

# **A PROJECT REPORT FOR COFARM**

**JONATHAN ARIEL MUYETI**

**S20B06/003**

**A PROJECT REPORT SUBMITTED TO THE SCHOOL OF BUSINESS, IN PARTIAL  
FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF A DEGREE OF BACHELOR  
OF BUSINESS COMPUTING OF UGANDA CHRISTIAN UNIVERSITY**

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**UGANDA CHRISTIAN  
UNIVERSITY**

*A Centre of Excellence in the Heart of Africa*

## DECLARATION

I, Muyeti Jonathan Ariel,

hereby declare that the work presented in this project report is my original work and to the best of my knowledge, has never been submitted to any institution of higher learning for a similar or any other academic awards and therefore gladly confirm that consultations done based on past works - previously published material, works of others – have their references and citations attributed to in this report.

Name	Registration Number	Signature	Date
MUYETI JONATHAN ARIEL	S20BO6/003		06/09/2023

**APPROVAL**

I, the undersigned do certify that this report entitled "Cofarm App" has been compiled under my supervision and hereby recommend for acceptance by the School of Business, Uganda Christian University Mukono in partial fulfilment of the requirement for the Award of a Bachelor of Business Computing (BBC3)

**SUPERVISOR(S)**

**Mr. Mwesigye Joshua, Lecturer.**

Signed: Mwesigye Joshua

Date: 06/09/2023

## **DEDICATION**

I dedicate this project report to my parents who have struggled for my success, endeavoured to pay my tuition, and sacrificed for me both financially and morally.

I also dedicate this piece of work to my dear supervisor for the pieces of advice he has given to me to of develop this project report.

More important than ever, I dedicate the entire work to the Lord Almighty God His infinite wisdom, knowledge, understanding and guidance through the Holy Spirit, Amen!

## **ACKNOWLEDGEMENT**

My sincere appreciation goes to the following who contributed to the eventual and successful realization of this report;

To God through whom all things are possible.

I specifically wish to recognize the support and assistance given by my supervisor,

**Mr. Mwesigye Joshua.**

I also wish to thank my parents for having brought me to Campus to acquire knowledge that will better my future.

I also acknowledge my friends and classmates who have helped me with advice and encouragements in the course of developing this project report.

**Abstract:**

The coffee industry frequently has difficulties with fair pricing, market access, and communication between buyers and farmers, especially in areas like Uganda. The present dissertation delves into the creation and execution of COFARM, a mobile application that aims to strengthen coffee farmer unions and augment their revenue streams by establishing a connection between producers and consumers.

The report lists the main difficulties that coffee farmer unions confront, such as their restricted distribution options, confusing price structures, and communication gaps. In order to address these issues and advance sustainable practices, COFARM will be developed through extensive study and stakeholder participation.

The primary goals of COFARM are to create an intuitive marketplace, apply open pricing policies, and enable direct connection between buyers and producers. Coffee farmer unions can post their products on the marketplace with thorough descriptions and information about their origins, and safe payment gateways guarantee easy transactions. Long-term partnerships and trust are fostered by transparent pricing algorithms, which take market trends and quality into account. A communication platform also facilitates real-time negotiation and interaction, which improves relationship-building and personalized orders.

This study is important because it might strengthen coffee farmer unions, advance fair trade and transparency, and provide small-scale growers with more access to markets. COFARM seeks to support the sustainability and economic success of the coffee industry in Uganda and abroad by offering a digital solution that is customized to meet the demands of coffee buyers and growers.

## Contents

CHAPTER 1 .....	9
1.0Introduction.....	9
1.1Background .....	9
1.2Problem Statement .....	10
1.3Main objective .....	10
1.5Scope of the study .....	11
1.6Significance of the study or purpose of the study .....	12
CHAPTER 2: Literature Review .....	13
2.0 Introduction.....	13
2.2 Review of related literature.....	13
2.2.1 What I Adopted.....	13
2.2.2 Weaknesses of the reviewed literature .....	14
2.2.3Additions to the body of knowledge .....	14
2.3 Conclusion and Summary .....	15
CHAPTER THREE: METHODOLOGY.....	16
3.0 Methodology .....	16
3.1 Research Design.....	17
3.2 Web Scrapping.....	17
3.3Observation .....	17
3.4 Design Tools .....	17
3.6 Implementation .....	18
3.7 Testing and Validation .....	18
CHAPTER 4: SYSTEM ANALYSIS AND DESIGN.....	19
4.1 Presentation of Findings: .....	19
4.2 Strengths and Weaknesses of the Current System: .....	19
4.3 Developed System - Introducing the Cofarm App:.....	19
4.3.1 Requirements Specification: .....	20
4.4 CONTEXT DIAGRAM (DFD Level 0) .....	21
4.4.1 DATA FLOW DIAGRAM (DFD LEVEL 1) USER SIDE.....	22

4.4.2 DATA FLOW DIAGRAM LEVEL 2 ADMIN SIDE .....	23
4.4.3 ENTITY RELATIONSHIP DIAGRAM: .....	24
4.4.4 FLOW CHART .....	25
4.4.5 USE CASE DIAGRAM.....	26
4.4.6 DATA DICTIONARY.....	27
CHAPTER 5: IMPLEMENTATION .....	28
5.1 Introduction .....	28
5.2 Print Screens: .....	28
5.3 System Testing:.....	34
5.4 Validation:.....	34
5.5 Limitations: .....	34
CHAPTER 6: Recommendations and Conclusions .....	35
6.0 Introduction.....	35
6.1 Recommendations:.....	35
6.2 Conclusion: .....	35
6.3 Summary:.....	35
APPENDIX.....	36

## CHAPTER 1

### 1.0 Introduction.

Coffee is Uganda's number 1 exporting commodity and many Ugandans participate in its production. This places it as a great priority and in a special position. Hence the need to give coffee unions an online platform to sell.

The simple but lucrative coffee bean is a coveted crop the world over. Yet many coffee farmers in Uganda are unable to benefit much from producing and selling it, with many earning less than \$1 a day.

Many coffee farmers lack the tools, training and bargaining power to build profitable businesses, and women often suffer the most. Women typically contribute the bulk of coffee-related labor but do not have access to land, coffee trees or finance.

For example, if Jada Coffee received an export order of 1,000 metric tons of coffee, the company would borrow money from the Coffee Fund to buy the required coffee and export it immediately and they could use Cofarm to purchase this coffee.

COFARM is a mobile application which enables enable coffee unions to sell coffee business practices and market integration to help farmers lift themselves out of poverty.

### 1.1 Background

Numerous small-scale farmers who are members of coffee farmer unions depend heavily on the production of coffee for their livelihoods. These farmers frequently struggle to sell their coffee products profitably because they have trouble interacting with potential customers, reaching larger markets, and negotiating reasonable rates. It is evident that a platform that streamlines the selling process, maintains transparency, and encourages sustainable practices is needed to close the gap between coffee producers and purchasers.

Currently, Bugisu Cooperative Union buys a kilogram of Arabica coffee at Shillings 11,800 up from Shillings 6,700 previously. He says that the improved prices have attracted farmers to supply their produce to the union. John Gidudu, a coffee farmer and delegate from Bulusani Grower's Cooperative Society, says that they decided to supply coffee to the union after serious engagements with the board leadership to explore ways of promoting Arabica coffee to get better prices and timely payments.

"Why we supply Bugisu Cooperative Union is because they have found the need to support coffee farmers compared to previous seasons where they had no urge for the product and delayed payments," Gidudu said. Wilfred Kissa, a coffee farmer from Sironko district says that the urge for the farmers to sell the product to Bugisu Cooperative Union took a lot of explanations from the new board on how they were ready to resolve the grievances of coffee farmers such as low prices.

## 1.2 Problem Statement

Farmers belonging to coffee unions struggled to reach a wider audience of potential buyers due to limited distribution channels and market access. The absence of a transparent pricing mechanism often resulted in unfair pricing for farmers, leading to financial instability and reduced motivation for quality production. Farmers found it challenging to communicate directly with potential buyers, hindering their ability to negotiate, build relationships, and better understand market demands. The complex logistics of getting coffee from remote farms to buyers were a major hurdle, leading to delays and increased costs.

## 1.3 Main objective

The primary objective of the coffee trading app was to empower coffee farmer unions and enhance their sales by establishing a digital platform that facilitates seamless interactions between farmers and buyers. The main goal was to bridge the gap between producers and consumers, ensuring fair pricing, market access, and sustainable practices, while also promoting transparency and direct communication. Through this objective, the app aimed to create a win-win situation where both farmers and buyers benefit, leading to increased economic prosperity for farmers and a reliable source of high-quality coffee products for buyers.

## 1.4 Specific objectives

### **I. Marketplace Establishment and Integration:**

The app was designed and developed with a user-friendly marketplace that enabled coffee farmer unions to list their coffee products with detailed descriptions, origin information, and quality attributes. Secure payment gateways were integrated to facilitate seamless transactions between farmers and buyers.

## **II. Transparent Pricing Mechanism:**

A transparent pricing system was implemented that factored in quality, coffee varieties, and market trends. Algorithms were created that helped both farmers and buyers arrive at fair pricing, fostering trust and long-term relationships.

## **III. Direct Communication Channel:**

A communication platform was incorporated where coffee farmers and buyers could interact directly. Real-time messaging, negotiation capabilities, and the exchange of product-related information were enabled, leading to effective relationship-building and customized orders.

### **1.5 Scope of the study**

#### **Content Scope:**

- **Product Listings and Descriptions:**

Detailed descriptions of coffee products, including origin, flavor notes, processing methods, and certifications were provided.

High-quality images showcased the appearance of the coffee beans.

- **Pricing and Transparency:**

Transparent pricing information detailed factors affecting the cost, such as quality, processing, and market trends.

- **Logistics and Delivery:**

Information about packaging options and estimated delivery times was available.

Order tracking capabilities for both farmers and buyers were offered.

- **Market Insights and Analytics:**

An analytics dashboard offered market trends, popular products, and buyer preferences.

Educational resources about coffee cultivation, processing, and quality improvement were provided.

#### **Time Scope:**

The development of the coffee trading app was expected to take approximately 6-9 months. This timeline included:

3 months: Initial design and planning phase, including user interface design and feature planning.

2-3 months: Development phase, creating the app's backend infrastructure, communication features, payment gateways, and database.

1-2 months: Testing and optimization phase, ensuring the app's functionality, security, and user experience.

1 month: Deployment, launch, and initial user feedback collection.

#### **Geographical Scope:**

The app's primary focus was to entail serving coffee farmer unions and buyers within a specific geographical region, initially Uganda. However, the app's infrastructure was built in a way that allows for potential expansion to other coffee-producing regions in the future. This ensures scalability and adaptability as the app gains traction and popularity.

### [1.6 Significance of the study or purpose of the study](#)

The study that developed the coffee trading app held significant purpose and potential impact due to the following reasons:

**Empowered Coffee Farmers:** The app directly empowered coffee farmer unions by providing them with a digital platform to showcase their products, negotiate prices, and establish direct connections with buyers. This empowerment led to improved market access and increased economic opportunities for farmers.

**Promoted Fair Trade and Transparency:** By implementing transparent pricing mechanisms and direct communication channels, the app ensured fair trade practices. This transparency built trust between farmers and buyers, fostering long-term relationships based on mutual benefit.

**Expanded the Market:** The app's marketplace allowed coffee farmers to reach a broader audience of potential buyers beyond their local markets.

## CHAPTER 2: Literature Review

### 2.0 Introduction

COFARM is a mobile application which will enable coffee farmers who take their produce to the cooperative union and would require the cooperative union to do the marketing and selling for them.

### 2.2 Review of related literature

Ugandan Coffee Farmers Alliance, UCFA, has been using a smartphone app to monitor and manage coffee delivery. The app created in 2013 by software manufacturer SAP was part of the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH developPPP.de program, which they implemented on behalf of the German Federal Ministry for Economic Cooperation and Development (BMZ).

The software is streamlined to be used in the coffee sector and has benefited 13,000 UCFA farmers. UCFA is an alliance of about 54,000 small coffee farmers. Ugacof, which is Uganda's leading coffee exporter, with about 11,000 affiliate members also uses the app. An employee of UCFA records every sack of coffee using a registered smartphone. The farmer then receives by SMS the confirmation of delivery and payment. You can as well use the app for cashless payment.

Carsten Friedland, who is a product developer at SAP explained that "The UCFA has simplified its administration processes, yet at the same time it now analyses the data with much greater accuracy. This offers other benefits for members." UCFA in the first harvest season was able to cut up to 14% of its administrative cost.

Another benefit the program provides farmers is the access to credit and investments to small farmers. Banks are able to get recorded data from the app as a form of evidence for income. Before the advent of the app, farmers were not able to show enough evidence of needed securities like income and land ownership.

This app has brought about transparency and efficiency in coffee production in Uganda, Africa's second largest coffee producer. With the positive feedback recorded, SAP is now working to adapt the app for use with other products in Uganda and other countries (GIZ).

#### 2.2.1 What I Adopted

**Mobile App:** Considered developing a mobile app that is user-friendly and accessible to both farmers and buyers, similar to the one used by UCFA.

**Transparent Pricing:** Implemented a transparent pricing mechanism that factors in quality, market trends, and other relevant factors to ensure fair pricing for both sellers and buyers.

**Direct Communication:** Included a direct communication channel within the app to facilitate real-time messaging, negotiations, and the exchange of product-related information between farmers and buyers.

**Confirmation and Payment:** Provided confirmation of delivery and payment through SMS or other convenient means to ensure transparency and trust in the transaction process.

**Data Analysis:** Considered incorporating data analytics features that allow for the analysis of transaction data, which can provide valuable insights and benefits for both users and administrators.

### 2.2.2 Weaknesses of the reviewed literature

**Limited Scope:** The UCFA app appears to be primarily focused on the coffee industry. If my trading app is intended for a broader range of products or industries, you may need to adapt its features and functionalities accordingly.

**Dependency on Mobile:** The UCFA app relies on mobile phones for data entry and communication. If your target users have limited access to smartphones or the internet, it could be a barrier to adoption.

**Data Security:** Given that the app handled sensitive transaction and financial data, ensuring robust data security and privacy features is crucial. Any weaknesses in data security could pose significant risks.

**User Training:** The UCFA app's success was partly attributed to the training provided to users. Ensuring that your app offers effective user training and support is essential, especially for users who may not be tech-savvy.

### 2.2.3 Additions to the body of knowledge

**Identify Applicable Features:** Identifies features and practices from the UCFA app that are directly applicable to my trading app. This may include transparent pricing mechanisms, direct communication channels, confirmation and payment methods, and data analysis capabilities.

**Enhance User Experience:** Paid attention to the user experience (UX) design. Made sure that the app is intuitive and user-friendly, providing clear instructions and support for users who may not be familiar with the technology.

**Strengthen Security:** Given that your app will likely handle sensitive transaction data, prioritize robust security measures to protect user information and financial transactions.

### 2.3 Conclusion and Summary

In conclusion, the development of the Cofarm app represented a significant step forward in the world of commerce, offering a platform that empowers both producers and buyers. Drawing inspiration from the successful model of the Ugandan Coffee Farmers Alliance's app, our trading app aspires to provide a versatile solution that addresses a range of industries and products.

The key takeaways from this endeavour included:

**Empowerment through Technology:** Our app aimed to empower farmers, producers by providing them with a user-friendly digital platform. It enables them to showcase their products, connect with buyers, and conduct transactions efficiently, expanding their market reach.

**Transparency and Fairness:** The transparent pricing mechanisms and direct communication channels within the app promote fair trade practices, building trust between buyers and sellers. This transparency fosters mutually beneficial, long-term relationships.

**Continuous Improvement:** We emphasize the importance of user feedback and data analysis to drive ongoing improvements. The app's features and usability will evolve in response to user needs and market trends.

In summary, our trading app builds upon the knowledge and successes of existing solutions while contributing new insights and adaptability to the ever-changing landscape of commerce. By providing a versatile and user-friendly platform, we aim to facilitate fair and transparent trade, empower businesses, and drive economic growth for all stakeholders involved.

## CHAPTER THREE: METHODOLOGY

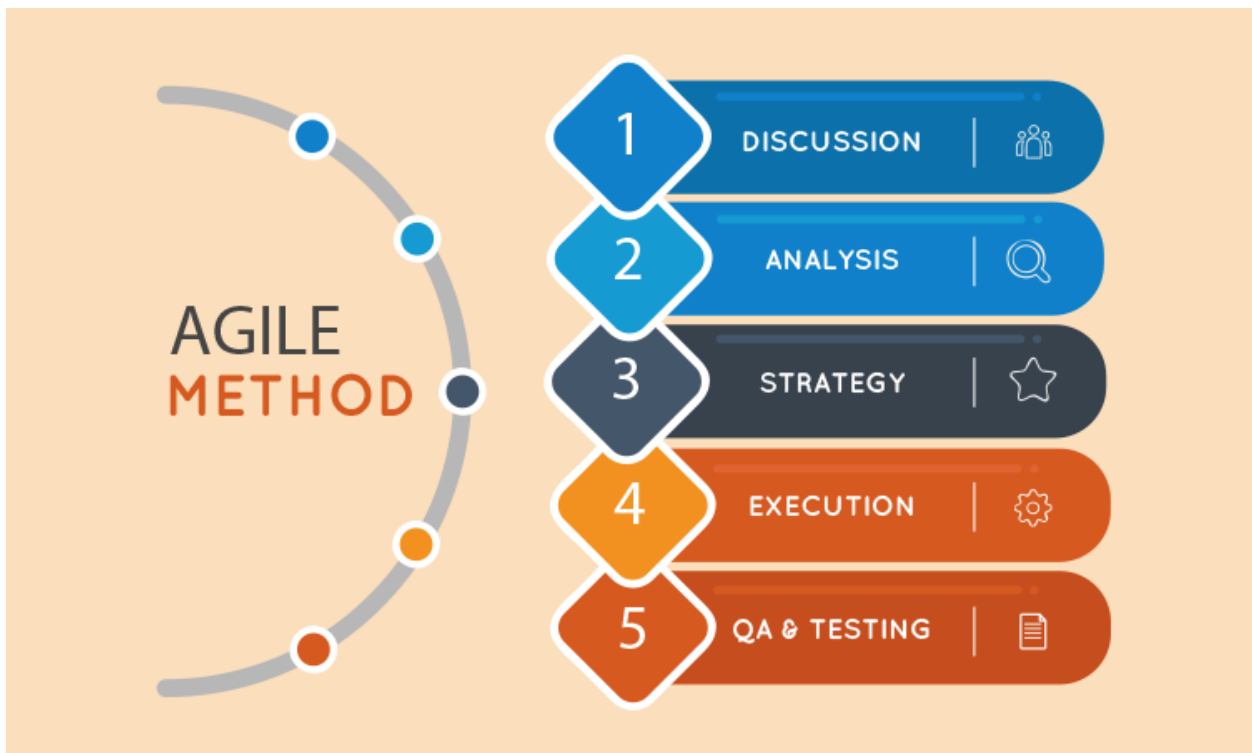
### 3.0 Methodology

The methodology section describes the process taken to create Cofarm, with a focus on the steps required in developing, implementing, and assessing the app's functionality. This section seeks to provide a clear explanation of the systematic process used to develop a strong and user-friendly software for managing coffee trade. The proposed project will employ agile methodology, and it consists of two people to develop a system to analyse and make predictions based on the models.

#### **Methodology used;**

Agile practices involve discovering requirements and developing solutions through the collaborative effort of self-organizing and cross-functional teams and their customer(s)/end user(s). It advocates adaptive planning, evolutionary development, early delivery, and continual improvement, and it encourages flexible responses to change.

*Figure 1: Agile Methodology*



In figure 1 above is visual description showing how the agile Methodology operates

### 3.1 Research Design

*Table 1: Research Design*

Number	Specific objectives	Techniques and tools
1	To research coffee farmers' present difficulties in order to identify their shortcomings and provide a remedy in the proposed application.	<ul style="list-style-type: none"><li>• Web Scrapping</li><li>• Observation</li></ul>
2	To create a Cofarm app prototype that adheres to our design guidelines	<ul style="list-style-type: none"><li>• Use of Case Diagrams</li><li>• Data Flow Diagrams(DFDs)</li></ul>
3	Implement a Cofarm app prototype that matches our design standards.	<ul style="list-style-type: none"><li>• Android Studio</li><li>• MY SQL</li></ul>
4	To ensure that our Cofarm mobile application is error-free, we must test and certify its performance.	<ul style="list-style-type: none"><li>• Android Phone</li><li>• Android Implementer</li></ul>

*In Table 1 above: this depicts how I researched for this project.*

### 3.2 Web Scrapping

Web scraping is the practice of obtaining information from websites. It entails programming code to browse web pages automatically, retrieve the needed information, and store it for subsequent analysis or usage. Web scraping used for a variety of reasons, including data collection, market research and competitive analysis.

### 3.3 Observation

The observation method is a gathering strategy that involves directly witnessing and recording behaviors, events, or occurrences of coffee diseases and their treatments. It entails conducting structured and objective observations and documentation of specific characteristics of interest.

### 3.4 Design Tools

Visual Studio (IDE): Visual Studio Code provides a flexible and customized working environment for a wide range of programming languages and frameworks by combining a lightweight code editor with strong features, extensions, and integrations.

Use case diagrams: Represents the interactions between actors (people, systems, or external entities) and the system under development. They depict the system's many use cases or functionalities and how they relate to various actors.

ER Diagrams: ER diagrams visualize the entities, relationships between entities, and attributes associated with them to depict the logical structure of a database system.

### 3.6 Implementation

The building of the Cofarm app during the implementation phase using the established requirements and design guidelines. The frontend and backend parts of the app will be built using php, html, JavaScript, and Visual Studio as the IDE to ensure its functioning and usability.

### 3.7 Testing and Validation

Cofarm app through a test to sniff out any issues and fix them. A number variety of testing techniques, including unit testing, integration testing, and user acceptability testing, to ensure my apps' usability and performance.

## CHAPTER 4: SYSTEM ANALYSIS AND DESIGN

### 4.1 Presentation of Findings:

This section presents the findings of the study based on data collected from app usage analysis. It highlights key insights from coffee farmer unions, individual farmers, and potential buyers, shedding light on their preferences, challenges, and expectations regarding a digital coffee trading platform.

### 4.2 Strengths and Weaknesses of the Current System:

The strengths and weaknesses of the current coffee trading system are identified through the study:

#### **Strengths:**

- Existing farmer unions facilitated some level of collective bargaining power.
- Local market presence allowed for face-to-face interactions between farmers and buyers.
- Informal knowledge sharing and support networks exist within these unions.

#### **Weaknesses:**

- Limited market reach beyond local boundaries.
- Lack of price transparency and standardized pricing mechanisms.
- Challenges in timely and secure delivery of coffee to buyers.
- Difficulty in showcasing sustainable practices and certifications.

### 4.3 Developed System - Introducing the Cofarm App:

The coffee trading app aims to address the limitations of the current system and enhance the trading process. It provides an online platform that facilitates direct interactions between coffee farmer unions and potential buyers.

#### **Key Features of the Proposed System:**

- **Marketplace:** A user-friendly marketplace where coffee farmer unions list their products with detailed descriptions, origin information, and quality attributes.

- **Transparent Pricing:** The app implements a transparent pricing mechanism, considering quality, coffee varieties, and market trends, fostering trust between farmers and buyers.
- **Direct Communication:** Real-time messaging features enable farmers and buyers to negotiate, clarify details, and build relationships.
- **Logistical Support:** Integration with trusted partners for transportation and packaging ensures timely and secure delivery of coffee.

#### 4.3.1 Requirements Specification:

The requirements specification outlines the functional and non-functional requirements of the proposed coffee trading app:

##### **Functional Requirements:**

- **User Profiles:** Buyers create and manage profiles.
- **Product Listings:** Farmers list their coffee products with descriptions and images.
- **Messaging Platform:** Real-time messaging facilitates direct communication.
- **Transparent Pricing:** Pricing calculation based on quality and market trends.
- **Logistical Support:** Integration with transportation and packaging partners.
- **Sustainability Section:** Farmers showcase sustainable practices and certifications.
- **Data Analytics:** Provides market insights and buyer preferences.

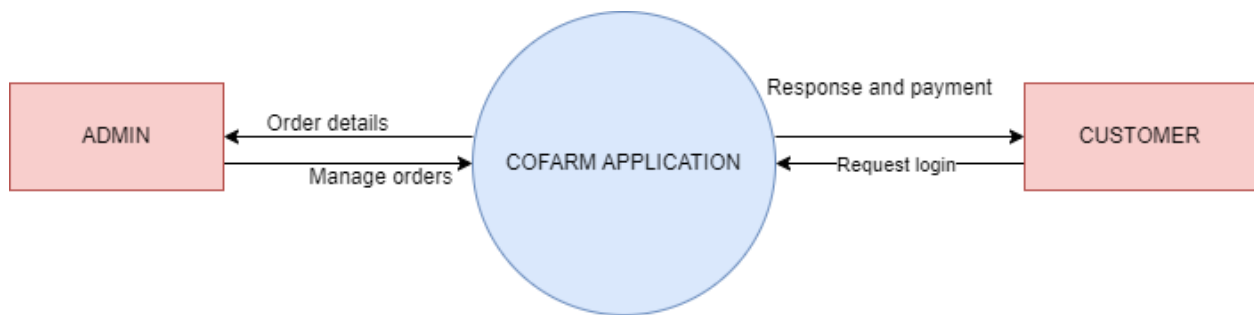
##### **Non-Functional Requirements:**

- **Usability:** Intuitive user interface for easy navigation.
- **Security:** Secure data storage and payment gateways.
- **Scalability:** Built to accommodate potential expansion.
- **Performance:** Fast loading times and responsiveness.
- **Reliability:** Ensures stable and uninterrupted service.

#### 4.4 CONTEXT DIAGRAM (DFD Level 0)

In the logical design processes, data flow diagrams were used to show how information moved through the development system. Data flow diagrams show the procedures that the app's users use to run the program. Additionally, it shows how the entities interact with the system.

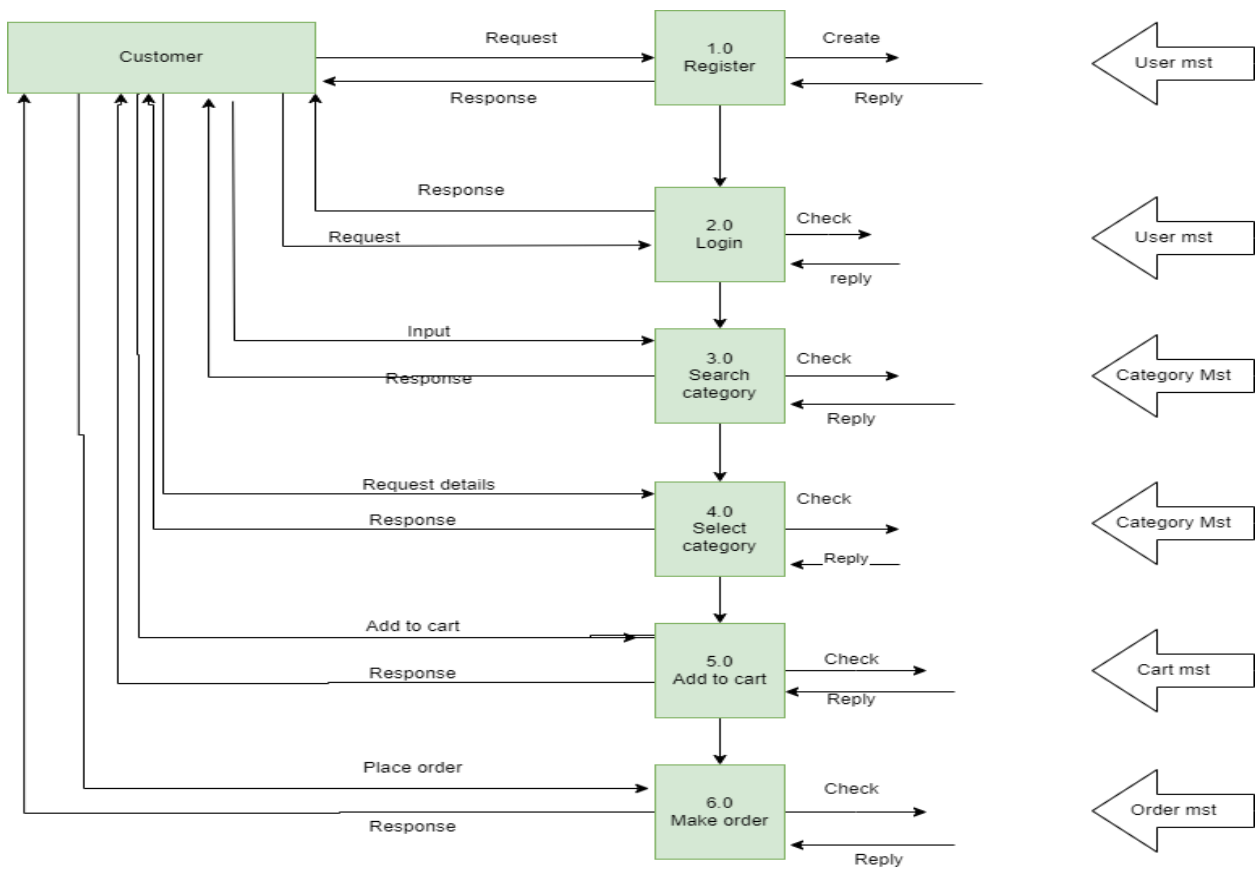
*Figure 2: DFD LEVEL 0*



*In Figure 2, this shows the process of the admin and the user*

#### 4.4.1 DATA FLOW DIAGRAM (DFD LEVEL 1) USER SIDE

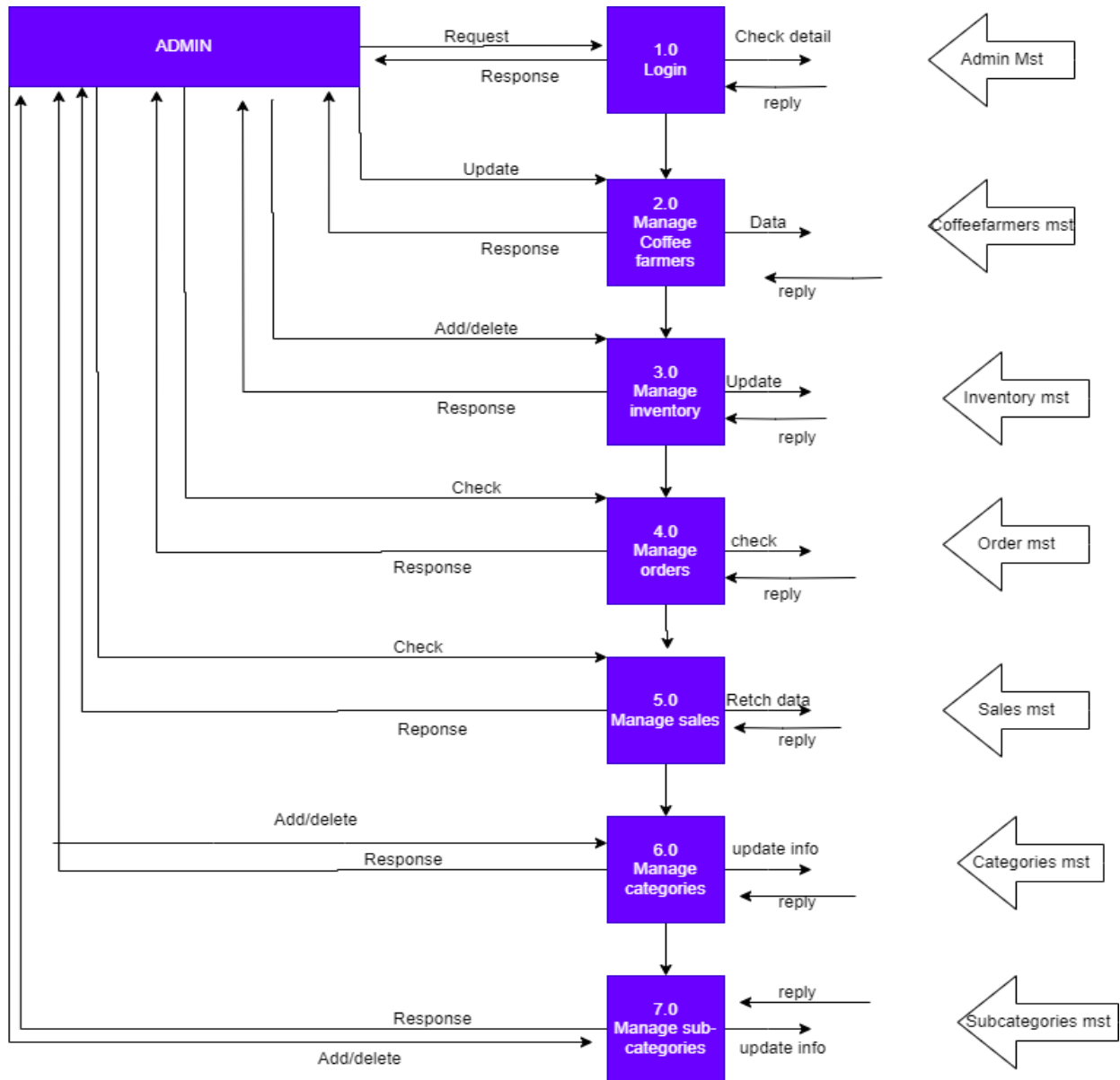
Figure 3: DFD LEVEL 1 User side



In Figure 3 above is the DFD Level 1 for the user, it depicts how the customer will interact with the Cofarm application.

#### 4.4.2 DATA FLOW DIAGRAM LEVEL 2 ADMIN SIDE

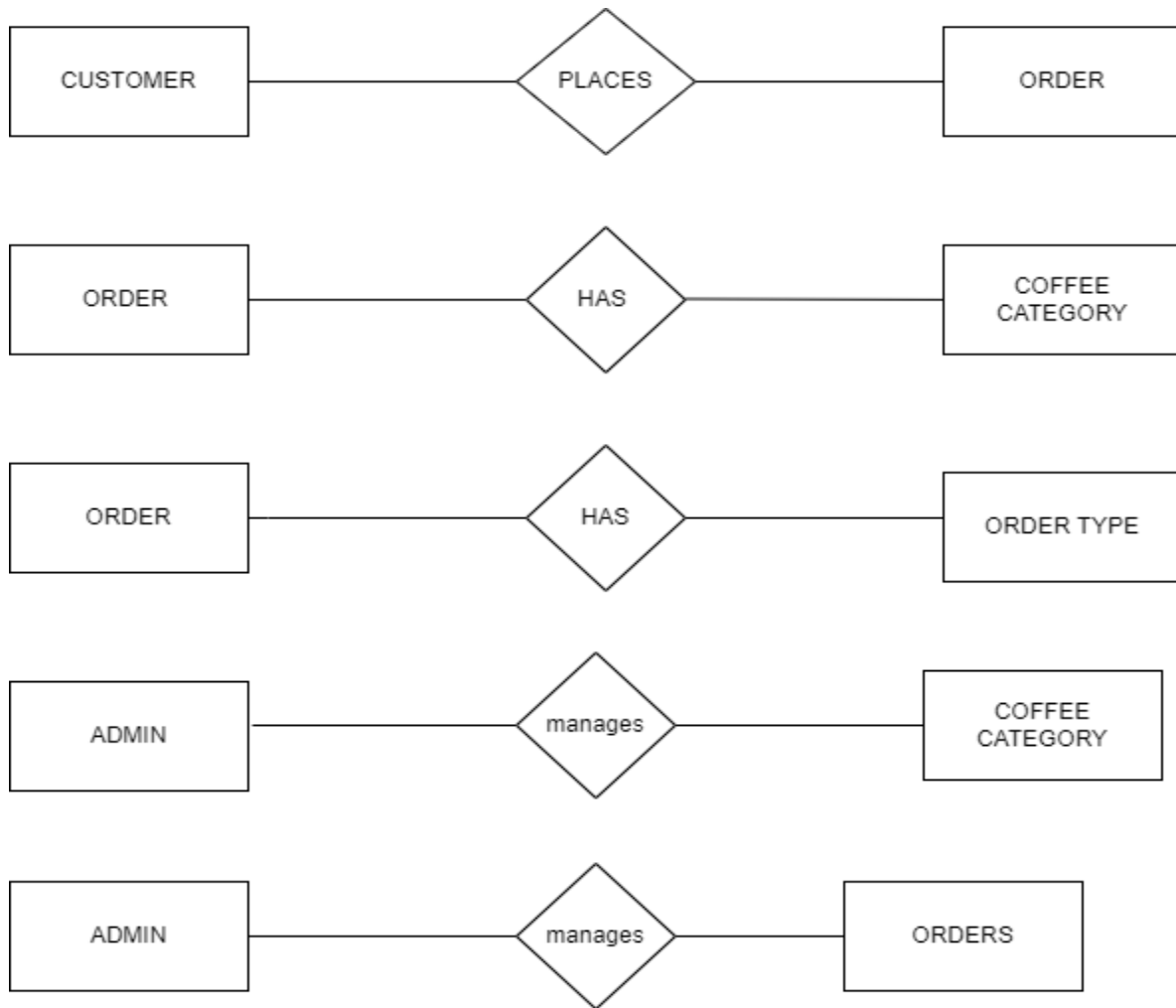
Figure 4: DFD LEVEL 2 Admin Side



In Figure 4 above is the DFD level 2, depicts how the admin will manage the whole application.

#### 4.4.3 ENTITY RELATIONSHIP DIAGRAM:

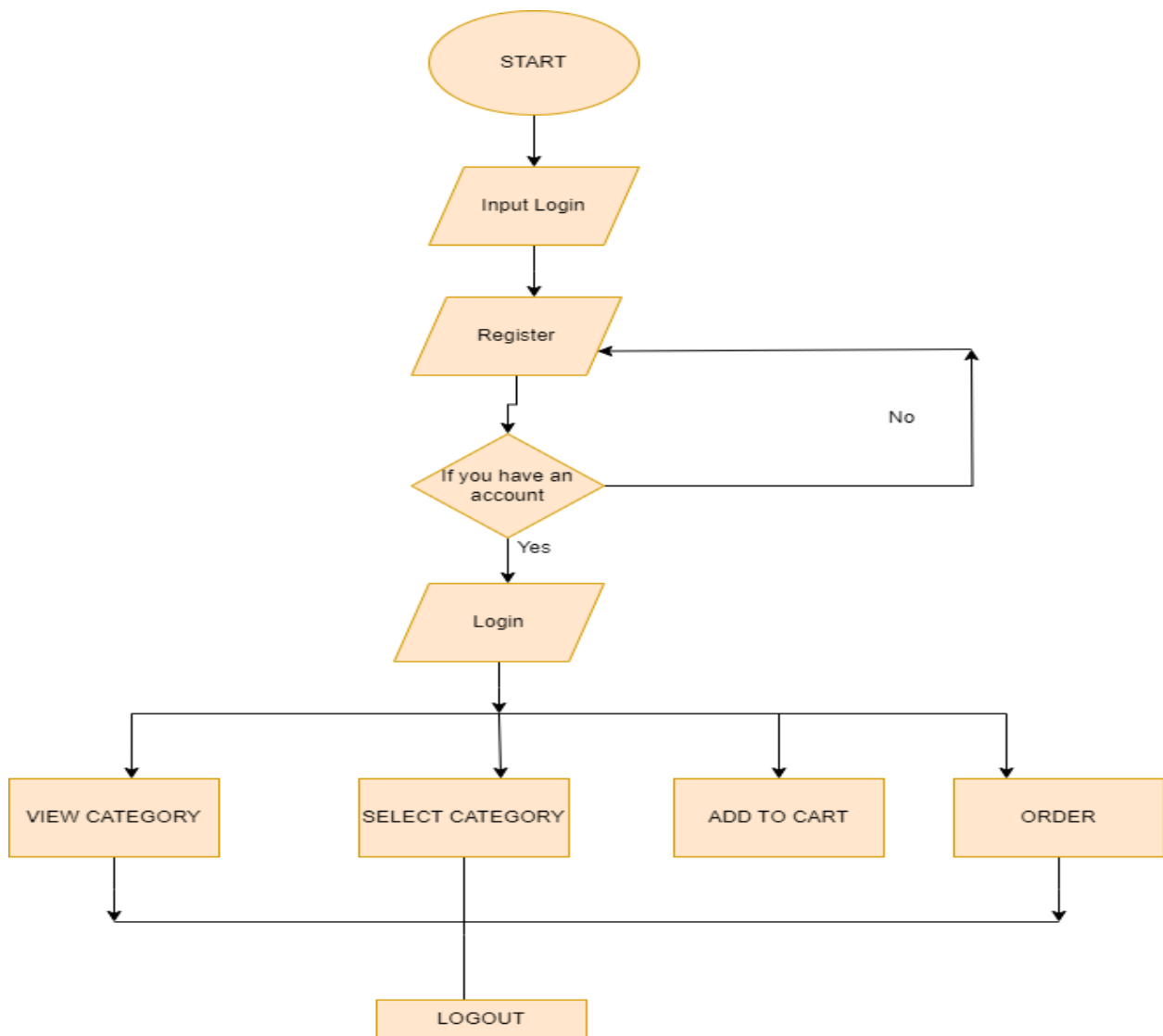
*Figure 5: Entity Relationship Diagram*



*In Figure 5 above is the entity relationship diagram, which is visual representation of the entities (objects or concepts), attributes (properties of entities), and the relationships between entities within the database.*

#### 4.4.4 FLOW CHART

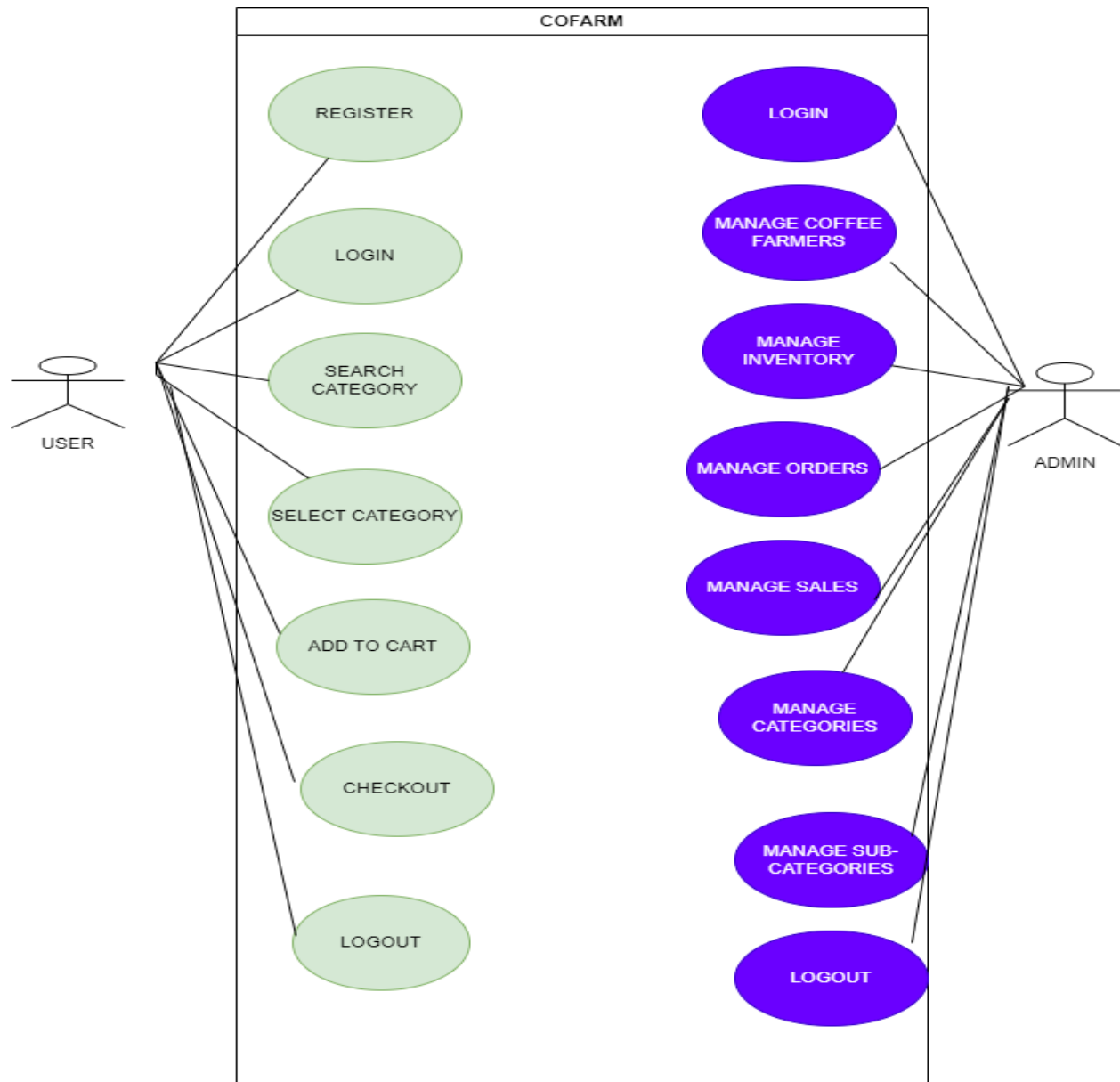
Figure 6: Flow Chart



In Figure 6 above is the flow chart, graphical representation of a process or system that uses various symbols and arrows to depict the flow of steps for the user.

#### 4.4.5 USE CASE DIAGRAM

Figure 7: Use Case Diagram



In Figure 7 above is the use case diagram, this is visual representation of the interactions between different actors (users or external systems) and a system (typically software) to describe the system from a user and admin perspective.

#### 4.4.6 DATA DICTIONARY

*Table 2: Data Dictionary*

ENTITY	ATTRIBUTES	DATA TYPES	CONSTRAINTS
USER	User ID F Name L Name Gender	INT(30) VACHAR (250) VARCHAR (250) VARCHAR (250)	NOT NULL NOT NULL NOT NULL NOT NULL
COFFEE CATEGORY	ID Category Description	INT(30) Varchar (250) TEXT	NOT NULL NOT NULL DEFAULT NULL
ORDERS	ID Client ID Payment Method	INT (30) INT (30) VARCHAR (100)	NOT NULL NOT NULL NOT NULL
INVENTORY	ID Product_ID QUANTITY	INT (30) INT (30) DOUBLE	NOT NULL NOT NULL NOT NULL
CART	ID INVENTORY_ID QUANTITY	INT(30) INT (30) INT (30)	NOT NULL NOT NULL NOT NULL
SALES	ID ORDER_ID TOTAL_AMMOUNT	INT (30) INT (30) DOUBLE	NOT NULL NOT NULL NOT NULL

*In Table 2 above*, a repository that provides detailed information about the data elements (fields or attributes) used within a database, dataset, or information system.

## CHAPTER 5: IMPLEMENTATION

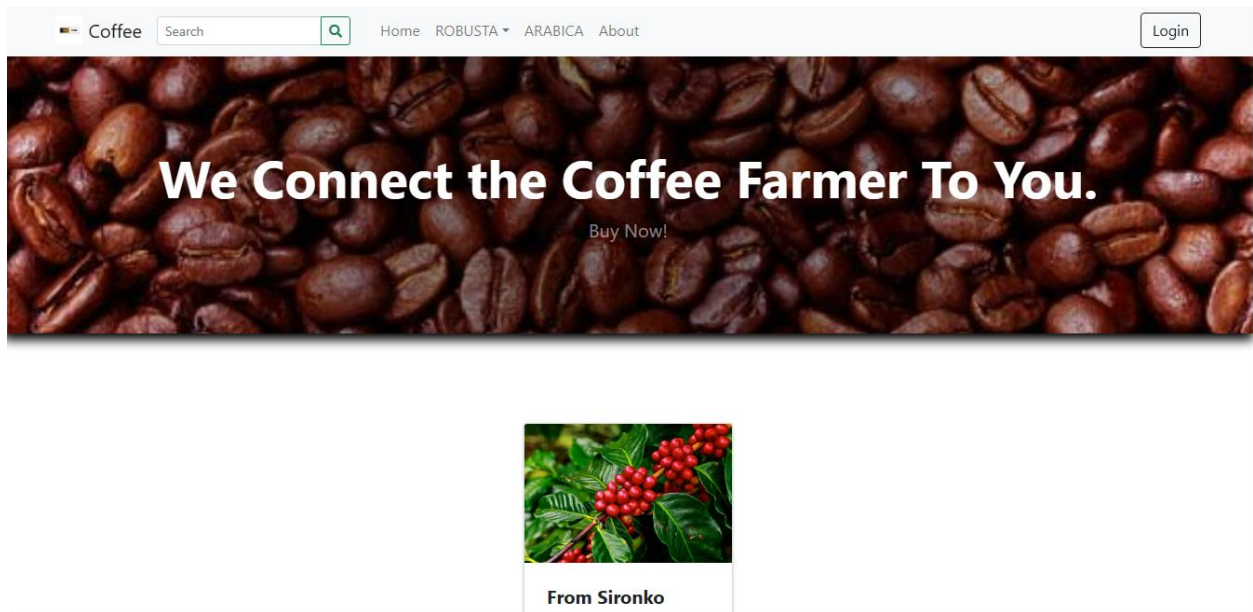
### 5.1 Introduction

This section involved implementation of the project idea into the app.

### 5.2 Print Screens:

Visual representations of key screens and functionalities of the app will be provided in this subsection.

*Figure 8: The Initial Homepage*



*In Figure 8 above is the initial homepage, which shows what the customer will view after accessing Cofarm this is how it looks like.*

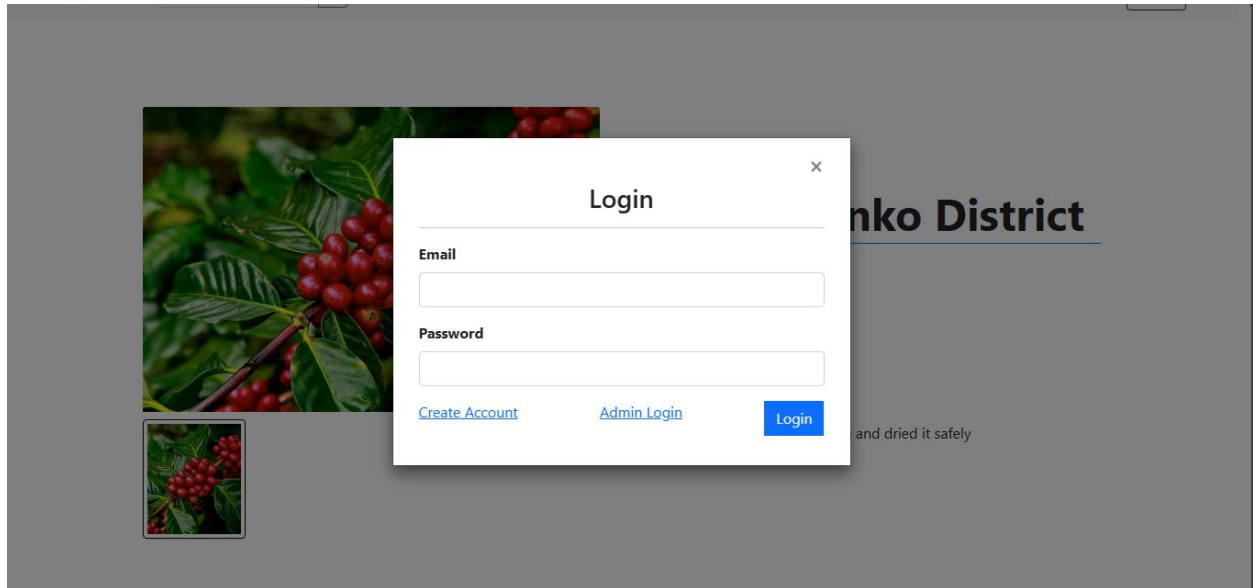
Figure 9: REGISTRATION PAGE

The image shows a registration form titled "Create New Account" with a close button (X) in the top right corner. The form contains the following fields:

- Firstname**: A text input field.
- Lastname**: A text input field.
- Contact**: A text input field.
- Gender**: A dropdown menu with "Male" selected and a downward arrow.
- Default Delivery Address**: A large text area for address input.
- Email**: A text input field.
- Password**: A text input field.

*In Figure 9 above is the registration, this is the point at which the customer has to register in order to log in and interact with Cofarm.*

Figure 10: LOGIN PAGE



*In Figure 10 above is the login page, after the customer registers successfully they can login at this point and view the different coffee options of various farmers.*

Figure 11: VIEW PRODUCT



## From Sironko District

By: John Masaba

₱ 5,000

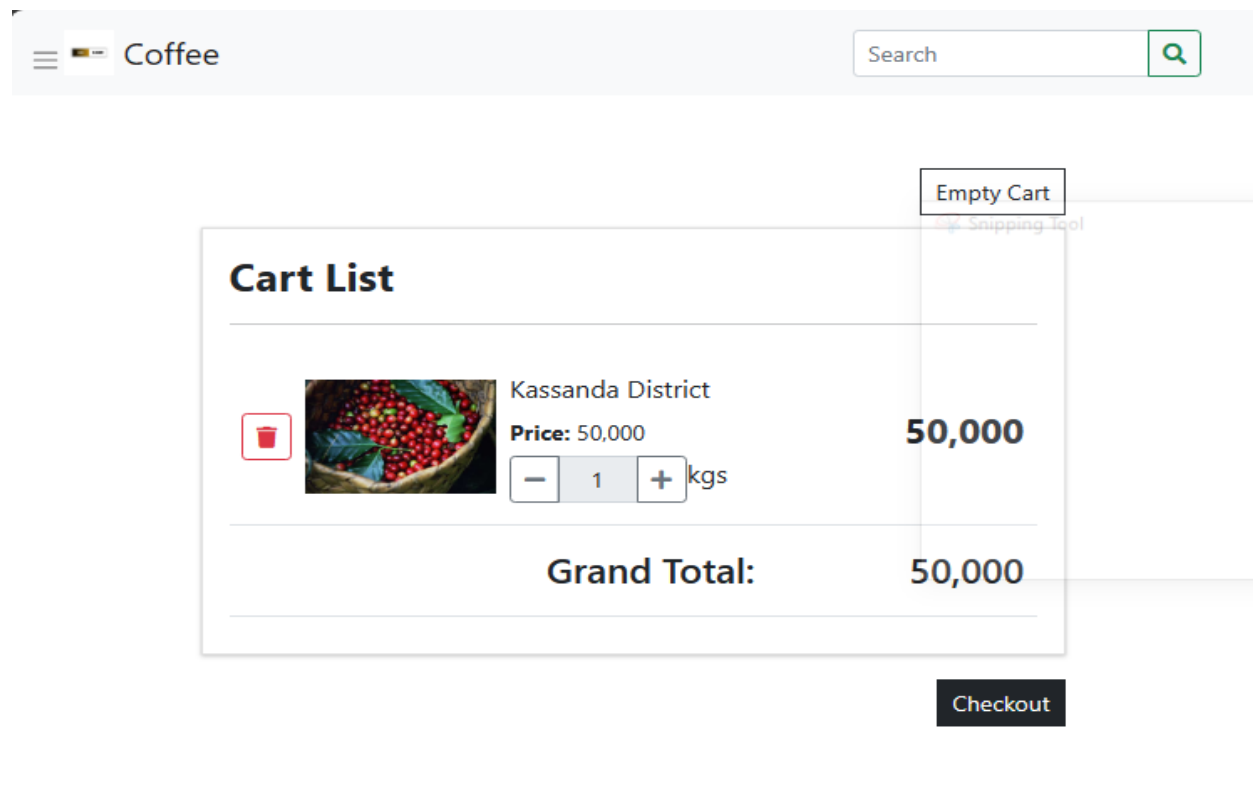
Available Stock: 12

I harvested this two months ago and dried it safely



In Figure 11 shows where the user logs in and proceeds to add to cart.

Figure 12: ADDING TO CART



In Figure 12, the adding to cart at which the customer chooses the quantity they want and proceeds to the checkout.

Figure 13: CHECKOUT

---

☰ Coffee  🔍

### Checkout

**Order Type**

For Delivery     For Pick up

**Delivery Address**

**Total: 50,000**

---

**Payment Method**

---

In Figure 13 above, the image shows the point where a customer makes an order which the admin will then accept.

### 5.3 System Testing:

System testing was a crucial step to ensure that the app functioned as intended. The following testing methodologies were employed:

- **Functionality Testing:** Verified that all app features worked correctly, from product listings to messaging functionalities.
- **Usability Testing:** Involved potential users in navigating the app and providing feedback on user-friendliness.
- **Compatibility Testing:** Ensured the app worked smoothly on various devices and platforms.
- **Security Testing:** Assessed the app's security measures to protect user data and transactions.

### 5.4 Validation:

Validation involved assessing whether the developed app met the intended objectives and user expectations. The following aspects were considered during validation:

- **User Feedback:** Gathered feedback from coffee farmer unions, individual farmers, and buyers regarding the app's usability, features, and overall performance.
- **Functionality Alignment:** Ensured that the app's features aligned with the proposed system's goals and objectives.
- **Market Response:** Observed the adoption rate and satisfaction level of users to validate the app's value.

### 5.5 Limitations:

While the coffee trading app presented numerous benefits, it's important to acknowledge potential limitations:

- **Technological Barriers:** Some farmers or buyers may have had limited access to smartphones or the internet, affecting their ability to fully engage with the app.
- **Language and Literacy:** Language barriers or low digital literacy levels among certain users might have hindered their interaction with the app.
- **Internet Connectivity:** The app's effectiveness relied on stable internet connectivity, which could have been a challenge in some regions.

## CHAPTER 6: Recommendations and Conclusions

### 6.0 Introduction

The final section of the project report provided a concise summary of the entire study's purpose, methodology, findings, and implications. This section served as a culmination of the project's journey, highlighting the significance and potential impact of the coffee trading app for coffee farmer unions and buyers.

### 6.1 Recommendations:

Based on the comprehensive study conducted, the following recommendations were put forth:

**User Training:** To overcome potential technological barriers, training sessions were provided for farmers and buyers to enhance their digital literacy and effective use of the app.

**Localized Content:** Language options and localized content were considered to cater to a diverse user base, ensuring broader adoption.

**Offline Functionality:** Exploration was made into incorporating limited offline functionality to enable users to access certain features even in areas with intermittent internet connectivity.

**Continuous Improvement:** A feedback loop with users was established to continuously improve the app's features, responsiveness, and user experience.

### 6.2 Conclusion:

The coffee trading app served as a pioneering solution that revolutionized the way coffee farmer unions interacted with buyers, enhancing market access, transparency, and sustainability. The app empowered farmers, bridged geographical barriers, and fostered direct communication, contributing to the growth of the coffee industry.

### 6.3 Summary:

In summary, the study's journey from identifying challenges in the previous coffee trading system to proposing, developing, and validating a digital solution underscored the transformative potential of technology in the agricultural sector. The coffee trading app not only addressed market inefficiencies but also promoted fair trade, sustainability, and empowerment within the coffee community.

By integrating technology, promoting transparency, and fostering direct connections, the coffee trading app emerged as a beacon of positive change in the world of coffee trade, benefiting both farmers and buyers alike.

## APPENDIX

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