

**Democratic and Popular Republic of Algeria Ministry  
of Higher Education and Scientific Research**

**University 20 August 1955-Skikda**

**Faculty of Science**

**Department of Computer Science**



**End of studies dissertation for the purpose of obtaining the degree of**

# **Master of Computer Science**

**Option: Computer Systems (SI)**

## **Theme**

**Design and Implementation of a Multi-Vendor  
Ecommerce Platform for handmade products  
with wordpress**

**Directed by:**

**Belabed Amani Chourouk**

**Supervised by:**

**Dr.Remdane Chikh**

**Session : 2023**

# Gratitude

*First and foremost, I would like to express my heartfelt gratitude to Allah for granting me the opportunity and strength to complete this academic journey.*

*I am immensely grateful to my supervisor, Mr. Remdane Chikh, for his unwavering support, encouragement, and invaluable guidance throughout this research project. I would also like to extend my sincere thanks to my family and friends for their continuous support and prayers. Their love and motivation kept me going during times of uncertainty. I would like to express my gratitude to my classmates and colleagues for their stimulating discussions and insights that have helped shape my academic perspective.*

*Lastly, I would like to thank the university faculty and staff for providing me with a conducive learning environment that fostered my personal and academic growth. Without the blessings and support of Allah, my family, my supervisor, and my peers, this academic achievement would not have been possible.*

# *Dedication*

*I dedicate this dissertation to my beloved family, whose unconditional love, support, and encouragement have been my driving force throughout this academic journey.*

*I am forever grateful to my parents, whose guidance and sacrifices have made this accomplishment possible. My heartfelt appreciation goes to my siblings, whose unwavering support and constant motivation have kept me on track.*

*I would also like to dedicate this work to my respected teachers and mentors, whose profound knowledge, guidance, and mentorship have been invaluable in shaping my academic perspective.*

*Finally, I dedicate this work to all the individuals who have touched my life and inspired me in countless ways. Their presence and influence have made me the person I am today.*

*Amani*

## Abstract

Throughout this dissertation, we designed and developed a multivendor e-commerce website. This website serves as a platform for multiple vendors to sell their handmade products online, providing a convenient and efficient way for customers to browse and purchase handmade items.

Royas web application simplifies the management tasks for vendors by automating various processes, including inventory management, order fulfillment, and sales tracking. This automation streamlines the overall operations and enhances the user experience for both vendors and customers.

Additionally, we utilized HTML, CSS, and JavaScript to enhance the frontend development of the website, creating an intuitive and visually appealing user interface. This combination of WordPress and frontend technologies ensures a seamless and engaging user experience.

Throughout the development process, we employed the Unified Modeling Language (UML) to design and model the solution, ensuring a well-structured and scalable architecture.

## Résumé

Tout au long de ce mémoire, nous avons conçu et développé un site web de commerce électronique multi-vendeurs. Ce site web sert de plateforme permettant à plusieurs vendeurs de vendre leurs produits faits à la main en ligne, offrant ainsi aux clients un moyen pratique et efficace de parcourir et d'acheter des articles faits à la main.

L'application web Royas simplifie les tâches de gestion pour les vendeurs en automatisant divers processus, notamment la gestion des stocks, le traitement des commandes et le suivi des ventes. Cette automatisation rationalise l'ensemble des opérations et améliore l'expérience utilisateur tant pour les vendeurs que pour les clients.

De plus, nous avons utilisé HTML, CSS et JavaScript pour améliorer le développement frontend du site web, créant ainsi une interface utilisateur intuitive et attrayante sur le plan visuel. Cette combinaison de WordPress et de technologies frontend garantit une expérience utilisateur fluide et captivante.

Tout au long du processus de développement, nous avons utilisé le langage de modélisation unifié (UML) pour concevoir et modéliser la solution, garantissant ainsi une architecture bien structurée et évolutive.

# Table of Contents

<b>GENERAL INTRODUCTION.....</b>	<b>1</b>
<b><i>CHAPTER 1:WEB APPLICATION AND E-COMMERCE .....</i></b>	<b><i>4</i></b>
<b>1. INTRODUCTION .....</b>	<b>5</b>
<b>2. WEB APPLICATION .....</b>	<b>5</b>
2.1. WHAT IS A WEB APPLICATION? .....	5
2.2. HISTORY.....	5
2.3. E-commerce web application.....	7
PORTAL WEB APPLICATION .....	7
CONTENT MANAGEMENT SYSTEM WEB APPLICATION .....	7
2.4. ADVANTAGES AND DISADVANTAGES OF WEB APPLICATION DEVELOPMENT .....	8
ADVANTAGES OF WEB APP DEVELOPMENT: .....	8
DISADVANTAGES OF APP DEVELOPMENT : .....	8
<b>3. THE CLIENT/SERVER MODEL :.....</b>	<b>9</b>
3.1. HOW THE CLIENT-SERVER MODEL WORKS? .....	9
3.2. THE ADVANTAGES OF THE CLIENT/SERVER ARCHITECTURE .....	10
3.3. DISADVANTAGES OF CLIENT /SERVER MODEL .....	11
<b>4. ELECTRONIC E-COMMERCE : .....</b>	<b>11</b>
4.1. DEFINITION: .....	11
4.2. HISTORY: .....	11
4.3. KEY DIFFERENCES BETWEEN E-COMMERCE VS TRADITIONAL COMMERCE: .....	12
4.4. TOPOLOGY OF ELECTRONIC COMMERCE : .....	13
4.5. E-COMMERCE GIANTS : .....	16
4.6. ADVANTAGES AND DISADVANTAGES OF ELECTRONIC COMMERCE: .....	17
ADVANTAGES:.....	17
DISADVANTAGES: .....	18
<b>5. CONCLUSION .....</b>	<b>19</b>
<b><i>CHAPTER 2:MULTIVENDOR E-COMMERCE PLATFORMS.....</i></b>	<b><i>20</i></b>
<b>1. INTRODUCTION .....</b>	<b>21</b>

<b>2.</b>	<b>MULTIVENDOR ECOMMERCE PLATFORMS .....</b>	<b>21</b>
2.1.	What is a multivendor e-commerce platform? .....	21
2.2.	How does it work? .....	22
2.3.	Multivendor e-commerce workflow:.....	22
2.4.	Basic Essentials of multivendor management:.....	24
2.5.	Challenges that can face multivendor platforms: .....	27
<b>3.</b>	<b>PROBLEM STATEMENT AND OBJECTIVES .....</b>	<b>28</b>
3.1.	Problem statement:.....	28
3.2.	Objectives: .....	29
<b>4.</b>	<b>CONCLUSION .....</b>	<b>29</b>
	<b><i>CHAPTER 3: ANALYSIS AND DESIGN .....</i></b>	<b><i>30</i></b>
<b>1.</b>	<b>INTRODUCTION .....</b>	<b>31</b>
<b>2.</b>	<b>UML LANGUAGE.....</b>	<b>31</b>
2.1.	Definition: .....	31
2.2.	Historical: .....	31
2.3.	Why UML?.....	32
2.4.	UML diagrams: .....	33
	Structural diagrams : .....	33
	Behavioral diagrams : .....	33
2.5.	Advantages and Disadvantages of UML diagrams: .....	34
	Advantages:.....	34
	Disadvantages: .....	35
<b>3.</b>	<b>THE STARUML MODELING TOOL SELECTION .....</b>	<b>36</b>
3.1.	Definition: .....	36
3.2.	Benefits of staruml:.....	37
<b>4.</b>	<b>ANALYSIS OF THE PROJECT .....</b>	<b>38</b>
4.1.	Use case diagram : .....	38
4.2.	Sequence diagram: .....	40
4.3.	Activity diagram: .....	43
<b>5.</b>	<b>PRESENTATION OF THE DATABASE TABLES:.....</b>	<b>46</b>
	Categories table : .....	46
	Vendors table : .....	47
	Customers table : .....	47

Products table:.....	48
Orders table: .....	48
Orders_items table: .....	49
<b>6. CONCLUSION .....</b>	<b>49</b>
<b><i>CHAPTER 4:IMPLIMENTATION OF THE APPLICATION .....</i></b>	<b><i>50</i></b>
<b>1. INTRODUCTION: .....</b>	<b>51</b>
<b>2. THE TOOLS AND PROGRAMMING LANGUAGES USED:.....</b>	<b>51</b>
Html & CSS languages:.....	51
The PHP language: .....	52
jQuery: .....	52
Javasript: .....	52
VS code:.....	53
Wamp server:.....	53
WordPress:.....	53
<b>3. PRESENTATION OF SOME PAGES OF THE WEBSITE: .....</b>	<b>54</b>
Home page:.....	54
Footer:.....	54
About Us: .....	55
All products (handmade products) page: .....	55
Product Page :.....	56
Vendors page : .....	56
Shop page: .....	57
Sign up and login Page:.....	57
Your Cart page : .....	58
Checkout page : .....	58
Account page: .....	59
Vendor registration form:.....	59
Vendor Dashboard:.....	60
Administrator dashboard: .....	60
<b>4. CONCLUSION:.....</b>	<b>61</b>
<b>GENERAL CONCLUSION .....</b>	<b>63</b>
<b>BIBLIOGRAPHY .....</b>	<b>64</b>

# List of figures

Figure 1: Evolution of the web.....	06
Figure 2: Client/server architecture.....	10
Figure 3: History of e-commerce infography.....	12
Figure 4: Multivendor e-commerce shopping system.....	24
Figure 5: Types of UML diagrams.....	34
Figure 6: StarUML graft interface.....	37
Figure 7: Use case diagram.....	39
Figure 8: Entity-Relationship diagram.....	40
Figure 9: Sequence diagram of the admin.....	41
Figure 10: Sequence diagram of the vendor.....	42
Figure 11: Sequence diagram of the customer.....	42
Figure 12: Activity diagram of the admin.....	43
Figure 13: Activity diagram of the vendor.....	44
Figure 14: Activity diagram of the customer.....	45
Figure 15: Home page.....	54
Figure 16: Home page footer.....	54
Figure 17: About us page.....	55
Figure 18: All products page.....	55
Figure 19: Product page.....	56
Figure 20: Vendors page.....	56
Figure 21: Shop page.....	57
Figure 21: Signup and login page.....	57
Figure 22: Cart page.....	58

Figure 23: Checkout page.....	58
Figure 24: Account page.....	59
Figure 25: Vendor registration form.....	59
Figure 25: Vendor dashboard.....	60
Figure 25: Admin dashboard.....	60

# List of tables

Table 1: Database structure.....	46
Table 2: categories table structure.....	46
Table 3: Vendors table structure.....	47
Table 4 : Customers table structure.....	47
Table 5: Products table structure.....	48
Table 7: Orders table structure.....	48
Table 8: Orders_items table structure.....	49

***GENERAL  
INTRODUCTION***

## General Introduction

---

### General Introduction

The democratization of internet access and the availability of new information and communication technologies (ICTs) now allow for very fast access and implementation of modern technologies for sharing and distributing information.

Web applications are very diverse and it is precisely the variety of applications offered, in terms of both information and communication, that make the strength of the Internet. New business models, new distribution channels, and professional electronic marketplaces have thus emerged on the net and have contributed to the development of E-commerce.

Multivendor e-commerce platforms, a key aspect of the evolving e-commerce landscape, have further amplified the potential of digital marketplaces. These platforms enable multiple vendors to showcase their products or services in one centralized online marketplace. By harnessing the power of these platforms, businesses in Algeria can leverage the democratization of internet access and the availability of new ICTs to accelerate their growth and expand their customer reach.

One of the significant advantages of multivendor e-commerce platforms is the emergence of new business models and distribution channels. These platforms have brought about a paradigm shift in the way commerce is conducted. In Algeria, this presents an opportunity for small and medium-sized enterprises (SMEs) that previously faced barriers to market entry. Multivendor platforms offer a cost-effective solution for SMEs to establish their online presence, reach a wider customer base, and compete on a level playing field with larger enterprises.

The impact of multivendor e-commerce on Algeria's economy can be far-reaching. By enabling local businesses to connect with consumers across the country, these platforms promote economic inclusivity and drive job creation. The increased

## General Introduction

---

market exposure and sales potential empower SMEs to scale their operations, leading to the growth of domestic industries.

Furthermore, multivendor e-commerce platforms contribute to the digitization of the economy, fostering innovation, efficiency, and competitiveness.

Moreover, the accessibility of multivendor e-commerce platforms enhances the overall consumer experience. Algerian customers gain access to a broader range of products and services, along with the convenience of online shopping and the ability to compare offerings from different vendors. This not only improves consumer choice but also encourages healthy competition among sellers, leading to improved product quality, competitive pricing, and enhanced customer satisfaction.

Given this situation, our end-of-cycle project aims to design and implement an interactive, reliable, user-friendly web application that seamlessly integrates into the working environment of Royas, a multivendor e-commerce platform specializing in traditional, handmade products. Our project aims to provide a comprehensive solution that caters to the unique needs and challenges faced by artisans and craftsmen in showcasing and selling their products online. By leveraging the power of technology, we aim to create a platform that offers a seamless browsing and purchasing experience for customers, while also providing robust seller tools for inventory management, order processing, and customer communication. Our goal is to empower artisans and craftsmen with a reliable and accessible platform that promotes their traditional, handmade products to a global audience, preserving cultural heritage and fostering economic growth.

The thesis is divided into four main chapters in addition to the general introduction and conclusion:

- The first chapter presents web applications, their definition, history, and architecture, as well as their fields of application and the client/server model. In the same chapter, we will provide some basic notions on e-commerce and the concept of online auctions.

## General Introduction

---

- In the second chapter, we delve into multivendor e-commerce platforms, exploring their workflow, challenges, and the objectives of our project.
- The third chapter is dedicated to the design of the web application and explains the modeling by the UML method.
- The fourth chapter explains the project's implementation details, the development tools, with captures of the application's interfaces.

# **CHAPTER 1:**

***WEB APPLICATION***

***AND***

***E-COMMERCE***

## **Chapter 1: Web Application and E-commerce**

---

### **1. Introduction**

In computer science, a web application is an application that can be directly manipulated online through a web browser and does not require use on client machines. A web application is usually installed on a server and is manipulated by using widgets through a web browser. This chapter presents the definition of applications and their architectures, fields of application, advantages and disadvantages, and the client/server model. It also discusses e-commerce, e-commerce topologies, types of e-commerce merchants, advantages and disadvantages, and concludes with online auctions, their operation, types, and advantages and disadvantages.

### **2. WEB APPLICATION**

#### **2.1. WHAT IS A WEB APPLICATION?**

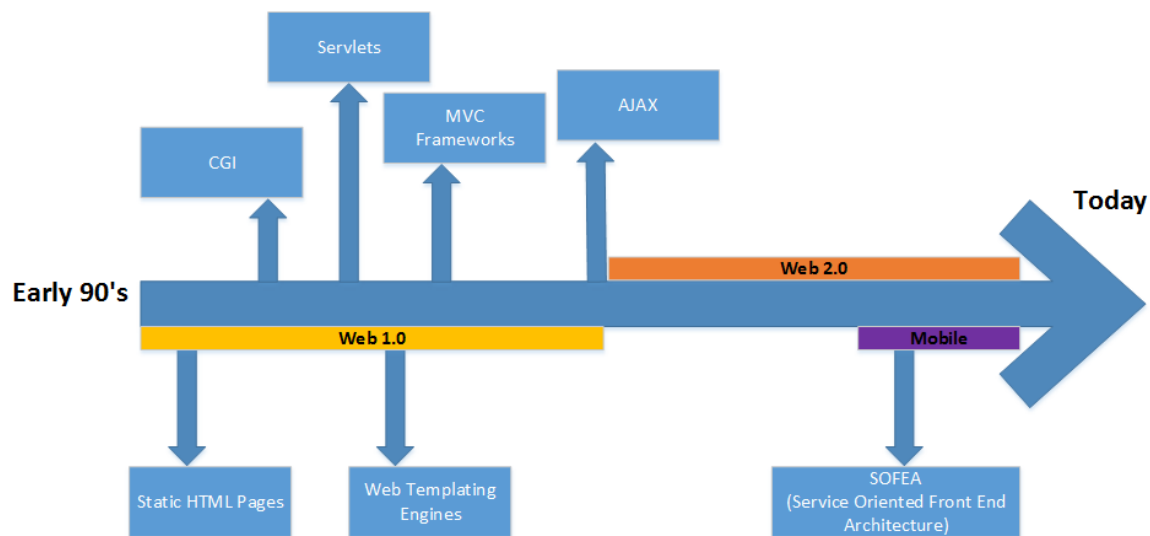
A web application (web app) is an application program that is stored on a remote server and delivered over the internet through a browser interface. Web services are web apps by definition and many, although not all, websites contain web apps.

Developers design web applications for a wide variety of uses and users, from an organization to an individual for numerous reasons. Commonly used web applications can include webmail, online calculators or e-commerce shops. While users can only access some web apps by a specific browser, most are available no matter the browser.[1]

#### **2.2. HISTORY**

The Figure below clearly depicts the exact evolution of web application all the way from its humble beginning in early 90's to the current state.

## Chapter 1: Web Application and E-commerce



**Figure 1: Evolution of web**

It's very hard to clearly separate Web 1.0 from web 2.0 as there wasn't anything different which got introduced in Web 2.0. That's the reason the figure above clearly doesn't put in a timeline as these are not very clearly defined.

Having said that, it is evident from the figure that, over the last few decades there has been substantial change in how we see web sites/ applications. When the web initially started, these were not called as applications; rather these were called as sites, with static content and hyperlinks which allows users to navigate from one content page to another. After that came the existence of CGI and Servlets which allowed these static sites to become dynamic and more personalized. These sites slowly started calling themselves as applications as they start to do some basic stuff which a client server application could do for a user.

The scene of web applications quickly changed with the introduction of MVC frameworks (In the world of Java Struts was one of the initial MVC frameworks) and [2]

## **Chapter 1: Web Application and E-commerce**

---

They usually have an admin panel to control the backend and front-end portions and allow the administrator to modify the content and include different interactive components to the web app.

The dynamic web app is built using various programming languages such as PHP and ASP.NET.

### **2.3. E-commerce web application**

When your web application promotes products or services directly to your potential customers, you can call it an e-commerce web application which is no different from an online shopping store. Many of the basic features of the e-commerce web app include the addition of new products, removal of outdated and old products, managing payments, facilitating electronic payments, and a user-friendly interface. An effective management panel is very necessary to look at all these tasks. Professional website developers can customize such applications to make them user-friendly. Some of the most common examples of e-commerce web apps include Flipkart, Amazon, Ajio, and the list goes on.

#### **PORTAL WEB APPLICATION**

A portal web application offers a single access point to important data to a particular type of user. It is a web application that is capable of accessing different sections on the home page. Portals are the best option for organizations and businesses that prefer to build customized interfaces to suit the needs of their target audience. Only registered users are allowed to access and the user's activities can be monitored by the service provider, once the user logs in.

#### **CONTENT MANAGEMENT SYSTEM WEB APPLICATION**

A content Management System (CMS) is a type of website application in which the owner can modify the content without any help from the technical team. The content can be modified using the admin panel without any knowledge of the programming language. In general, there are a number of CMS variations with various specifications and designs.[3]

## Chapter 1: Web Application and E-commerce.

---

### 2.4. ADVANTAGES AND DISADVANTAGES OF WEB APPLICATION DEVELOPMENT

#### ADVANTAGES OF WEB APP DEVELOPMENT:

- **Runs on any OS:** It is programmed to run on any OS. It must appropriately adapt to iOS, Android, and Windows Phone — amongst other operating systems.
- **Runs using easy URL:** These apps run on the device's own browser through an easy URL.
- **Do not need to be downloaded:** They don't get to be downloaded and installed from app stores like Google Play or Apple's App Store. This translates into money-saving since having an immediate link through an internet app is free.
- **Do not need to be updated like apps:** They may also open websites. This suggests that they don't require to be updated within the way common apps do.
- **Cost Efficient:** The most important benefit you'll draw faraway from its price. Web app development is that the cheaper quiet app development. It consists of making a link or several links between the appliance and an URL. Developing a native app or an interpreted app entails a better cost but its chances to succeed are far greater.[4]

#### DISADVANTAGES OF APP DEVELOPMENT :

- **Creates problem if website is not responsive:** The website responsiveness means the website data displays on every platform and every size of screens correctly.
- If your website undergoes any quite issue, your application are going to be in trouble too. Do not assume that your web app will work perfectly if you

## Chapter 1: Web Application and E-commerce.

---

do not have a top quality corporate website. For instance, if the web site's URL takes a while to load or if uncomfortable 'cookies' show up when entering the website, accessing it through the appliance will entail an equivalent issues. The matter isn't inherent to your web app. It's rather located within the website's development.

- **Internet connection is compulsory:** An Internet connection are going to be an absolute must run it. Otherwise, you'll not be ready to browse the website.
- It will also lose visibility because it won't get on display within the stores.
- In addition, there'll be some access restrictions on certain hardware features of the device it's running on.[5]

### 3. THE CLIENT/SERVER MODEL :

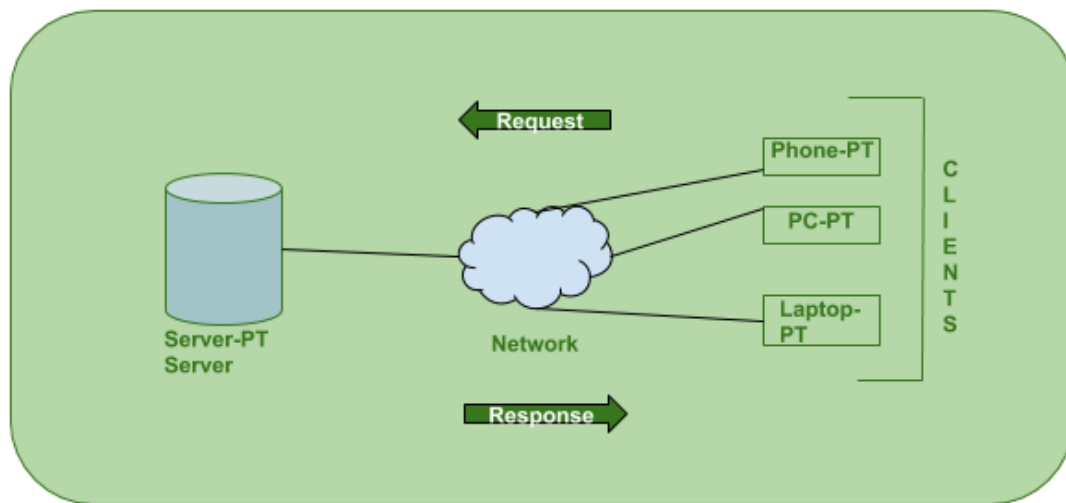
The client-server model describes the communication between two computing entities over a network. Clients are the ones requesting a resource or service and Servers are the ones providing that resource or service. Note, the server can be running one or more programs and involved in multiple communications with multiple clients at the same time. The client initiates the communication and awaits a response from the server. This model was developed in the '70s at Xerox Palo Alto Research Center (PARC).[6]

#### 3.1. HOW THE CLIENT-SERVER MODEL WORKS?

In this article we are going to take a dive into the **Client-Server** model and have a look at how the **Internet** works via, web browsers. This article will help us in having a solid foundation of the WEB and help in working with WEB technologies with ease.

- **Client:** When we talk the word **Client**, it mean to talk of a person or an organization using a particular service. Similarly in the digital world a **Client** is a computer (**Host**) i.e. capable of receiving information or using a particular service from the service providers (**Servers**).[7]

## Chapter 1: Web Application and E-commerce



**Figure 2: Client/Server architecture**

- **Server:** Similarly, when we talk the word **Servers**, It mean a person or medium that serves something. Similarly in this digital world a **Server** is a remote computer which provides information (data) or access to particular services.

### 3.2. THE ADVANTAGES OF THE CLIENT/SERVER ARCHITECTURE

- The data is centralized within the system that is maintained in a single place.
- The model is efficient in delivering resources to the client and also requires low-cost maintenance.
- It is easy to manage, and the data can be easily delivered to the client.
- As the data is centralized, this system is more secure and serves added security to the data.
- Within this type of model, more clients and servers can be embedded into the server, which makes the performance outstanding and increases the model's overall flexibility. [8]

## **Chapter 1: Web Application and E-commerce**

---

### **3.3. DISADVANTAGES OF CLIENT /SERVER MODEL**

- Clients are prone to viruses, Trojans and worms if present in the Server or uploaded into the Server.
- Server are prone to Denial of Service (DOS) attacks.
- Data packets may be spoofed or modified during transmission.
- Phishing or capturing login credentials or other useful information of the user are common and MITM(Man in the Middle) attacks are common.[9]

## **4. ELECTRONIC E-COMMERCE :**

### **4.1. DEFINITION:**

Electronic commerce (ecommerce) refers to companies and individuals that buy and sell goods and services over the Internet. Ecommerce operates in different types of market segments and can be conducted over computers, tablets, smartphones, and other smart devices. Nearly every imaginable product and service is available through ecommerce transactions, including books, music, plane tickets, and financial services such as stock investing and online banking. As such , it is considered a very disruptive technology.[10]

### **4.2. HISTORY:**

Most of us have shopped online for something at some point, which means we've taken part in ecommerce. So it goes without saying that ecommerce is everywhere. But very few people may know that ecommerce has a history that goes back before the internet began.

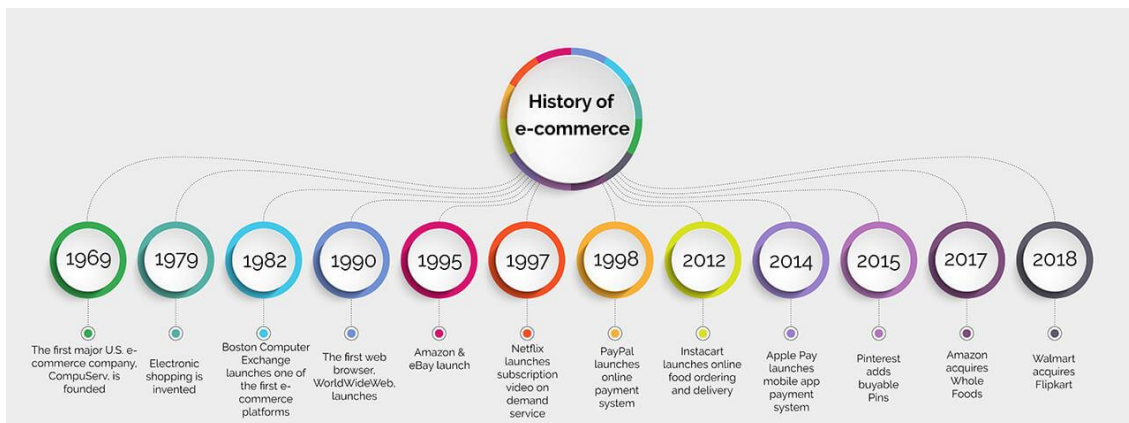
Ecommerce actually goes back to the 1960s when companies used an electronic system called the Electronic Data Interchange to facilitate the transfer of documents. It wasn't until 1994 that the very first transaction. took place. This involved the sale of a CD between friends through an online retail website called NetMarket.

## Chapter 1: Web Application and E-commerce.

The industry has gone through so many changes since then, resulting in a great deal of evolution. Traditional brick-and-mortar retailers were forced to embrace new technology in order to stay afloat as companies like Alibaba, Amazon, eBay, and Etsy became household names. These companies created a virtual marketplace for goods and services that consumers can easily access.

New technology continues to make it easier for people to do their online shopping. People can connect with businesses through smartphones and other devices and by downloading apps to make purchases.

The introduction of free shipping, which reduces costs for consumers, has also helped increase the popularity of the ecommerce industry.[11]



**Figure 3: History of e-commerce infographic**

### 4.3. KEY DIFFERENCES BETWEEN E-COMMERCE VS TRADITIONAL COMMERCE:

Both E-commerce vs Traditional commerce are popular choices in the market; let us discuss some of the major Difference Between E-commerce and Traditional commerce:

- E-Commerce is completely in digital and online mode where the communication is through electronic form completely whereas Traditional Commerce is completely offline and through in person or face to face.
- E-Commerce is reachable worldwide and has more connectivity whereas Traditional Commerce is limited to a particular geographical area especially smaller.

## **Chapter 1: Web Application and E-commerce.**

---

- E-Commerce information of exchange takes place in different forms either through digital ads or emails etc. whereas the information of exchange in Traditional Commerce happens in the form of hoardings or pamphlets distribution or through any physical mode of exchange.
- E-Commerce can have one to one marketing whereas Traditional Commerce can have only one-way marketing.
- E-Commerce can have several payment modes such as online transactions or digital wallets or cash on delivery whereas Traditional Commerce can have only cash payment in person.
- The delivery of goods in E-commerce is either the on the same day or any other day depending on the availability of logistics and several other restrictions depending on the location of the customers whereas in traditional commerce the delivery of goods is instant.
- E-commerce provides a lot of discounts and at lower rates whereas in Traditional commerce there will be no or fewer discounts and no other options except to approach different seller which takes time.
- E-Commerce provides good customer services in different forms such as chat option or direct call with customer care executive whereas Traditional commerce does not provide any such customer support.
- E-Commerce accepts the return of the products if not interested or not liked by the customer within 7 – 15 days depending on the seller whereas Traditional commerce does not provide such return policy until there is damage in the product.
- E-Commerce provides a lot of products in scope and a wide variety of products irrespective of brands and types of products whereas Traditional commerce has limited number of products with a particular seller as space is limited.[12]

### **4.4. TOPOLOGY OF ELECTRONIC COMMERCE :**

## **Chapter 1: Web Application and E-commerce**

---

Depending on the goods, services, and organization of an ecommerce company, the business can opt to operate several different ways. Here are several of the popular business models.

- **Business to Consumer (B2C) :**

B2C ecommerce companies sell directly to the product end-user. Instead of distributing goods to an intermediary, a B2C company performs transactions with the consumer that will ultimately use the good. This type of business model may be used to sell products (i.e. your local sporting goods store's website) or services (i.e. a lawncare mobile app to reserve landscaping services). This is the most common business model and is likely the concept most people think about when they hear ecommerce.

- **Business to Business (B2B) :**

Similar to B2C, an ecommerce business can directly sell goods to a user. However, instead of being a consumer, that user may be another company. B2B transactions are often entail larger quantities, greater specifications, and longer lead times. The company placing the order may also have a need to set recurring goods if the purchase is for recurring manufacturing processes.

- **Business to Government (B2G) :**

Some entities specialize as government contractors providing goods or services to agencies or administrations. Similar to a B2B relationship, the business produces items of value and remits those items to an entity. B2G ecommerce companies must often meet government requests for proposal requirements, solicit bids for projects, and meet very specific product or service criteria. In addition, there may be joint government endeavors to solicit a single contract through a government-wide acquisition contract.

## Chapter 1: Web Application and E-commerce

---

- **Consumer to Consumer (C2C) :**

Established companies are the only entities that can sell things. Ecommerce platforms such as digital marketplaces connect consumers with other consumers who can list their own products and execute their own sales. These C2C platforms may be auction-style listings (i.e. eBay auctions) or may warrant further discussion regarding the item or service being provided (i.e. Craigslist postings).

Enabled by technology, C2C ecommerce platforms empower consumers to both buy and sell without the need of companies.

- **Consumer to Business (C2B) :**

Modern platforms have allowed consumers to more easily engage with companies and offer their services, especially related to short-term contracts, gigs, or freelance opportunities. For example, consider listings on Upwork. A consumer may solicit bids or interact with companies that need particular jobs done. In this way, the ecommerce platform connects businesses with freelancers to enable consumers greater power to achieve pricing, scheduling, and employment demands.

- **Consumer to Government (C2G) :**

Less of a traditional ecommerce relationship, consumers can interact with administrations, agencies, or governments through C2G partnerships. These partnerships are often not in the exchange of service but rather the transaction of obligation. For example, uploading your Federal tax return to the IRS digital website is an ecommerce transaction regarding an exchange of information. Alternatively, you may pay your tuition to your university online or remit property tax assessments to your county assessor.[13]

## Chapter 1: Web Application and E-commerce

---

### 4.5. E-COMMERCE GIANTS :

The e-commerce market is highly competitive and constantly evolving. Some of the biggest players in the industry include Amazon, Alibaba, Walmart, and eBay.

- **eBay:** is a multinational e-commerce company established in 1995 and headquartered in San Jose, California.  
eBay operates an online marketplace that enables individuals and businesses to buy and sell various goods and services, including electronics, clothing, collectibles, and vehicles. The platform allows for both auction-style and fixed-price sales, and eBay generates revenue by charging fees to sellers based on the value of items sold. eBay also operates several other businesses, including StubHub, a platform for buying and selling event tickets, and Classifieds, a network of online marketplaces for local communities.
- **Amazon:** Amazon.com is a multinational company headquartered in Seattle, Washington. It began as an online bookstore but quickly expanded into other areas, such as e-commerce, cloud computing, digital streaming, and artificial intelligence. Amazon's e-commerce platform is one of the largest in the world, with many products available for purchase. Its Prime membership program offers customers benefits such as free two-day shipping, streaming video and music access, and discounts on select products. Amazon Web Services (AWS) is a top provider of cloud computing services, while Amazon Studios produces original films and television shows.
- **Etsy:** Etsy is an e-commerce platform that specializes in handmade, vintage, and unique goods. It was founded in 2005 and has since become a popular online marketplace for independent sellers to showcase their handmade crafts, vintage items, and other unique products. Etsy is known for its focus on small businesses and creative

## Chapter 1: Web Application and E-commerce

---

entrepreneurs, and provides a platform for them to connect with customers around the world.

- **Alibaba:** Alibaba Group Holding Limited is a multinational technology conglomerate headquartered in China. Alibaba's businesses include e-commerce, retail, internet and technology services, cloud computing, and digital media and entertainment. Its flagship platform, Taobao, is one of the world's largest online marketplaces, while Tmall serves as a platform for brands and retailers. Alibaba's cloud computing division, Alibaba Cloud, is a major player in the cloud infrastructure market. Its digital media and entertainment division, Alibaba Pictures, produces and distributes films and TV shows. The company is also involved in fintech, logistics, and healthcare.[14]

### 4.6. ADVANTAGES AND DISADVANTAGES OF ELECTRONIC COMMERCE:

#### ADVANTAGES:

- **Convenience:** Ecommerce can occur 24 hours a day, seven days a week. Although ecommerce may take a lot of work, it is still possible to generate sales as you sleep or earn revenue while you are away from your store.
- **Increased selection:** Many stores offer a wider array of products online than they carry in their brick-and-mortar counterparts. And many stores that solely exist online may offer consumers exclusive inventory that is unavailable elsewhere.
- **Potentially lower start-up cost:** Ecommerce companies may require a warehouse or manufacturing site, but they usually don't need a physical storefront. The cost to operate digitally is often less expensive than needing to pay rent, insurance, building maintenance, and property taxes.

## Chapter 1: Web Application and E-commerce

---

- **International sales:** As long as an ecommerce store can ship to the customer, an ecommerce company can sell to anyone in the world and isn't limited by physical geography.
- **Easier to retarget customers:** as customers browse a digital storefront, it is easier to entice their attention towards placed advertisements, directed marketing campaigns, or pop-ups specifically aimed at a purpose.

### DISADVANTAGES:

- **Limited customer service:** If you shop online for a computer, you cannot simply ask an employee to demonstrate a particular model's features in person. And although some websites let you chat online with a staff member, this is not a typical practice.
- **Lack of instant gratification:** When you buy an item online, you must wait for it to be shipped to your home or office. However, e-tailers like Amazon make the waiting game a little bit less painful by offering same-day delivery as a premium option for select products.
- **Inability to touch products:** Online images do not necessarily convey the whole story about an item, and so ecommerce purchases can be unsatisfying when the products received do not match consumer expectations. Case in point: an item of clothing may be made from shoddier fabric than its online image indicates.
- **Reliance on technology:** If your website crashes, garners an overwhelming amount of traffic, or must be temporarily taken down for any reason, your business is effectively closed until the ecommerce storefront is back.
- **Higher competition:** Although the low barrier to entry regarding low cost is an advantage, this means other competitors can easily enter the market. Ecommerce companies must have mindful marketing strategies and remain diligent on SEO optimization to ensure they maintain a digital presence.[15]

### **5. CONCLUSION**

In this chapter, we have demonstrated the importance of web applications that allow for simplified communication between individuals and programs. To achieve this, we have examined the architecture and functioning principles of these applications. Through the web, a client can purchase any product they desire and can see what is being offered in the market without having to travel. This is the goal of our work, which we will explore in the following chapter.

# **CHAPTER 2:**

***MULTIVENDOR***

***ECOMMERCE***

***PLATFORMS***

## Chapter 2: Multivendor Ecommerce Platforms.

---

### 1. Introduction

Multivendor ecommerce platforms have transformed the way businesses and customers engage in online shopping worldwide. These platforms provide a centralized marketplace where multiple vendors can sell their products or services to a diverse customer base.

In a multivendor ecommerce platform, individual sellers, small businesses, and artisans can establish their virtual stores within the platform, showcasing their offerings to a wide range of customers. This model offers numerous benefits for both vendors and customers. Vendors gain access to a larger customer base, increased visibility, and the convenience of a pre-built platform infrastructure. Customers, on the other hand, enjoy a vast product selection, competitive pricing, and the ability to compare offerings from various sellers.

### 2. Multivendor ecommerce platforms

#### 2.1. What is a multivendor e-commerce platform?

A multi-vendor eCommerce platform is a ready-to-use solution for creating online marketplaces where many merchants may list and sell their items.

This platform provides all the fundamental eCommerce functions, including the necessary connectors to optimize and manage marketplace operations. Thus, multiple vendors can be onboarded on the platform.

At the same time, consumers gain access to a vast catalog of products and sellers in a single marketplace, making it the ideal go-to option for any of their requirements.[16]

## Chapter 2: Multivendor Ecommerce Platforms.

---

### 2.2. How does it work?

**Multivendor ecommerce marketplace** is a platform to sell products, where the admin controls the market place. Merchants or vendors can register their business and sell their products to the customers. All products displayed on the site are not the property of Amazon but the vendor.

The vendors take care of the responsibilities like receiving a customer's order and processing the products. In contrast, Amazon takes care of maintaining the platform and the products that it owns.[17]

### 2.3. Multivendor e-commerce workflow:

There are several roles that are directly involved in the business relationship on a marketplace.

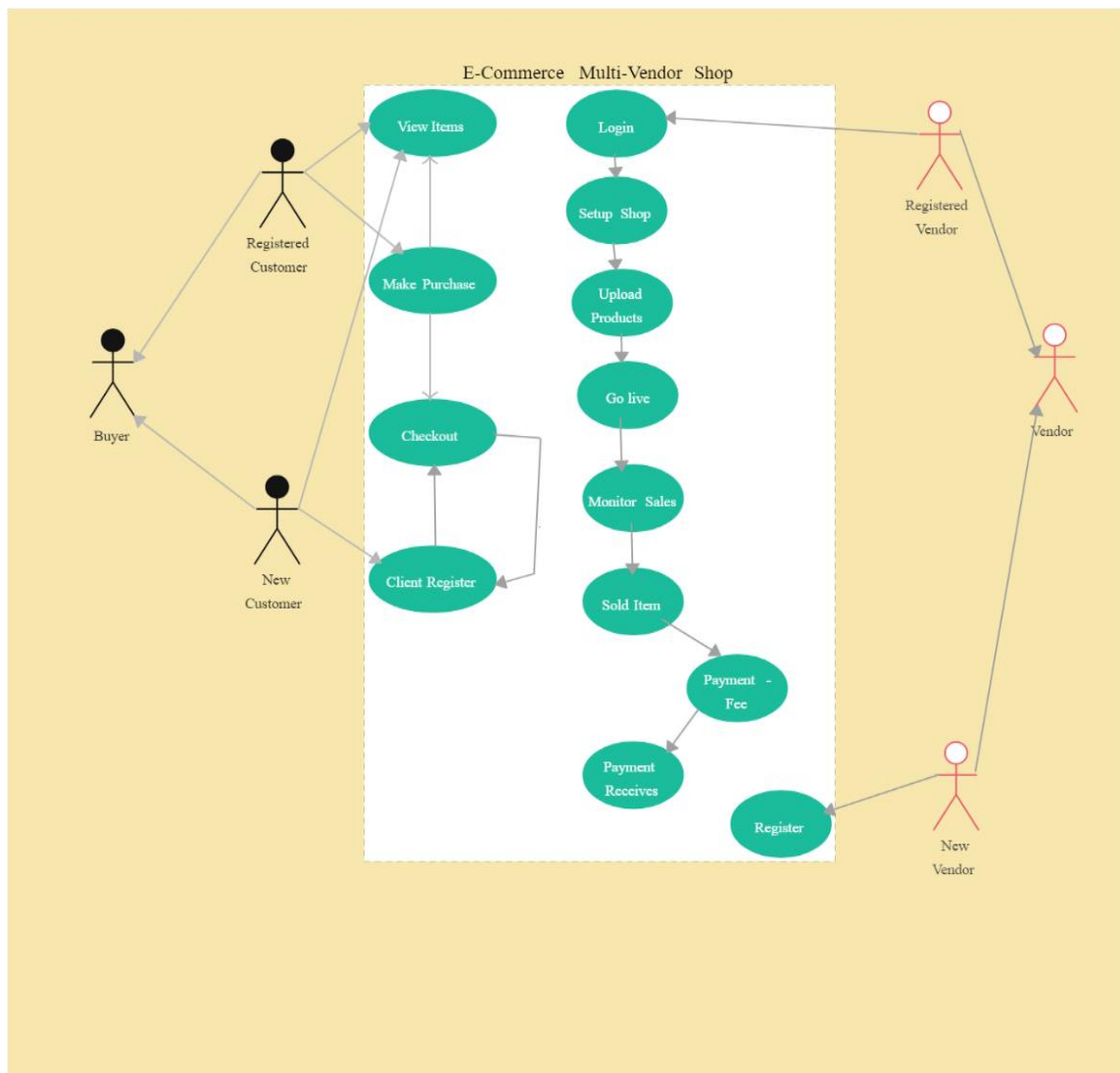
- **The administrator** is the owner of the marketplace website or his representative who regulates the relationship between buyers and sellers on the marketplace and also makes important decisions in the development of the marketplace platform, The admin responsibilities include:
  - Vendor Management: The merchant can manage and oversee all vendor activities, including onboarding, approvals, and overall vendor performance.
  - Product Management: The merchant can manage and review the products listed by vendors, ensuring they meet the platform's standards and guidelines.
  - Sales Management: The merchant has access to the sales data and can oversee the overall sales performance of vendors on the platform.
  - Commission Management: The merchant can manage the commission structure, set commission rates, and handle the disbursement of payments to vendors.

## Chapter 2: Multivendor Ecommerce Platforms.

---

- **Vendors**—also called Sellers—are providers of products and goods. Vendors go through a sign-up process to become sellers on the platform. Once approved by the admin, vendors have access the following of features:
  - **Landing Page:** Vendors have a dedicated landing page for their products, where they can showcase their logos, provide information about their business, and highlight their product offerings.
  - **Profile Section:** Vendors can manage their profile information, including contact details, business description, and logo.
  - **Product Attributes:** Vendors can add, edit, list, and delete attributes for their products, such as size, color, or material.
  - **Rating/Review:** Vendors can monitor and respond to customer ratings and reviews for their products.
- **Customers** are all customers who make purchases or order services through marketplaces. Customers have the ability to:
  - **Browse and Search:** Customers can explore the platform, search for specific products, and browse products listed by different vendors.
  - **Add to Cart and Checkout:** Customers can add products from multiple vendors to their cart and proceed to the checkout process.
  - **Ratings and Reviews:** Customers can provide ratings and reviews for products purchased from vendors, contributing to the overall product reputation and helping other customers make informed decisions.[18]

## Chapter 2: Multivendor Ecommerce Platforms.



**Figure 4: multivendor E-commerce shopping system.**

### 2.4. Basic Essentials of multivendor management: Inventory Management

Because we're talking about a multi vendor' system, adding inventory isn't as simple as it may seem to be. Here you have two choices:

- To add items on your own.
- To provide your vendors the ability to add their items.

## Chapter 2: Multivendor Ecommerce Platforms.

---

Marketplaces are most likely to use the second choice. This provides you with two advantages. Allowing your vendors to add their items allows you to save time and focus on more vital tasks as management. Furthermore, the vendor will have a greater understanding of his goods than you, resulting in higher-quality product descriptions and photographs. However, you must have a structure in place to ensure that quality is maintained. A quality assurance system is used by many marketplaces to approve or disapprove products before they go live. Choosing the correct e-commerce platform might assist in this situation.

- **Management of orders:**

When it comes to marketplaces that sell downloaded or digital items, things aren't too hard. Customers can purchase things, pay for them, and have immediate access to them. When it comes to a marketplace that offers physical objects that must be physically delivered, things get a little more complicated. The issue is that the same buyer may have purchased many items from various sellers. You, on the other hand, will receive a single collective order and a single total payment. Maintaining our focus on order management, you must now ensure that all vendors deliver their goods on time. To effectively manage it, provide your vendors with a dashboard where they can monitor all of their pending orders. As a manager, you must be able to see any orders that have been received. There should also be a sorting system in place so that you can quickly discover which providers have yet to deliver their orders. You can send updates to customers via email notifications to keep them informed and avoid dissatisfaction.

## Chapter 2: Multivendor Ecommerce Platforms.

---

- **Management of shipments:**

In all online stores, shipping things effectively is a crucial management factor. When it comes to marketplaces, however, it gets more difficult because you don't have inventory and must ensure that your merchants ship their products as quickly as possible. One of the most frequent approaches to manage shipping in a marketplace is for the owner to authorize specific shipping methods that all vendors must use to send their goods. You can, for example, have all of your orders shipped at a fixed rate. This ensures that your company has a delivery policy and makes it easier to handle customer questions.

- **Management of vendor payment:**

Paying vendors is one of the more difficult aspects of multivendor management. Your multi-vendor store uses a single shopping cart to charge the buyer a total amount, which is then placed into the store manager's account. This is where things become difficult because it is now the store manager's responsibility to pay out the money collected by the vendors. When it comes to processing vendor payments, it's critical to make sure you pay your vendors on time.

- **Fees and commission for vendors:**

Fees and commissions for vendors in a multivendor marketplace refer to the charges and percentages applied to their sales transactions. Fees cover operational costs, while commissions are the marketplace's share of revenue. These amounts are deducted before vendors receive their payouts.[19]

### 2.5. Challenges that can face multivendor platforms:

- **Vendor Management :**

One of the primary challenges is vendor management. Managing a large number of vendors can be difficult and time-consuming, especially when dealing with different products, pricing, shipping, and customer support. It's crucial to ensure that vendors are providing high-quality products and services to maintain a good reputation and customer loyalty.

- **Competition :**

As the number of multi-vendor marketplace platforms grows, the competition among them is becoming more intense. Businesses need to focus on offering unique products, competitive prices, and exceptional customer service to stand out from the competition.

- **Security and Fraud prevention:**

Multi-vendor marketplace platforms can be vulnerable to fraud and security breaches, which can result in significant financial losses and damage to reputation. It's essential to have robust security measures in place to protect both the vendors and the customers.

- **Branding and Marketing:**

Building a strong brand identity and marketing strategy is crucial for the success. Businesses need to develop a clear value proposition and communicate it effectively to their target audience. Effective marketing strategies, such as social media marketing, email marketing, and influencer marketing, can help attract new customers and retain existing ones.

## Chapter 2: Multivendor Ecommerce Platforms.

---

- **Payment Gateway Integration:**

Integrating a payment gateway can be challenging as it involves managing multiple vendors, payment gateways, and currencies. Businesses need to ensure that they integrate secure payment gateways that are reliable and efficient.

- **Technical Infrastructure :**

Building and maintaining a robust technical infrastructure is essential for the smooth functioning. It's crucial to have a scalable and reliable platform that can handle high traffic, data storage, and data security.[15]

### 3. Problem statement and Objectives

#### 3.1. Problem statement:

The lack of an efficient and dedicated platform for selling handmade items and goods in Algeria poses a significant challenge for artisans and craftsmen to reach a wider market and showcase their unique creations. The absence of a centralized multivendor e-commerce website tailored specifically to the Algerian market restricts the growth potential and economic opportunities for local artisans, hindering their ability to connect with potential customers and expand their businesses. Therefore, there is a pressing need to create a multivendor e-commerce website that caters to the unique requirements and challenges of selling handmade items and goods in Algeria, providing a platform that promotes local craftsmanship, boosts economic growth, and fosters a thriving marketplace for artisans and customers alike.

## Chapter 2: Multivendor Ecommerce Platforms.

---

### 3.2. Objectives:

- Develop a user-friendly and secure multivendor e-commerce website specifically designed for selling handmade items and goods in Algeria.
- Enable seamless product listing, management, and inventory tracking for vendors, ensuring efficient operations and a positive user experience.
- Implement a robust payment gateway system to facilitate secure and reliable transactions between vendors and customers.
- Provide comprehensive customer support to address inquiries, concerns, and issues promptly, fostering customer satisfaction and loyalty.
- Foster collaboration and community engagement by facilitating interaction and knowledge sharing among vendors, creating a supportive environment for artisans and small businesses.

## 4. Conclusion

Bringing the concept of multivendor ecommerce platforms to Algeria comes with its own set of challenges. Factors such as logistics, payment systems, cultural preferences, and localized support need to be taken into consideration. However, the potential benefits for Algerian businesses and customers are immense. Multivendor ecommerce platforms can stimulate the local economy, empower small-scale entrepreneurs, and provide customers with a convenient and diverse shopping experience

# *CHAPTER 3:*

## *ANALYSIS AND DESIGN*

## Chapter 3: Analysis and Design

---

### 1. Introduction

Conceptual study or conceptual formalization is the most important step in an IT project. Its purpose is to establish the choices of information and processes to be manipulated in the information system. Therefore, it is useful to review some fundamentals of the UML method and its various diagrams that will be used to design and model our system.

### 2. UML language

#### 2.1. Definition:

Unified modeling language is a standard language for specifying, visualizing, constructing, and documenting the artifacts of software systems. Object Management Group (OMG) created UML and UML 1.0 specification draft was proposed to the OMG in January 1997. UML can be described as a general-purpose visual modeling language to visualize, specify, construct and document software systems. Although UML is generally used to model software systems it is not limited within this boundary. It is also used to model non-software systems as well like process flow in a manufacturing unit etc. UML is not a programming language but tools can be used to generate code in various languages using UML diagrams.[19]

#### 2.2. Historical:

Grady Booch, Ivar Jacobson, and James Rumbaugh created the Unified Modeling Language in 1995 while working at Rational software. In 1997, the Object Management Group adopted UML as a standard for its members, which includes the likes of Hewlett-Packard, IBM, and Apple Computer. With interoperability in mind, this ensured that UML would be a shared visual language for years to come.

## Chapter 3: Analysis and Design

---

In 2005, the language was published by the International Organization for Standardization (ISO) and has since been revised and reviewed to keep it up to date. The most recent version, UML 2.5, was released in 2015.

Today, UML diagrams are less popular because many software teams now work in an Agile environment, but there are certainly reasons to use them. UML diagramming allows teammates to consistently document and convey ideas — and that type of clear communication helps keep everyone on track.[15]

### 2.3. Why UML?

Uml diagrams are one of the most popular software engineering diagrams. When it comes to building new products or systems, there are two key reasons to add UML diagramming to your toolkit.

- **Better Ideation and Collaboration**

Before developers start coding, UML can help everyone get on the same page. Understanding the system they're trying to create allows developers to delegate work, identify potential problems before work has started, and work efficiently toward a common goal.

- **Clearer Documentation of Workflow or Project Structure**

After code is written, a UML diagram can help developers understand the decisions made and structures developed for the project. This information helps teams as they look to improve upon the project for the future.[19]

## Chapter 3: Analysis and Design

---

### 2.4. UML diagrams:

To the uninitiated, it may seem as though there is an infinite number of UML diagrams, but in actuality, UML standards identify 13 types of diagrams that are divided into two groups, defined below.

#### **Structural diagrams :**

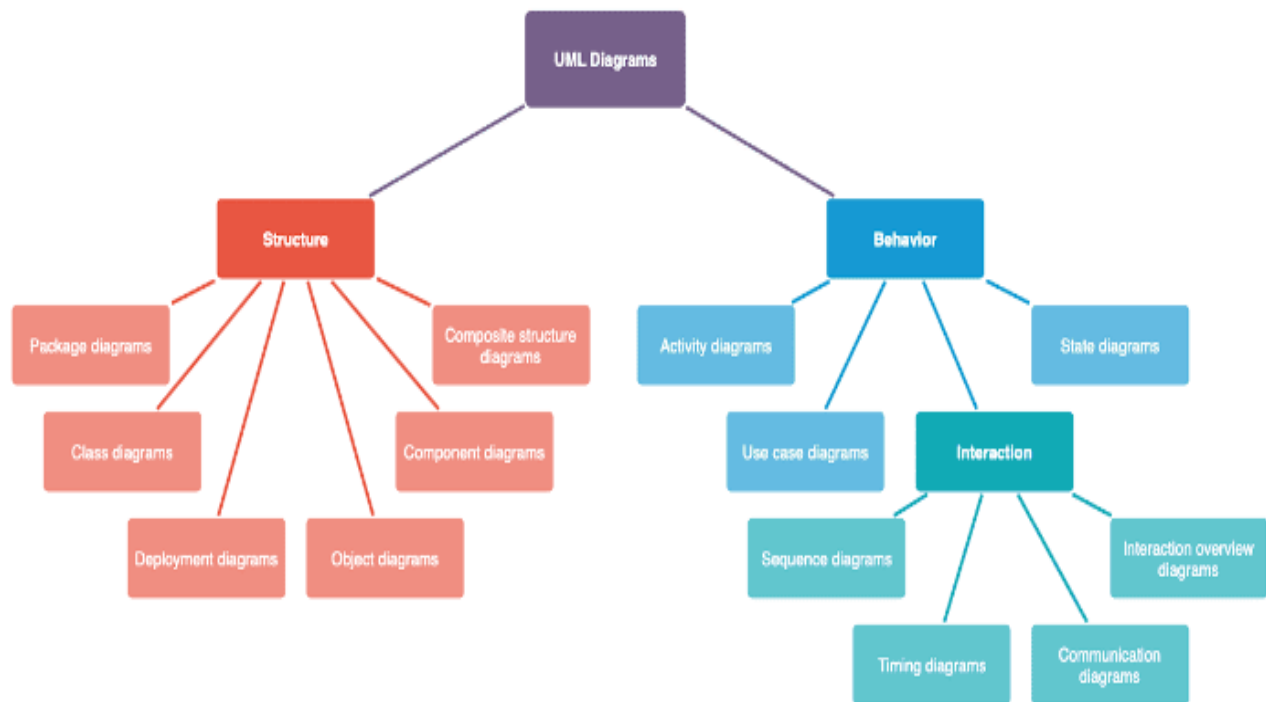
Structural UML diagrams, as the name would suggest, show how the system is structured, including the classes, objects, packages, components, etc. in the system and the relationships between those elements.

- Class diagram.
- Component diagram.
- Deployment diagram.
- Composite structure diagram.
- Object diagram.
- Package diagram.
- Profile diagram.

#### **Behavioral diagrams :**

These UML diagrams visualize how the system behaves and interacts with itself and with users, other systems, and other entities.

- Timing diagram.
- Interaction overview diagram.
- Communication diagram.
- State diagram.
- Use case diagram.
- Sequence diagram.
- Activity diagram.[18]



**Figure 5: Type of UML diagrams.**

### 2.5. Advantages and Disadvantages of UML diagrams:

#### Advantages:

- **Proper Communication for the Software Architecture**

The system's blueprint is actually the software architecture because it's the framework on which the process and the efficiency depends. UML (Unified Modeling Language) is the extensive language that is used for modeling software engineering.

It also helps in assessing the performance of the users and also with tracking, security, and gives relevant guidelines for the assigned operation. As it has properties to reach widely, UML is the perfect language to communicate visual information about the software architecture to a large number of workers who use it.

## Chapter 3: Analysis and Design

---

- **Planning Tool before Making a Program**

UML can help you plan your program before it is time to start programming it. The tool can help with generating codes that can set up the model UML. The diagram is relatively easy to change and can help you reduce overhead when you are finally implementing the program.

- **Easily Debug Any Issue**

A more extensive program can take up to hours and hours of search to find the error in it, and it can also cause problems in the system later on. So a program is designed nicely with the help of UML so that each of the tasks carries its own codes, which are easier for the programmer to debug.

### **Disadvantages:**

- **A Bit of Time Consuming**

The major off-putting disadvantage that UML has that it takes a lot of time to manage the diagrams. For the UML to give you excellent work, a programmer needs to synchronize the codes that require a software project's maintenance and time.

- **It Is Just A Language**

You can say that it is just a language to communicate and the people who understand it can talk to each other. And it totally depends on how you are using it. If you are using it for a complete model-based system, then only you can get information with regards to traceability, which is quite important in some industries, but it requires serious discipline.

However, UML also lacks formal semantics in various areas. State machines and composite structures are two areas in which there is work that is being done to improve the quality of it. If you don't get its full advantage, then it can restrict you from accomplishing your goals that have been set by your company.

## Chapter 3: Analysis and Design

---

- **Designing – That Is All**

UML consist of too much design that takes so much time to make and can get overwhelming for some companies. This results in companies to overlook the actual program and overanalyze the real issue by falling for the codes.

- **It Can Ascend Its Complexity**

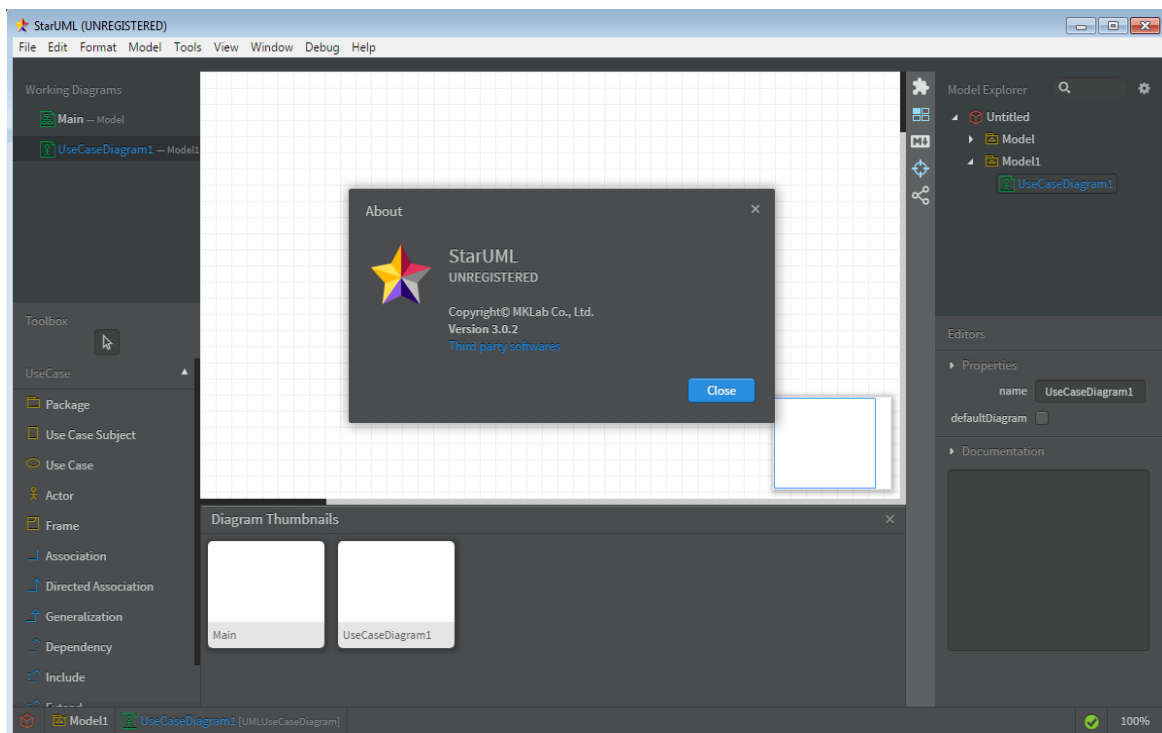
Some programmers think they are better off without it because it can grow in such complexity, making the new programmers stay out of learning or using it. This makes using the UML less important because of its massive size of diagrams and codes.[20]

### 3. The StarUml Modeling Tool Selection

#### 3.1. Definition:

StarUML is an open source software modeling tool that supports the UML (Unified Modeling Language) framework for system and software modeling. It is based on UML version 1.4, provides eleven different types of diagram and it accepts UML 2.0 notation. It actively supports the MDA (Model Driven Architecture) approach by supporting the UML profile concept and allowing to generate code for multiple languages.[21]

## Chapter 3: Analysis and Design



**Figure 6: StarUml graft interface**

### 3.2. Benefits of staruml:

- A most important advantage is that the user can generate codes from the diagram drawn. Anyone who is not interested in the front-end diagrams can use the backend coding to add the functionality, change the diagram to their need, and modify it as per the usage by changing the Java code. This makes reverse engineering possible i.e. generating a diagram from the code that is formed initially from the diagram drawn.
- The user interface is known to all as it uses visual studio along with other coding languages such as C and C#. Also, the diagrams drawn in UML software can be exported into JPG.XMI formats help the user to identify and check the patterns in different formats and to explore more options.

## Chapter 3: Analysis and Design

---

- StarUML is faster, flexible, and can be extended to accommodate other codes in the diagram. The extensive features make the users fall in love. If mistakes happen, we can undo and make adjustments. This feature is not applicable in some UML tools.
- Anyone can understand the framework, and hence the architecture can be modified for the extensive use of the software. Performance and security can be tracked easily with the help of StarUML. Documentation is provided with proper guidelines to improve the business processes. StarUML is the visual language that communicates information to the users in a diagrammatic manner.
- The tools in StarUML help to know the requirements in the system and apply the design patterns so that proper analysis can be done to understand and modify the diagrams. These tools are open source and for more high requirements, tools can be purchased from the software vendors.[21]

### 4. Analysis of the project

#### 4.1. Use case diagram :

A UML use case diagram is the primary form of system/software requirements for a new software program underdeveloped. Use cases specify the expected behavior, and not the exact method of making it happen. Use cases once specified can be denoted both textual and visual representation. A key concept of use case modeling is that it helps us design a system from the end user's perspective. It is an effective technique for communicating system behavior in the user's terms by specifying all externally visible system behavior.

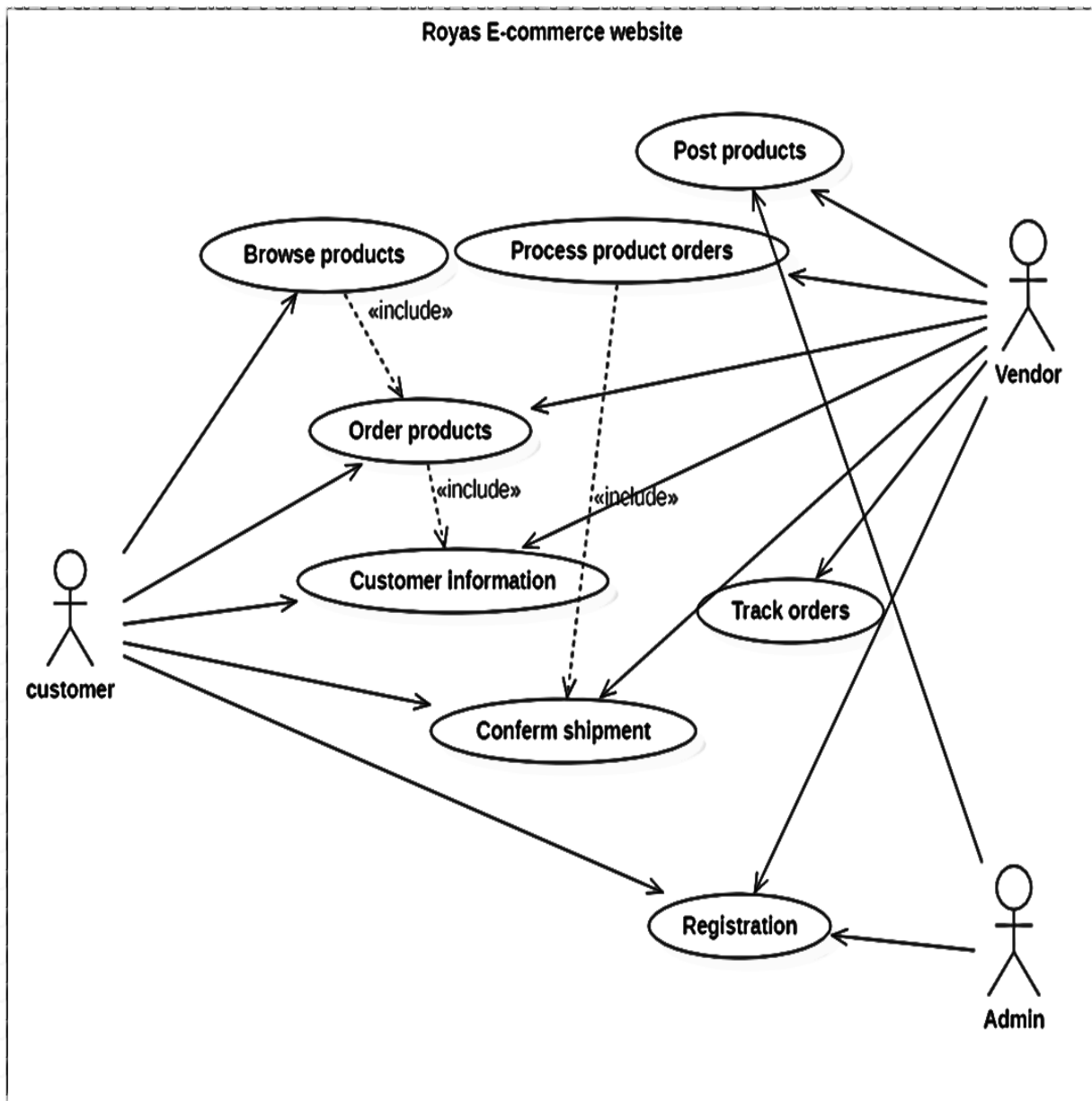


Figure 7: Use case Diagram

## 1.1. Entity-Relationship Model :

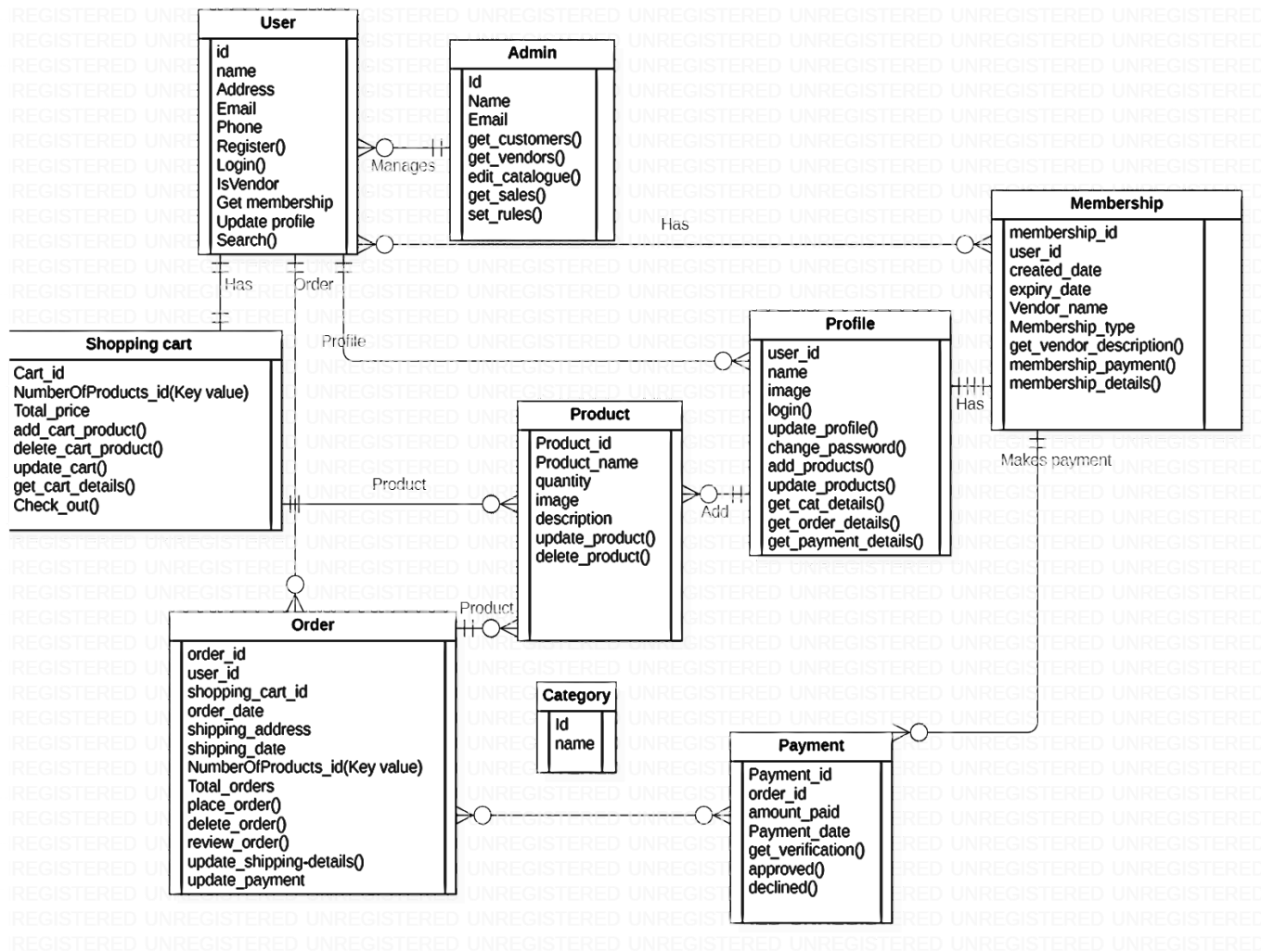


Figure 8: Entity-Relationship model

## 4.2. Sequence diagram:

A sequence diagram is a type of interaction diagram because it describes how—and in what order—a group of objects works together.

## Chapter 3: Analysis and Design

- Sequence diagram of the Administrator

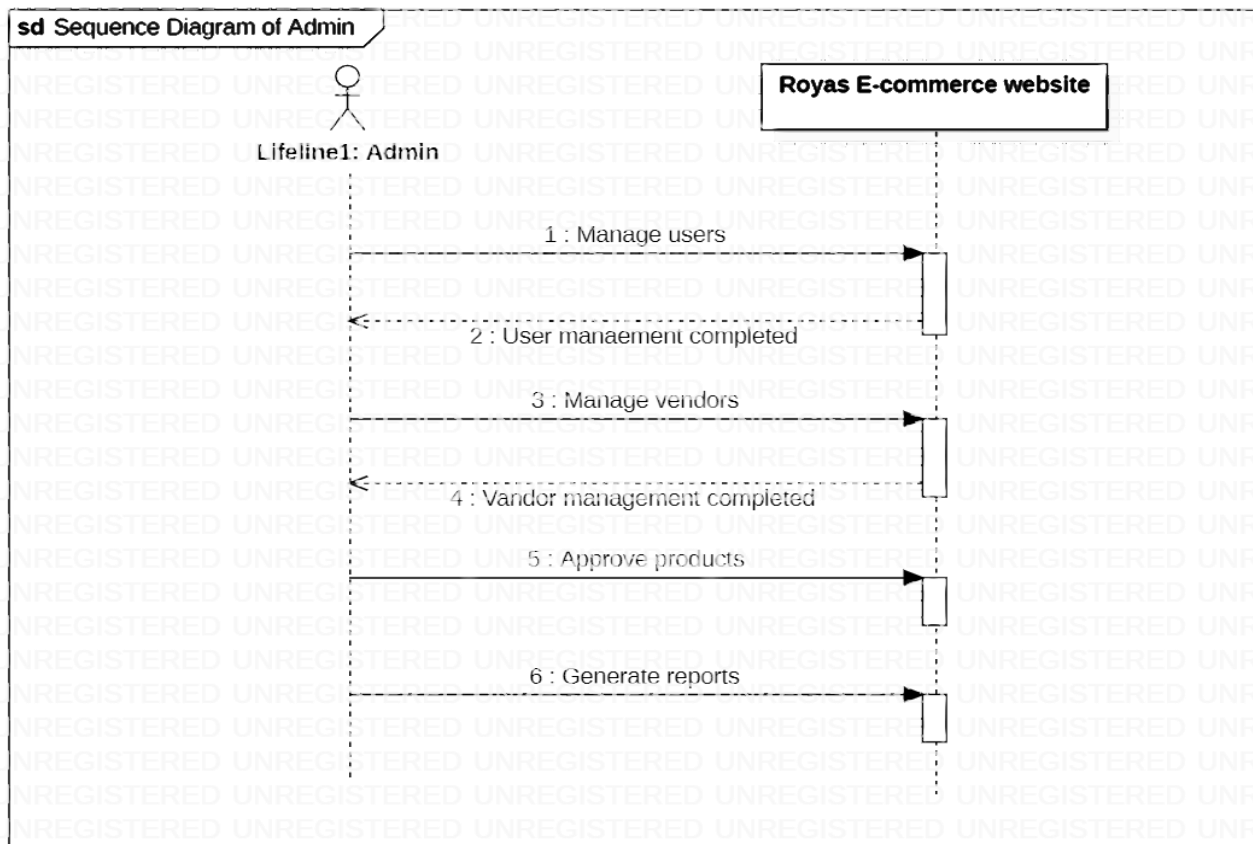


Figure 9: Sequence diagram of the Administrator.

- Sequence diagram of the vendor

## Chapter 3: Analysis and Design

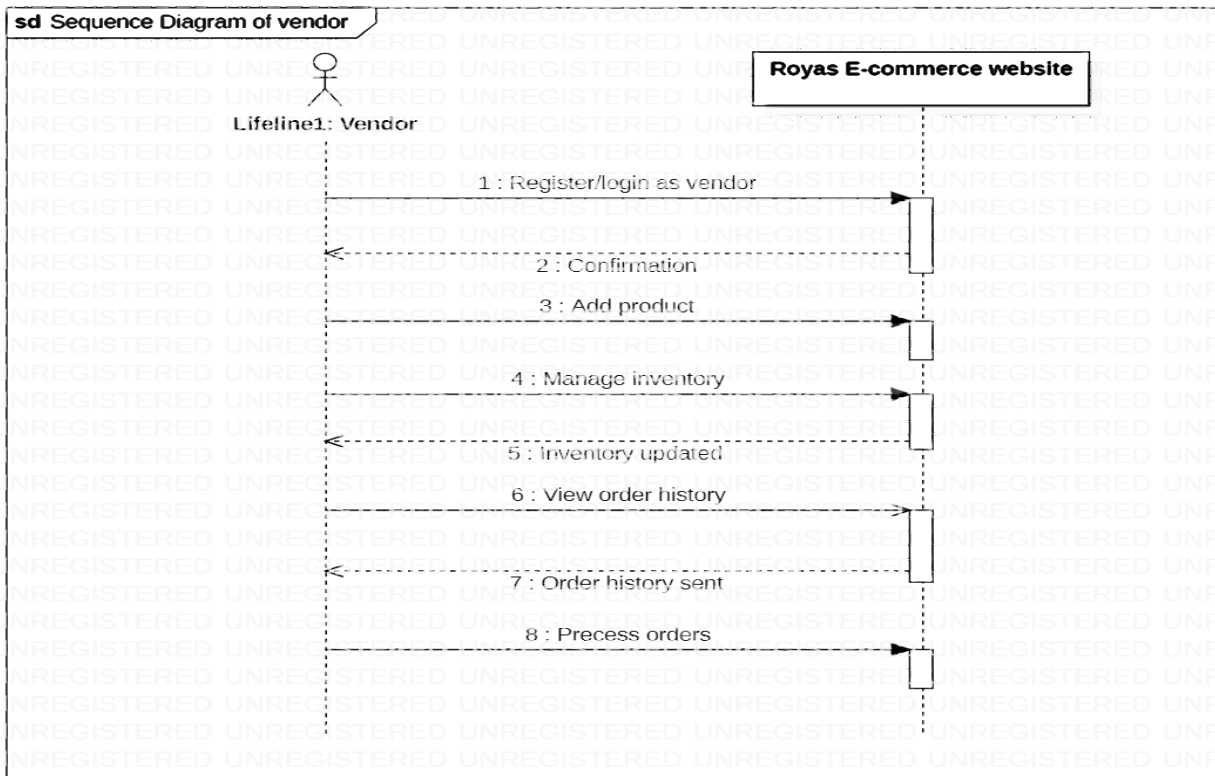


Figure 10: Sequence diagram of the vendor

- Sequence diagram of the customer

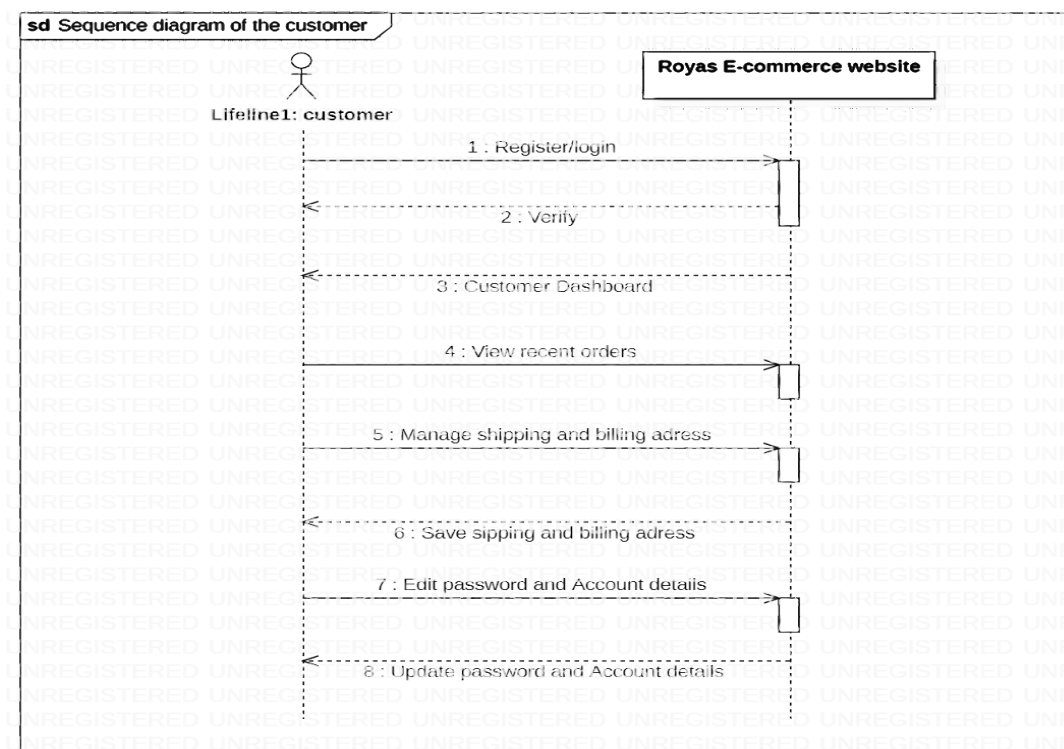


Figure 11: Sequence diagram of the customer.

### 4.3. Activity diagram:

Activity diagram visualize the steps performed in a use case—the activities can be sequential, branched, or concurrent. This type of UML diagram is used to show the dynamic behavior of a system.

- Activity diagram of the Administrator

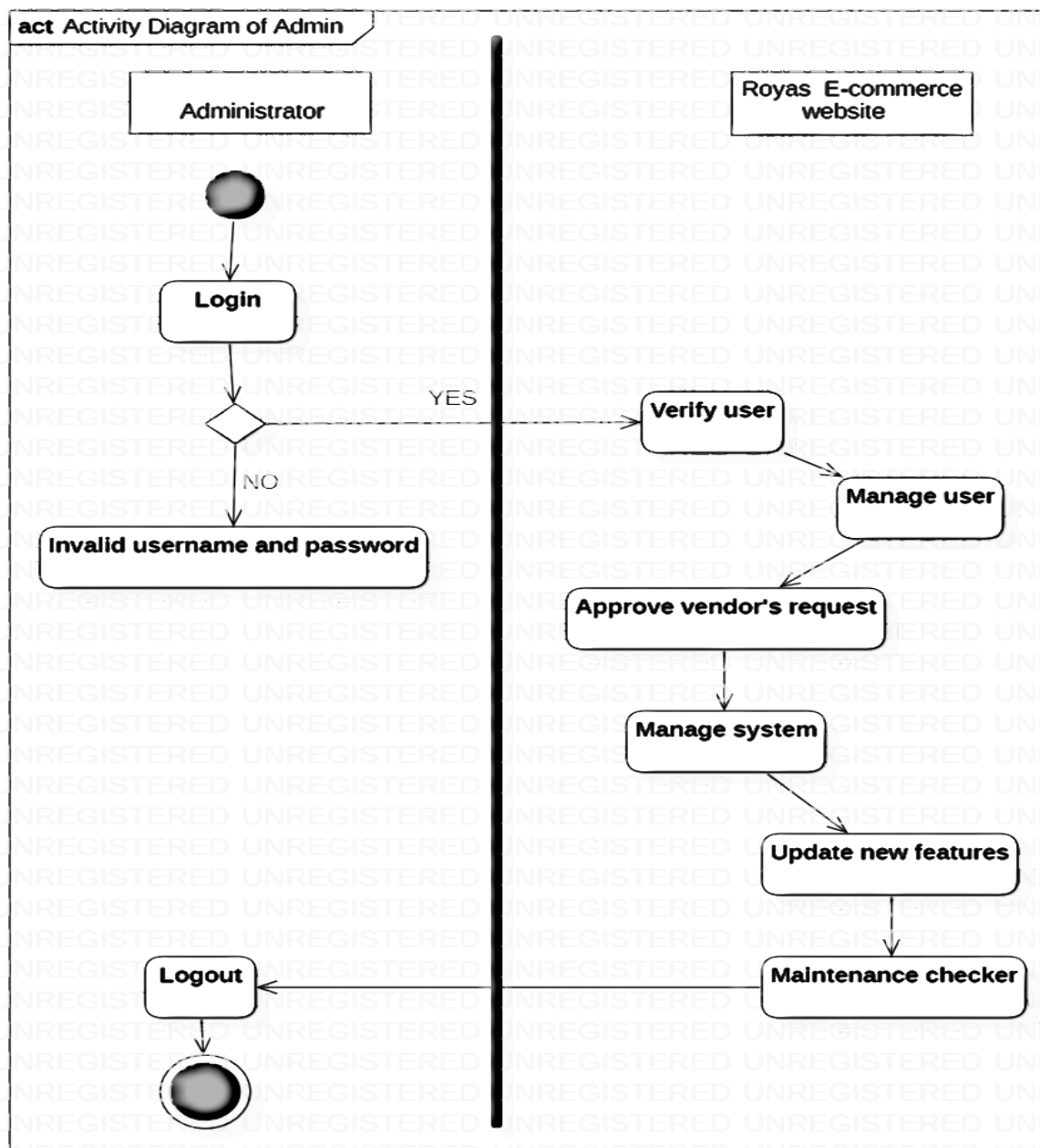


Figure 12: Activity Diagram of the Admin.

- Activity diagram of the vendor

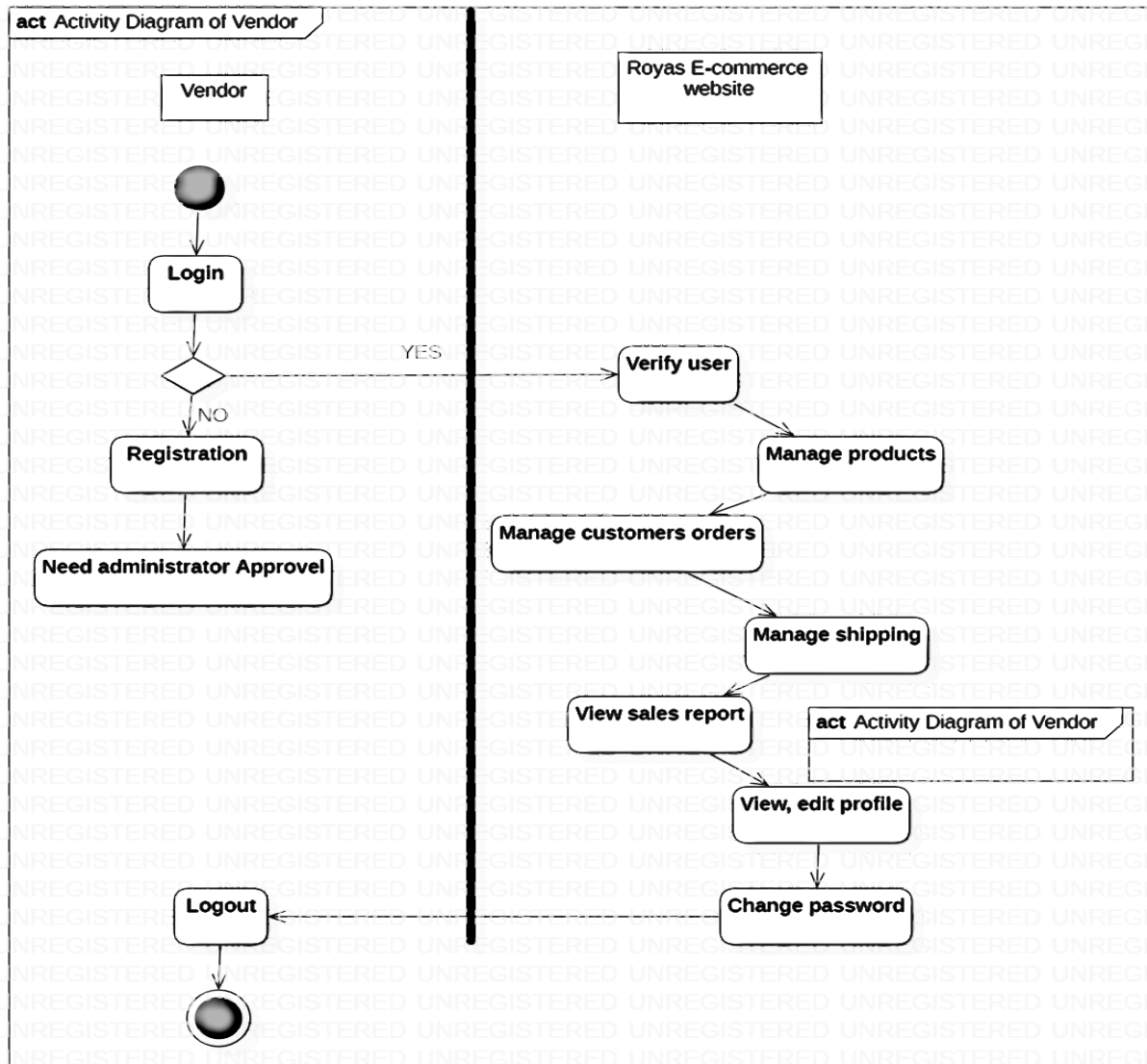


Figure 13: Activity Diagram of the vendor.

- Activity diagram of the customer:

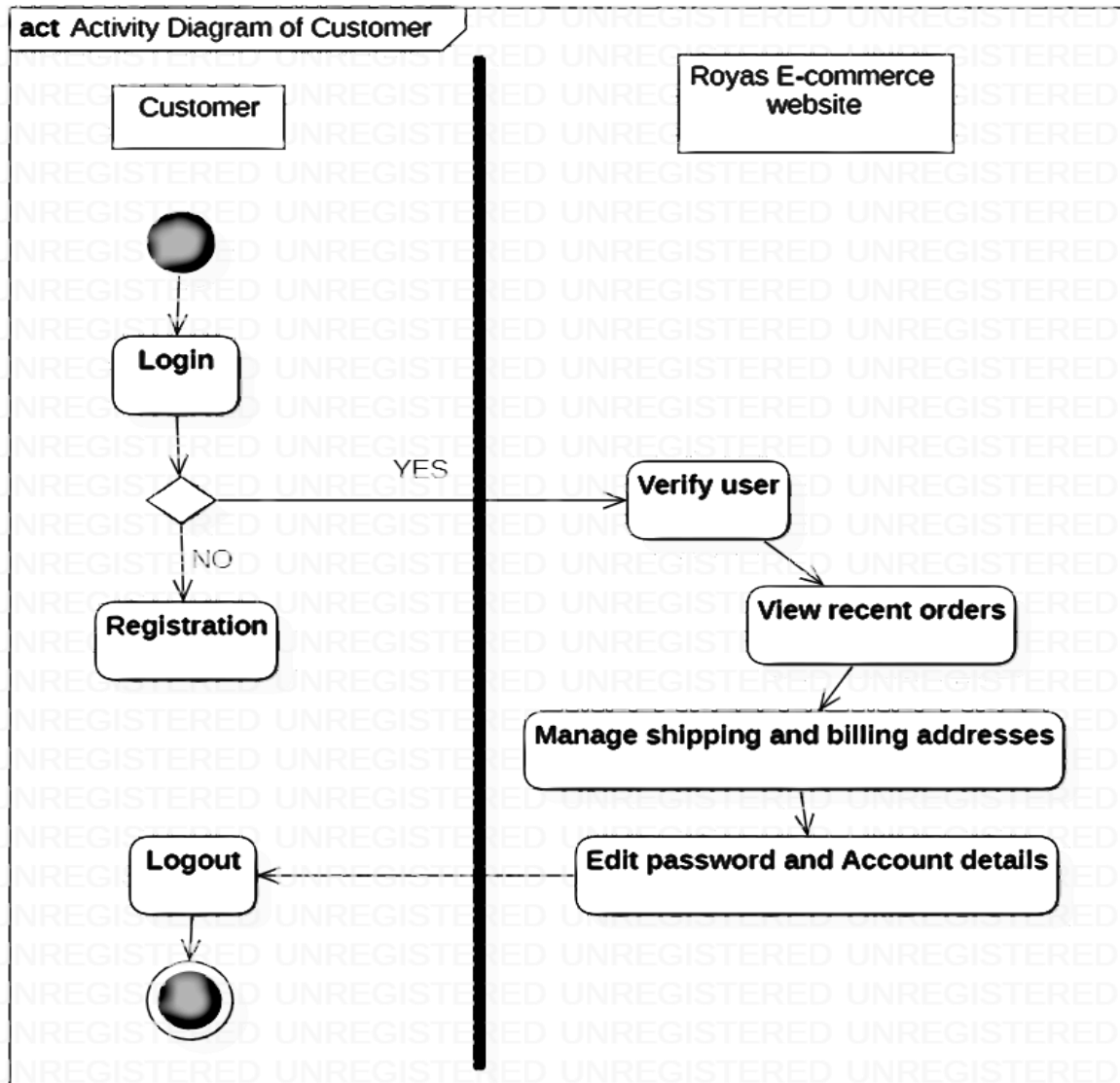


Figure 14: Activity Diagram of the customer.

### 5. Presentation of the database tables:

We have chosen the name 'Royas1' as the name of our database, which contains 6 tables.

Table	Line	Type	Interclassement	Size
Categories	2	InnoDB	utf8mb4_general_ci	16 kio
Vendors	6	InnoDB	utf8mb4_general_ci	16 kio
Customers	8	InnoDB	utf8mb4_general_ci	16 kio
Products	8	InnoDB	utf8mb4_general_ci	16 kio
Orders	5	InnoDB	utf8mb4_general_ci	16 kio
Order_items	5	InnoDB	utf8mb4_general_ci	16 kio

**Table 1 : Database structure.**

#### Categories table :

The "categories" table is represented as follows:

Name	Type	Size	Key	Null
User_id	int	30	primaire	No
Name	Varchar			No

**Table 2: Categories table structure.**

## Chapter 3: Analysis and Design

---

### Vendors table :

The "vendors" table is represented as follows:

Name	Type	Size	Key	Null
Vendor_id	int	30	primaire	No
Use_id	int	30		No
Vendor_name	Varchar			No
Description	Varchar	300		No
Rating	float			No
Registration_date	date			No

**Table 3 : Vendors table structure.**

### Customers table :

The "customers" table is represented as follows:

Name	Type	Size	Key	Null
User_id	int	30	primaire	No
Username	Varchar			No
Password	Varchar	30		No
Email	Varchar			No
first_name	Varchar			No
Last_name	Varchar			No
address	Varchar			No
phone	Varchar	30		No

**Table 4 : Customers table structure.**

## Chapter 3: Analysis and Design

---

### Products table:

The "products" table is represented as follows:

Name	Type	Size	Key	Null
Product_id	int	30	primaire	No
Vendor_id	int			No
Product_name	varchar	100		No
category	varchar			No
price	decimal			No
Description	varchar			No
stock_quqntity	int			No
Upload_date	date			No

**Table 5: Product table structure.**

### Orders table:

The "orders" table is represented as follows:

Name	Type	Size	Key	Null
Order_id	Int	30	primary	No
User_id	Int	30	primary	No
Order_date	date			No
Total_amount	decimal			No
Payment_status	varchar			No

**Table 6: Orders table structure.**

## Chapter 3: Analysis and Design

---

### Orders\_items table:

The "orders\_items" table is represented as follows:

Name	Type	Size	Key	Null
Order_item_id	Int	30	primary	No
Order_id	Int	30	primary	No
Product_id	Int			No
Quantity	Int			No
Item_price	decimal			No

**Table 7: Order\_items table structure.**

## 6. Conclusion

In this chapter, we focused on the analytical and conceptual aspects of our application, as well as the databases that interact with it. The conceptual phase is a fundamental step in the realization of any project. For this purpose, we defined the use case and translated it through the construction of sequence and class diagrams. Finally, we defined all the tables of the used database. Thanks to these, things are clearer, and the development of our application has become easier.

# **CHAPTER 4:**

## ***IMPLEMENTATION OF THE APPLICATION***

## Chapter 4: Implementation of the Application

---

### 1. Introduction:

This chapter presents the various computer tools and techniques that were used for the development of our web application. In the following sections, we will describe the components of the working environment, as well as the implementation tools. We will also provide some examples of interfaces that have been created in our web application.

### 2. The tools and programming languages used:

Since this application is a dynamic web application requiring the availability of a server infrastructure, several applications are needed to develop the server-side:

- A WAMP web server.
- A server-side scripting language (PHP).

#### Html & CSS languages:



**HTML**, in full hypertext markup language, a formatting system for displaying material retrieved over the Internet. Each retrieval unit is known as a Web page (from World Wide Web), and such pages frequently contain hypertext links that allow related pages to be retrieved. HTML is the markup language for encoding Web pages.[22]

**CSS** stands for Cascading Style Sheets. It is a style sheet language which is used to describe the look and formatting of a document written in markup language. It provides an additional feature to HTML. It is generally used with HTML to change the style of web pages and user interfaces. It can also be used with any kind of XML documents including plain XML, SVG and XUL.[23]

## Chapter 4: Implementation of the Application

---

### The PHP language:



**PHP** (Hypertext Processor) is a general-purpose scripting language and interpreter that is freely available and widely used for web development. The language is used primarily for server-side scripting, although it can also be used for command-line scripting and, to a limited degree, desktop applications. The acronym PHP was originally derived from Personal Home Page Tools, but it now stands for PHP: Hypertext Preprocessor, which the PHP Group's documentation describes as a "recursive acronym."

### jQuery:



**jQuery** is an open-sourced JavaScript library that simplifies creation and navigation of web applications. Specifically, jQuery simplifies HTML Document Object Model (DOM) manipulation, Asynchronous JavaScript and XML (Ajax) and event handling. Additionally, jQuery incorporates JavaScript functionalities by manipulating CSS properties to add effects such as fade-ins and outs for website elements.[24]

### Javascript:



**JavaScript** is a dynamic programming language that's used for web development, in web applications, for game development, and lots more.

It allows you to implement dynamic features on web pages that cannot be done with only HTML and CSS.[25]

## Chapter 4: Implementation of the Application

---

### VS code:



**Visual Studio Code** (famously known as VS Code) is a free open source text editor by Microsoft. VS Code is available for Windows, Linux, and macOS. Although the editor is relatively lightweight, it includes some powerful features that have made VS Code one of the most popular development environment tools in recent times.[26]

### Wamp server:



**WampServer** (formerly WAMP5 ) is a WAMP -like web development platform , allowing PHP scripts to run locally (without having to connect to an external server).

WampServer is not in itself a software, but an environment comprising three servers ( Apache , MySQL and MariaDB ), a script interpreter (PHP), as well as phpMyAdmin for web administration of MySQL databases.[27]

### WordPress:



**WordPress** is an open-source content management system (CMS) that makes it easy to create and manage a website. It is the most popular CMS in the world. Millions of business owners, bloggers, and publishers use WordPress every day to maintain their online presence.[28]

## Chapter 4: Implementation of the Application

### 3. Presentation of some pages of the website:

In this section, we will describe the main pages for the development of our web application.

#### Home page:

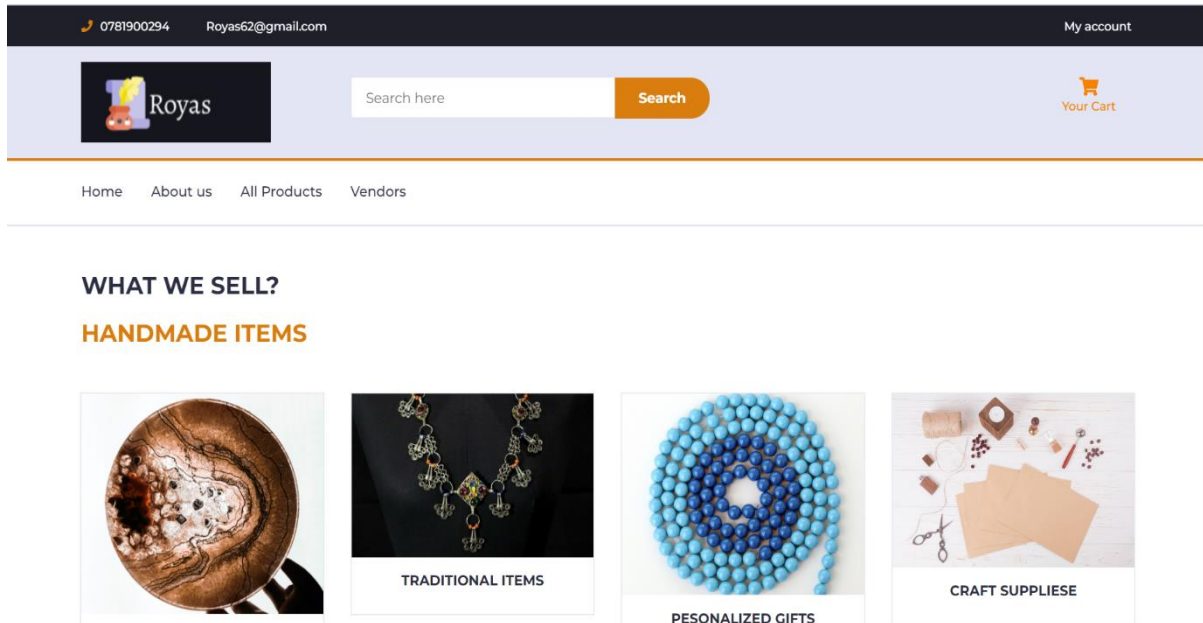


Figure 15: Home Page

serves as the initial point of contact for visitors and provides an overview of the website's offerings and specialization.

#### Footer:

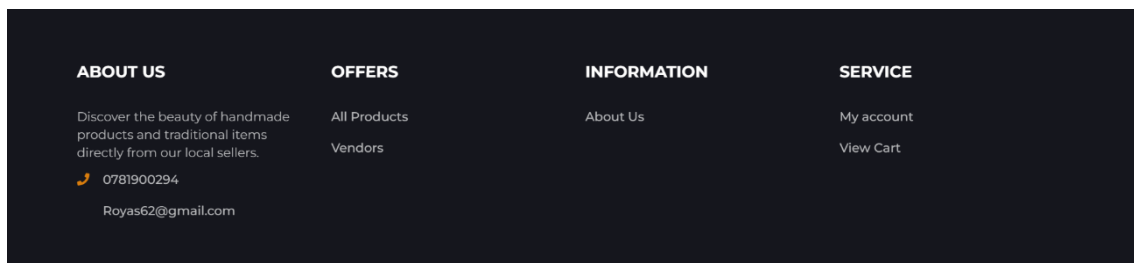


Figure 16: Home page Footer

## Chapter 4: Implementation of the Application

In which, visitors can conveniently find our phone number and Gmail account for contacting us whenever needed.

### About Us:

#### ABOUT US

##### About Us

Welcome to Royas, an online marketplace specifically designed to empower individuals, particularly housewives, women, and girls, to showcase and sell their homemade and DIY products effortlessly.

At Royas, we understand the challenges faced by talented individuals who wish to share their creations with the world but often encounter obstacles in promoting their products and connecting with potential customers.

Join us on this exciting journey as we celebrate the creativity and entrepreneurial spirit of individuals who have turned their passions into meaningful businesses. Discover unique treasures, support local artisans, and be a part of a community that values craftsmanship and innovation.

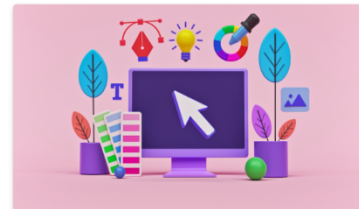


Figure 17: About us page

### All products (handmade products) page:

#### ALL PRODUCTS

Showing all 7 results

Default sorting

eewefff  
Read more

effefe  
2,222.00 ~~22.00~~ EGP  
Add to cart

frgergerg  
4,342.00 ~~344.00~~ EGP  
Add to cart

gdfhgf  
56,00 ~~22.00~~ EGP  
Add to cart

Figure 18: All products page.

## Chapter 4: Implementation of the Application

In Royas web app, we specialize in offering a wide range of handmade items, including Homemade items, Traditional items, Personalized gifts, and Craft supplies. We take pride in supporting both our customers and vendors by providing a seamless experience that not only showcases these remarkable creations but also facilitates their production in the industry. Whether you're seeking unique treasures, personalized expressions of love, or the necessary supplies to unleash your own creativity, Royas web app is here to inspire and empower you.

### Product Page :

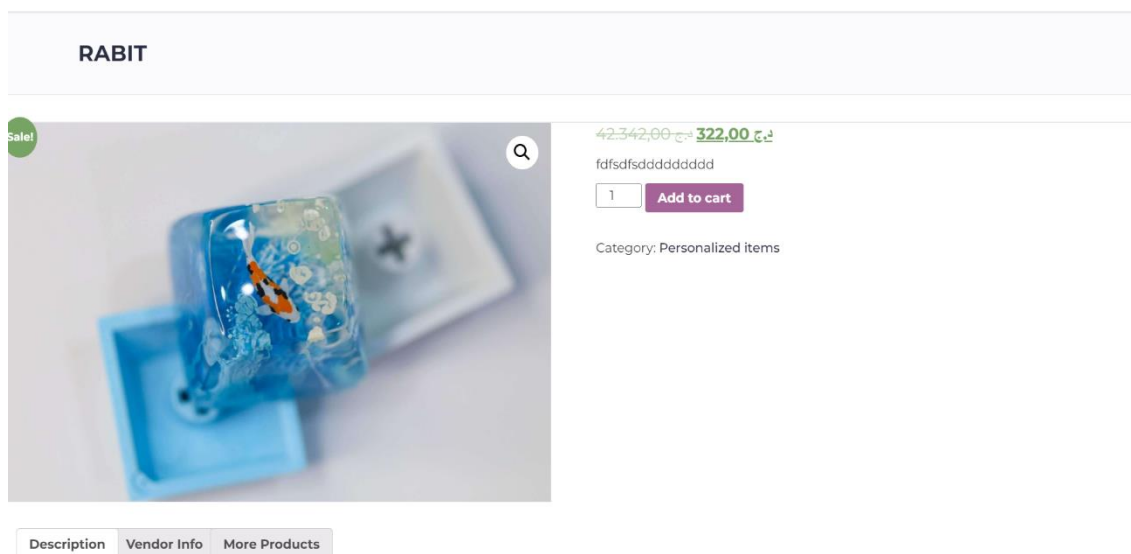


Figure 19 : Product page.

### Vendors page :

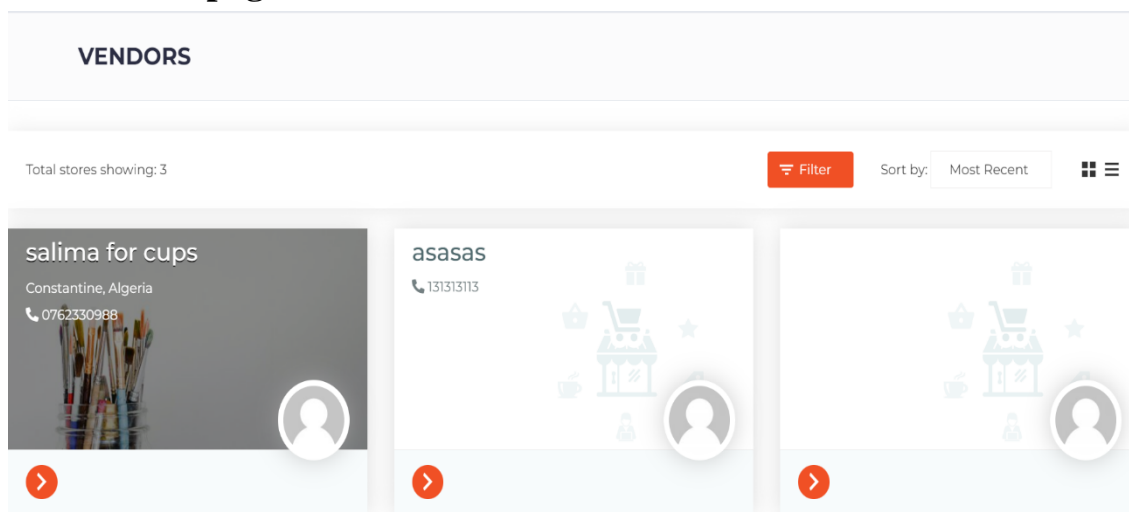


Figure 20 : Vendors page.

## Chapter 4: Implementation of the Application

### Shop page:

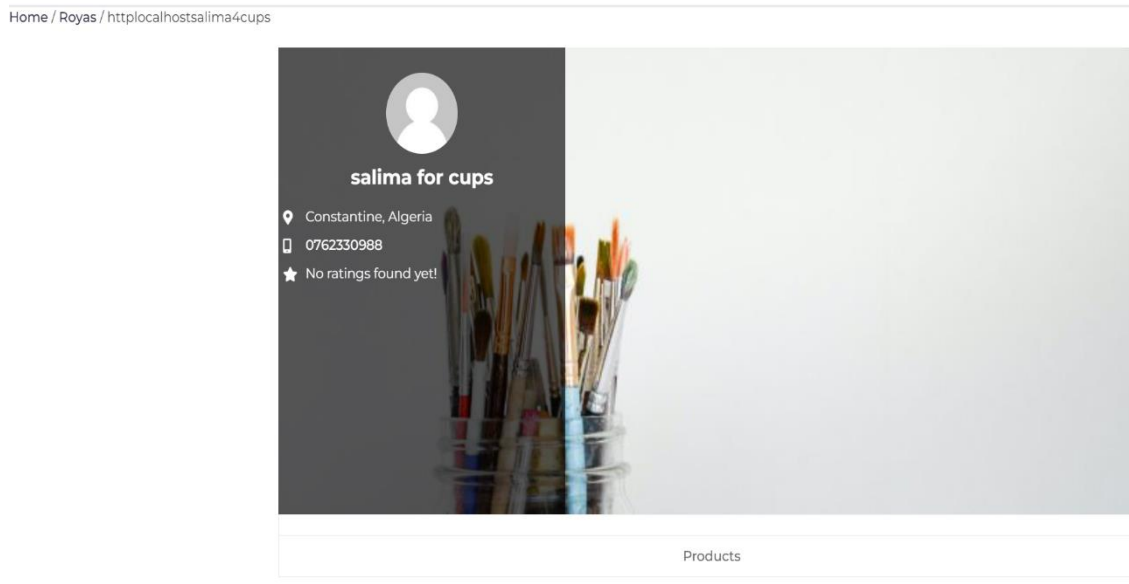
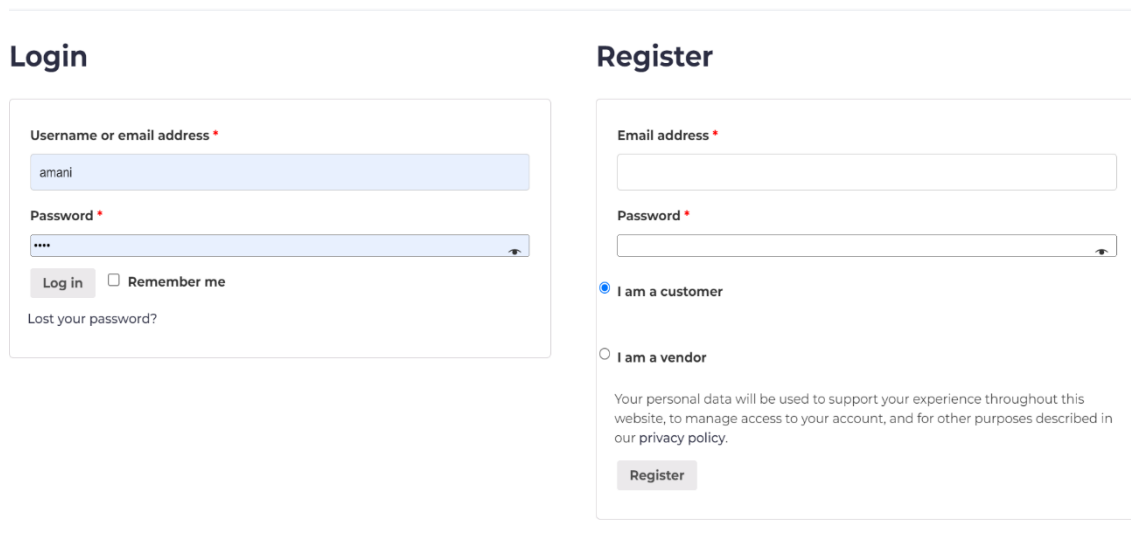


Figure 21: Shop page.

### Sign up and login Page:



The screenshot displays two forms side-by-side: 'Login' and 'Register'.

**Login Form:**

- Field: Username or email address \* (Value: amani)
- Field: Password \* (Value: \*\*\*\*)
- Buttons: Log in, Remember me (checkbox)
- Link: Lost your password?

**Register Form:**


- Field: Email address \*
- Field: Password \*
- Radio buttons: I am a customer (selected), I am a vendor
- Text: Your personal data will be used to support your experience throughout this website, to manage access to your account, and for other purposes described in our privacy policy.
- Button: Register

Figure 22: Sign up and login form.

Our esteemed visitors have the privilege of creating an account, this account enables them to efficiently manage their orders, ensuring a seamless shopping experience tailored to their preferences.

## Chapter 4: Implementation of the Application

### Your Cart page :

Product	Price	Quantity	Subtotal
 <b>effefe</b> Vendor:	22,00 €	<input type="text" value="3"/>	66,00 €

#### Cart totals

Subtotal	66,00 €
Shipping:	<b>Free shipping</b> Shipping to <b>Skikda</b> . <a href="#">Change address</a>
<b>Total</b>	<b>66,00 €</b>

Figure 22 : Cart page.

Where you can manage your orders.

### Checkout page :

Have a coupon? Click here to enter your code

#### Billing details

First name \*

Last name \*

Company name (optional)

Country / Region \*

Street address \*

Ship to a different address?

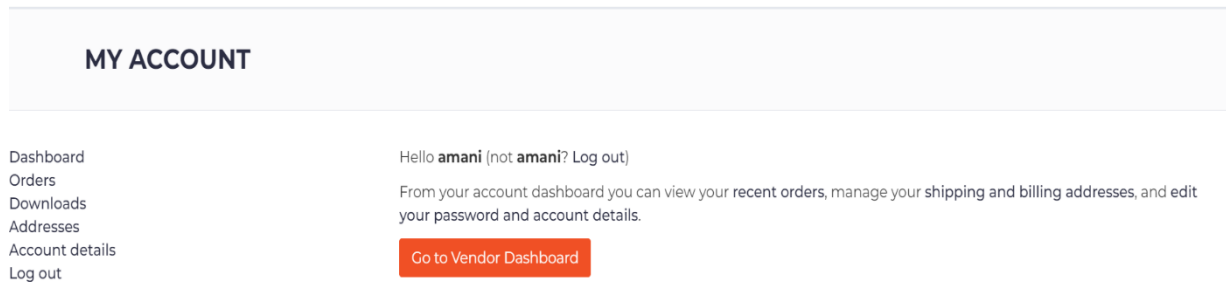
Order notes (optional)

Figure 23 : Checkout page.

## Chapter 4: Implementation of the Application

---

### Account page:



**MY ACCOUNT**

Dashboard  
Orders  
Downloads  
Addresses  
Account details  
Log out

Hello **amani** (not **amani**? Log out)

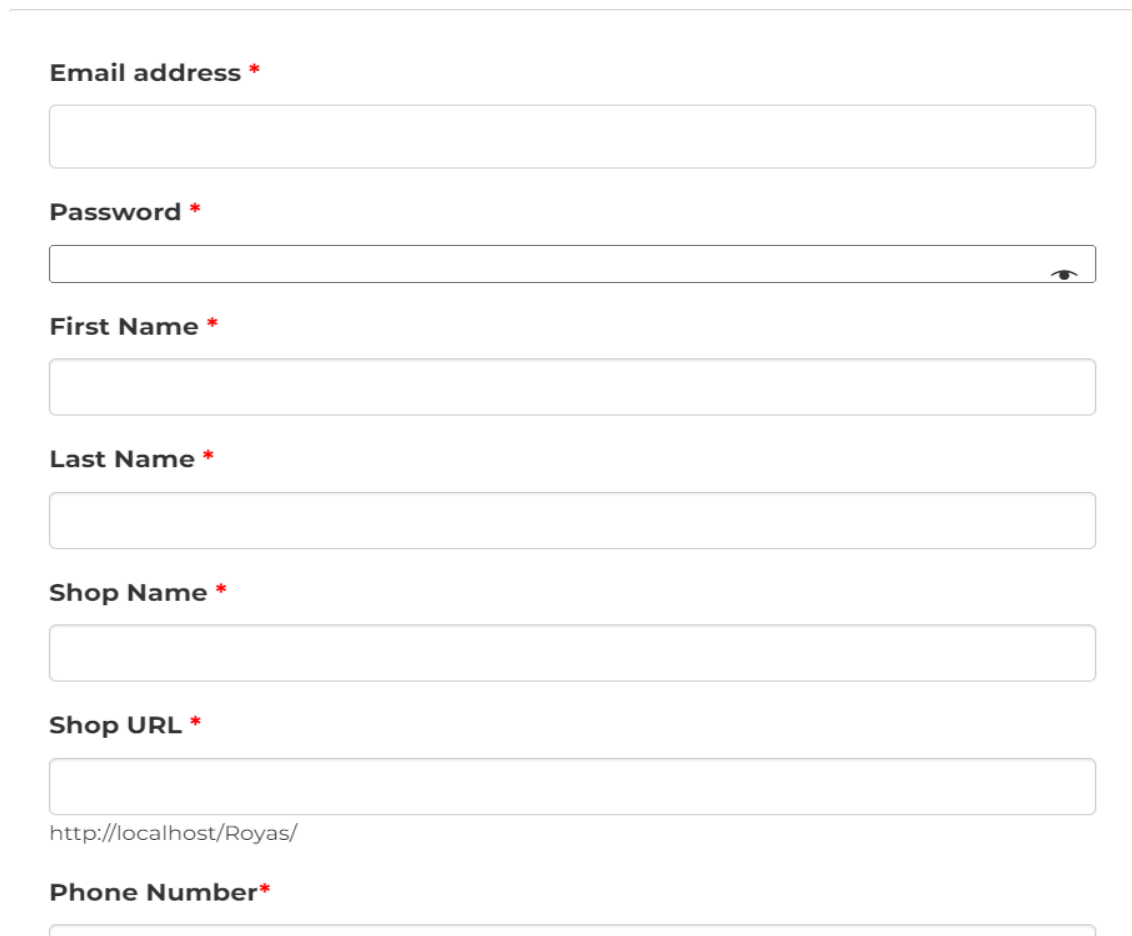
From your account dashboard you can view your recent orders, manage your shipping and billing addresses, and edit your password and account details.

[Go to Vendor Dashboard](#)

**Figure 24: Account page.**

Once you create your account, you get directed to my account page where you can proceed to be a vendor if you signed up as a vendor in our website.

### Vendor registration form:



**Email address \***

**Password \***

**First Name \***

**Last Name \***

**Shop Name \***

**Shop URL \***

http://localhost/Royas/

**Phone Number\***

**Figure 25: Vender registration form.**

## Chapter 4: Implementation of the Application

### Vendor Dashboard:

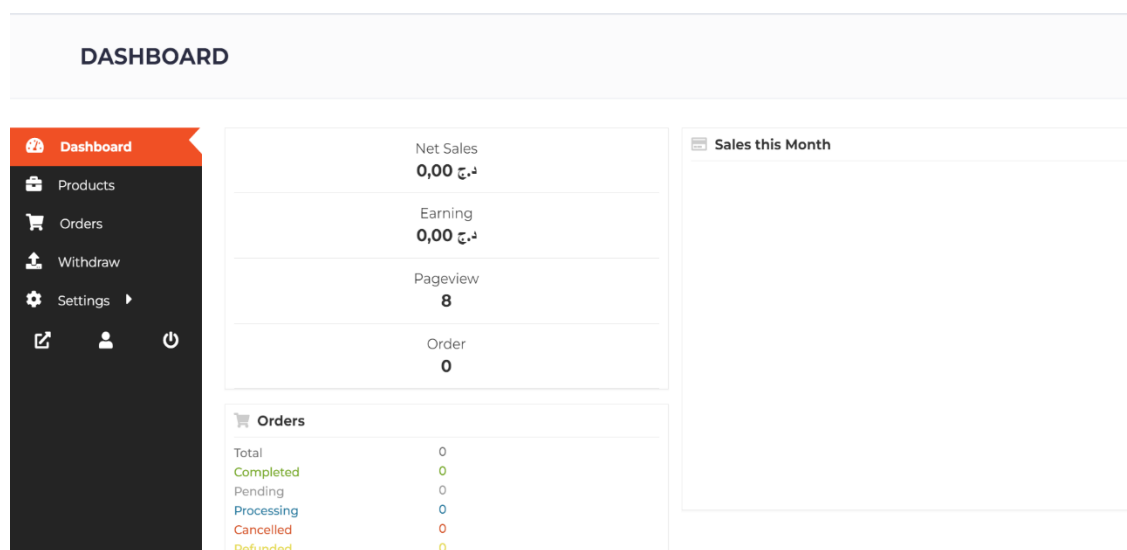


Figure 25: Vender dashboard.

The vendor dashboard is a user-friendly interface for sellers. It allows vendors to manage products, track orders, view sales reports, request withdrawals, and customize their store settings.

### Administrator dashboard:

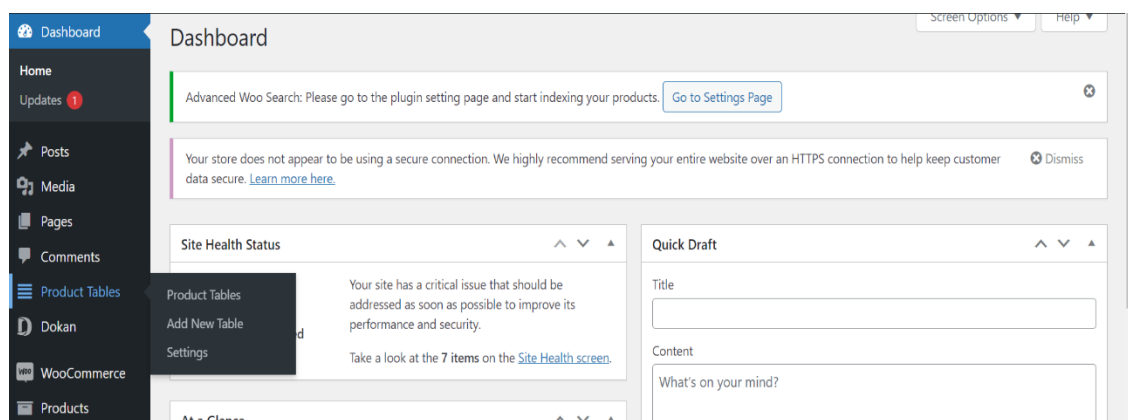


Figure 25: Admin dashboard.

website administrators can manage and control various aspects of the marketplace. It offers a range of tools and features to oversee vendor activities, handle site settings, and ensure smooth operation. Administrators can manage user

## Chapter 4: Implementation of the Application

---

accounts, review and approve vendor registrations, monitor sales and transactions, and configure payment gateways.

### **4. Conclusion:**

In the implementation section, we presented the various tools and languages used in the development of our web application. Subsequently, we showcased some web application interfaces as we designed them. The application provides all the useful and necessary functions for the proper functioning of a multivendor ecommerce web application. We believe we have achieved the initial objectives, but we can still improve certain aesthetic and functional aspects.

# *GENERAL CONCLUSION*

## General Conclusion

---

### General Conclusion

significantly impacted the world of e-commerce. The emergence of multivendor e-commerce platforms has amplified the potential of digital marketplaces, enabling multiple vendors to showcase their products or services in a centralized online marketplace. These platforms have brought about a paradigm shift in commerce, offering new business models and distribution channels that empower small and medium-sized enterprises (SMEs) in Algeria. The impact of multivendor e-commerce on the country's economy is substantial, promoting economic inclusivity, job creation, and the growth of domestic industries. Furthermore, these platforms contribute to the digitization of the economy, fostering innovation, efficiency, and competitiveness. By designing and implementing an interactive web application within the ROyas multivendor e-commerce platform, our project aims to address the unique needs and challenges faced by artisans and craftsmen, providing them with a reliable and accessible platform to showcase their traditional, handmade products to a global audience. Through technology, we strive to preserve cultural heritage and foster economic growth. The thesis will explore various aspects of web applications, multivendor e-commerce platforms, and the design and implementation of the web application, providing insights and practical solutions to enhance the e-commerce experience for both vendors and customers.

## **Bibliography**

- [1] <http://www.techtarget.com>.
- [2] <http://www.javacodebook.com>.
- [3] <http://www.clickittech.com>.
- [4] <http://www.claysis.com>.
- [5] <http://www.geeksforgeeks.org>.
- [6] <http://www.sdxcentral.com>.
- [7] <http://www.u-next.com>.
- [8] <http://www.investopedia.com>.
- [9] <http://www.educba.com>
- [10] <http://www.imarcgroup.com>
- [11] <http://www.shiptmltle.com>
- [12] <http://www.ntspl.co.in/>
- [13] <http://www.intuz.com/>
- [14] <http://www.cebcommerce.com>
- [15] <http://www.webnexs.com>
- [16] <http://www.lucidchart.com>
- [17] <http://www.pczome.co.uk>
- [18] <http://www.glify.com>

- [19] <http://www.educba.com>
- [20] <http://www.visual-paradigm.com>
- [21] <http://www.staruml.sourceforge.net>
- [22] <http://www.britannica.com/technology/HTML>
- [23] <https://www.javatpoint.com/what-is-css>
- [24] <https://www.theserverside.com/definition/jQuery>
- [25] <https://www.freecodecamp.org/news/what-is-javascript-definition-of-js/>
- [26] <https://www.educative.io/answers/what-is-visual-studio-code>
- [27] [https://fr-m-wikipedia-org.translate.google.com/wiki/WampServer?\\_x\\_tr\\_sl=fr&\\_x\\_tr\\_tl=en&\\_x\\_tr\\_hl=en&\\_x\\_tr\\_pto=sc](https://fr-m-wikipedia-org.translate.google.com/wiki/WampServer?_x_tr_sl=fr&_x_tr_tl=en&_x_tr_hl=en&_x_tr_pto=sc)
- [28] <https://www.namecheap.com/wordpress/what-is-wordpress/>