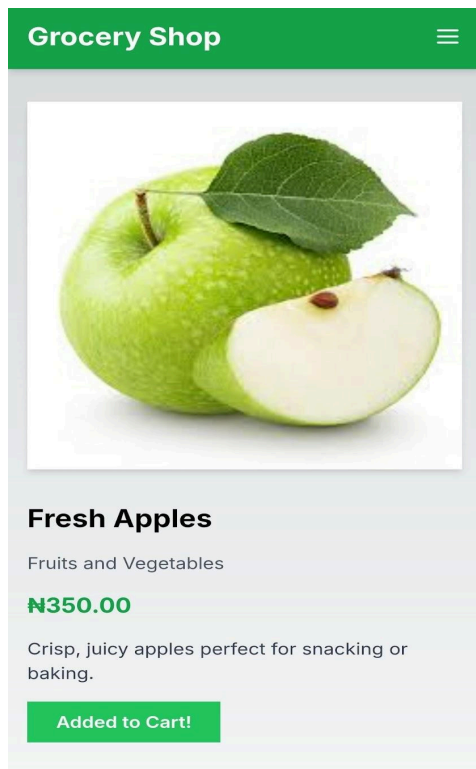


Figure 4.7: Output Specification for page Product Details page

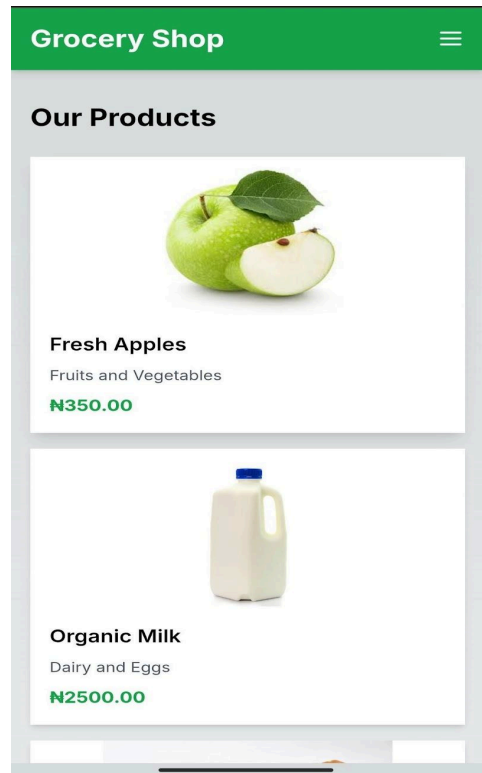


Figure 4.8: Output Specification for Products

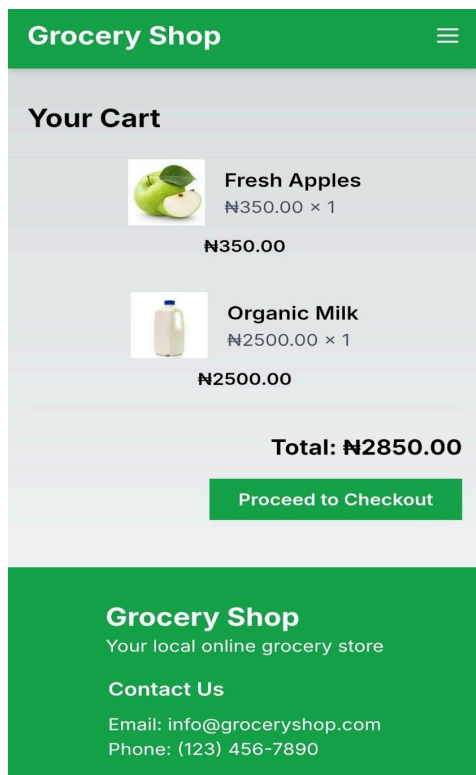


Figure 4.9: Output /Input Specification for Cart Page

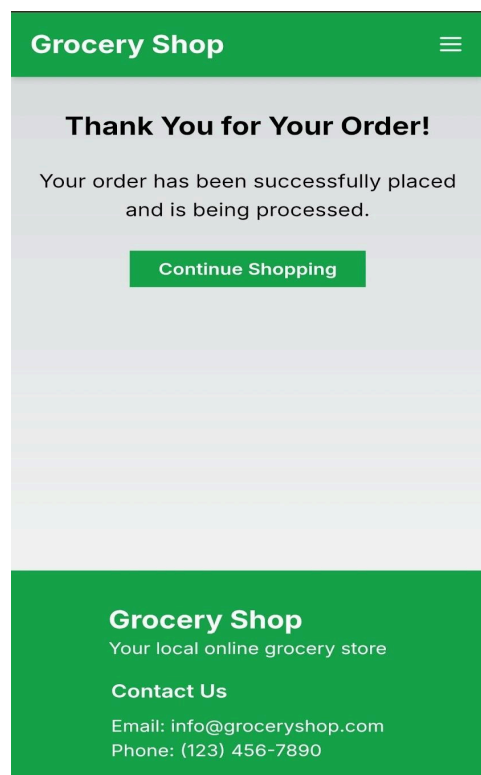


Figure 4.10: Output Spec for thank-you page

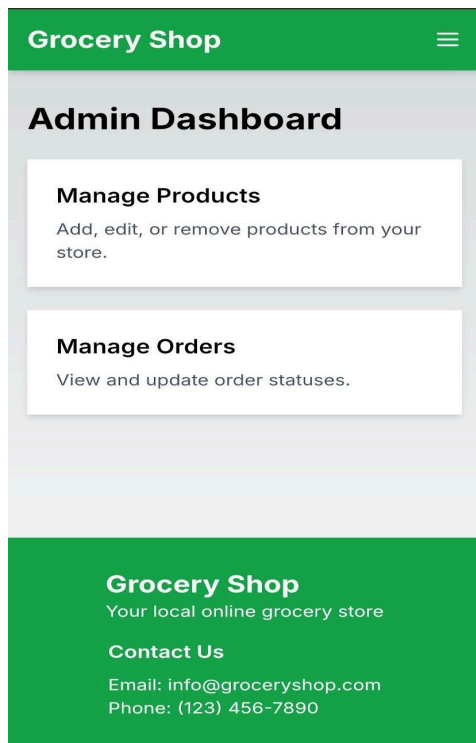


Figure 4.11: Input Specification for Admin Home Page

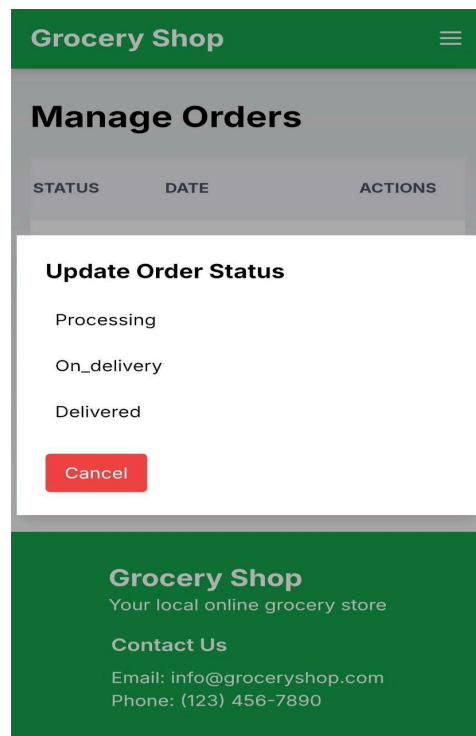


Figure 4.12: Input Spec for Admin Edit order

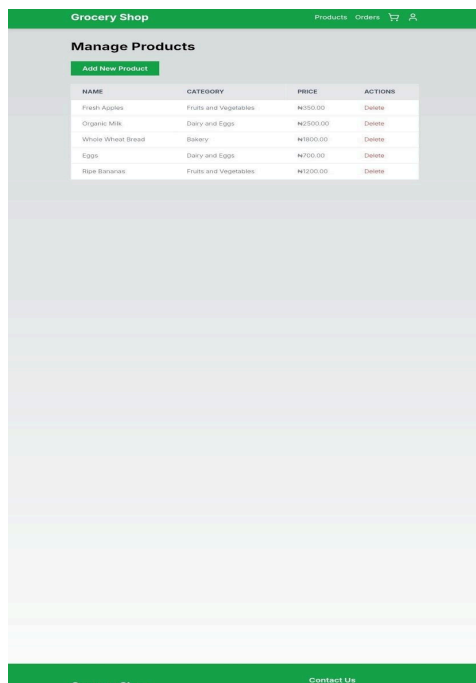


Figure 4.13: Output Specification for Admin Products Page

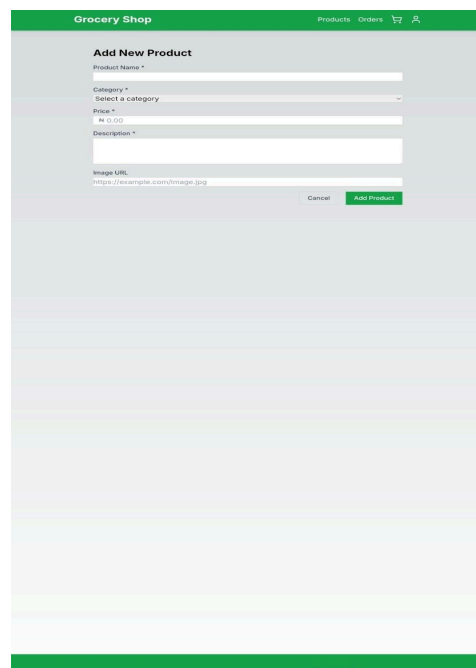


Figure 4.14: Input Spec for admin create product page

4.3.3 Database Specification and Design

The E-commerce Website system database contains four (4) tables which are Category Table, Grocery Table, Grocery Sales Record Table, and Login Table:

Table 4.1: Category Table

S/N	FIELD NAME	FIELD DESCRIPTION	FIELD TYPE	FIELD LENGHT
1	Id	Unique Identification	Integer	30
2	name	Item Category	Varchar	100

Table 4.2: Product Table

S/N	FIELD NAME	FIELD DESCRIPTION	FIELD TYPE	FIELD LENGHT
1	Id	Unique Identification	Integer	30
2	name	Name of product	Varchar	30
3	Description	Item Description	Varchar	1000
4	Image	User Photo	Varchar	100
5	Stock	Stock Items	Varchar	30
6	Price	Item price	Float	30
7	Category	Item category	Varchar	1000
8	Tdate	Transaction Date	Varchar	30

Table 4.3: Order Table

S/N	FIELD NAME	FIELD DESCRIPTION	FIELD TYPE	FIELD LENGHT
1	Id	Unique Identification	Integer	30
2	Amount	Amount of order	Float	30
3	Quantity	Number of Stock Sold	Varchar	30
5	Tdate	Transaction Date	Varchar	50

Table 4.4: User Table

S/N	FIELD NAME	FIELD DESCRIPTION	FIELD TYPE	FIELD LENGHT
1	Id	Unique Identification	Integer	30
2	email	Username	Varchar	50
3	password	Password	Varchar	50
4	role	Role	Varchar	5

4.3.4 Data Dictionary

The data dictionary table contains the list of field and their description used in the database table structure designation.

Table 4.5: E-Commerce Data Dictionary

S/N	Field Name	Description
1.	Id	This field signifies the unique identification of the table and it's a primary key.

2.	Bank	It consist of the list of banks in Nigeria
3.	Country	It consist of the list of countries
4.	Location	It consist of the list of states within a specific country
5.	Fname	It signifies the full name of the End-user
6.	Gender	It signifies the gender of the End-user
7.	Address	It signifies the address of the End-user
8.	Bank	It consist of the list of banks in Nigeria
9.	Pass	It contains the end-user's password / pin
10.	Datereg	Date of registration

4.4 Choice and Justification of Programming Language

To ensure a standardized object oriented program in its entire ramification, HTML, CSS, TYPESCRIPT, NEXTJS , NODEJS and MYSQL Database were used in the development of E-commerce Website. These entire programs are used to ensure effective program. The motive behind the use of the language is its compatibility with several Operating Systems. It is object oriented and combines the feature of hypertext and TypeScript platform thereby making it to run on any Operating System through the web browser. It is secured in that it does not cause harm to user's system and access to information is restricted. The language is simple and easy to learn. Below is a brief explanation of the programming languages used;

HTML: HTML is a **markup** language for **describing** web documents (web pages).

1. HTML stands for **H**yper **T**ext **M**arkup **L**anguage
2. A markup language is a set of **markup tags**

3. HTML documents are described by **HTML tags**
4. Each HTML tag **describes** different document content

CSS: stands for Cascading Style Sheet, it describes how HTML elements are to be displayed on screen, paper, or in other media. CSS saves a lot of work. It can control the layout of multiple web pages all at once and External style sheets are stored in CSS files

JAVASCRIPT: JavaScript is the programming language of HTML and the Web.

Programming makes computers do what you want them to do. JavaScript is easy to learn.

Hypertext Preprocessor (PHP): PHP is a server scripting language, and a powerful tool for making dynamic and interactive Web pages. PHP is a widely-used, free, and efficient alternative to competitors such as Microsoft's ASP.

MYSQL: SQL is a standard language for accessing and manipulating databases. SQL stands for Structured Query Language, SQL lets you access and manipulate databases, and SQL is an ANSI (American National Standards Institute) standard. SQL can perform the following task;

1. SQL can execute queries against a database
2. SQL can retrieve data from a database
3. SQL can insert records in a database
4. SQL can update records in a database
5. SQL can delete records from a database
6. SQL can create new databases
7. SQL can create new tables in a database
8. SQL can create stored procedures in a database
9. SQL can create views in a database
10. SQL can set permissions on tables, procedures, and views

4.5 Program Documentation

The main purpose of program documentation is to describe the design of your program. The documentation also provides the framework in which to place the code. As coding progresses, the code is inserted into the framework already created by the program documentation. The following was documented for the successful implementation of the software;

- a) README file which contains a brief description of the project, installation instructions, a short example/tutorial,
- b) Document your code which comprises application of coding conventions, such as file organization, comments, naming conventions, programming practices, etc.
- c) Version of the files along with the major edits you did in each version

4.6 Implementation Techniques

The software Implementation is a process carried out to make changes on the tested programs developed in the system. The software will be installed successfully if the hardware requirement and the software requirement are available. The following phase contains how the software was implemented successfully;

1) Coding: The coding system has been developed to meet the following main objectives;

- a) To design application software that will be used to purchase an item online by the interested personnel.
- b) To design application software that will update new products like grocery items and other related items online.
- c) To design software that will be used to make series of grocery shopping online by the several personnel.
- d) To design software that will be used to research about products and make purchases for desired item.
- e) It will be used for automated system for the grocery store online shopping.

2) **File conversion:** During file setup it is necessary to convert the existing master file to a new page. This new form is the responsibility of the newly designed, which undergoes the process of converting the old system master file to a new one.

System Conversion is a transformation process stage in system implementation at which the newly designed system is put in place of the old system by the organization after been tested and documented to prove that it is working. It is a significant milestone after which the ownership of the system if been officially transferred from the researcher (analyst) and the programmer to the end user.

The under listed are various system conversion briefly described to enable the implementation process.

- a) **Parallel System of Conversion:** This takes place simultaneously at the same time, runs between the old and new system until probably the new system is completely put in place and the old system discarded.
- b) **Direct System of Conversion:** This takes place automatically at a time over a short period of time. It saves cost, manages time and enhances fast operation but finds to a high risk of failure without new system comparability.

3) **Changeover Procedure:**

This is the process of changing from the former or previous system to the new system. In a changeover procedure, the organization change from the existing system to new system. This can be done in one of the following ways:

- a) **Parallel Changeover:** This is the process of running the two systems simultaneously and comparing their results until the new system proves satisfactory; after which the use of the new system would be commenced.

- b) **Direct Changeover:** This is the case whereby the new system replaced the old system immediately after development and when it must have proved successful. This procedure may be drastic if the new system fails.
 - c) **Phased Changeover:** In phased changeover method, the system usually starts with one unit or department of the organization. The advantage is that the organization would avoid losses in case it (the new system) fails.
- 4) **Commissioning:** This is the process of ensuring that installed systems are functionally tested and capable of being operated and conform to the design intention.

4.7 Programming Module Specification

Programming module specification follows successful implementation and incorporates also evaluation of the system in order to give the desired or necessary improvement. It includes monitoring the process of the other stages of system development to ensure that the development plan and objective are being accomplished. There are three types of system maintenance which include;

- a) **Corrective Maintenance:** This covers maintenance, which is needed to put right coding errors and other faults, which may be introduced into the software. It include, the routine “debugging” of newly produced or recently amended code and emergency error correction in response to report faults.
- b) **Adaptive Maintenance:** This covers the changes which are made to the software to meet new or changed circumstances, such as restructuring of a database, alternatives in operating procedures and changes to hardware or software versions.
- c) **Preventive Maintenance:** This covers attempts to make the software perform more effectively. It includes user requests for enhancement, improvement due to experience, changes to make the software more easy to use and rewrite the code to make the

maintenance that is specifically used for the new system to reduce its chances of breakages.

4.7.1 Installation

The following are the steps required for the installation of the new E-commerce Website;

Installing Software from the CD Drive

Step 1: Insert and Open you Compact Disk (CD)

Step 2: Copy the “**e-commerce-website**” folder and paste in any path of your choice

Step 3: Enter the frontend folder and run the following commands
npm install; nom run start

Step 4: Enter your backend folder and run the following commands
npm install; npm run start

Step 5: Open your browser e.g Mozilla Firefox, Google Chrome.

Step 6: Type in this URL below on your address bar of your browser

localhost:port

Step 7: Ensure the username is **root** and password is empty before clicking on **Go** button

Step 8: Click on Import and Browse your computer to search for e-commerce.db

Path: **C:\wamp\www\ e-commerce-website \db**

Step 9: Click and open on **e-commerce**, then click on **Go** button below the import page.

Step 10: Type in this URL below to execute the Software

127.0.0.1 /e-commerce-website/

Step 10: You're done

Re-Executing the Software after Installation

Step 1: Start your frontend and backend server

Step 2: Open your browser and type in the URL below and click enter

127.0.0.1 / e-commerce-website/

4.8 Computer Hardware Minimum Requirement

The software designed needed the following hardware for an effective operation of the newly designed system.

- a) A system running on AMD, Pentium 2 or higher processor
- b) The random access memory (ram) should be at least 512mb.
- c) Enhanced keyboard.
- d) At least 20 GB hard disk.
- e) V.G.A or a colored monitor.

4.9 Software Requirement

The software requirements include:

- a) A Windows XP operating system or higher version for faster processing
- b) MySQL database
- c) Apache webserver
- d) Nodejs and Reactjs runtime environment

4.10 Personnel / User Training

Before the user can use the software, it is necessary to give a thorough training on how to use the software. It is also important to note that the users of the software are the operators. Training involves the tutorials, lectures or other methods used to make the users to understand how to use and maintain the software program. The following steps would help train and guide the users on how to use the program effectively:

- a) Follow the instruction as in the software installation above
- b) Right click on the E-commerce Website Software and copy to the installed WAMP server
- c) If successful, click on your browser and type in **127.0.0.1/ e-commerce-website**
- d) Enter the security password and click on login

- e) Enter the main menu, select any of the submenus you want and continue
- f) After performing necessary actions on the submenu, exit the program from the browser close button

4.11 Discussion of Findings

The design and implementation of e-commerce websites have become increasingly critical in today's digital economy, where businesses are leveraging online platforms to reach broader audiences and improve their sales processes. Key findings from the study of e-commerce website design reveal several important aspects that contribute to the success of these platforms.

One of the most significant findings is the importance of user-friendly interface design. According to Smith and Jones (2022), a well-designed user interface (UI) significantly enhances the user experience (UX) by making navigation intuitive and reducing the steps needed to complete transactions. The study indicates that websites with cluttered layouts and complicated navigation tend to have higher bounce rates, as users prefer sites where they can easily find products and proceed with purchases.

Additionally, the research highlights the role of responsive design in e-commerce success. With the increasing use of mobile devices for online shopping, it is essential that e-commerce websites are optimized for various screen sizes and devices. As noted by Williams et al. (2021), responsive design ensures that users have a consistent and seamless experience across different devices, which is crucial for maintaining customer satisfaction and increasing sales. Websites that fail to implement responsive design risk alienating a significant portion of their audience, particularly mobile users.

Another key finding relates to the security features of e-commerce websites. Ensuring the security of customer data and transactions is paramount, as breaches can lead to loss of customer trust and legal repercussions. According to Johnson (2020), the implementation of robust security measures, such as SSL certificates and secure payment gateways, is essential for protecting sensitive information and fostering trust among users. The study emphasizes that consumers are more likely to engage with e-commerce websites that clearly demonstrate their commitment to security.

The research also underscores the importance of search engine optimization (SEO) in driving traffic to e-commerce websites. Effective SEO strategies, including the use of relevant keywords, meta tags, and high-quality content, are critical for improving the visibility of e-commerce sites in search engine results. As Brown and Taylor (2023) point out, e-commerce websites that rank higher on search engines are more likely to attract organic traffic, leading to increased sales and revenue.

Furthermore, the study found that the integration of multiple payment options and a smooth checkout process are crucial for reducing cart abandonment rates. As noted by Harris and Liu (2021), offering a variety of payment methods, such as credit cards, digital wallets, and bank transfers, caters to different customer preferences and can significantly improve the likelihood of completing a sale. The study also highlights the importance of minimizing the steps in the checkout process to reduce friction and encourage customers to finalize their purchases.

In essence, the successful design and implementation of e-commerce websites hinge on several key factors, including user-friendly interface design, responsive layouts, robust security measures, effective SEO strategies, and a streamlined checkout process. These elements not only enhance the user experience but also contribute to the overall effectiveness and profitability of the e-commerce platform. As businesses continue to adapt to the evolving digital landscape, prioritizing these aspects will be essential for sustaining growth and competitiveness in the online marketplace.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 Introduction

It is important to ascertain that the objective of this study was on the Design and Implementation of E-commerce Website. In the preceding chapter, the relevant data collected for this study were presented, critically analyzed and appropriate interpretation given. In this chapter, certain recommendations made which in the opinion of the researcher will be of benefits in addressing the E-commerce Website.

5.2 Summary

The Internet-based electronic commerce environment has been widespread developed, which provides consumers with a convenient platform to search for information, interact with retailers and purchase products online. According to data collected in 2013, Nigeria has owned around 8.7 million internet users. That corresponds to over 94% of the population, which makes Nigeria become one of the greatest countries in the world in terms of internet use (E-commerce News, 2016). Furthermore, the report brings up the fact that the dominating categories of products that are traded online in Nigeria are travels, clothing and shoes, but also electronics and entertainment/media and it also mentions Adlibris, Cdon, Ellos and H&M as some of the most popular stores for online shopping within the different categories.

The motivation that led to the implementation of the proposed system is that alot of customers have to queue for a long period of time before getting their desired product or goods from the grocery seller, which makes shopping within the store very stressful, and the customers have to spend all their time just to purchase an item in the store shop which is not right, all because of the manual approach towards grocery shopping.

The aim of the study is to design and implement a web based software that will eradicate the problems of the existing E-Commerce Website System stated above. In achieving this aim, the following specific objectives were laid out to develop an application software that will automate the system for the grocery store online shopping and be used to purchase an item online by the interested personnel and develop a system that will be used for automated system for the grocery store online shopping.

The methodology adopted in this study is the structure system analysis and design methodology (SSADM) which is a technical approach for analyzing and designing an application or system by applying object oriented programming as well as visual modeling throughout the software development process. The programming language used is HTML, CSS, JAVASCRIPT, PHP, SQL and JQUERY. The reason why web programming languages was used is because, it is platform independent and it is a web based application. Based on the findings of this study, recommendations made are that formal analysis and design were used to give adequate understanding to the object-oriented technique used. The major quest is to ease the problem and stress encountered in customer's grocery shopping experience and keeping records of stock list, customer lists, sales volume, and summary report. The expected result is a web based E-Commerce software that will apply cyber security features to the e-Commerce application for a grocery store online shopping and also update new products like grocery items and other related items online.

5.3 Conclusion

In conclusion, the design and implementation of an e-commerce website are pivotal in determining its success in a competitive online market. A user-friendly interface, responsive design, strong security measures, effective search engine optimization, and a streamlined checkout process are all critical components that contribute to a positive user experience and increased sales. By focusing on these key areas, businesses can create e-commerce platforms

that not only attract and retain customers but also drive growth and profitability. As the digital landscape continues to evolve, prioritizing these elements will remain essential for businesses seeking to thrive in the e-commerce sector.

5.4 Recommendations

From this study, a shopping centre website providing online market and web site package under the same domain is successfully implemented.

Using the principle of content management, online market provides all functions which customers need for conducting online store for grocery shopping. Furthermore, the website package service well known among online store owners is convenient and flexible for any potential users. For website development open source software is mostly used due to its low cost of development. Provided services are likewise relatively low in price and suitable for online market. This website also promotes e-commerce and online marketing on the Internet, complying with the information technology policy of the government. Regarding website quality, implementing various techniques of web design and database management system coupled with other additional services, the website is quite responsive.

Furthermore, businesses should prioritize creating a user-friendly interface that is easy to navigate and visually appealing to enhance customer satisfaction and retention. They should ensure their e-commerce websites are responsive, providing a seamless experience across all devices, particularly mobile phones. Strong security measures should be implemented to protect customer data and build trust, including SSL certificates and secure payment gateways.

Additionally, businesses should focus on effective search engine optimization (SEO) to improve visibility and attract organic traffic. Finally, they should streamline the checkout process and offer multiple payment options to reduce cart abandonment and increase conversion rates.

REFERENCES

- Brown, S., & Taylor, R. (2023). The Impact of SEO on E-Commerce Success: Strategies for Higher Rankings. *Journal of Digital Marketing*, 18(3), 134-150.
- Definition of Quality Products. (2010). *Neweconomicseducation.blogspot.se*. Retrieved 8 April 2017, from <http://neweconomicseducation.blogspot.se/2012/02/definition-of-qualityproducts.html>
- Downs, A (1961). A theory of consumer efficiency. *Journal of Retailing*, 37, 6–12. Winter.
- Dunk, A. (2002). Product quality, environmental accounting and quality performance. *Accounting, Auditing & Accountability Journal*, 15(5), 719-732. <http://dx.doi.org/10.1108/09513570210448975>
- Ecommerce in Nigeria - Ecommerce News. (2016). *Ecommerce News*. Retrieved from <https://ecommercenews.eu/e-commerce-per-country/e-commerce-Nigeria/>
- Ecommerce News. (2014). Shopping online for groceries popular in Nigeria - Ecommerce News. Available at: <https://ecommercenews.eu/shopping-online-for-groceries-popular-inNigeria/>
- Elliott, J. (2002). Achieving Customer Satisfaction through Requirements Understanding. *Isn.at*. Retrieved 8 April 2017, from http://www.isn.at/select_newspaper/requirements/dera.html
- Greener S.L. & Martelli J. (2015) *An Introduction to Business Research Methods*. Copenhagen: Ventus Publishing ApS.
- Harris, M., & Liu, X. (2021). Optimizing the Checkout Process: Reducing Cart Abandonment in E-Commerce. *International Journal of E-Commerce and Retail*, 10(2), 89-102.
- Hsin Chang, H., & Wen Chen, S. (2008). The impact of online store environment cues on purchase intention. *Online Information Review*, 32(6), 818-841. <http://dx.doi.org/10.1108/14684520810923953>
- International Journal Of Retail & Distribution Management*, 33(2), 161-176. <http://dx.doi.org/10.1108/09590550510581485>
- Johnson, P. (2020). E-Commerce Security: Best Practices for Protecting Customer Data. *Journal of Online Security*, 12(4), 200-215.
- Khosrow-Pour, M. (2006). *Encyclopedia of E-Commerce, E-Government and Mobile Commerce*. Hershey PA: Idea Group Reference.
- Lee, G., & Lin, H. (2005). Customer perceptions of e-service quality in online shopping.

- Nguyen, T., & Gizaw, A. (2014). Factors that influence consumer purchasing decisions of Private Label Food Products (Bachelor). School of Business, Society and Engineering.
- Park, C. & Kim, Y. (2003). Identifying key factors affecting consumer purchase behavior in an online shopping context. *International Journal Of Retail & Distribution Management*, 31(1), 16-29. <http://dx.doi.org/10.1108/09590550310457818>
- PostNord (2016). E-commerce in the Nordics 2016 , Retrieved April 10 2017 from <http://www.postnord.com/globalassets/global/english/document/publications/2016/e-commercein-the-nordics-2016-web.pdf>
- PostNord (2017). E-commerce in the Nordics 2017 , Retrieved April 10 2017 from <http://www.postnord.com/globalassets/global/english/document/publications/2017/e-commercein-the-nordics-2017.pdf>
- Product quality. (n.d.) McGraw-Hill Concise Encyclopedia of Engineering. (2002). Retrieved April 8 2017 from <http://encyclopedia2.thefreedictionary.com/Product+quality>
- Rahman, M. (2013). GREEN PRODUCTS: A STUDY ON YOUNG & NATIVE SWEDISH CONSUMERS' PURCHASE INTENTIONS OF GREEN PRODUCTS. Master's Thesis. Umeå School of Business & Economics.
- Raijas, A., & Tuunainen, V. (2001). Critical factors in electronic grocery shopping. *The International Review Of Retail, Distribution And Consumer Research*, 11(3), 255-265. <http://dx.doi.org/10.1080/09593960121682>
- Rao, S., Raghunathan, T., & Solis, L. (1997). A comparative study of quality practices and results in India, China and Mexico. *Journal Of Quality Management*, 2(2), 235-250. [http://dx.doi.org/10.1016/s1084-8568\(97\)90005-5](http://dx.doi.org/10.1016/s1084-8568(97)90005-5)
- Research and markets; Nigeria leading in internet use. (2011). *Entertainment Newsweekly*, 191. Retrieved from <http://proxy.library.ju.se/login?url=http://search.proquest.com.proxy.library.ju.se/docview/905811955?accountid=11754>
- Saleem, A. G., Ibrahim, M., Yousuf, M., & Naveed Ahmed, A. (2015). Product Perceived Quality and Purchase Intention with Consumer Satisfaction. *Global Journal of Management And Business Research*, 15(1).
- Salisbury, W., Pearson, R., Pearson, A., & Miller, D. (2001). Perceived security and World Wide Web purchase intention. *Industrial Management & Data Systems*, 101(4), 165-177. <http://dx.doi.org/10.1108/02635570110390071>

- Saunders, M., Lewis, P. & Thornhill, A. (2009). *Research Methods for Business Customers*. Harlow: Pearson Education.
- Smith, A., & Jones, L. (2022). The Role of User Interface Design in Enhancing E-Commerce User Experience. *Journal of Human-Computer Interaction*, 25(1), 45-61.
- Srinivasan, N., Ratchford, B.T., (1991). An empirical test of an external search for automobiles. *Journal of Consumer Research* 18, 233-242
- Sullivan, P. and Heitmeyer, J. (2008). Looking at Gen Y shopping preferences and intentions: exploring the role of experience and apparel involvement. *International Journal of Consumer Studies*, 32(3), pp.285-295.
- Verhoef, P. and Langerak, F. (2001). Possible determinants of consumers' adoption of electronic grocery shopping in the Netherlands. *Journal of Retailing and Consumer Services*, 8(5), pp.275-285.
- Wärneryd, B. et al. (1990). *Att fråga: om frågekonstruktion vid intervjuundersökningar och postenkäter*. Örebro: Statistiska Centralbyrån.
- what decides our purchasing behavior) Retrieved from:
<http://tech.qq.com/a/20150330/073747.html>
- Williams, K., Brown, J., & Lee, D. (2021). The Importance of Responsive Design in E-Commerce Websites. *International Journal of Web Development*, 7(3), 172-189.
- Young Kim, E. and Kim, Y. (2004). Predicting online purchase intentions for clothing products. *European Journal of Marketing*, 38(7), pp.883-897.
- Zeithaml, V. (2006). Consumer Perceptions of Price, Quality, and Value: A Means-End Model and Synthesis of Evidence. *Journal Of Marketing*, 52(3), 2.
<http://dx.doi.org/10.2307/1251446>

APPENDIX A

“SOURCE CODE”

```
PAGE.TSX
"use client"
import Link from "next/link"
import Image from "next/image"
import { useEffect, useState } from "react"
import LoadingSpinner from "../components/Loading-Spinner"

const API_BASE_URL = process.env.NEXT_PUBLIC_API_BASE_URL ||
"http://localhost:3000"

export default function Home() {
  const [featuredCategories, setFeaturedCategories] = useState<any[]>([]);
  const [isLoading, setIsLoading] = useState(true)

  useEffect(() => {
    const fetchCategories = async () => {
      try {
        const response = await fetch(`${API_BASE_URL}/products/category`)
        const data = await response.json()
        setFeaturedCategories(data)
      } catch (error) {
        console.error("Failed to fetch featured categories:", error)
      } finally {
        setIsLoading(false)
      }
    }
  }, [])

  fetchCategories()

  if (isLoading) {
    return <LoadingSpinner />
  }
  return (
    <div className="space-y-8">
      <section className="text-center">
        <h1 className="text-3xl md:text-4xl font-bold text-green-600 mb-4">Welcome to
Grocery Shop</h1>
        <p className="text-lg md:text-xl text-gray-600">
          Fresh produce and quality groceries delivered to your doorstep.
        </p>
      </section>

      <section>
        <h2 className="text-2xl font-semibold mb-4">Featured Categories</h2>
        <div className="grid grid-cols-1 sm:grid-cols-2 lg:grid-cols-4 gap-4 md:gap-6">
```

```

    {featuredCategories.map((category) => (
      <Link
        key={category.id}
        href={` /products?category=${category.id}`}
        className="bg-white shadow-md rounded-lg overflow-hidden
hover:shadow-lg transition-shadow duration-300"
      >
        <Image
          src={category.image || "/placeholder.svg"}
          alt={category.name}
          width={300}
          height={200}
          className="w-full h-40 md:h-48 object-cover"
        />
        <div className="p-4">
          <h3 className="text-lg font-semibold text-green-600">{category.name}</h3>
        </div>
      </Link>
    )})
  </div>
</section>

```

```

<section className="text-center">
  <Link
    href="/products"
    className="inline-block bg-green-600 text-white px-6 py-3 rounded-md
font-semibold hover:bg-green-700 transition-colors duration-300"
  >
    Shop All Products
  </Link>
</section>
</div>
)
}

```

THANK-YOU.TSX

```
import Link from "next/link"
```

```

export default function ThankYouPage() {
  return (
    <div className="text-center max-w-md mx-auto">
      <h1 className="text-2xl md:text-3xl font-bold mb-6">Thank You for Your
Order!</h1>
      <p className="text-lg md:text-xl mb-8">Your order has been successfully placed
and is being processed.</p>
      <Link
        href="/"
        className="bg-green-600 text-white px-6 py-2 rounded-md font-semibold
hover:bg-green-700 transition-colors duration-300"
      >
        Continue Shopping
    </Link>

```

```
    </Link>
  </div>
)
}
```

CART.TSX

```
"use client"
import Link from "next/link"
import Image from "next/image"
import { useEffect, useState } from "react"
import LoadingSpinner from "../components/Loading-Spinner"
import { useRouter } from "next/navigation"
```

```
const API_BASE_URL = process.env.NEXT_PUBLIC_API_BASE_URL ||
"http://localhost:3000"
```

```
export default function CartPage() {
  const [cartItems, setCartItems] = useState<any[]>([]);
  const [isLoading, setIsLoading] = useState(true)
  let id = ""
  const router = useRouter()

  useEffect(() => {
    const fetchCartItems = async () => {
      id = localStorage.getItem("id") || ""
      if (!id) {
        router.push("/login")
        return
      }
      try {
        const response = await fetch(`${API_BASE_URL}/orders/cart`, {
          method: "GET",
          headers: {
            "Content-Type": "application/json",
            "Authorization": `Bearer ${id}`
          }
        })
      } catch (error) {
        console.error("Failed to fetch cart items:", error)
      } finally {
        setIsLoading(false)
      }
    }
    fetchCartItems()
  }, [])
```

```

if (isLoading) {
  return <LoadingSpinner />
}

const total = cartItems.reduce((sum, item) => sum + item.price * item.quantity, 0)

return (
  <div>
    <h1 className="text-2xl md:text-3xl font-bold mb-6">Your Cart</h1>
    {cartItems.length === 0 ? (
      <div className="text-center py-10">
        <p className="text-lg text-gray-500 mb-4">Your cart is empty.</p>
        <Link href="/" className="text-green-600 font-semibold hover:underline">
          Continue Shopping
        </Link>
      </div>
    ) : (
      <div className="space-y-4">
        {cartItems.map((item) => (
          <div key={item.id} className="flex flex-col sm:flex-row items-center
justify-between border-b pb-4">
            <div className="flex items-center space-x-4 mb-2 sm:mb-0">
              <Image
                src={item.image || "/placeholder.svg"}
                alt={item.name}
                width={64}
                height={64}
                className="rounded-md"
              />
            <div>
              <h2 className="text-lg font-semibold">{item.name}</h2>
              <p className="text-gray-600">
                ₦{item.price.toFixed(2)} x {item.quantity}
              </p>
            </div>
            <div>
              <p className="font-semibold">₦{(item.price *
item.quantity).toFixed(2)}</p>
            </div>
          </div>
        ))}
      </div>
      <div className="mt-6 text-right">
        <p className="text-xl font-bold">Total: ₦{total.toFixed(2)}</p>
        <Link
          href="/checkout"
          className={`inline-block mt-4 px-6 py-2 rounded-md font-semibold
transition-colors duration-300 ${
            cartItems.length === 0
              ? 'bg-gray-400 text-white cursor-not-allowed'

```

```

        : 'bg-green-600 text-white hover:bg-green-700'
      }}
      aria-disabled={cartItems.length === 0}
      tabIndex={cartItems.length === 0 ? -1 : 0}
    >
      {cartItems.length === 0 ? 'Cart is Empty' : 'Proceed to Checkout'}
    </Link>
  </div>
</>
)}
</div>
)
}

```

ORDER.TXS

```

"use client"
import Link from "next/link"
import { formatDate } from "@lib/utills"
import LoadingSpinner from "../components/Loading-Spinner"
import { useEffect, useState } from "react"
import { useRouter } from "next/navigation"

// Mock data for orders
// const orders = [
//   { id: "ORD001", date: "2023-05-15", total: 7530, status: "Delivered" },
//   { id: "ORD002", date: "2023-05-10", total: 4500, status: "Shipped" },
//   { id: "ORD003", date: "2023-05-05", total: 2090, status: "Processing" },
//   { id: "ORD004", date: "2023-04-30", total: 32980, status: "Delivered" },
// ]
const API_BASE_URL = process.env.NEXT_PUBLIC_API_BASE_URL ||
"http://localhost:3000"

export default function OrdersPage() {
  const [orders, setOrders] = useState<any[]>([]);
  const [isLoading, setIsLoading] = useState(true)
  let id = ""
  const router = useRouter()
  useEffect(() => {
    id = localStorage.getItem("id") || ""
    if (!id) {
      router.push("/login")
      return
    }
  })
  const fetchOrders = async () => {
    try {
      const response = await fetch(`${API_BASE_URL}/orders`, {
        method: "GET",
        headers: {
          "Content-Type": "application/json",
          "Authorization": `Bearer ${id}`
        }
      })
    }
  }
}

```

```

    }
  })
  const data = await response.json()
  setOrders(data)
} catch (error) {
  console.error("Failed to fetch cart items:", error)
} finally {
  setIsLoading(false)
}
}
fetchOrders()
}, [])

if (isLoading) {
  return <LoadingSpinner />
}

return (
  <div className="container mx-auto px-4 py-8">
    <h1 className="text-3xl font-bold mb-6">Your Orders</h1>
    <div className="bg-white shadow-md rounded-lg overflow-hidden">
      <table className="min-w-full divide-y divide-gray-200">
        <thead className="bg-gray-50">
          <tr>
            <th className="px-6 py-3 text-left text-xs font-medium text-gray-500 uppercase tracking-wider">
              Order ID
            </th>
            <th className="px-6 py-3 text-left text-xs font-medium text-gray-500 uppercase tracking-wider">
              Date
            </th>
            <th className="px-6 py-3 text-left text-xs font-medium text-gray-500 uppercase tracking-wider">
              Total
            </th>
            <th className="px-6 py-3 text-left text-xs font-medium text-gray-500 uppercase tracking-wider">
              Status
            </th>
            <th className="px-6 py-3 text-left text-xs font-medium text-gray-500 uppercase tracking-wider">
              Actions
            </th>
          </tr>
        </thead>
        <tbody className="bg-white divide-y divide-gray-200">
          {orders.map((order) => (
            <tr key={order.id}>

```

```

        <td className="px-6 py-4 whitespace-nowrap text-sm font-medium
text-gray-900">{order.id}</td>
        <td className="px-6 py-4 whitespace-nowrap text-sm
text-gray-500">{formatDate(order.date)}</td>
        <td className="px-6 py-4 whitespace-nowrap text-sm
text-gray-500">₹{order.total.toFixed(2)}</td>
        <td className="px-6 py-4 whitespace-nowrap">
          <span
            className={
              { px-2 inline-flex text-xs leading-5 font-semibold rounded-full
              $ {order.status === "Delivered"
                ? "bg-green-100 text-green-800"
                : order.status === "Shipped"
                ? "bg-blue-100 text-blue-800"
                : "bg-yellow-100 text-yellow-800"
              }
            }
          >
            {order.status}
          </span>
        </td>
        <td className="px-6 py-4 whitespace-nowrap text-sm font-medium">
          <Link href={` /orders/${order.id}`} className="text-green-600
hover:text-green-900">
            View Details
          </Link>
        </td>
      </tr>
    )}
  </tbody>
</table>
</div>
</div>
)
}

```

CHECKOUT.TXS

```

"use client"
import Link from "next/link"
import Image from "next/image"
import { useEffect, useState } from "react"
import LoadingSpinner from "../components/Loading-Spinner"
import { useRouter } from "next/navigation"

```

```

const API_BASE_URL = process.env.NEXT_PUBLIC_API_BASE_URL ||
"http://localhost:3000"

```

```

export default function CartPage() {
  const [cartItems, setCartItems] = useState<any[]>([]);
  const [isLoading, setIsLoading] = useState(true)

```

```

let id = ''
const router = useRouter()

useEffect(() => {
  const fetchCartItems = async () => {
    id = localStorage.getItem("id") || ""
    if (!id) {
      router.push("/login")
      return
    }
    try {
      const response = await fetch(`${API_BASE_URL}/orders/cart`, {
        method: "GET",
        headers: {
          "Content-Type": "application/json",
          "Authorization": `Bearer ${id}`
        }
      })
    } catch (error) {
      console.error("Failed to fetch cart items:", error)
    } finally {
      setIsLoading(false)
    }
  }
  fetchCartItems()
}, [])

if (isLoading) {
  return <LoadingSpinner />
}

const total = cartItems.reduce((sum, item) => sum + item.price * item.quantity, 0)

return (
  <div>
    <h1 className="text-2xl md:text-3xl font-bold mb-6">Your Cart</h1>
    {cartItems.length === 0 ? (
      <div className="text-center py-10">
        <p className="text-lg text-gray-500 mb-4">Your cart is empty.</p>
        <Link href="/" className="text-green-600 font-semibold hover:underline">
          Continue Shopping
        </Link>
      </div>
    ) : (
      <div className="space-y-4">
        {cartItems.map((item) => (

```

```

    <div key={item.id} className="flex flex-col sm:flex-row items-center
justify-between border-b pb-4">
      <div className="flex items-center space-x-4 mb-2 sm:mb-0">
        <Image
          src={item.image || "/placeholder.svg"}
          alt={item.name}
          width={64}
          height={64}
          className="rounded-md"
        />
        <div>
          <h2 className="text-lg font-semibold">{item.name}</h2>
          <p className="text-gray-600">
            ₦{item.price.toFixed(2)} x {item.quantity}
          </p>
        </div>
        <div>
          <p className="font-semibold">₦{(item.price *
item.quantity).toFixed(2)}</p>
        </div>
      </div>
    </div>
  </div>
  <div className="mt-6 text-right">
    <p className="text-xl font-bold">Total: ₦{total.toFixed(2)}</p>
    <Link
      href="/checkout"
      className={inline-block mt-4 px-6 py-2 rounded-md font-semibold
transition-colors duration-300 ${
        cartItems.length === 0
          ? 'bg-gray-400 text-white cursor-not-allowed'
          : 'bg-green-600 text-white hover:bg-green-700'
      }}
      aria-disabled={cartItems.length === 0}
      tabIndex={cartItems.length === 0 ? -1 : 0}
    >
      {cartItems.length === 0 ? 'Cart is Empty' : 'Proceed to Checkout'}
    </Link>
  </div>
</div>
</div>
)
}

```

LOGIN.TSX

```

"use client"
import Link from "next/link"
import Image from "next/image"
import { useEffect, useState } from "react"
import LoadingSpinner from "../components/Loading-Spinner"

```

```

import { useRouter } from "next/navigation"

const API_BASE_URL = process.env.NEXT_PUBLIC_API_BASE_URL ||
"http://localhost:3000"

export default function CartPage() {
  const [cartItems, setCartItems] = useState<any[]>([]);
  const [isLoading, setIsLoading] = useState(true)
  let id = ""
  const router = useRouter()

  useEffect(() => {
    const fetchCartItems = async () => {
      id = localStorage.getItem("id") || ""
      if (!id) {
        router.push("/login")
        return
      }
      try {
        const response = await fetch(`${API_BASE_URL}/orders/cart`, {
          method: "GET",
          headers: {
            "Content-Type": "application/json",
            "Authorization": `Bearer ${id}`
          }
        })
        const data = await response.json()
        setCartItems(data)
      } catch (error) {
        console.error("Failed to fetch cart items:", error)
      } finally {
        setIsLoading(false)
      }
    }
    fetchCartItems()
  }, [])

  if (isLoading) {
    return <LoadingSpinner />
  }

  const total = cartItems.reduce((sum, item) => sum + item.price * item.quantity, 0)

  return (
    <div>
      <h1 className="text-2xl md:text-3xl font-bold mb-6">Your Cart</h1>
      {cartItems.length === 0 ? (
        <div className="text-center py-10">

```

```

    <p className="text-lg text-gray-500 mb-4">Your cart is empty.</p>
    <Link href="/" className="text-green-600 font-semibold hover:underline">
      Continue Shopping
    </Link>
  </div>
) : (
  <div className="space-y-4">
    {cartItems.map((item) => (
      <div key={item.id} className="flex flex-col sm:flex-row items-center
justify-between border-b pb-4">
        <div className="flex items-center space-x-4 mb-2 sm:mb-0">
          <Image
            src={item.image || "/placeholder.svg"}
            alt={item.name}
            width={64}
            height={64}
            className="rounded-md"
          />
          <div>
            <h2 className="text-lg font-semibold">{item.name}</h2>
            <p className="text-gray-600">
              ₺{item.price.toFixed(2)} x {item.quantity}
            </p>
          </div>
        </div>
        <p className="font-semibold">₺{(item.price *
item.quantity).toFixed(2)}</p>
      </div>
    ))}
  </div>
  <div className="mt-6 text-right">
    <p className="text-xl font-bold">Total: ₺{total.toFixed(2)}</p>
    <Link
      href="/checkout"
      className={`inline-block mt-4 px-6 py-2 rounded-md font-semibold
transition-colors duration-300 ${
        cartItems.length === 0
          ? 'bg-gray-400 text-white cursor-not-allowed'
          : 'bg-green-600 text-white hover:bg-green-700'
      }}
      aria-disabled={cartItems.length === 0}
      tabIndex={cartItems.length === 0 ? -1 : 0}
    >
      {cartItems.length === 0 ? 'Cart is Empty' : 'Proceed to Checkout'}
    </Link>
  </div>
</>
)}
</div>

```

```
)  
}
```

SIGNUP.TSX

```
"use client"
```

```
import { useState } from "react"  
import { useRouter } from "next/navigation"  
import Link from "next/link"
```

```
const API_BASE_URL = process.env.NEXT_PUBLIC_API_BASE_URL ||  
"http://localhost:3000"
```

```
export default function SignupPage() {  
  const [name, setName] = useState("")  
  const [email, setEmail] = useState("")  
  const [password, setPassword] = useState("")  
  const [error, setError] = useState<string|null>(null);  
  const router = useRouter()  
  
  const handleSubmit = async (e: React.FormEvent<HTMLFormElement>) => {  
    e.preventDefault()  
    try {  
      const response = await fetch(`${API_BASE_URL}/user/signup`, {  
        method: "POST",  
        headers: {  
          "Content-Type": "application/json",  
        },  
        body: JSON.stringify({ email, password, name}),  
      })  
  
      const data = await response.json()  
  
      if (!response.ok) {  
        setError("An error occurred")  
        return  
      }  
  
      router.push("/login")  
    } catch (error) {  
      console.error("Failed to fetch orders:", error)  
      setError("Invalid credentials")  
      return  
    } finally {  
    }  
  }  
  // Simulate signup process  
  console.log("Signing up with:", name, email, password)  
  router.push("/login")  
}
```

```

return (
  <div className="max-w-md mx-auto">
    <h1 className="text-2xl md:text-3xl font-bold mb-6">Sign Up</h1>
    <p className="text-red-500 text-center">{error? error :"}</p>
    <form onSubmit={handleSubmit} className="space-y-4">
      <div>
        <label htmlFor="name" className="block text-sm font-medium text-gray-700">
          Name
        </label>
        <input
          type="text"
          id="name"
          value={name}
          onChange={(e) => setName(e.target.value)}
          required
          className="mt-1 block w-full rounded-md border-gray-300 shadow-sm
focus:border-green-500 focus:ring-green-500"
        />
      </div>
      <div>
        <label htmlFor="email" className="block text-sm font-medium text-gray-700">
          Email
        </label>
        <input
          type="email"
          id="email"
          value={email}
          onChange={(e) => setEmail(e.target.value)}
          required
          className="mt-1 block w-full rounded-md border-gray-300 shadow-sm
focus:border-green-500 focus:ring-green-500"
        />
      </div>
      <div>
        <label htmlFor="password" className="block text-sm font-medium
text-gray-700">
          Password
        </label>
        <input
          type="password"
          id="password"
          value={password}
          onChange={(e) => setPassword(e.target.value)}
          required
          className="mt-1 block w-full rounded-md border-gray-300 shadow-sm
focus:border-green-500 focus:ring-green-500"
        />
      </div>
      <button

```

```

        type="submit"
        className="w-full bg-green-600 text-white px-6 py-2 rounded-md font-semibold
hover:bg-green-700 transition-colors duration-300"
      >
        Sign Up
      </button>
    </form>
    <p className="mt-4 text-center">
      Already have an account?{" "}
      <Link href="/login" className="text-green-600 hover:underline">
        Log in
      </Link>
    </p>
  </div>
)
}

```

ADMIN

PAGE.TSX

```
"use client"
```

```
import Link from "next/link"
```

```
import { useRouter } from "next/navigation"
```

```
import { useEffect, useState } from "react"
```

```
export default function AdminPage() {
```

```
  let role = ""
```

```
  let id = ""
```

```
  const router = useRouter()
```

```
  useEffect(() => {
```

```
    role = localStorage.getItem('role') || ""
```

```
    id = localStorage.getItem('id') || ""
```

```
    if (!id) router.push("/login")
```

```
    if (role !== "admin") router.push("/")
```

```
  }, [])
```

```
  return (
```

```
    <div>
```

```
      <h1 className="text-3xl font-bold mb-6">Admin Dashboard</h1>
```

```
      <div className="grid grid-cols-1 md:grid-cols-2 gap-6">
```

```
        <Link
```

```
          href="/admin/products"
```

```
          className="bg-white shadow-md rounded-lg p-6 hover:shadow-lg
```

```
transition-shadow duration-300"
```

```
        >
```

```
          <h2 className="text-xl font-semibold mb-2">Manage Products</h2>
```

```
          <p className="text-gray-600">Add, edit, or remove products from your
store.</p>
```

```

    </Link>
    <Link
      href="/admin/orders"
      className="bg-white shadow-md rounded-lg p-6 hover:shadow-lg
transition-shadow duration-300"
    >
      <h2 className="text-xl font-semibold mb-2">Manage Orders</h2>
      <p className="text-gray-600">View and update order statuses.</p>
    </Link>
  </div>
</div>
)
}

```

PRODUCTS.TSX

```

"use client"
import LoadingSpinner from "@app/components/Loading-Spinner"
import Link from "next/link"
import { useRouter } from "next/navigation"
import { useEffect, useState } from "react"

const API_BASE_URL = process.env.NEXT_PUBLIC_API_BASE_URL ||
"http://localhost:3000"

export default function AdminProductsPage() {
  const [products, setProducts] = useState<any[]>([]);
  const [isLoading, setIsLoading] = useState(true)
  let role = ""
  let id = ""
  const router = useRouter()

  useEffect(() => {
    role = localStorage.getItem('role') || ""
    id = localStorage.getItem('id') || ""
    const fetchProducts = async () => {
      try {
        const response = await fetch(`${API_BASE_URL}/products`)
        const data = await response.json()
        setProducts(data)
      } catch (error) {
        console.error("Failed to fetch products:", error)
      } finally {
        setIsLoading(false)
      }
    }
  })
  if (!id) router.push("/login")
  if (role !== "admin") router.push("/")
  fetchProducts()
}

```

```
}, [])
```

```
const deleteProduct = async (idt: any) => {  
  role = localStorage.getItem('role') || ''  
  id = localStorage.getItem('id') || ''  
  try {  
    const response = await fetch(`${API_BASE_URL}/products/admin/delete/${idt}`, {  
      method: "Delete",  
      headers: {  
        "Content-Type": "application/json",  
        "Authorization": `Bearer ${id}`  
      },  
    });  
  }  
};
```

```
if (response.ok) {  
  window.location.reload();  
} else {  
  console.error("Failed to update order status");  
}  
} catch (error) {  
  console.error("Error updating order status:", error);  
}  
};
```

```
if (isLoading) {  
  return <LoadingSpinner />  
}
```

```
return (  
  <div>  
    <h1 className="text-3xl font-bold mb-6">Manage Products</h1>  
    <Link  
      href="/admin/products/new"  
      className="inline-block mb-6 bg-green-600 text-white px-6 py-2 rounded-md  
font-semibold hover:bg-green-700 transition-colors duration-300"  
    >  
      Add New Product  
    </Link>  
    <div className="overflow-x-auto">  
      <table className="min-w-full bg-white">  
        <thead>  
          <tr className="bg-gray-200 text-gray-600 uppercase text-sm leading-normal">  
            <th className="py-3 px-6 text-left">Name</th>  
            <th className="py-3 px-6 text-left">Category</th>  
            <th className="py-3 px-6 text-left">Price</th>  
            <th className="py-3 px-6 text-left">Actions</th>  
          </tr>  
        </thead>  
        <tbody className="text-gray-600 text-sm font-light">
```

```

        {products.map((product) => (
          <tr key={product.id} className="border-b border-gray-200
hover:bg-gray-100">
            <td className="py-3 px-6 text-left
whitespace-nowrap">{product.name}</td>
            <td className="py-3 px-6 text-left">{product.category.name}</td>
            <td className="py-3 px-6 text-left">₹{product.price.toFixed(2)}</td>
            <td className="py-3 px-6 text-left">
              <button onClick={() => deleteProduct(product.id)} className="text-red-600
hover:text-red-800">Delete</button>
            </td>
          </tr>
        ))}
      </tbody>
    </table>
  </div>
</div>
)
}

```

ORDERS.TSX

```
"use client"
```

```

import LoadingSpinner from "@app/components/Loading-Spinner";
import { useRouter } from "next/navigation";
import { useEffect, useState } from "react";
import Modal from "@app/components/Modal"; // Assuming you have a Modal
component

```

```

const API_BASE_URL = process.env.NEXT_PUBLIC_API_BASE_URL ||
"http://localhost:3000";

```

```

export default function AdminOrdersPage() {
  const [orders, setOrders] = useState<any[]>([]);
  const [isLoading, setIsLoading] = useState(true);
  const [showModal, setShowModal] = useState(false);
  const [selectedOrderId, setSelectedOrderId] = useState<string | null>(null);
  let role = ""
  let id = ""
  const router = useRouter();

  useEffect(() => {
    role = localStorage.getItem('role') || ""
    id = localStorage.getItem('id') || ""
    const fetchOrders = async () => {
      try {
        const response = await fetch(`${API_BASE_URL}/orders/admin/orders`, {
          method: "GET",
          headers: {
            "Content-Type": "application/json",
            "Authorization": `Bearer ${id}`
          }
        });
      }
    }
  });
}

```

```

    }
  });

  if (response.status === 401) { setOrders([]); } else {
    const data = await response.json();
    setOrders(data);
  }

  } catch (error) {
    console.error("Failed to fetch orders:", error);
  } finally {
    setIsLoading(false);
  }
};

if (!id) router.push("/login");
if (role !== "admin") router.push("/");

fetchOrders();
}, []);

const handleUpdateClick = (orderId: string) => {
  setSelectedOrderId(orderId);
  setShowModal(true);
};

const updateOrderStatus = async (status: string) => {
  try {
    const response = await
fetch(`${API_BASE_URL}/orders/admin/update/${selectedOrderId}`, {
  method: "POST",
  headers: {
    "Content-Type": "application/json",
    "Authorization": `Bearer ${id}`
  },
  body: JSON.stringify({ status })
});

    if (response.ok) {
      setShowModal(false);
      window.location.reload();
    } else {
      console.error("Failed to update order status");
    }
  } catch (error) {
    console.error("Error updating order status:", error);
  }
};

if (isLoading) {

```

```

    return <LoadingSpinner />;
  }

  return (
    <div>
      <h1 className="text-3xl font-bold mb-6">Manage Orders</h1>
      <div className="overflow-x-auto">
        <table className="min-w-full bg-white">
          <thead>
            <tr className="bg-gray-200 text-gray-600 uppercase text-sm leading-normal">
              <th className="py-3 px-6 text-left">Order ID</th>
              <th className="py-3 px-6 text-left">Customer</th>
              <th className="py-3 px-6 text-left">Total</th>
              <th className="py-3 px-6 text-left">Status</th>
              <th className="py-3 px-6 text-left">Date</th>
              <th className="py-3 px-6 text-left">Actions</th>
            </tr>
          </thead>
          <tbody className="text-gray-600 text-sm font-light">
            {orders.map((order) => (
              <tr key={order.id} className="border-b border-gray-200 hover:bg-gray-100">
                <td className="py-3 px-6 text-left
whitespace-nowrap">{order.order_no}</td>
                <td className="py-3 px-6 text-left">{order.user.name}</td>
                <td className="py-3 px-6 text-left">₹{order.amount.toFixed(2)}</td>
                <td className="py-3 px-6 text-left">{order.status}</td>
                <td className="py-3 px-6 text-left">{order.created_at}</td>
                <td className="py-3 px-6 text-left">
                  <button onClick={() => handleUpdateClick(order.id)}
className="text-blue-600 hover:text-blue-800">Update Status</button>
                </td>
              </tr>
            ))}
          </tbody>
        </table>
      </div>

      {showModal && (
        <div>
          <Modal onClose={() => setShowModal(false)} its={[
'Processing', 'On_delivery', 'Delivered']} idt={selectedOrderId || "1"}
id={parseInt(id || "0")} setShowModal={setShowModal} />
        </div>
      )}
    </div>
  );
}

```

prisma.schema

```
// This is your Prisma schema file,  
// learn more about it in the docs: https://pris.ly/d/prisma-schema  
  
// Looking for ways to speed up your queries, or scale easily with your serverless or edge  
// functions?  
// Try Prisma Accelerate: https://pris.ly/cli/accelerate-init  
  
generator client {  
  provider = "prisma-client-js"  
}  
  
datasource db {  
  provider = "postgresql"  
  url      = env("DATABASE_URL")  
}  
  
enum ROLE {  
  user  
  admin  
}  
  
enum ORDER_STATUS {  
  Pending  
  Processing  
  On_delivery  
  Delivered  
}  
  
model user {  
  id    Int    @id @default(autoincrement())  
  name  String  
  email String  
  password String  
  role  ROLE   @default(user)  
  
  orders order[]  
  
  created_at DateTime @default(now())  
  cart    cart[]  
}  
  
model category {  
  id    Int    @id @default(autoincrement())  
  name  String  
  image String  
  
  created_at DateTime @default(now())
```

```
product product[]  
}
```

```
model product {  
  id Int @id @default(autoincrement())  
  name String  
  image String  
  price Float  
  description String?  
  
  created_at DateTime @default(now())  
  
  category category @relation(fields: [categoryId], references: [id])  
  categoryId Int  
}
```

```
model order {  
  id Int @id @default(autoincrement())  
  
  order_no String @unique  
  ordered_items item[]  
  status ORDER_STATUS @default(Pending)  
  
  amount Float  
  
  feedback String?  
  
  phone_number String?  
  address String?  
  zip_code String?  
  
  created_at DateTime @default(now())  
  user user? @relation(fields: [userId], references: [id])  
  userId Int?  
}
```

```
model cart {  
  id Int @id @default(autoincrement())  
  
  items item[]  
  
  user user? @relation(fields: [userId], references: [id])  
  userId Int?  
}
```

```
model item {  
  id Int @id @default(autoincrement())  
  name String  
  image String  
  price Float
```

quantity Int

order order? @relation(fields: [orderId], references: [id])

orderId Int?

cart cart? @relation(fields: [cartId], references: [id])

cartId Int?

}