



BUSHRA MASOOD
01-134202-110
NOSHEELA KHALID
01-134202-054

LocalOrgano

Bachelor of Science in Computer Science

Supervisor: Dr. Moazzam Ali

Department of Computer Science
Bahria University, Islamabad

March 2024

Abstract

LocalOrgano is a revolutionary platform tailored to uplift local home-based businesses in Pakistan. In a world where global giants often overshadow local businesses, these local enterprises often struggle to gain visibility and expand their customer base. LocalOrgano emerges as a beacon of hope and opportunity for Pakistan's vibrant community of artisans, craftspeople, farmers, and entrepreneurs. This website is a movement—a movement to create a thriving and sustainable local economy. LocalOrgano serves as a centralized hub where these local businesses can showcase their products and services to a wider audience, overcoming geographical constraints and connecting directly with consumers. Leveraging modern technologies such as React.js, Express.js, Node.js, and MongoDB, the platform offers a seamless user experience, combining dynamic frontend interactions with robust backend functionality. From up-to-date product listings to intuitive product profiles and engaging community tools, LocalOrgano is the catalyst for local businesses to thrive in the digital era. LocalOrgano is more than just a platform; it's a channel for genuine connections between producers and consumers. With various unique features including Multilingual support, Chatbot and voice search, LocalOrgano creates an environment of trust and accessibility for local and organic products. As we navigate through global challenges like the COVID-19 pandemic, supporting local economies and communities becomes increasingly vital. LocalOrgano is committed to building a sustainable local economy in Pakistan.

Acknowledgments

First and foremost, we express our sincere gratitude to Almighty Allah, the Lord of the Universe, who gave us the strength to complete this project. Secondly, we are immensely grateful to our parents for supporting us throughout the journey; their guidance and blessings kept us going. We would also like to express our heartfelt appreciation to our esteemed supervisor, Dr. Moazzam Ali, for his constant support and his feedback. His mentorship not only enhanced our understanding of the subject matter but also instilled in us a sense of confidence and determination. We are truly fortunate to have had such a dedicated and inspiring mentor by our side throughout this journey. Finally, we express our gratitude to all the individuals and organizations who have contributed to this project in various ways.

Nosheela Khalid
Bushra Masood
Islamabad, Pakistan
March 2024

Contents

Abstract	i
Acknowledgments	ii
1 Introduction	1
1.1 Project Overview	1
1.2 Problem Description	2
1.3 Project Objectives	2
1.4 Project Scope	3
1.5 Methodology	3
1.6 Phases of our project	3
1.6.1 Requirement Gathering	4
1.6.2 Developing UI	4
1.6.3 Database Design	4
1.6.4 System Implementation	4
1.6.5 Feedback and System Reviews	5
1.7 Architecture Diagram	5
1.8 Feasibility Study	6
1.8.1 Technical Feasibility	6
1.8.2 Operation Feasibility	6
1.8.3 Economic Feasibility	6
1.9 Limitations	6
1.10 Mitigation Strategies	7
1.11 Resource Requirements	7
1.12 Solution Application Areas	8
1.13 Tools/Technology	8
1.14 Tree Diagram	8
2 Literature Review	10
2.1 Analysis of Electronic Commerce Model of Organic Agricultural Products	10
2.1.1 Gaps	10
2.1.2 Solutions	10
2.2 E-Consumers and Local Food Products: A Perspective for Developing Online Shopping for Local Goods in Poland.....	11
2.2.1 Gaps.....	11
2.2.2 Solutions.....	11
2.3 E-commerce and its potential in Pakistan	11

2.3.1	Gaps.....	11
2.3.2	Solutions.....	11
2.4	An Analysis and Comparison of Proprietary and Open-Source Software for Building E-commerce Website: A Case Study	12
2.4.1	Gap	12
2.4.2	Solution	12
2.5	A literature review of the main factors influencing the e-commerce and last-mile delivery projects during COVID-19 pandemic	12
2.5.1	Gap	12
2.5.2	Solution	12
2.6	Existing Systems	13
2.7	Comparison Table	13
3	Requirement Specifications	15
3.1	Existing System	15
3.2	Limitations of Existing System	15
3.3	Proposed System	16
3.4	Functional Requirements	16
3.5	Non-Functional Requirements	18
3.5.1	Performance Requirements	18
3.5.2	Safety Requirements	18
3.5.3	Security Requirements	18
3.6	Use Cases	18
3.7	Use Case Dictionary	19
3.8	Admin Use Case	26
3.9	Vendor Use Case	26
4	System Design	28
4.1	System Architecture	28
4.2	Design Constraints	28
4.2.1	Platform Compatibility	28
4.2.2	Network Connectivity	28
4.2.3	Security and Privacy	29
4.2.4	Performance and Scalability	29
4.3	Design Methodology	29
4.4	Design Goals	29
4.4.1	Performance:	29
4.4.2	Security	29
4.4.3	Usability	30
4.4.4	Availability	30
4.4.5	Maintainability	30
4.5	Sequence Diagram	30
4.5.1	User Login and Sign-up:	30
4.5.2	Activity Diagram	32
4.5.3	Class Diagram	33
4.6	Low Level Design	34
4.6.1	Website Modules	34

4.7	GUI Design	45
4.8	Usability Principles	46
4.8.1	Learnability	46
4.8.2	Efficiency	46
4.8.3	Aesthetic and Minimalist Design.....	46
4.8.4	Consistency	46
4.8.5	Flexibility and Customization.....	47
5	System Implementation	48
5.1	System Architecture	48
5.2	ER Diagram.....	51
6	Testing	53
6.1	System Testing	53
6.1.1	Functional Testing	53
6.1.2	Graphical User Interface Testing	54
6.1.3	Compatibility Testing	54
6.1.4	Usability Testing	54
6.1.5	Performance Testing.....	54
6.1.6	Interface Testing.....	55
6.1.7	Load Testing.....	55
6.1.8	Security Testing.....	55
6.2	Testing Performance Test Cases	55
6.3	Testing Usability Test Cases	56
7	Conclusion	64
7.1	Benefits of the System:.....	64
7.2	Future Works:	65
A	User Manual	66
A.1	Introduction	66
A.2	Getting Started	66
A.2.1	Account Registration	66
A.2.2	Logging In	66
A.3	Navigating the Home Page.....	67
A.4	Searching and Viewing Products.....	67
A.5	Managing Your Cart.....	67
A.6	Checkout Process	68
A.7	Vendor Dashboard	68
A.7.1	Becoming a Vendor	68
A.7.2	Managing Your Vendor Profile	69
A.7.3	Showcasing Your Products	69
A.7.4	Interacting with Customers.....	70
A.8	Contact and Support	70
	References	71

List of Figures

1.1	Phases of our project	3
1.2	Three-Tier Architecture	5
1.3	Tree Diagram.....	9
2.1	Comparison Table	14
3.1	Roles within the LocalOrgano.....	16
3.2	Use Case Modeling For General User.....	19
3.3	Use Case Modeling For Admin.....	26
3.4	Use Case Modeling For Vendor	26
4.1	User Registration and Login.....	31
4.2	User Adding a Product to the Cart	32
4.3	Activity Diagram.....	33
4.4	Class Diagram	34
4.5	Home Screen	35
4.6	Home Screen	37
4.7	User Registration screen.....	38
4.8	Login Screen	39
4.9	ProductDetails	40
4.10	Cart Details	41
4.11	Admin dashboard	42
4.12	All Products.....	43
4.13	User Profile	44
4.14	Vender Profile.....	45
5.1	system Architecture.....	49
5.2	Entity-Relationship Diagram for LocalOrgano	52
6.1	Interface Testing.....	55

List of Tables

3.1	User Signup Use case	20
3.2	User Login Use case.....	21
3.3	Search Product Use Case.....	22
3.4	Add to Cart Use Case	23
3.5	Make Orders Use Case	24
3.6	Add Reviews and Ratings Use Case	25
6.1	Test Case: Register	57
6.2	Test Case: Login.....	57
6.3	Test Case: Forget Password.....	58
6.4	Test Case: Update Profile	58
6.5	Test Case: Add New Product.....	59
6.6	Test Case: Search	59
6.7	Test Case: Shopping Cart	60
6.8	Test Case: Voice Search	60
6.9	Test Case: Multilingual Website	61
6.10	Test Case: Reviews and Ratings	61
6.11	Test Case: Product Rankings.....	62
6.12	Test Case: Customize Ordering.....	62
6.13	Test Case: Chatbot Functionality.....	63

Acronyms and Abbreviations

VS Code	Visual Studio Code
React.js	React JavaScript library
Node.js	Node JavaScript runtime environment
Express.js	Express JavaScript web application framework
MongoDB	MongoDB NoSQL database management system
XML	Extensible Markup Language
API	Application Programming Interface
ER Diagram	Entity-Relationship Diagram
GUI	Graphical User Interface

Chapter 1

Introduction

1.1 Project Overview

In today's dynamic business landscape, local home-based businesses face challenges in reaching a broader customer base and achieving sustainable growth. These small-scale enterprises, often characterized by their dedication to quality and craftsmanship, possess tremendous potential, but are hampered by their lack of visibility and resources. Local artisans, craftspeople, farmers, and entrepreneurs find it difficult to succeed because they lack the resources to build a significant web presence and compete successfully in a globalized market dominated by larger multinationals. Moreover, local businesses in Pakistan had been badly affected by the Covid-19 pandemic.[1]

To solve this problem, we propose the development of a user-friendly website, where small enterprises can list and sell their products online. This platform aims to bridge the gap between consumers wanting locally made products of high quality and entrepreneurs aiming to increase their market share. LocalOrgano website is an innovative platform designed exclusively for the local home-based businesses in our community. We believe in the power of creating relationships between local producers and consumers. Whether you're a talented artisan, a skilled crafter, a dedicated farmer, or a passionate home-based businessman, our platform is here to help you thrive and connect with customers online. Our goal is to develop a thriving, sustainable, and prosperous local economy by offering a practical and user-friendly platform where local entrepreneurs can showcase their unique products and services, and where local consumers can discover and support the talent and creativity in their community. The COVID-19 pandemic has profoundly affected businesses operating at the micro, small, and medium scales, highlighting the necessity of adaptability and resilience in challenging situations. We are aware of how susceptible these businesses are to future pandemics and viral infections. LocalOrgano is dedicated to offering a strong and adaptable structure to reduce these risks. It provides a feature-rich ecosystem that ensures a smooth, and rewarding experience for everyone involved, making

it easier than ever to connect local entrepreneurs with their community.

1.2 Problem Description

In today's dynamic marketplace, consumers are increasingly interested in purchasing local and organic products due to their perceived health benefits and support for local communities. Therefore, consumer demand for trustworthy sources of local and organic products is rising. Despite the increasing consumer interest in local and organic products, a significant challenge persists in accessing these items. These products are often concentrated in specific geographic regions or are primarily available through specialty stores, which restrict their accessibility to a wider customer base. This geographical confinement can be a barrier for consumers who live outside these regions or don't have access to specialty stores, preventing them from enjoying the benefits of local and organic goods. Moreover, there exists a noticeable gap in the market for a comprehensive, user-friendly, and reliable online platform that can bridge this accessibility gap. Even though e-commerce has taken over the retail industry, but existing online marketplaces often fall short in catering to the specific needs of consumers looking for local and organic items. They typically lack dedicated sections or filters to easily find such products. This deficiency to display their products to a larger audience not only irritates consumers but also local farmers, artists, and small-scale producers. The struggle faced by these producers is particularly significant. They serve as the foundation of the local and organic food supply chain. However, because there aren't enough venues for them to grow their consumer base, their products frequently remain confined to local marketplaces. As a result, there is a missed opportunity for both consumers and producers in the local and organic product arena because there isn't a specialized online marketplace that meets these specific needs. The research publication suggests implementing effective policies to support the growth of the organic food market on both national and international scales. This sector holds considerable promise for generating employment opportunities and addressing unemployment challenges within the economy.[2] '

This project aims to provide a digital marketplace for sellers to showcase their offerings, helping them expand their reach and grow their businesses.

1.3 Project Objectives

The objectives of the project are as follows:

- To create a user-friendly website to increase accessibility of local and organic products to a wider consumer base.
- Enhance consumer trust by providing a reliable source for local and organic products.

1.4 Project Scope

Pakistan, with a population of around 200 million, ranks as the sixth most populous nation globally. Despite its vast population, the E-commerce sector in Pakistan remains in its early stages, presenting significant untapped potential. There is ample opportunity for specialization within the market, with plenty of room for growth and development.[3] Our project scope encompasses the development of LocalOrgano, a specialized e-commerce platform tailored exclusively for local home-based businesses, artisans, farmers, and entrepreneurs in Pakistan. The primary focus is on creating an intuitive, user-friendly website facilitating the listing and sale of locally made and organic products. Key components include user registration, product listing and management, efficient search and filtering mechanisms, supplier and consumer profile systems, enhanced user experience with recommended Products and voice search functionality, Multilingual support, chatbot, and a feedback and review system. The platform is designed for scalability and maintenance, accommodating future growth and technological advancements. Excluded from the scope are Delivery module, marketing campaign execution, logistics implementation, and legal consultation.

1.5 Methodology

Since this project has many different modules to implement different features, some being more crucial to the overall idea than others, we will be using one of the Iterative Methodologies namely Agile Development Model. Our Project contains five phases, each dependent on the completion of the one prior to it.

1.6 Phases of our project

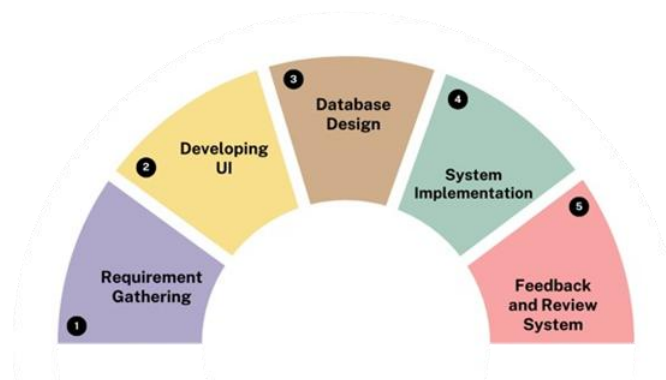


Figure 1.1: Phases of our project

1.6.1 Requirement Gathering

We began by engaging directly with local artisans, craftspeople, farmers, and entrepreneurs through interviews and surveys. These interactions allowed us to gain valuable insights into their challenges, preferences, and requirements. Through this process, we identified key features that would be essential for the success of the e-commerce platform, including seamless product listing, Customer, Vendor, Admin Dashboard, intuitive order management, and robust user authentication. Additionally, we conducted thorough market research and analyzed existing competitor platforms to understand industry trends and ensure that our platform offers unique value propositions tailored to the needs of our local community.

1.6.2 Developing UI

Our UI design process focused on creating visually appealing and user-friendly interfaces that prioritize ease of navigation and effectively showcase the diverse range of products offered by local businesses. We utilized tools such as Figma and Sketch to create wireframes and mockups, allowing us to visualize the layout and functionality of the platform before proceeding with development. Throughout the design phase, we actively sought feedback from potential users and stakeholders, incorporating their suggestions and preferences to refine the UI and optimize the overall user experience.

1.6.3 Database Design

Our database design was meticulously planned to accommodate the complex data structures required to support various aspects of the e-commerce platform, including product catalog management, user profiles, order processing, Cart Management. We opted for a document-oriented NoSQL (MongoDB) database to ensure data integrity and efficient retrieval.

1.6.4 System Implementation

During the system implementation phase, we focused on developing both the backend infrastructure and frontend components of the LocalOrgano platform, leveraging the MERN (MongoDB, Express.js, React.js, Node.js) stack And Tailwind CSS for its robustness and flexibility.

We employed Node.js in conjunction with Express.js on the backend to construct a scalable and efficient server-side architecture. Node.js provided a non-blocking, event-driven runtime environment, while Express.js facilitated the development of RESTful APIs for handling core business logic, data processing, and interactions with the MongoDB database.

We utilized React.js, a robust JavaScript library, for the frontend to develop dynamic and responsive user interfaces. React's component-based architecture allowed us to modularize

our frontend codebase, improving code maintainability and facilitating rapid development. Additionally, React's virtual DOM mechanism ensured optimal rendering performance, enabling a seamless browsing and shopping experience across devices. Additionally, We utilized Tailwind CSS, a highly customizable utility-first CSS framework, for styling the frontend of our application. Tailwind CSS enabled us to apply styles directly in the markup, significantly speeding up the development process and reducing the need for context switching between HTML and CSS files. Its utility-first approach ensured design consistency across the application, as we could easily reuse utility classes for various components.

1.6.5 Feedback and System Reviews

Following the completion of the initial development phase, our next step will be to gather feedback from a diverse group of users, including local businesses and potential customers, to ensure that the LocalOrgano platform meets their needs and expectations. Based on the feedback received, we will iteratively refine the platform, addressing any issues that arise, optimizing performance, and adding new features to enhance the overall user experience. This iterative approach allows us to continuously improve the platform's functionality and usability, ensuring that it remains aligned with the evolving needs of our users.

1.7 Architecture Diagram

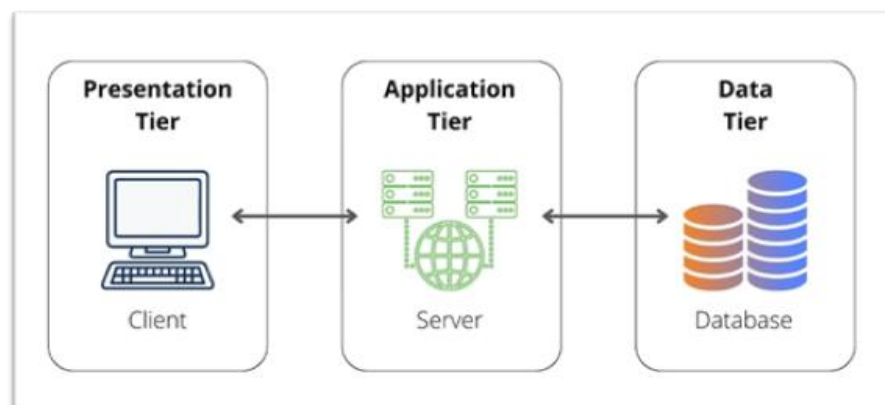


Figure 1.2: Three-Tier Architecture

Figure 1.2 provides an overview of the system's architecture, showcasing its three-tiered structure. This architectural diagram offers a high-level understanding of how different components interact within the system, highlighting its organization and distribution across tiers.

1.8 Feasibility Study

Over the past few years, Pakistan has witnessed a rising inclination towards organic foods. A noticeable shift is occurring as an increasing number of individuals prioritize health and wellness, recognizing the advantages of opting for organic food items compared to their conventional counterparts.[4] The feasibility study for LocalOrgano, highlights its potential to meet the growing demand for local and organic products. Consumers have a strong interest in these products, according to market research, but there are barriers to easy access. Research findings indicate an opportunity for Pakistani organic products to establish, broaden, and solidify their presence within the traditional food market. There's a noticeable gap in the market, highlighting a consumer willingness to purchase organic food products online. This trend is driven by the emerging size and potential of the Pakistani organic market, coupled with the strengths inherent in our agricultural sector.[5] The feasibility study of our project is divided into three main parts, which are as follows:

1.8.1 Technical Feasibility

It involves checking whether the required technology and infrastructure are available and can be implemented to develop the website. The necessary technical requirements such as hardware, software, database, and hosting should be available.

1.8.2 Operation Feasibility

It determines whether the website will be easy to operate, how long it will take to implement, and whether it will meet the needs of the target audience. Operational feasibility also considers the skills and knowledge required to use the application.

1.8.3 Economic Feasibility

It assesses whether the project is financially viable and whether the benefits outweigh the costs. Economic feasibility considers factors such as development costs, potential revenue generation, and return on investment.

1.9 Limitations

- **Limited Geographic Scope:** While the project aims to support local businesses in Pakistan, its geographic scope may limit its effectiveness in reaching a broader international audience.
- **Platform Adoption:** Convincing local businesses and consumer to adopt the LocalOrgano platform may be challenging, especially if they are accustomed to traditional methods

of selling or are skeptical about the benefits of e-commerce. As per a study by the Pakistan Software Export Board, a mere 18% of Pakistan's population has engaged in online purchases, with primary concerns revolving around fraud and security issues.[6]

- **Digital Literacy Barriers:** Both consumers and businesses may face challenges related to digital literacy, particularly in rural areas or among older demographics. This could hinder adoption and usage of the platform.
- **Sustainable Growth:** Ensuring the long-term sustainability and growth of the platform beyond the initial development phase may require ongoing efforts in marketing, user acquisition, and platform maintenance.

1.10 Mitigation Strategies

- **Education and Training:** Implement initiatives to improve digital literacy among both businesses and consumers. This could include offering workshops, tutorials, or online resources to help users navigate the platform and understand its benefits.
- **Partnership Opportunities:** Collaborate with local organizations, government agencies, or industry associations to promote the platform and encourage businesses to join. Offer incentives or benefits for early adopters to attract businesses to the platform.
- **Continuous Improvement:** Consistently seek input from users and businesses to pinpoint areas for improvement and resolve any issues or concerns. Invest in ongoing development and maintenance of the platform to ensure it remains competitive and meets the user's evolving needs.

1.11 Resource Requirements

The following are the resource requirements for this project:

- **Computing Resources:** High-performance servers and cloud infrastructure for hosting the platform.
- **Development Tools:** Software development tools, IDEs, and design software for website development.
- **Human Resources:** Skilled developers, designers, quality assurance testers, and support staff.
- **Internet Connectivity:** Reliable internet connectivity for continuous development and testing.

1.12 Solution Application Areas

The project outlined focuses on the development of a Marketplace tailored to local home-based businesses in the community. It addresses a vital issue faced by these businesses, namely their challenge in reaching a wider customer base and attaining sustainable growth in today's dynamic business landscape. Based on a recent report, Pakistan ranks as the 37th largest market for E-Commerce globally, demonstrating a consistent increase in market revenues over time.[7] By creating a platform where local businesses can list and sell their products online, the project aims to bridge the gap between consumers seeking high quality, locally produced goods and home-based entrepreneurs looking to expand their market reach. The targeted domain is the local economy, particularly small-scale and home-based businesses like organic food, clothing and textiles, organic personal care products, organic supplements and herbs, and handicrafts and artworks.

1.13 Tools/Technology

The tools/technologies that we will use in this project are as follows:

- **Hardware:**
 - Computers and Workstations
 - High-speed Internet Connectivity
- **Software:**
 - Programming Languages and Frameworks (e.g., React.js, Express.js, Node.js, Tailwind CSS)
 - Database Management System (DBMS) (e.g., MongoDB)
 - Integrated Development Environment (IDE)
 - Communication and Collaboration Tools (e.g., Zoom, Microsoft Teams)
 - Design and Graphics Software (e.g., Canva.com, Illustrator, Figma)

1.14 Tree Diagram

A tree diagram is a visual representation used to illustrate hierarchical relationships among items.

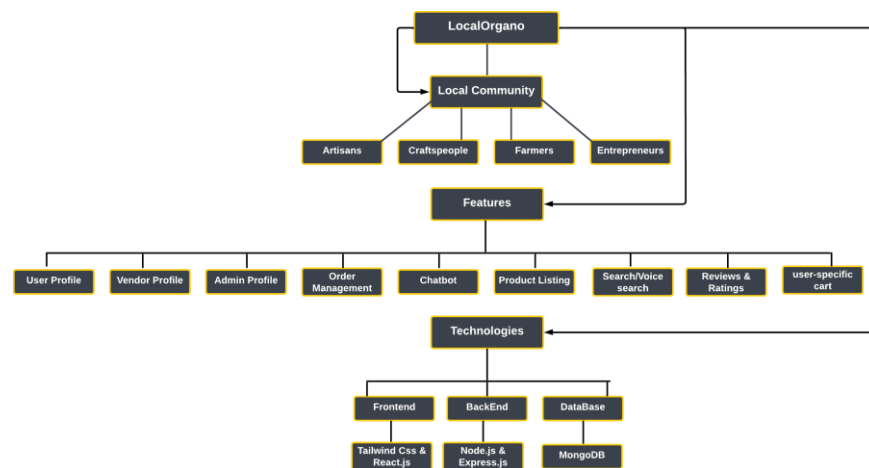


Figure 1.3: Tree Diagram

Figure 1.3 illustrates the structural components and features of LocalOrgano, an attractive platform designed to support local home-based businesses in Pakistan. It encapsulates the hierarchical structure and interconnected elements that define the LocalOrgano platform, emphasizing its commitment to empowering local businesses with modern technological solutions and user-friendly features.

Chapter 2

Literature Review

2.1 Analysis of Electronic Commerce Model of Organic Agricultural Products

The research paper titled "Analysis of Electronic Commerce Model of Organic Agricultural Products" by Xiaocui Wang in 2019 examines the e-commerce market for organic products. It explores the differences and obstacles between China's organic agricultural product e-commerce model and those of more developed countries, providing insightful information for sustainable growth.[8]

2.1.1 Gaps

- Limited market maturity for organic agricultural products.
- Insufficient Farmer Participation.
- Lack of Clear Standards and Transparency.
- Underdeveloped E-commerce Infrastructure.

2.1.2 Solutions

- Provide user-friendly onboarding processes and ongoing support to facilitate active participation.
- Enhance the e-commerce infrastructure and optimize the website for a seamless user experience.
- Regularly update and maintain the platform to accommodate future growth and technological advancements.

2.2 E-Consumers and Local Food Products: A Perspective for Developing Online Shopping for Local Goods in Poland

The research paper titled “E-Consumers and Local Food Products: A Perspective for Developing Online Shopping for Local Goods in Poland” by Anetta Barska and Julia Wojciechowska-Solis, published on 18 June 2020, analyzes consumer behavior in online shopping for local food products and identifies obstacles to purchasing.[9]

2.2.1 Gaps

- Consumer concerns about higher prices, lower availability, freshness, and reliability act as significant barriers to the expansion of local online commerce.
- Underdeveloped E-consumer Segment for local products indicating an untapped potential that needs further development.

2.2.2 Solutions

- Implement a transparent pricing strategy that balances affordability with quality, assuring consumers of fair value.
- Enhance user engagement by implementing features like recommended Products, customization options, and a user-friendly interface.

2.3 E-commerce and its potential in Pakistan

The research paper titled “E-commerce and its potential in Pakistan” by Dr. Muhammad Zeshan in 2023 explores the potential of e-commerce in Pakistan, addresses key challenges faced by the e-commerce sector, and proposes solutions.[10]

2.3.1 Gaps

- lack of confidence in online shopping.
- The digital literacy gap in Pakistan’s population poses a challenge for e-commerce, as many people may face difficulties in online navigation, and effective use of digital tools.

2.3.2 Solutions

- Implement features that provide reliable customer support to build trust in online shopping.

- Address the digital literacy gap by offering instructional videos to enhance digital literacy among users and building a multilingual website to support Pakistan's native community.

2.4 An Analysis and Comparison of Proprietary and Open-Source Software for Building E-commerce Website: A Case Study

Research by Eric B. Blancaflor and SASKY A. Samonte in 2023 identifies gaps and solutions in building e-commerce websites using proprietary and open-source software.[11]

2.4.1 Gap

- Companies often had to develop their own platforms internally, which were typically not scalable, difficult to manage, and unable to integrate seamlessly with existing software solutions.

2.4.2 Solution

- Build a comprehensive platform with features like user-friendly registration, vendor onboarding, intuitive interface design, chatbot, and advanced analytics.

2.5 A literature review of the main factors influencing the e-commerce and last-mile delivery projects during COVID-19 pandemic

Research by Tiziana Campisi, Antonio Russo, and Socrates Basbas in 2023 discusses the impact of COVID-19 on e-commerce and last-mile delivery projects.[12]

2.5.1 Gap

- The COVID-19 outbreak necessitates the implementation of various restrictions and measures, affecting local communities and global society.

2.5.2 Solution

- Address pandemic challenges by developing a website, ensuring a safe and reliable marketplace to support local businesses during global crises.

2.6 Existing Systems

Daraz and Amazon are two massive online shopping platforms that have changed the way people shop. Daraz stands as a prominent online marketplace across South Asia, serving as a leading platform in countries including Pakistan, Bangladesh, Nepal, and Sri Lanka. It offers a huge variety of items, from electronics to fashion to groceries. With Daraz, people can easily buy things online, pay securely, and get their orders delivered right to their doorstep. On the other hand, Amazon is the king of e-commerce worldwide. It's known for its gigantic selection of products, fast shipping through services like Amazon Prime, and even digital content like movies and music through Amazon Prime Video and Amazon Music. Amazon has become a one-stop shop for buying online, making it incredibly convenient for millions of shoppers around the globe. While existing e-commerce systems cater to a broad audience, they may not adequately prioritize the promotion and support of local businesses and their products. The intense competition with larger retailers and international sellers puts local businesses at a disadvantage, impacting their sales and growth potential. Moreover, the ordering process on many platforms lacks flexibility, particularly for local and organic products, where consumers may have specific requirements.

2.7 Comparison Table

FEATURES	DARAZ	AMAZONE	LOCALORGANO
TARGET MARKET	GLOBAL	GLOBAL	LOCAL (PAKISTAN)
PRODUCT RANGE	WIDE VARIETY	WIDE VARIETY	LOCAL & ORGANIC
SELLER BASE	LARGE SELLERS	LARGE SELLERS	LOCAL BUSINESSES
GEOGRAPHIC REACH	GLOBAL	GLOBAL	LOCAL (PAKISTAN)
SPECIAL FEATURES	FLASH SALES, DISCOUNTS	PRIME MEMBERSHIP, AMAZONBASICS	VOICE SEARCH, CUSTOMIZE ORDERING
FRONTEND	HTML, CSS, JAVASCRIPT	HTML, CSS, JAVASCRIPT	HTML, CSS (BOOTSTRAP), JAVASCRIPT (REACTJS)
BACKEND	JAVA, PHP, PYTHON	JAVA, C++, PYTHON, RUBY, PERL	NODE.JS, EXPRESS.JS, JAVASCRIPT
DATABASE	MYSQL, MONGODB	AMAZON AURORA, DYNAMODB	MONGODB

Figure 2.1: Comparison Table

Chapter 3

Requirement Specifications

3.1 Existing System

While traditional e-commerce platforms provide an array of features to enhance the overall shopping experience, there are notable gaps that hinder the growth and visibility of local businesses. These platforms excel in presenting product listings with detailed descriptions and customer reviews, facilitating informed purchasing decisions. They offer user-friendly shopping cart systems and account creation options, making item management and order tracking seamless. However, despite prioritizing product discovery through search and navigation functionalities, they often overlook the unique offerings of local businesses. This limitation results in a lack of dedicated support for small-scale enterprises, impeding their visibility and growth potential within the broader e-commerce landscape.

3.2 Limitations of Existing System

Local businesses encounter various challenges within the existing e-commerce landscape. Their reach is often limited, struggling to extend beyond their immediate vicinity, leading to a restricted customer base. Additionally, the lack of online visibility poses hurdles for consumers seeking products from local establishments. Resource constraints further hinder small enterprises from establishing and maintaining a robust online presence, including website development and effective marketing. While existing e-commerce systems cater to a broad audience, they may not adequately prioritize the promotion and support of local businesses and their products. The intense competition with larger retailers and international sellers puts local businesses at a disadvantage, impacting their sales and growth potential. Moreover, the ordering process on many platforms lacks flexibility, particularly for local and organic products, where consumers may have specific requirements. Customization options for users to tailor products based on their preferences are often limited. Lastly, the prevalent text-based search methods in traditional e-commerce

platforms can be time-consuming and less convenient, especially for users with limited typing abilities or a preference for voice interactions.

3.3 Proposed System

To address identified gaps, we propose the development of LocalOrgano, a specialized platform designed exclusively for small enterprises to list and sell their products. Focused on promoting and supporting local businesses, LocalOrgano reduces direct competition with larger retailers by targeting local markets and emphasizing local and organic products. The platform offers a tailored user experience with customizable interfaces, fostering distinct brand identities for businesses and enhancing user satisfaction. Emphasizing community building, LocalOrgano serves as a cultural hub, promoting local traditions and unique products. Additionally, LocalOrgano addresses customization limitations by facilitating personalized ordering experiences for users. The platform integrates cutting-edge voice search functionality and is Multilingual, supporting multiple languages, including Urdu, to enhance accessibility and engagement, particularly in Pakistan’s diverse linguistic landscape.

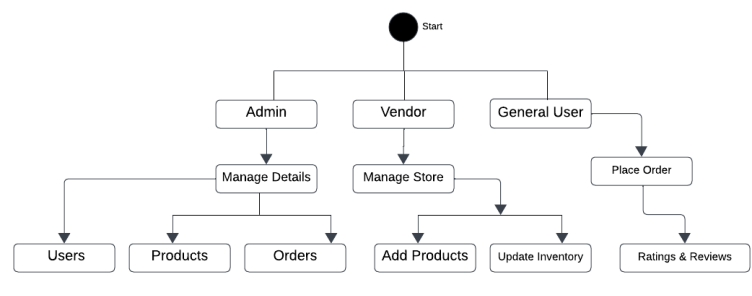


Figure 3.1: Roles within the LocalOrgano

Figure 3.1 outlines the main roles and functionalities within the LocalOrgano . It starts with a central node and branches into three primary roles: Admin, Vendor, and General User. Admins manage details related to users, products, and orders. Vendors handle store management, including adding products and updating inventory. General Users are focused on placing orders and providing ratings and reviews. This structure highlights the key interactions and responsibilities for each role within the platform.

3.4 Functional Requirements

The functional requirements include all major functionalities of product. Our project functional requirements are following.

- **User Registration and Profiles:** Developed a user registration system for users. Enabled users to create and manage their profiles.
- **Vendor Profile:** The Vendor Profile section allows users to become vendors by registering as a regular user, then requesting an upgrade via the chatbot. Admins verify and update the user's role to vendor, allowing access to the Vendor Dashboard where vendors can create and manage their profiles, showcase products, and interact with customers.
- **Admin Dashboard:** The Admin Dashboard allows admins to change user roles, handle user queries, and maintain records of all products, users, and orders. Admins can verify vendor requests, update user roles, and ensure smooth platform operations by managing inventory and addressing customer and vendor issues.
- **Product Listing and Management:** Designed an intuitive user interface for product listings. Implemented efficient search and filtering mechanisms. Established a robust database for product listings and user information.
- **Search and Discovery:** Enhanced search functionality for users to easily discover products.
- **Shopping Cart and Checkout:** Created a user-friendly shopping cart system for users to add and manage items. Implemented a secure and seamless checkout process.
- **Customize Ordering:** Provided options for users to customize their orders.
- **Voice Search:** Implemented voice search functionality for user convenience.
- **Multilingual Website:** Developed a multilingual web application to support multiple languages.
- **Reviews and Ratings:** Created a feedback and review system for users to provide ratings and comments.
- **Chatbot Integration:** Integrated a chatbot to assist users with their queries, and provide navigation help. This enhances the overall customer experience by offering quick and efficient assistance.
- **Advanced Filtering Options:** Developed comprehensive filtering options allowing users to easily refine product searches based on various criteria such as price, category, and customer ratings, ensuring a streamlined and efficient shopping experience.

3.5 Non-Functional Requirements

The non-functional requirements include all performance and security requirements of product. Our project non-functional requirements are following.

3.5.1 Performance Requirements

- **Efficiency:** The system should perform efficiently under optimal internet speed and operating system conditions. It should be scalable to handle maximum user load without crashing.
- **Dependability:** In case of server failure, the system should switch to another server and use backup data, resuming operation within 30 seconds.
- **Throughput and Delay:** The system should achieve maximum throughput and minimum delay. Error recovery time should be minimized.

3.5.2 Safety Requirements

- **Storage:** Sensitive user data should not be stored outside the designated storage system. Data of every user should be maintained securely.
- **Reliability:** The system should be available 24/7, and mean time between failures should be minimized.

3.5.3 Security Requirements

- **Authentication:** Only registered users should be able to access their accounts. The system should be secure from unauthorized access.

3.6 Use Cases

A use case diagram provides a visual representation of a system, illustrating how different users (actors) interact with the system to achieve specific goals.

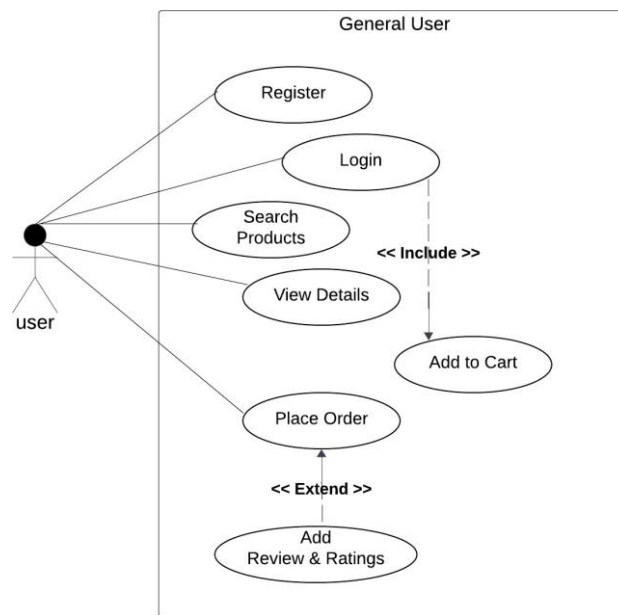


Figure 3.2: Use Case Modeling For General User

Figure 3.4 illustrates the interactions between a general user and the system. The user can register, log in, search for products, view product details, add products to the cart, place orders, and add reviews and ratings. The diagram shows that the "Add to Cart" action requires the user to be logged in (<<include>> relationship), and the "Add Review & Ratings" action can be performed as an extension (<<extend>> relationship) of the "Place Order" action.

3.7 Use Case Dictionary

The use case dictionary includes all use cases of our project. These use case are following.

User Registration: User registration is a pivotal process enabling user to establish their presence on the LocalOrgano platform. Visitors, aspiring to either shop for products initiate the registration by selecting their account type. Users provide essential details like full name, email, and password. Upon submission, the system validates the information, creating a new account upon successful verification.

Table 3.1: User Signup Use case

Use Case:	User Signup
Description:	New users register on LocalOrgano to access personalized profiles. Users provide basic details.
Actors:	<ul style="list-style-type: none">• Visitor: Initiates the registration process.• Consumer: Registers for shopping.
Pre-condition(s):	<ul style="list-style-type: none">• Visitors access the registration page.• Visitor is not already registered.
Main Flow:	<ol style="list-style-type: none">1. Provides consumer name, email, password.2. Submit the form.3. System checks and validates data.4. Successful validation leads to account creation.5. User is logged in.6. User is redirected to profile/dashboard.
Alternative Flows:	<ul style="list-style-type: none">• System prompts for correction.• System suggests recovery or login.
Post-condition(s):	<ul style="list-style-type: none">• User account created and logged in.

User Login: LocalOrgano's user login process is a fundamental component allowing registered consumers access to their accounts. By entering valid credentials, users gain secure entry to their personalized profiles, enabling them to engage in shopping or product management activities.

Table 3.2: User Login Use case

Use Case:	User Login
Description:	Users, authenticate themselves on LocalOrgano by providing their registered email and password, ensuring secure access to their respective accounts.
Actors:	<ul style="list-style-type: none"> • Consumer: Registered users logging in. • Platform Administrator: Oversees the login process for security.
Pre-condition(s):	<ul style="list-style-type: none"> • User is registered on LocalOrgano. • User has a valid email and password.
Main Flow:	<ol style="list-style-type: none"> 1. The user navigates to the login page. 2. Entering their registered email and password, the user proceeds. 3. System validates entered credentials. 4. Valid credentials grant access. 5. User is redirected to their profile/dashboard.
Alternative Flows:	<ul style="list-style-type: none"> • System prompts for re-entry of correct credentials. • User initiates a password reset if forgotten.
Post-condition(s):	<ul style="list-style-type: none"> • User successfully logs in.

Search Product: LocalOrgano's "Search Product" functionality allows users to efficiently find products listed on the platform. This feature provides users with a streamlined way to discover and access locally sourced products by searching based on keywords, categories, and other criteria.

Table 3.3: Search Product Use Case

Use Case:	Search Product
Description:	The "Search Product" use case on LocalOrgano enables users to search for products using various criteria, facilitating the discovery of locally sourced items.
Actors:	<ul style="list-style-type: none">• User: Uses the search functionality to find products.
Pre-condition(s):	<ul style="list-style-type: none">• User is registered and authenticated on LocalOrgano.
Main Flow:	<ol style="list-style-type: none">1. User accesses the search bar or search section.2. User enters search criteria such as keywords or filters.3. System processes the search query.4. System displays a list of products matching the search criteria.5. User views the search results and selects a product for more details.
Alternative Flows:	<ul style="list-style-type: none">• If no products match the search criteria, the system informs the user and suggests alternative search options.
Post-condition(s):	<ul style="list-style-type: none">• The user finds and views details of products based on the search criteria.

Add to Cart: LocalOrgano's "Add to Cart" functionality allows users to add products to their shopping cart for purchase. This feature enables users to keep track of their selected items and proceed to checkout when ready.

Table 3.4: Add to Cart Use Case

Use Case:	Add to Cart
Description:	The "Add to Cart" use case on LocalOrgano allows users to add selected products to their shopping cart, facilitating the process of purchasing multiple items in a single transaction.
Actors:	<ul style="list-style-type: none"> User: Adds products to the shopping cart.
Pre-condition(s):	<ul style="list-style-type: none"> User is registered and authenticated on LocalOrgano.
Main Flow:	<ol style="list-style-type: none"> 1. User logs into their account. 2. User searches for and views the details of a product. 3. User selects the desired product options (e.g., quantity). 4. User clicks the "Add to Cart" button. 5. System updates the user's shopping cart with the selected product. 6. User can continue shopping or proceed to checkout.
Alternative Flows:	<ul style="list-style-type: none"> If the user is not logged in, the system prompts the user to log in or register. If the selected quantity exceeds available stock, the system notifies the user and adjusts the quantity.
Post-condition(s):	<ul style="list-style-type: none"> The selected product is successfully added to the user's shopping cart. The shopping cart reflects the updated list of products.

Make Orders: LocalOrgano's "Make Orders" process represents the essence of consumer engagement, enabling users to seamlessly select and purchase locally sourced items. This integral functionality allows consumers to add desired products to their shopping cart, proceed through a secure checkout process, and ultimately contribute to the thriving local marketplace.

Table 3.5: Make Orders Use Case

Use Case:	Make Orders
Description:	The "Make Orders" use case on LocalOrgano encapsulates the consumer journey of selecting and purchasing products from the platform. It involves users adding items to their shopping cart, navigating through a secure checkout process, to acquire locally sourced goods.
Actors:	<ul style="list-style-type: none"> • Consumer: Initiates and completes the order-making process.
Pre-condition(s):	<ul style="list-style-type: none"> • Consumer is registered and authenticated on LocalOrgano. • Consumer has selected items in their shopping cart.
Main Flow:	<ol style="list-style-type: none"> 1. Consumer accesses the shopping cart or checkout section. 2. Consumer selects desired items and adds them to the shopping cart. 3. Consumer reviews the items in the shopping cart. 4. Clicks on "Proceed to Checkout." 5. Consumer enters delivery address and selects a payment method. 6. Submits necessary information. 7. System validates the entered information. 8. Validated information leads to the successful placement of the order. 9. Consumer receives an order confirmation.
Alternative Flows:	<ul style="list-style-type: none"> • Customers have the option to return to the shopping cart to add, remove, or adjust items before completing the order. • Consumer can cancel the order during the checkout process before final confirmation.
Post-condition(s):	<ul style="list-style-type: none"> • The order is successfully placed and recorded in the system. • Consumer receives confirmation and details of the placed order.

Add Reviews and Ratings: LocalOrgano's "Add Reviews and Ratings" functionality allows users to provide feedback on products they have purchased. This feature helps other customers make informed decisions and helps sellers improve their products based on customer feedback.

Table 3.6: Add Reviews and Ratings Use Case

Use Case:	Add Reviews and Ratings
Description:	The "Add Reviews and Ratings" use case on LocalOrgano allows users to provide feedback on products they have purchased, including a star rating and written review.
Actors:	<ul style="list-style-type: none"> User: Provides reviews and ratings for purchased products.
Pre-condition(s):	<ul style="list-style-type: none"> User is registered and authenticated on LocalOrgano. User has purchased the product they wish to review.
Main Flow:	<ol style="list-style-type: none"> 1. User navigates to the product page or order history. 2. User selects the option to add a review and rating. 3. User provides a star rating and writes a review. 4. User submits the review and rating. 5. System validates the review and rating input. 6. System stores the review and rating. 7. The review and rating are displayed on the product page.
Alternative Flows:	<ul style="list-style-type: none"> If the review input is invalid, the system notifies the user to correct the input.
Post-condition(s):	<ul style="list-style-type: none"> The review and rating are successfully added to the product page. Other users can view the review and rating.

3.8 Admin Use Case

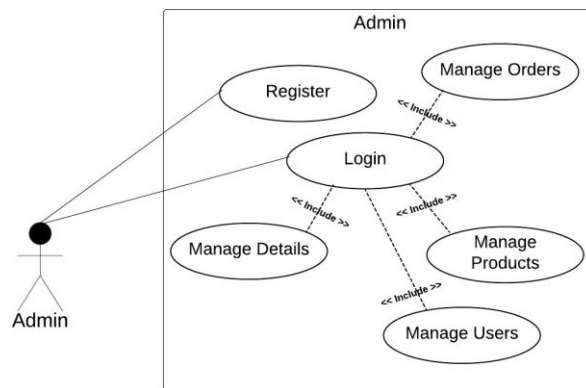


Figure 3.3: Use Case Modeling For Admin

Figure 3.4 illustrates the interactions between an admin and system. The admin can perform several key actions, including registering, logging in, managing orders, managing products, managing users, and managing details. The diagram highlights that the "Manage Orders," "Manage Products," "Manage Users," and "Manage Details" actions all require the admin to be logged in («include» relationship). This ensures that only authenticated admins can perform these management tasks, maintaining the security and integrity of the system.

3.9 Vendor Use Case

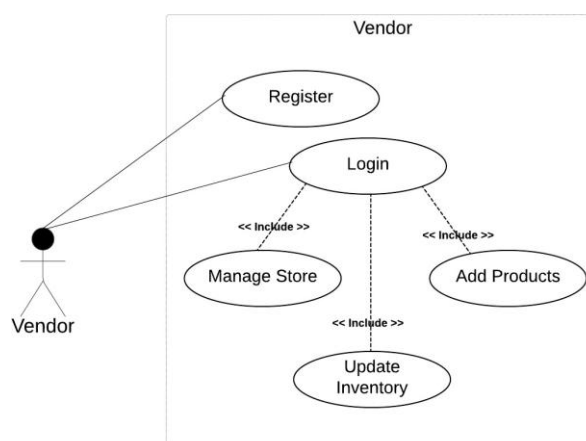


Figure 3.4: Use Case Modeling For Vendor

Figure 3.4 illustrates the interactions between a vendor and the system. The vendor can perform several key actions, including registering, logging in, managing their store, adding products, and updating inventory. The diagram highlights that the "Manage Store," "Add Products," and "Update Inventory" actions all require the vendor to be logged in (`«include»` relationship). This ensures that only authenticated vendors can perform these management tasks, maintaining the security and integrity of the system.

Chapter 4

System Design

4.1 System Architecture

The system architecture for our e-commerce web application involves both frontend and backend components. The front end, responsible for what users interact with, is developed using React.js in the Visual Studio Code environment. Users input data through the React.js interface, facilitating a dynamic and responsive user experience. On the backend, Node.js, along with the Express.js framework, powers the server-side logic and API endpoints. MongoDB serves as the database to store product listings, user information, Order Information and other relevant data.

4.2 Design Constraints

Design constraints are limitations or restrictions that influence the design process and the final outcome of a product. Some design constraints for LocalOrgano are following

4.2.1 Platform Compatibility

LocalOrgano's web application should prioritize compatibility with various web browsers, focusing on optimal performance on Android devices. The development process must ensure a responsive and consistent user experience across different browsers, considering variations in rendering and functionality.

4.2.2 Network Connectivity

Given the reliance on network connectivity for essential functions like data retrieval and user interactions, the web application must implement robust error handling. It should provide offline capabilities where feasible and efficiently manage slow or intermittent network connections, ensuring users can navigate seamlessly.

4.2.3 Security and Privacy

Security and privacy are paramount for a web application handling user data. The design must incorporate secure authentication methods, encryption of sensitive information during transmission, and adherence to relevant privacy regulations. This is essential to build user trust and maintain the confidentiality of personal data.

4.2.4 Performance and Scalability

The web application should be designed to handle a potentially large number of concurrent users and operations. Scalability considerations should extend to server infrastructure, database management, and network architecture to ensure optimal performance under varying loads. This scalability should align with LocalOrgano's specific requirements for its web application.

4.3 Design Methodology

In our approach to design methodology, we establish the framework of procedures and techniques essential for crafting our system. With the objective of developing a website, we prioritize leveraging MERN stack expertise and utilizing Visual Studio Code. Iterative refinement is integral to our design process, aimed at reducing errors in the final product. To foster innovation and efficiency, we foster a collaborative environment, encouraging brainstorming sessions to explore new ideas and arrive at optimal solutions.

4.4 Design Goals

Design goals are specific objectives to guide the development of a product. They serve as the foundation for making design decisions and prioritizing features. The design goals of LocalOrgano are following:

4.4.1 Performance:

LocalOrgano's web application should be designed to handle an increasing user base effectively. It is crucial for the system to perform well under various conditions, especially during peak times. Ensuring smooth functionality, the system should allow users to use the website 24/7.

4.4.2 Security

Given the deployment on the internet, security becomes a significant concern. Access to the platform will be diverse, involving readers, writers, and system admins. Implementing

robust access rights is crucial to address security and privacy issues effectively. Protection of user data must be a top priority to maintain the integrity of the software system.

4.4.3 Usability

Usability is paramount for LocalOrgano's web application. The system should feature an intuitive interface, ensuring ease of comprehension and navigation for users. The design should facilitate a seamless user experience, ensuring users don't feel stuck at any point. Clear instructions and an easy-to-understand layout are essential for a user-friendly platform.

4.4.4 Availability

LocalOrgano's web application must ensure constant availability for users, minimizing downtime. Whether accessed through the web or mobile platforms, the system should always remain available. Operations such as login and signup should be swift, taking only milliseconds to enhance the overall user experience.

4.4.5 Maintainability

Post-deployment, LocalOrgano's web application should exhibit flexibility for accommodating additional functionalities. The system must be easily maintainable, allowing seamless integration of changes or updates. This ensures adaptability to evolving requirements while maintaining a stable and efficient software system.

4.5 Sequence Diagram

Sequence diagrams are interaction diagrams, they show how the group of items within a system interact with one another and in what sequence.

4.5.1 User Login and Sign-up:

Figure 4.2, Sequence diagram for User Login and Sign-up in LocalOrgano illustrates the step-by-step process of user interaction during the login and sign-up.

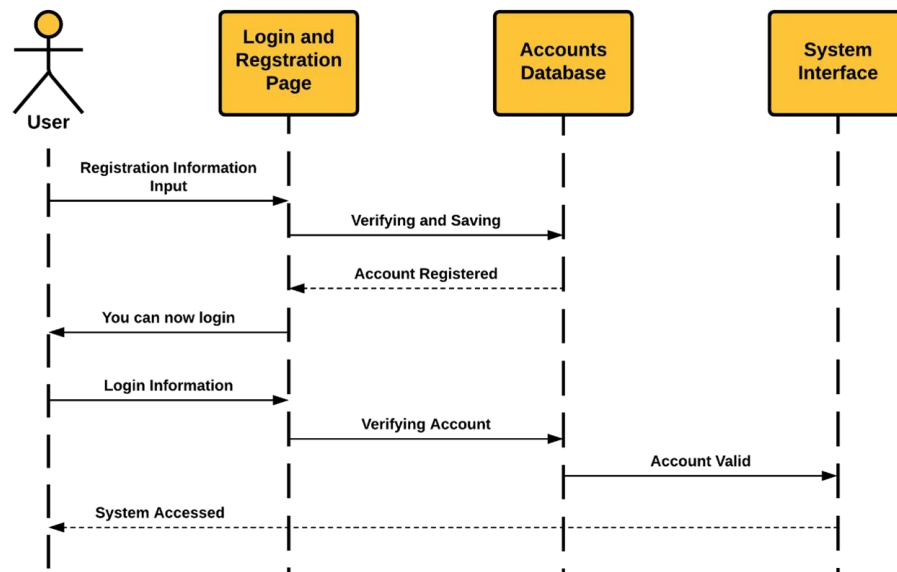


Figure 4.1: User Registration and Login

Initially, the user initiates the process by selecting either the sign-up or login option. In the sign-up process, the user provides necessary information such as username, email, and password. Upon submission, the platform validates the entered data and creates a new user account if all requirements are met. Alternatively, in the login process, the user inputs their credentials, including username and password. The platform verifies the provided information against existing records in the database. If the credentials are correct, the user accessed the platform's functionalities; otherwise, an error message is displayed prompting the user to retry.

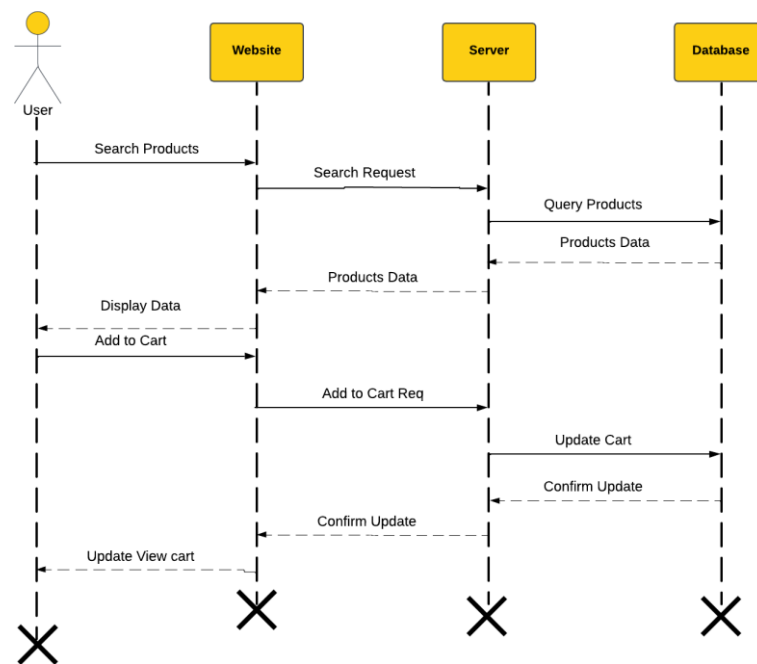


Figure 4.2: User Adding a Product to the Cart

Figure 4.2, illustrates a user searching for and adding a product to their cart on a website. The user initiates a search, the website requests product data from the server, which queries the database and returns the information. When the user adds the product to the cart, the website sends the request to the server, which updates the database and confirms the update back to the website, completing the process.

4.5.2 Activity Diagram

An Activity Diagram is a type of UML (Unified Modeling Language) diagram that represents the dynamic aspects of a system. It visually depicts the flow of activities or actions and the sequence in which they occur within a particular process or system.

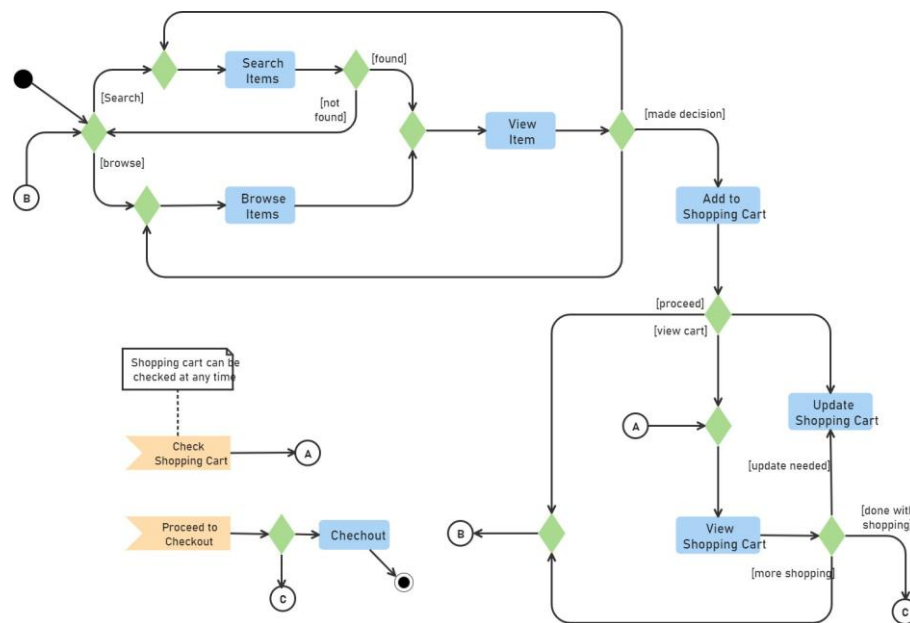


Figure 4.3: Activity Diagram

Figure 4.3, illustrates the process flow of an online shopping experience on platform. The process begins with the user initiating a search for a product. Once the desired product is located, the user views its detailed information. At this point, the system checks the user's login status. If the user is not logged in or registered, they are prompted to log in or create an account. If the user is already logged in, they proceed to add the product to their shopping cart. The next step involves the user viewing their cart to review the selected items. Following this, the user proceeds to the checkout stage where they are required to enter their shipping information. The final steps involve placing the order and concluding the shopping process.

4.5.3 Class Diagram

Figure 4.4, Class Diagram, provides a structured overview of the system's architecture and functionality. It illustrates the system's key classes and their relationships.

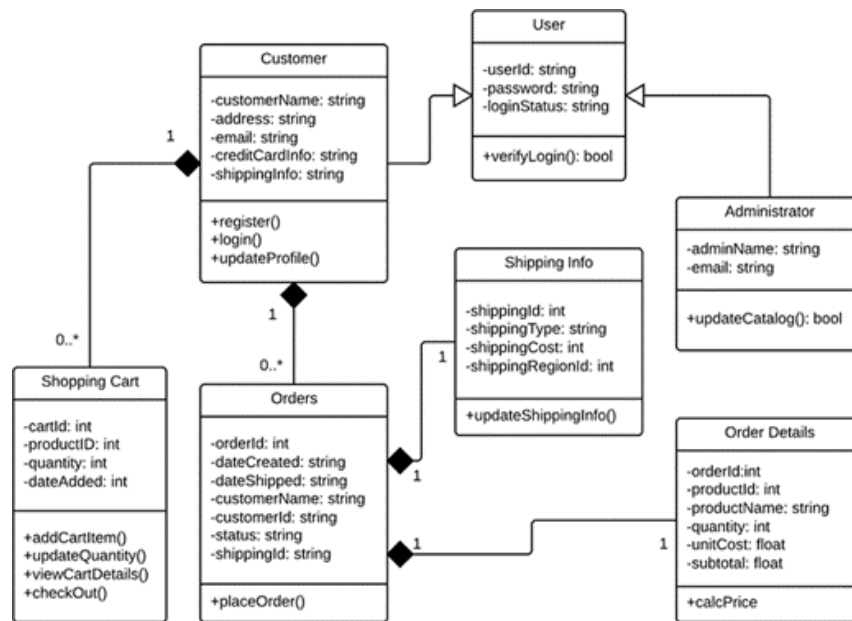


Figure 4.4: Class Diagram

It includes classes like User, Product, Cart, Order, Vendor and Admin. Users, representing customers and administrators, have attributes such as username and password etc. Products contain details like name, description, and price. The Cart manages selected items, while Orders include order detail like order number and status. Payment handles payment methods and transaction status. These classes are interconnected through associations, representing how they interact and collaborate within the system.

4.6 Low Level Design

Low-level design describes the detailed implementation of system components, specifying how each module or feature will function within the system. It includes diagrams and interfaces, providing a blueprint for developers to implement the system efficiently and effectively.

4.6.1 Website Modules

The Website Module includes all interfaces within LocalOrgano's e-commerce platform, including the Home Screen, Login Screen, Register Screen, and others. These interfaces collectively form the user-facing component of the website, enabling users to interact with the platform's features seamlessly.

4.6.1.1 Home Screen

The home page of LocalOrgano website serves as the main entry point, offering an overview of available products and categories, and facilitating easy navigation for users.

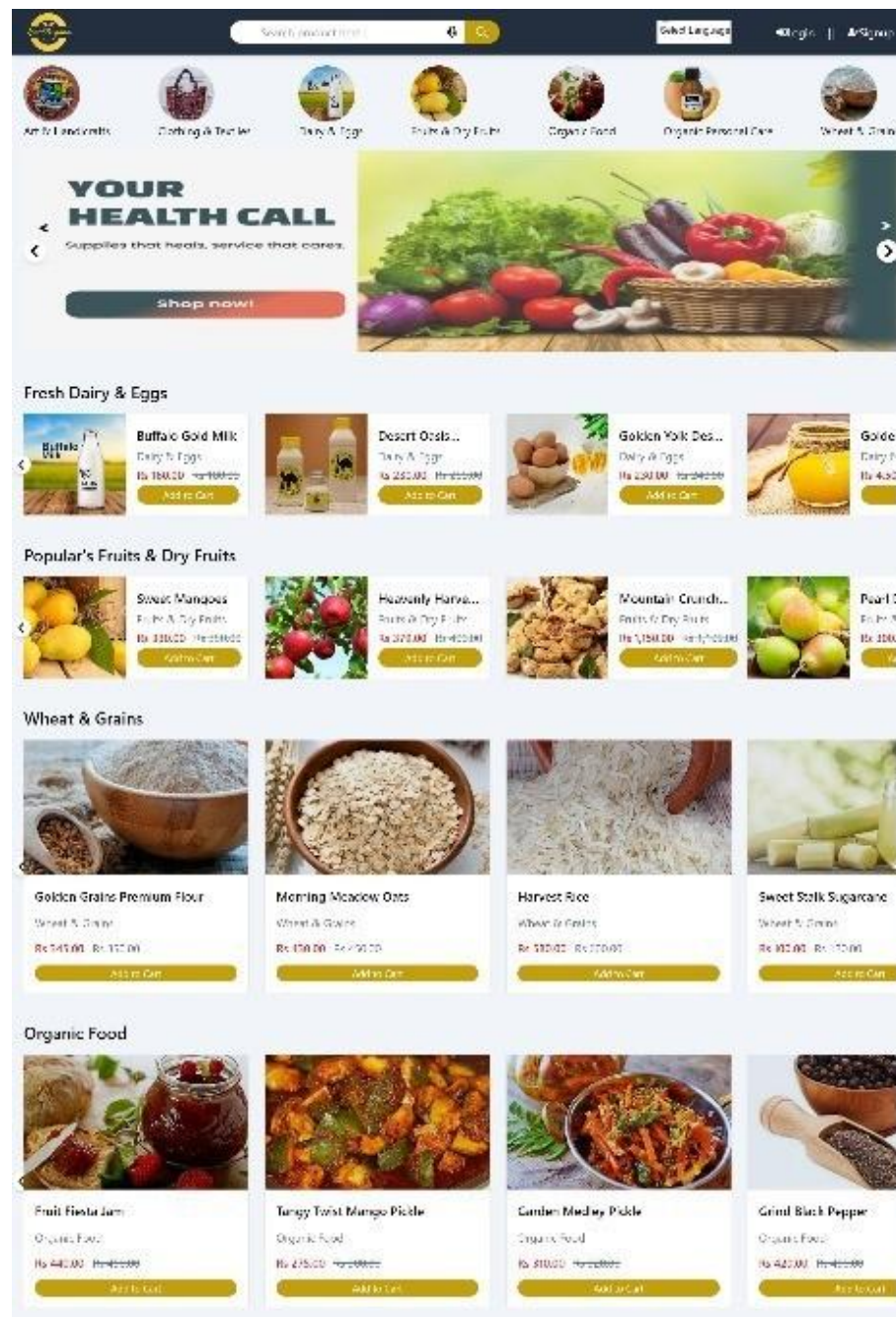


Figure 4.5: Home Screen

Figure 4.5 showcases a user-friendly layout featuring various product categories such as Fresh Dairy Eggs, Popular Fruits Dry Fruits, Wheat Grains, and Organic Food. Each category displays several products with images, names, prices, and an "Add to

Cart" button, making it easy for users to browse and select items. A prominent banner at the top advertises a health-related call to action, encouraging users to shop for healthy products. Additionally, the navigation bar includes options for searching products, selecting a language, and accessing user accounts.

4.6.1.2 Home Screen in Urdu

The home page of LocalOrgano website serves as the main entry point, offering an overview of available products and categories, and facilitating easy navigation for users.

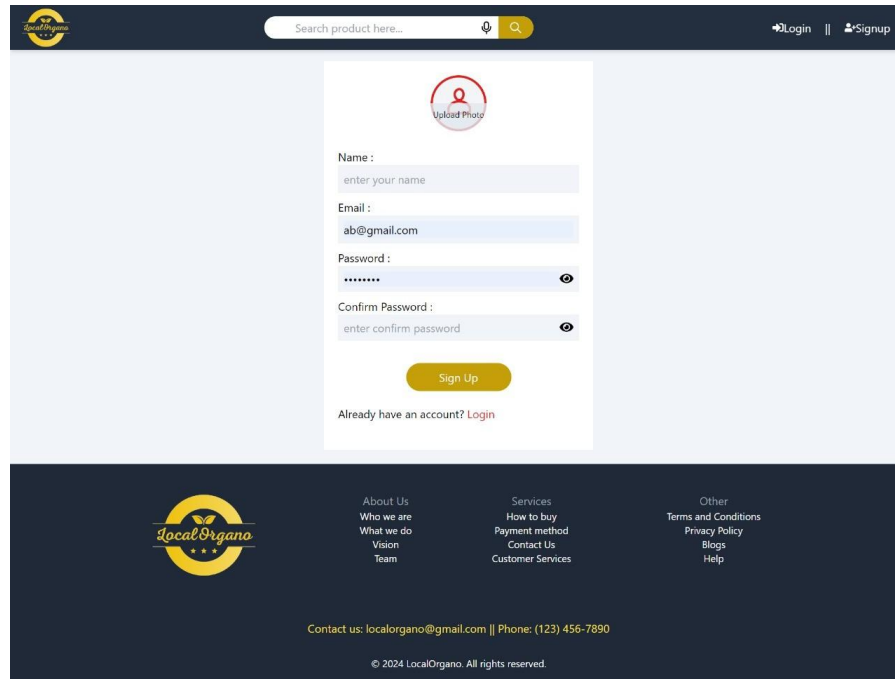


Figure 4.6: Home Screen

Figure 4.6 showcases a home page notable for its use of the Urdu language. It is organized into sections such as Fresh Dairy Eggs, Popular Fruits Dry Fruits, Wheat Grains, and Organic Food. Each section displays a selection of items with images, names, prices, and "Add to Cart" buttons. A prominent banner at the top highlights special promotions or health messages, drawing attention to featured products. The navigation bar offers functionality for searching products, changing the language, and accessing user accounts, ensuring a seamless shopping experience for customers.

4.6.1.3 Register new User

The registration page of LocalOrgano is designed to allow new users to create an account easily.



The screenshot displays the user registration interface for LocalOrgano. At the top, a dark blue header contains the LocalOrgano logo on the left, a search bar with the placeholder text "Search product here..." in the center, and "Login" and "Signup" links on the right. The main content area is a light blue rectangle. In the center of this area is a white registration form. The form includes an "Upload Photo" button with a red circular icon, followed by input fields for "Name" (placeholder: "enter your name"), "Email" (placeholder: "ab@gmail.com"), "Password" (placeholder: "*****" with an eye icon), and "Confirm Password" (placeholder: "enter confirm password" with an eye icon). Below these fields is a prominent yellow "Sign Up" button. Underneath the button is a link that says "Already have an account? Login". The footer is a dark blue bar containing the LocalOrgano logo on the left, a list of links in the center (About Us, Who we are, What we do, Vision, Team, Services, How to buy, Payment method, Contact Us, Customer Services), and a list of links on the right (Other, Terms and Conditions, Privacy Policy, Blogs, Help). At the bottom center of the footer, it says "Contact us: localorgano@gmail.com || Phone: (123) 456-7890" and "© 2024 LocalOrgano. All rights reserved."

Figure 4.7: User Registration screen

Figure 4.7 represents a simple and clean layout with fields for entering the user's name, email, password, and confirmation of the password. There is also an option to upload a profile picture. A "Sign Up" button is prominently displayed to complete the registration process. Additionally, the page provides a link for users who already have an account to log in.

4.6.1.4 Login User

The login page of LocalOrgano allows returning users to access their accounts.

LocalOrgano

Search product here...

Login || Signup

Email :

ab@gmail.com

Password :

.....

Forgot password ?

Login

Don't have account ? Sign up

LocalOrgano

About Us
Who we are
What we do
Vision
Team

Services
How to buy
Payment method
Contact Us
Customer Services

Other
Terms and Conditions
Privacy Policy
Blogs
Help

Contact us: localorgano@gmail.com || Phone: (123) 456-7890

© 2024 LocalOrgano. All rights reserved.

Figure 4.8: Login Screen

Figure 4.8, showcases straightforward design with fields for entering the user's email and password. There is an option to view the password to ensure accuracy, and a "Forgot password?" link provides a way to recover access if needed. A prominent "Login" button is displayed for users to submit their credentials. For new users, a link to the sign-up page is provided.

4.6.1.5 Product Details

The product details page of LocalOrgano provides comprehensive information about a specific item for sale.

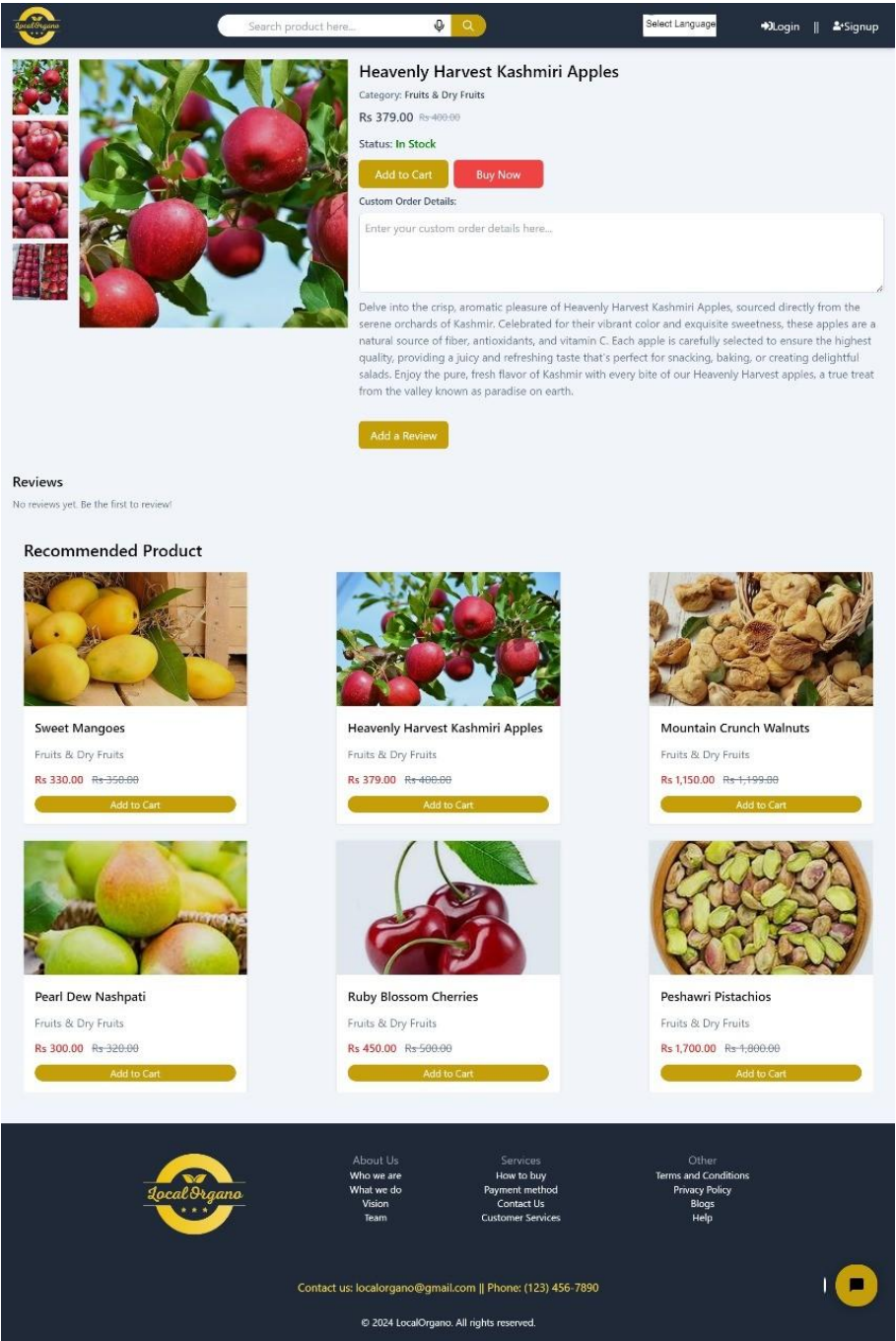


Figure 4.9: ProductDetails

Figure 4.9 showcases a large image of the product, "Heavenly Harvest Kashmiri Apples," along with a detailed description highlighting its key attributes, such as taste, origin, and nutritional benefits. The product's price, availability status, and options to add to the cart or buy immediately are clearly displayed. Users can enter custom order details if necessary. Below the product description, there's a section for customer reviews, encouraging feedback from buyers. Additionally, a recommended products section suggests

related itemspurchasing decisions.

4.6.1.6 Cart Details

The checkout page of LocalOrgano finalizes the shopping process, allowing users to review and confirm their orders.

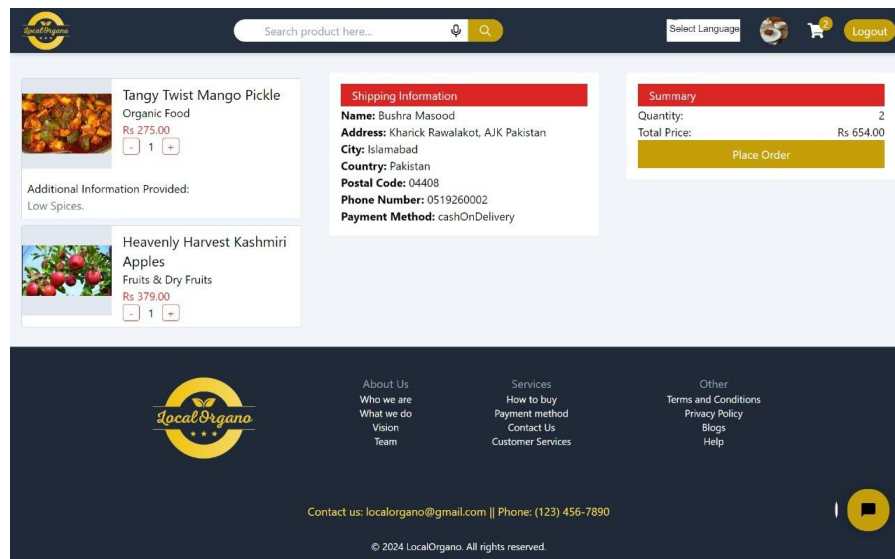


Figure 4.10: Cart Details

Figure 4.10 displays the selected products, such as "Tangy Twist Mango Pickle" and "Heavenly Harvest Kashmiri Apples," with their quantities and prices. The shipping information section lists the customer's name, address, city, country, postal code, phone number, and payment method. A summary section provides the total quantity of items and the total price, along with a "Place Order" button to complete the purchase. The user interface ensures that all necessary details are clearly visible and easily editable before finalizing the order.

4.6.1.7 Admin dashboard

The admin dashboard of LocalOrgano provides a comprehensive overview of key metrics and management tools.

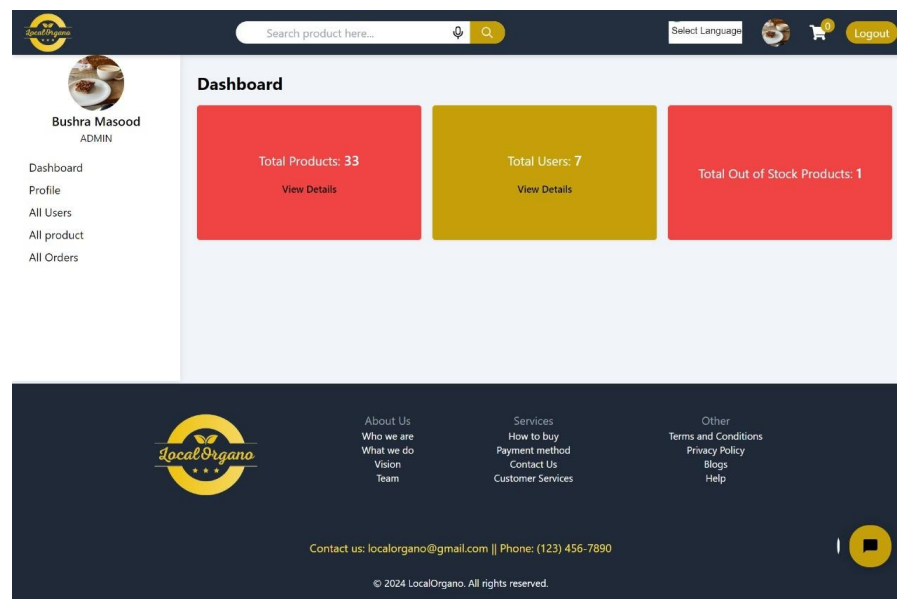









































































Figure 4.11: Admin dashboard

Figure 4.11 features summary cards displaying the total number of products (33), total users (7), and the number of out-of-stock products (1). Each card includes a "View Details" link for more in-depth information. The sidebar allows the admin to navigate to different sections, such as Profile, All Users, All Products, and All Orders, facilitating efficient management of the website.

4.6.1.8 All Products

The product management page of website enables administrators to oversee and manage the inventory effectively.

		Search product here...		Select Language	 	Logout
 <p>Bushra Masood ADMIN</p> <p>Dashboard</p> <p>Profile</p> <p>All Users</p> <p>All product</p> <p>All Orders</p>		All Products Upload Product				
Product Id	Product Name	Category	Price	Selling Price	Stock	Actions
66433fb642ccc05ab4236dae	Sweet Stalk Sugarcane	Wheat & Grains	120	100	36	 
6643354942ccc05ab4236c7b	Bedazzled Charms	Art & Handicrafts	500	470	13	 
6643307a42ccc05ab4236bce	Clay Harmony Pottery	Art & Handicrafts	2000	1800	8	 
6643302242ccc05ab4236bca	Papercraft Wonders	Art & Handicrafts	1500	1400	5	 
66432f8842ccc05ab4236bc6	Vibrant Voyages Truck Art	Art & Handicrafts	2500	2200	10	 
66432cf042ccc05ab4236b4d	Sindhi Heritage Ajrak	Clothing & Textiles	3000	2800	20	 
66432c8b42ccc05ab4236b49	Kashmir Enchantment Shawl	Clothing & Textiles	15000	10000	10	 
66432bc342ccc05ab4236b45	Heritage Peak Topi	Clothing & Textiles	1200	1130	10	 
66432b3342ccc05ab4236b41	Crafted Charm Handmade Bags	Clothing & Textiles	2500	2450	17	 
66432a9442ccc05ab4236b3d	Root Revive Onion Oil	Organic Personal Care	800	750	15	 
66432a2142ccc05ab4236b39	Golden Radiance Turmeric Mask	Organic Personal Care	600	585	20	 
664329a542ccc05ab4236b35	EarthPure Multani Mitti	Organic Personal Care	350	330	9	 
6643290142ccc05ab4236b31	Golden Glow Apricot oil	Organic Personal Care	800	790	14	 
664326c442ccc05ab4236ae6	Mango Magic Jam	Organic Food	400	390	20	 
6643255d42ccc05ab4236abf	Grind Black Pepper	Organic Food	450	420	40	 
664324e742ccc05ab4236abb	Garden Medley Pickle	Organic Food	320	310	30	 
6643246042ccc05ab4236ab7	Tangy Twist Mango Pickle	Organic Food	300	275	18	 
6643235042ccc05ab4236a73	Fruit Fiesta Jam	Organic Food	450	440	25	 
664322ca42ccc05ab4236a6f	Harvest Rice	Wheat & Grains	600	580	39	 
66426b41ba5a22a19c025d5e	Morning Meadow Oats	Wheat & Grains	450	430	20	 
66426ac3ba5a22a19c025d5a	Golden Grains Premium Flour	Wheat & Grains	350	345	6	 
66426983ba5a22a19c025d28	Peshawri Pistachios	Fruits & Dry Fruits	1800	1700	21	 
66426873ba5a22a19c025d0b	Ruby Blossom Cherries	Fruits & Dry Fruits	500	450	56	 
66426757ba5a22a19c025cdd	Pearl Dew Nashpati	Fruits & Dry Fruits	320	300	16	 
66426699ba5a22a19c025caa	Mountain Crunch Walnuts	Fruits & Dry Fruits	1199	1150	99	 
66426559ba5a22a19c025c64	Heavenly Harvest Kashmiri Apples	Fruits & Dry Fruits	400	379	35	 
66426502ba5a22a19c025c60	Sweet Mangoes	Fruits & Dry Fruits	350	330	13	 
66426094ba5a22a19c025be8	Creamline Classics Cow Milk	Dairy & Eggs	120	100	13	 
6642601fba5a22a19c025be4	CapraPure Goat Milk	Dairy & Eggs	180	160	10	 
66425cf2ba5a22a19c025be4	Golden Essence Desi Ghee	Dairy & Eggs	5000	4500	22	 
66425b5c0a5a22a19c025b87	Golden Yolk Desi Eggs	Dairy & Eggs	240	230	15	 
66425aa8ba5a22a19c025b78	Desert Oasis Camel Milk	Dairy & Eggs	250	230	1	 
664256c3ba5a22a19c025a9b	Buffalo Gold Milk	Dairy & Eggs	180	160	0	 



About Us

Who we are

What we do

Vision

Team

Services

How to buy

Payment method

Contact Us

Customer Services

Other

Terms and Conditions

Privacy Policy

Blogs

Help

Contact us: localorgano@gmail.com || Phone: (123) 456-7890

© 2024 LocalOrgano. All rights reserved.

Figure 4.12: All Products

Figure 4.12 lists all the products with details such as Product ID, Product Name, Category, Price, Selling Price, Stock, and available Actions. Each product entry includes options to edit or delete the product, ensuring easy updates and maintenance of the product

catalog. The "Upload Product" button at the top right allows for the addition of new items to the inventory.

4.6.1.9 User Profile

This page of the website allows users to view their Profiles and past and current orders.

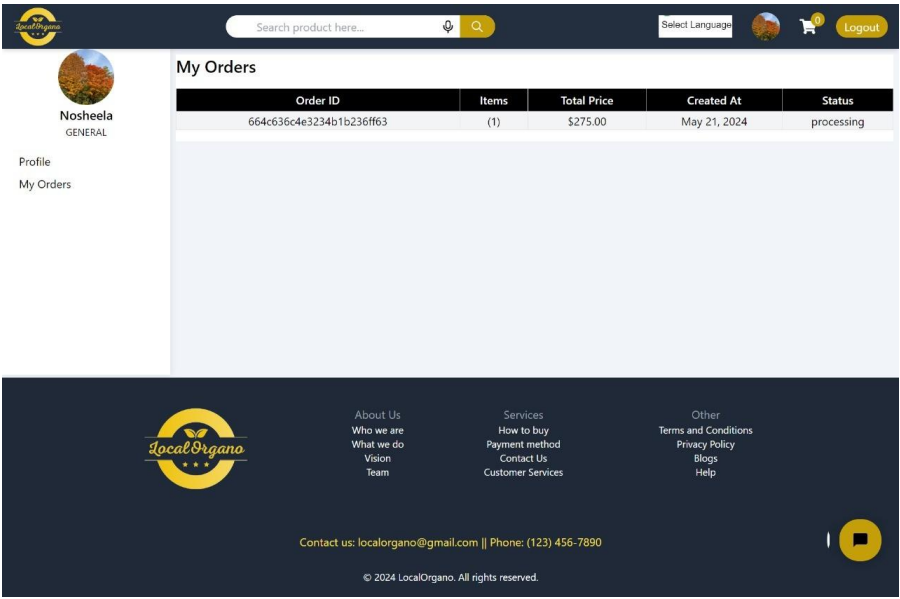


Figure 4.13: User Profile

Figure 4.13 displays a list of orders with details such as Order ID, the number of items, total price, creation date, and status. Users can easily track their purchases, seeing that the order listed is currently in the "processing" stage. The sidebar provides navigation options to the user's profile and order history, facilitating easy access to personal information and order management.

4.6.1.10 Vendor Profile

The vendor profile page of website allows vendors to manage their product listings effectively.

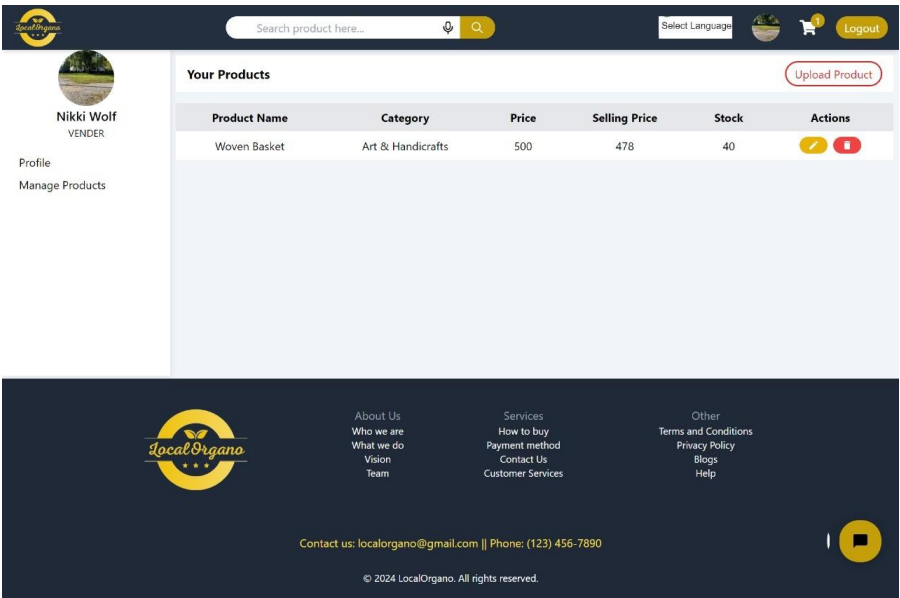


Figure 4.14: Vender Profile

Figure 4.14 displays a list of the vendor’s products with details such as Product Name, Category, Price, Selling Price, Stock, and available Actions. Vendors can edit or delete their products using the action buttons provided. The "Upload Product" button at the top right enables the addition of new products to their inventory.

4.7 GUI Design

The user interface of the LocalOrgano website is designed to be simple, easy and intuitive to navigate. We’ve minimized the number of buttons and input fields to streamline the user experience. The focus is on enabling users to effortlessly explore local products, make purchases, and engage with the community.

The homepage is clean and straightforward, providing clear navigation options to different sections of the website. Users can easily browse products, view availability, and manage their orders. Additionally, there are options to contact customer support for assistance or inquiries.

The product listing and details pages are meticulously designed to offer a user-friendly experience, featuring concise descriptions and high-quality images that highlight the distinctive offerings from local businesses. Users can easily search for products, view availability, and make purchases with just a few clicks.

For order management, users have access to a dedicated section where they can view their current and past orders, track shipments, and manage returns or cancellations. Clear and transparent policies are provided to guide users through the process.

Security is paramount, and the website includes robust measures to protect users' personal and financial information.

4.8 Usability Principles

We've adhered to Dr. Donald Norman's Usability Principles to shape the Graphical User Interface of our proposed system. Usability, in essence, entails user-centered design, where both the design and development processes prioritize meeting the user's goals, models, and requirements. Usability principles are essential to consider when designing our LocalOrgano website. By focusing on these principles, you can create a system that is easy to use, efficient, and enjoyable for your users.

4.8.1 Learnability

We've incorporated various elements to ensure the platform is easy to learn for new users. Clear and concise instructions are provided at each step of the process, guiding users through tasks such as setting up their account, listing products, and making purchases.

4.8.2 Efficiency

To enhance efficiency, we've optimized various aspects of the platform to minimize user effort and streamline processes. For example, we've implemented predictive search functionality to help users find products quickly, and we've integrated features such as one-click purchasing and saved preferences to expedite the checkout process.

4.8.3 Aesthetic and Minimalist Design

Our design approach emphasizes simplicity and clarity to create an intuitive user experience. We've utilized a clean and modern design aesthetic, with ample white space and clear typography to reduce visual clutter. Icons and graphical elements are used sparingly and purposefully to convey information without overwhelming the user. Furthermore, we've conducted user testing and feedback sessions to refine the design based on user preferences and expectations.

4.8.4 Consistency

Consistency in design and user experience is maintained throughout the platform to ensure a cohesive and familiar interaction environment. We've established a standardized set of design elements, including button styles, color palettes, and layout principles, which are applied consistently across all pages and features. This uniformity helps users navigate

the platform with confidence, knowing that familiar patterns and interactions will yield predictable outcomes.

4.8.5 Flexibility and Customization

Recognizing the diverse needs and preferences of our users, we've built flexibility into the platform to accommodate a range of customization options. Users have the flexibility to personalize their experience by customizing settings such as language preferences and display preferences. Moreover, advanced users have the option to customize their dashboard layout or enable specific features tailored to their workflow, enhancing the personalization and efficiency of their user experience. By addressing these aspects, we've developed the LocalOrgano platform to not only fulfill the functional requirements of our users but also provide a seamless and delightful experience, promoting engagement and satisfaction.

Chapter 5

System Implementation

In the implementation phase, we bring the design to life by transforming it into functional programs. This involves installing the system, finalizing processes, and furnishing documentation for the user's reference. Upon completion of this phase, the application transitions into static production. At this stage, verification ensures that all planned requirements are met, yielding an acceptable outcome.

5.1 System Architecture

The system architecture for the e-commerce website involves both frontend and backend components. The frontend, responsible for user interaction, is developed using React.js in the Visual Studio Code environment. Users input data through the React.js interface, facilitating a dynamic and responsive user experience. On the backend, Node.js, along with the Express.js framework, powers the server-side logic and API endpoints. MongoDB serves as the database to store product listings, user information, and other relevant data.

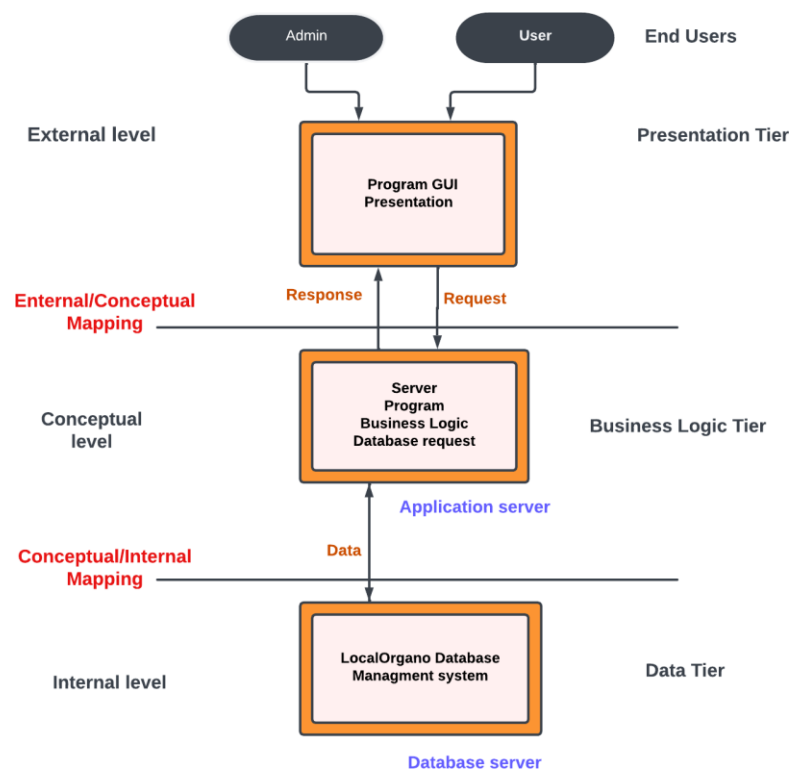


Figure 5.1: system Architecture

Figure 5.1 illustrates that, the LocalOrgano system architecture follows a three-tier structure comprising presentation, application, and data tiers. The presentation tier handles user interface interactions, while the application tier manages business logic and processing. The data tier stores and retrieves information from the database, ensuring efficient data management and system scalability.

Tools and Technologies

The tools and technologies used in developing our application are as follows:

- **Visual Studio Code (VS Code):** Visual Studio Code is a popular source-code editor developed by Microsoft. It provides developers with a lightweight yet powerful environment for writing code, debugging, and collaborating on projects. VS Code offers extensive support for various frameworks and programming languages, making it a versatile choice for software development.
- **React.js:** React.js is a JavaScript library designed for constructing user interfaces, especially for single-page applications. It empowers developers to craft reusable UI components, streamlining the development process and enhancing maintainability.

Following a component-based architecture, React.js facilitates a modular and scalable approach to web application development.

- **Node.js:** Node.js serves as a runtime environment for running JavaScript code on the server-side, enabling developers to create scalable and high-performance web applications. By leveraging JavaScript for both client and server-side development, Node.js fosters a unified development experience. Its extensive ecosystem of libraries and packages, accessible through npm (Node Package Manager), accelerates the development and deployment processes, enhancing productivity and efficiency.
- **Express.js:** Express.js is a lightweight web application framework designed for Node.js, offering a comprehensive suite of tools for constructing web servers and APIs. Its feature-rich capabilities include routing, middleware support, and HTTP utility methods, streamlining the handling of HTTP requests and responses. Express.js is particularly well-suited for developing RESTful APIs and backend services, thanks to its simplicity and flexibility in building web applications.
- **MongoDB:** MongoDB is a widely used NoSQL database known for its flexibility in storing data as JSON-like documents. This schema-less approach allows for scalability and adaptability to diverse data models, making it suitable for managing large volumes of data. MongoDB's performance and scalability make it a preferred choice for modern applications requiring robust database solutions. MongoDB is well-suited for modern web applications, particularly those built with Node.js and Express.js, due to its compatibility with JavaScript and support for dynamic schemas.

Methodology

LocalOrgano application was developed using a combination of modern technologies and an iterative development approach, with future enhancements in mind. The development process comprised several phases:

- **Research:** During the initial phase, extensive research was conducted to gather essential information regarding the development of the application. This involved studying existing e-commerce platforms and market trends in local home-based businesses in Pakistan. While there were existing e-commerce platforms, none specifically catered to local artisans, craftspeople, farmers, and entrepreneurs. Thus, the decision was made to develop a dedicated platform to address this gap.
- **Development:** The project team planned and initiated the development of the LocalOrgano application, utilizing the chosen development stack. The chosen stack for the project was:

Frontend: React.js was used for developing the frontend interface. React.js provided a robust and scalable framework for building dynamic user interfaces.

Backend: Node.js and Express.js were selected for developing the backend server. These technologies offered a lightweight and efficient runtime environment for handling server-side logic and API endpoints.

Database: MongoDB was selected as the database management system for its versatility and scalability, which are well-suited for storing a wide range of data types associated with products, businesses, and user profiles. This flexibility allows for efficient management of diverse datasets within the application, accommodating the dynamic nature of modern web platforms.

- **Iterative Development:** The development process followed an iterative approach, with regular feedback loops and continuous improvements based on user testing and market feedback. Features were implemented incrementally, allowing for early testing and validation of functionality. This iterative approach ensured that the application could adapt to changing requirements and incorporate future enhancements seamlessly.

5.2 ER Diagram

The ER (Entity-Relationship) Diagram for LocalOrgano outlines the entities and their relationships within the system.

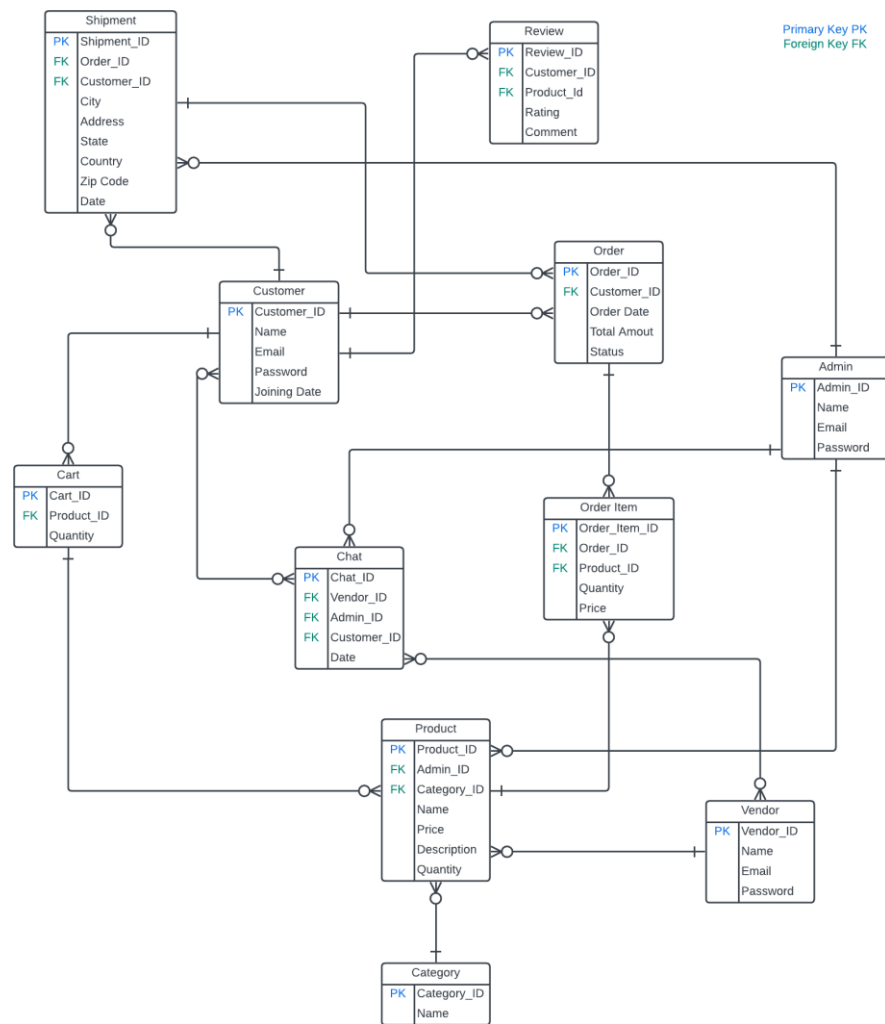


Figure 5.2: Entity-Relationship Diagram for LocalOrgano

Figure 5.2 represents the structure and interrelations within an e-commerce system. It outlines the key entities involved in the system, such as Customers, Products, Categories, Orders, Order Items, Carts, Payments, Shipments, Reviews, Vendors, Admins, and Chats. Each entity contains specific attributes, with primary keys (PK) uniquely identifying records and foreign keys (FK) establishing connections between different entities. The diagram illustrates how customers interact with the system by browsing products, adding items to their cart, placing orders, making payments, and receiving shipments. Additionally, it shows how customers can leave reviews for products, communicate with vendors through chat, and how admins manage the system. Vendors are also depicted as managing product listings.

Chapter 6

Testing

6.1 System Testing

In this chapter, we will focus on assessing the performance of the LocalOrgano web application. System testing is a critical process conducted to assess the effectiveness of the product and ensure its alignment with defined requirements. This phase is pivotal in the development of the LocalOrgano platform, ensuring it operates as intended. Acknowledging the challenges encountered by many systems during testing, we emphasize a detailed and comprehensive evaluation through various testing methods and techniques.

This section delineates the test determination specific to the LocalOrgano application. The testing of our framework will adhere to a systematic methodology, encompassing White Box testing, Discovery testing, Usability testing, Programming Performance testing, Security testing, GUI testing and Load testing. Compatibility testing, and Installation Testing.

Test Designing involves creating a structured plan to conduct experiments on the LocalOrgano framework. The subsequent execution and assessment of these experiments aim to ensure that the platform delivers the intended functionalities effectively. Additionally, Test Planning involves providing inputs for the software and evaluating their outcomes. The overarching goal is to guarantee that the LocalOrgano framework meets expectations and operates seamlessly. Discovery testing, GUI testing, performance testing, load testing, security testing, compatibility testing, usability testing, and installation testing are essential types of testing conducted to ensure the reliability and quality of the system.

6.1.1 Functional Testing

Functional testing in LocalOrgano involves ensuring that the application adheres to defined requirements and functions as expected. This includes testing user interactions and verifying that tasks or functionalities are performed correctly and logically. Key aspects of functional testing include:

- Checking the presence and correct display of all required fields.
- Verifying the proper functioning of fields like password entry and login details.
- Evaluating the application's response to closing or reopening.

6.1.2 Graphical User Interface Testing

The graphical user interface (GUI) is a crucial aspect of LocalOrgano, designed for user interaction through images and graphical symbols. GUI testing ensures that the interface is user-friendly and visually pleasing. It includes:

- Checking the presence of attractive and visually pleasing elements.
- Verifying color-coordinated pages, eye-catching icons, and other visual elements.

6.1.3 Compatibility Testing

Compatibility testing assesses how well LocalOrgano functions across different platforms, environments, and devices. It ensures compatibility with browsers, hardware platforms, operating systems, and other software.

6.1.4 Usability Testing

Usability testing evaluates how easy and user-friendly LocalOrgano is. It focuses on aspects such as navigation, layout, visual design, responsiveness, and overall user experience. This includes tasks like:

- Checking the visibility and readability of text elements.
- Verifying the standard size and placement of buttons.
- Confirming the consistency of the logo and color schemes.

6.1.5 Performance Testing

Performance testing assesses LocalOrgano's speed, stability, and scalability under different workload conditions. Key aspects of performance testing include:

- Simulating realistic loads to identify performance bottlenecks.
- Measuring the system's response under different conditions.

6.1.6 Interface Testing

Interface testing specifically targets the interfaces between different components or modules within a software system. In order to make sure that the modules can connect with each other properly and that the data sent between them is valid, interface testing is done. Interface testing involves testing the inputs and outputs of each interface to ensure they meet standards and requirements. Interface testing ensures proper communication between different components or modules in the LocalOrgano system. It involves testing inputs and outputs of each interface for adherence to standards and handling unexpected events.

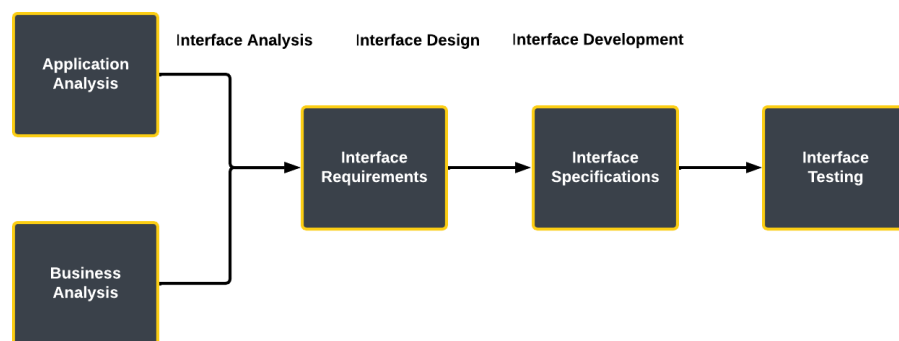


Figure 6.1: Interface Testing

6.1.7 Load Testing

Load testing assesses the performance of a system or application under specific levels of user traffic or workload. Load testing's objectives include finding and isolating any performance bottlenecks and verifying that the system or application can support the anticipated user load.

6.1.8 Security Testing

Security testing is a software testing process that evaluates the security of a system or application by identifying gaps, threats, or potential vulnerabilities. The purpose of security testing is to locate and eliminate any potential vulnerabilities. Techniques like penetration testing, vulnerability scanning, and risk assessment are employed.

6.2 Testing Performance Test Cases

To evaluate LocalOrgano's performance, several test cases were applied:

- To ensure that the response time and confidence score of our application are according to our requirements.

- To check whether our client-side application and server-side application remain connected with each other all the time.
- To ensure the application is running smoothly and the performance of the application never affects because of increased load.
- To ensure that all the user-related information is easily accessible by the user.
- To ensure that the updated data is also stored in the database.

6.3 Testing Usability Test Cases

Usability testing focuses on the user-friendliness of LocalOrgano, ensuring it is easy to use and acceptable in the market. To evaluate the performance of our system, we performed several tests to analyze the performance of our system. The following are test cases we applied to our system:

- To ensure that the response time and confidence score of our application are according to our requirements.
- To check whether our client-side application and server-side application remain connected with each other all the time.
- To ensure the application is running smoothly and the performance of the application never affects because of increased load.
- To ensure that all the user-related information is easily accessible by the user.

Test Cases

Several test cases were executed on the LocalOrgano system to assess its performance and effectiveness. We have listed them below:

Test Case 001 : Registration Test case 1 focused on the registration process of our website. Our application successfully passed this test as the registration process was completed without encountering any bugs or errors.

Table 6.1: Test Case: Register

Test Case:	Register
Test ID:	TC-1
Test Case Description:	Testing the Registration Process
Pre-condition:	The user has access to a stable internet connection.
Step 1 (Initial State):	Home page of the application is shown to the user.
Step 2 (Test Setup):	Login page of the website is displayed.
Step 3 (Input):	Click on the register button.
Step 4 (Expected Output):	Registration page of the application should be launched.
Step 5 (Output):	Registration page of the application is launched successfully.
Step 6 (Status):	Pass

Test Case 002 : Log In Test case 2 evaluated the application's registration process. Our website passed this test successfully as users were able to log in multiple times without encountering any errors.

Table 6.2: Test Case: Login

Test Case:	Login
Test ID:	TC-2
Test Case Description:	Testing the Login Process
Pre-condition:	The user account must exist in the system database.
Step 1 (Initial State):	Home page is displayed before the user.
Step 2 (Test Setup):	Main page of the website should be launched.
Step 3 (Input):	Click on the login button.
Step 4 (Expected Output):	Main page of the website should be launched.
Step 5 (Output):	Main page of the website is launched successfully.
Step 6 (Status):	Pass

Test Case 03 : Forget Password Test case 3 focused on the "Forget Password" process of our website. Our application successfully passed this test as the "Forget Password" process was completed without encountering any bugs or errors.

Table 6.3: Test Case: Forget Password

Test Case:	Forget Password
Test ID:	TC-3
Test Case Description:	Testing the Forget Password Process
Pre-condition:	The user has access to a stable internet connection.
Step 1 (Initial State):	Home page of the application is shown to the user.
Step 2 (Test Setup):	Login page of the website is displayed.
Step 3 (Input):	Click on the "Forget Password" button.
Step 4 (Expected Output):	"Forget Password" page of the application should be launched.
Step 5 (Input):	Enter the new password and confirm the new password on the reset password page.
Step 5 (Expected Output):	The password reset is successful, and the user can log in with the new password.
Step 7 (Status):	Pass

Test Case 04 : Update Profile

In test case 4, we tested the profile update functionality of our application. We verified that users could seamlessly modify their profile information, including their name, email, and profile picture.

Table 6.4: Test Case: Update Profile

Test Case:	Update Profile
Test ID:	TC-4
Test Case Description:	Testing Profile Update Functionality
Pre-condition:	The user must be logged in with valid credentials
Step 1 (Initial State):	User is logged in and navigated to their profile page
Step 2 (Test Setup):	Ensure the profile page is accessible and displays the user's current information
Step 3 (Input):	Modify profile details such as name, email, and profile picture
Step 4 (Expected Output):	Changes should be successfully applied to the user's profile
Step 5 (Output):	Profile details are updated as per the user's input
Step 6 (Status):	Pass

Test Case 05: Add New Product

Test case 5 focused on testing the core functionality of adding a new product to our LocalOrgano website. We conducted tests to ensure the seamless addition of a product without encountering any errors.

Table 6.5: Test Case: Add New Product

Test Case:	Add New Product
Test ID:	TC-5
Test Case Description:	Testing the process of adding a new product
Pre-condition:	The admin must be logged in with valid credentials and navigated to the product management section
Step 1 (Initial State):	Admin is on the product management page of the LocalOrgano website
Step 2 (Test Setup):	Click on the "Add New Product" button
Step 3 (Input):	A new product entry form should be displayed. Fill in the required details for the new product
Step 4 (Expected Output):	A new product entry form should be displayed and the new product should be successfully added to the website
Step 5 (Output):	The new product is added successfully to the website
Step 6 (Status):	Pass

Test Case 06: Search

Test case 6 focused on testing the search functionality of the LocalOrgano website. We conducted tests to ensure that users can easily discover products using the search feature without encountering any errors.

Table 6.6: Test Case: Search

Test Case:	Search
Test ID:	TC-6
Test Case Description:	Testing the search functionality of the website
Pre-condition:	The user must be logged in and on the homepage of the LocalOrgano website
Step 1 (Initial State):	User is on the homepage of the LocalOrgano website
Step 2 (Test Setup):	Enter a search query in the search bar and press enter
Step 3 (Input):	The system should display relevant search results based on the query
Step 4 (Expected Output):	Relevant search results matching the query should be displayed to the user
Step 5 (Output):	The system displays relevant search results matching the query
Step 6 (Status):	Pass

Test Case 07: Shopping Cart

Test case 7 involved testing the functionality of the shopping cart on the LocalOrgano website. We conducted tests to ensure that users can easily add products to the cart without encountering any errors.

Table 6.7: Test Case: Shopping Cart

Test Case:	Shopping Cart
Test ID:	TC-7
Test Case Description:	Testing the shopping cart functionality of the website
Pre-condition:	The user must be logged in and on the homepage of the LocalOrgano website.
Step 1 (Initial State):	User is on the homepage of the LocalOrgano website.
Step 2 (Test Setup):	Navigate to a product page and click on the "Add to Cart" button.
Step 3 (Input):	Add the product to the cart.
Step 4 (Expected Output):	The product should be successfully added to the shopping cart.
Step 5 (Output):	The product was successfully added to the shopping cart.
Step 6 (Status):	Pass

Test Case 08: Voice Search

In test case 8, we are validating the functionality of the voice search feature on the LocalOrgano website. We conducted tests to ensure that users can conveniently search for products using voice commands without encountering any errors.

Table 6.8: Test Case: Voice Search

Test Case:	Voice Search
Test ID:	TC-8
Test Case Description:	Testing the voice search functionality of the website
Pre-condition:	The user must be logged in and on the homepage of the LocalOrgano website.
Step 1 (Initial State):	User is on the homepage of the LocalOrgano website.
Step 2 (Test Setup):	Activate the voice search feature by clicking on the microphone icon.
Step 3 (Input):	Speak the search query into the microphone.
Step 4 (Expected Output):	The system should process the voice input and display relevant search results based on the query.
Step 5 (Output):	Relevant search results matching the voice query are displayed to the user.
Step 6 (Status):	Pass

Test Case 09: Multilingual Website

In test case 9, we are evaluating the functionality of the Multilingual feature on the LocalOrgano website, ensuring that users can switch between multiple languages seamlessly.

Table 6.9: Test Case: Multilingual Website

Test Case:	Multilingual Website
Test ID:	TC-9
Test Case Description:	Testing the Multilingual functionality of the website
Pre-condition:	The user must be logged in and on the homepage of the LocalOrgano website.
Step 1 (Initial State):	User is on the homepage of the LocalOrgano website.
Step 2 (Test Setup):	Navigate to the language settings option on the website.
Step 3 (Input):	Select a different language option from the available choices.
Step 4 (Expected Output):	The website content should be displayed in the selected language.
Step 5 (Output):	The website content is displayed correctly in the selected language.
Step 6 (Status):	Pass

Test Case 10: Reviews and Ratings

In test case 10, we will evaluate the functionality of the reviews and ratings system on the LocalOrgano website.

Table 6.10: Test Case: Reviews and Ratings

Test Case:	Reviews and Ratings
Test ID:	TC-10
Test Case Description:	Testing the reviews and ratings functionality of the website
Pre-condition:	The user must be logged in and on the product page of the LocalOrgano website.
Step 1 (Initial State):	User is on the product page of the LocalOrgano website.
Step 2 (Test Setup):	Navigate to the reviews section of the product page.
Step 3 (Input):	Submit a review with a rating for the product.
Step 4 (Expected Output):	The review and rating should be successfully submitted and displayed on the product page.
Step 5 (Output):	The review and rating are displayed on the product page.
Step 6 (Status):	Pass

Test Case 11: Product Rankings

In test case 11, we are verifying the functionality of product rankings on the LocalOrgano website. We aim to ensure that when users click on specific product ratings, the system displays products with matching ratings on the screen.

Table 6.11: Test Case: Product Rankings

Test Case:	Product Rankings
Test ID:	TC-11
Test Case Description:	Testing the product ranking functionality of the website
Pre-condition:	The user must be logged in and on the homepage of the LocalOrgano website.
Step 1 (Initial State):	User is on the homepage of the LocalOrgano website.
Step 2 (Test Setup):	Click on a specific product rating.
Step 3 (Input):	The system should filter and display products with matching ratings.
Step 4 (Expected Output):	Products with the selected rating should be displayed on the screen.
Step 5 (Output):	The system displays products with the selected rating.
Step 6 (Status):	Pass

Test Case 12: Customize Ordering

In test case 12, we are verifying the functionality of the customization box for users to customize their orders before ordering on the LocalOrgano website.

Table 6.12: Test Case: Customize Ordering

Test Case:	Customize Ordering
Test ID:	TC-12
Test Case Description:	Testing the customization feature for ordering on the website
Pre-condition:	The user must be logged in and on the homepage of the LocalOrgano website.
Step 1 (Initial State):	User is on the homepage of the LocalOrgano website.
Step 2 (Test Setup):	Navigate to the product page and select a product for ordering.
Step 3 (Input):	Use the provided customization box to enter customization details for the selected product.
Step 4 (Expected Output):	The customization box allows the user to input customization details for their order.
Step 5 (Output):	The customization box successfully accepts and displays the customization details entered by the user.
Step 6 (Status):	Pass

Test Case 13: Chatbot Functionality In test case 13, we are verifying the functionality of the chatbot for assisting users on the LocalOrgano website.

Table 6.13: Test Case: Chatbot Functionality

Test Case:	Chatbot Functionality
Test ID:	TC-13
Test Case Description:	Testing the chatbot feature for providing assistance and information to users on the website.
Pre-condition:	The user must be logged in and on the homepage of the LocalOrgano website.
Step 1 (Initial State):	User is on the homepage of the LocalOrgano website.
Step 2 (Test Setup):	Click on the chatbot icon to initiate the chatbot session.
Step 6 (Input):	Enter a query such as "How do I add a product to the cart?" in the chatbot text box.
Step 7 (Expected Output):	The chatbot provides a clear and accurate response to the query, explaining the steps for adding a product to the cart.
Step 8 (Output):	<p>The chatbot's response includes the following instructions:</p> <ol style="list-style-type: none"> 1. Navigate to the product page and select a product. 2. Click the "Add to Cart" button on the product details page. 3. View your cart by clicking the cart icon at the top right. 4. Adjust quantities or remove items as needed.
Step 9 (Status):	Pass

Chapter 7

Conclusion

In this chapter, we conclude the development journey of LocalOrgano, a dedicated platform aimed at supporting local home-based businesses in Pakistan. Throughout the project, we addressed the challenges faced by these enterprises and aimed to provide a comprehensive solution to bridge the gap between producers and consumers.

Our platform offers an innovative approach to connecting local artisans, craftspeople, farmers, and entrepreneurs with customers online. By leveraging modern technologies such as React.js, Express.js, Node.js, and MongoDB, we have developed a user-friendly application that facilitates the discovery and purchase of locally made products.

The major achievements of LocalOrgano include:

- Enabling local businesses to present their products and services on a centralized platform.
- Offering features such as product listings, business profiles, Multilingual support, voice search, chatbot, and community engagement tools.
- Incorporating user feedback and iterative improvements to enhance the platform's usability and functionality.

7.1 Benefits of the System:

1. LocalOrgano helps users find nearby local businesses and supports the local economy.
2. Users can easily access information about products and services offered by local entrepreneurs without the need to physically visit each business.
3. The platform saves time and cost by providing a convenient online marketplace for local goods and services.

7.2 Future Works:

Future enhancements for LocalOrgano include adding additional features to improve user experience and accessibility. Plans are underway to make the platform accessible across different devices and operating systems by developing mobile applications for iOS and Android, as well as optimizing the website for better performance on various web browsers. LocalOrgano also plans to integrate with popular social networking sites such as Facebook, Instagram, and Twitter, allowing users to easily share their favorite products and promotions. This integration will help increase visibility and support for local businesses while enabling vendors to engage with customers more effectively. To enhance the shopping experience and ensure transaction safety, LocalOrgano will introduce additional secure online payment methods, including support for various payment gateways, digital wallets, and secure credit/debit card processing. Furthermore, a customer recommendation system will be implemented to provide personalized shopping experiences by analyzing customer preferences and shopping behavior, offering tailored product recommendations.

Appendix A

User Manual

The LocalOrgano user manual provides comprehensive guidance for users to effectively navigate and utilize the features of the platform. It offers clear instructions on tasks such as registration, login, password management, and navigating the interface. Additionally, it provides insights into the platform's functionalities, enabling users to make the most of their experience on LocalOrgano. Our user manual will change with the changes on the website.

A.1 Introduction

Welcome to LocalOrgano, your go-to e-commerce platform for organic and handcrafted products. This user manual will guide you through the various features of the website, ensuring you have a smooth and enjoyable shopping experience.

A.2 Getting Started

A.2.1 Account Registration

To start using LocalOrgano, you need to create an account:

1. Click on the "Signup" button located in the top right corner of the home page.
2. Fill in your name, email, and password in the registration form.
3. Confirm your password and click the "Sign Up" button.

A.2.2 Logging In

If you already have an account, follow these steps to log in:

1. Click on the "Login" button at the top right corner.

2. Enter your registered email and password.
3. Click the "Login" button to access your account.

A.3 Navigating the Home Page

The home page is designed to provide an overview of available products and categories. It includes:

- **Search Bar:** Located at the top, allowing you to search for products.
- **Product Categories:** Sections like Fresh Dairy & Eggs, Fruits & Dry Fruits, Wheat & Grains, and Organic Food.
- **Promotional Banner:** Highlights special offers and health messages.
- **Navigation Bar:** Includes options for language selection, profile access, and cart status.

A.4 Searching and Viewing Products

To search and view products:

1. Use the search bar to enter the product name or category.
2. Browse through the results displayed in various categories.
3. Click on a product to view detailed information, including price, description, and availability.

A.5 Managing Your Cart

To manage items in your cart:

1. Click the "Add to Cart" button on the product details page.
2. View your cart by clicking the cart icon at the top right.
3. Adjust quantities or remove items as needed.
4. Click "Proceed" when ready to purchase.

A.6 Checkout Process

To complete your purchase:

1. Review your cart and click "Proceed to Checkout."
2. Enter your shipping information and select a payment method.
3. Review your order summary and click "Place Order."
4. You will receive a confirmation message that the order has been placed successfully.

A.7 Vendor Dashboard

A.7.1 Becoming a Vendor

To become a vendor on LocalOrgano, follow these steps:

A.7.1.1 Register as a User

1. Begin by registering as a regular user on the LocalOrgano platform.
2. Click on the "Signup" button located at the top right corner of the home page.
3. Fill in your name, email, and password in the registration form.
4. Confirm your password and click the "Sign Up" button.

A.7.1.2 Request Vendor Role

1. After successfully registering, log in to your account.
2. Use the chatbot feature available on the website to request an upgrade to a vendor account.
3. Type a request message such as, "I would like to become a vendor."

A.7.1.3 Admin Verification

1. The admin will receive your request and verify your details.
2. Upon verification, the admin will change your role from a regular user to a vendor.

A.7.1.4 Creating Your Vendor Profile

1. Once your role is updated, you can access the Vendor Dashboard.
2. Navigate to the "Vendor Dashboard" by clicking on your profile icon and selecting "Vendor Dashboard" from the dropdown menu.
3. Click on the "Create Profile" button.
4. Fill in the required information, including your business name, contact details, and a brief description of your products.
5. Upload a profile picture or business logo to personalize your vendor profile.
6. Click "Save" to create your vendor profile.

A.7.2 Managing Your Vendor Profile

To manage and update your vendor profile:

1. Access the Vendor Dashboard by clicking on your profile icon and selecting "Vendor Dashboard" from the dropdown menu.
2. Click on "Edit Profile" to make changes to your business name, contact details, description, or profile picture.
3. Update the necessary information and click "Save" to apply the changes.

A.7.3 Showcasing Your Products

Once your vendor profile is set up, you can showcase your products to potential customers:

1. Navigate to the "Manage Products" section.
2. Click on "Add New Product" to upload new products to your profile.
3. Provide detailed information about each product, including name, category, price, and description.
4. Upload high-quality images of your products to attract customers.
5. Click "Save" to add the product to your inventory.

A.7.4 Interacting with Customers

The Vendor Profile section also allows you to interact with customers:

1. Respond to customer inquiries by checking messages in your Vendor Dashboard regularly.
2. Manage reviews and feedback from customers to maintain a positive reputation.
3. Update your profile regularly with new products and promotions to keep customers engaged.

A.8 Contact and Support

For assistance, you can contact us at:

- **Email:** localorgano@gmail.com
- **Phone:** (123) 456-7890

Visit the "Contact Us" section on the website for more details.

This user manual is designed to help you navigate and utilize all the features of LocalOrgano effectively. Happy shopping!

References

- [1] Vaqar Ahmed. Pakistan's small businesses hit hard by COVID-19. *Arab News PK*, 2020. Cited on p. 1.
- [2] Ghulam Muhammad Mangnejo, Urooj Talpur, and Bakhtiar Ahmed Kuber. Factors influencing organic food purchase of young pakistani consumers. *Research Journal of Social Sciences and Economics Review (RJSSER)*, 1(4):113–121, 2020. Cited on p. 2.
- [3] Farhan Zafar. E-commerce industry in pakistan. ResearchGate, 2016. Cited on p. 3.
- [4] Navicoadsae. Organic foods in pakistan: A growing trend for health-conscious consumers, 2023. Cited on p. 6.
- [5] T. Khan. Feasibility study for a new online organic food products store in pakistan: an entrepreneurial venture. Executive MBA Research Projects, 2018. Cited on p. 6.
- [6] The economic potential of e-commerce in pakistan: Strategies to consider, 2022. Cited on p. 7.
- [7] The Express Tribune. Importance of e-commerce for pakistan's growth, 2023. Cited on p. 8.
- [8] Xiaocui Wang. Analysis of electronic commerce model of organic agricultural products. *Proceedings of The First International Symposium on Management and Social Sciences (ISMSS 2019)*, page 22, 2019. Cited on p. 10.
- [9] A. Barska and J. Wojciechowska-Solis. E-consumers and local food products: A perspective for developing online shopping for local goods in poland. *Sustainability*, 2020. Cited on p. 11.
- [10] M. Zeshan. E-commerce and its potential in pakistan. *PIDE in Press*, 2023. Cited on p. 11.
- [11] Eric B. Blancaflor and Sasky Samonte. An analysis and comparison of proprietary and open-source software for building e-commerce website: A case study. (3), 2023. Cited on p. 12.
- [12] T. Campisi, A. Russo, S. Basbas, E. Bouhouras, and G. Tesoriere. A literature review of the main factors influencing the e-commerce and last-mile delivery projects during covid-19 pandemic. *Transportation Research Procedia*, 69, 2023. Cited on p. 12.