Business Requirements Document (BRD)

1. Project Overview

Small farmers often struggle to connect directly with consumers, facing challenges such as market access, pricing transparency, and managing sales efficiently. The current market landscape, dominated by intermediaries, leads to reduced profits for farmers and higher prices for consumers. This project aims to build an online platform that connects farmers directly with consumers, allowing farmers to list their products, view current market prices via a government API, and enabling consumers to browse, order, and communicate seamlessly.

2. Objectives

- **Direct Connection: Facilitate a direct link between farmers and consumers, eliminating intermediaries.**
- **Product Visibility: Allow farmers to list and showcase their produce effectively.**
- **Market Insights: Provide farmers with access to real-time market prices to inform pricing strategies.**
- **User-Friendly Experience: Enable consumers to easily search, filter, and purchase products.**
- **Enhanced Communication: Improve interaction between farmers and consumers through integrated messaging and notifications.**

3. Scope

This project will include:

- **Farmer-facing Features: Product listing, inventory management, market price viewing, order management.**
- **Consumer-facing Features: Product search, order placement, order tracking, reviews and ratings.**
- **Common Features: Integration with government APIs for market prices.**

4. Key Features and Requirements

4.1. Search and Discovery

- **Search Products: Consumers can search for available products based on location, type, and price.**
- **Filter Options: Filter by category (fruits, vegetables, dairy), price range, and availability.**
- **Farmer Profiles: Display profiles with ratings, location, and product offerings.**

4.2. Product Management

- **Product Listing: Farmers can add, edit, or remove products with details (name, description, price, quantity).**
- **Image Upload: Farmers can upload images of their products to enhance visibility.**
- **Inventory Tracking: Automatic inventory updates as orders are placed.**

4.3. Market Price Viewing

- **Real-Time Market Prices: Integrate with a government API to display current market prices for various produce.**
- **Price Comparison: Allow farmers to compare their prices with current market rates.**

4.4. Order Management

- **Order Placement: Consumers can place orders for selected products directly from the app.**
- **Order Tracking: Consumers can track their order status (pending, in progress, completed).**
- **Order History: Provide consumers with a history of their past orders for easy reference.**

4.5. Notifications

- **Order Notifications: Farmers receive notifications for new orders and updates.**
- **Consumer Notifications: Consumers receive alerts for order status changes and promotions.**
- **Market Alerts: Notify farmers of significant price changes in their products.**

4.6. Reviews and Ratings

- **Feedback System: Consumers can rate, and review farmers based on product quality and service.**
- **Profile Impact: Ratings will influence farmers' visibility and credibility on the platform.**

4.7. Analytics and Insights

- **Sales Analytics: Farmers can view sales trends, popular products, and customer preferences.**
- **Performance Reports: Monthly reports showing revenue, order volume, and customer engagement metrics.**

5. Functional Requirements

5.1. Frontend (React & TypeScript)

- **Homepage: Overview of the application with featured products and a search bar.**
- **Login Page: Secure login for both farmers and consumers.**
- **Signup Page: Registration forms for farmers and consumers.**
- **Search Page: Product search with filtering options (by category, price, location and rating).**
- **Order Management Dashboard: Consumer dashboard for tracking orders, managing preferences, and viewing order history.**
- **Notification Center: Centralized location for viewing notifications and alerts related to orders, messages, and promotions.**
- **Seller's Product Listings: Page displaying all products listed by a farmer, with options to add, edit, or remove products.**
- **Add Product Page: Form for farmers to add new products, including fields for images, descriptions, pricing, and quantity.**
- **Remove Product Page: Functionality for farmers to remove products from their listings, with confirmation prompts.**
- **Edit Product Page: Form for farmers to update existing product details, including images, descriptions, and pricing.**
- **View Earnings/Sales: Dashboard feature for farmers to view their total earnings, sales reports, and transaction history.**
- **View Market Price/Marketplace (Live): Integration to display current market prices in real-time, helping farmers make informed pricing decisions.**
- **Buyer's Cart/Saved Products: Feature allowing consumers to view and manage items in their cart i.e. saved products for future reference.**
- **Cancel Purchase Page for Buyer: Page allowing consumers to view their orders and cancel purchases if needed, with confirmation prompts.**

- **Profile Pages for Buyers and Sellers: Individual profile pages where users can view and edit their information, including contact details and preferences.**

5.2. Backend (Node.js)

- **User Management: Authentication and authorization for both farmers and consumers.**
- **Product Management: CRUD operations for product listings and inventory management.**
- **Order Processing: Comprehensive order lifecycle management.**
- **Notification System: Push notification service for real-time updates.**
- **Reporting Module: Generate analytics reports for farmers.**

6. Non-Functional Requirements

- **Performance: The system must handle peak loads, especially during harvest seasons.**
- **Security: Ensure secure handling of user data and transactions by means of authorization and authentication.**
- **Scalability: The architecture should allow for easy scaling as the user base grows.**
- **Usability: The user interface must be intuitive, accommodating users with varying tech expertise.**

7. User Stories

As a Farmer:

- **I want to register for an account so that I can access the platform.**
- **I want to log in to my account so that I can manage my products and orders.**
- **I want to view and update my profile information to keep my contact details current.**

- **I want to easily list my products so that I can reach more customers.**
- **I want to view current market prices to price my products competitively.**
- **I want to add, edit, or delete my product listings as needed to ensure accuracy.**
- **I want to analyze my sales data to improve my business strategy and understand customer preferences.**

As a Consumer:

- **I want to register for an account so that I can place orders and manage my purchases.**
- **I want to log in to my account so that I can track my orders and profile.**
- **I want to search for produce options so that I can buy fresh products that meet my needs.**
- **I want to view and update my profile information to keep my contact details current.**
- **I want to add products to my cart so that I can purchase multiple items at once.**
- **I want to view my past purchases to keep track of what I've bought.**
- **I want to cancel a purchase if needed to ensure flexibility in my buying decisions.**
- **I want to download the payment invoice after payment**

8. Stakeholders

- **Farmers: Producers seeking to sell directly to consumers.**
- **Consumers: Individuals looking for fresh produce.**
- **Business Analysts: Interested in understanding market trends and user behavior.**
- **Government Agencies: Interested in promoting local agriculture and market access.**

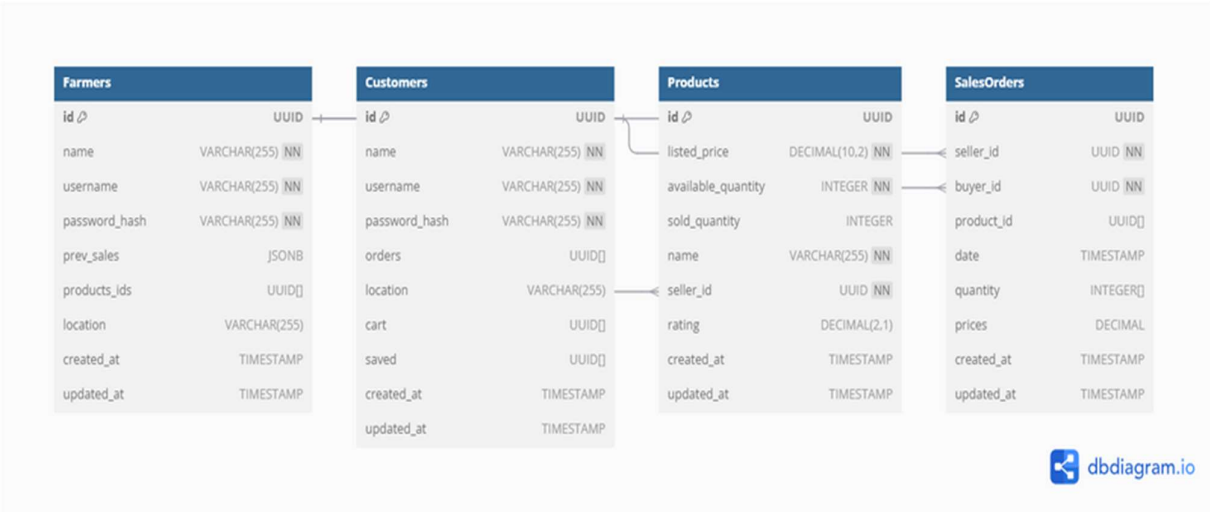
9. Timeline

- **API Design (1 day)**: Design and document the API endpoints required for communication between the frontend and backend.
- **Database Design (1 day)**: Define the database schema and relationships for farmers, consumers, products, orders, and reviews.
- **Backend Implementation (5 days)**: Develop the backend functionality, including user authentication, product management, order processing, and market price integration.
- **Frontend Implementation (5 days)**: Build the frontend components for both farmers and consumers, including pages for product listings, order management, and user profiles.
- **Frontend and Backend Integration (2 days)**: Connect the frontend with the backend APIs, ensuring data flows correctly between the two.
- **Testing and Deployment (1 day)**: Conduct thorough testing (unit, integration, and user acceptance), deploy the application, and finalize UI/UX improvements and bug fixes.

10. Success Metrics

- **Increased Sales: Measured by the number of transactions completed through the platform.**
- **Customer Satisfaction: Assessed through reviews and ratings from consumers.**
- **Farmer Engagement: Growth in active farmers using the platform and listing products.**
- **Market Insights Utilization: Frequency of farmers checking market prices and utilizing sales analytics.**

ER Diagram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username VARCHAR(255) NN
password_hash VARCHAR(255) NN
prev_sales JSONB
products_ids UUID[]
location VARCHAR(255)
created_at TIMESTAMP
updated_at TIMESTAMP
Customers
id UUID
name VARCHAR(255) NN
username VARCHAR(255) NN
password_hash VARCHAR(255) NN
orders UUID[]
location VARCHAR(255)
cart UUID[]
saved UUID[]
created_at TIMESTAMP
updated_at TIMESTAMP
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available_quantity INTEGER NN
sold_quantity INTEGER
name VARCHAR(255) NN
seller_id UUID NN
rating DECIMAL(2,1)
created_at TIMESTAMP
updated_at TIMESTAMP
SalesOrders
id UUID
seller_id UUID NN
buyer_id UUID NN
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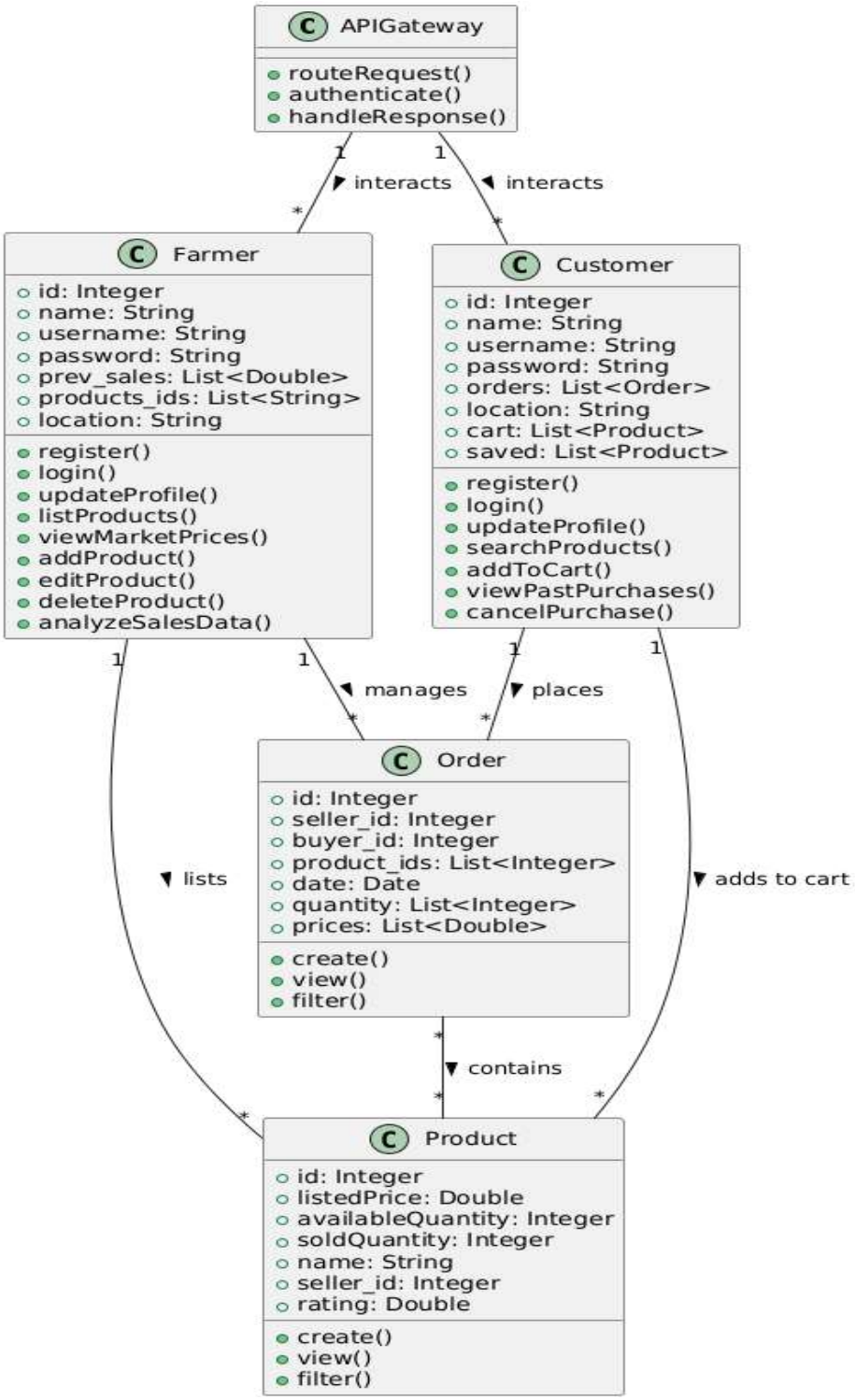
quantity INTEGER[]
prices DECIMAL
created_at TIMESTAMP
updated_at TIMESTAMP
dbdiagram.io

UML

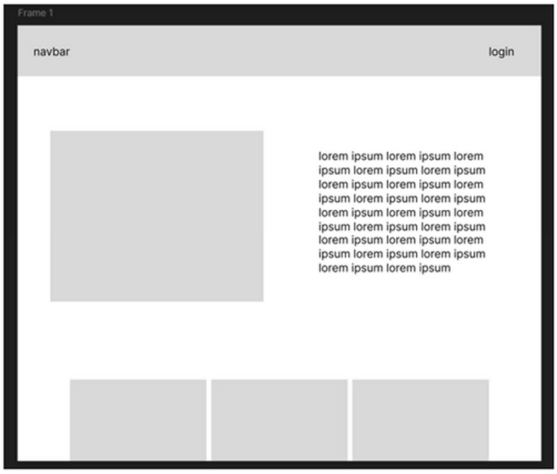
Class Diagram



Sequence Diagram

Wireframe

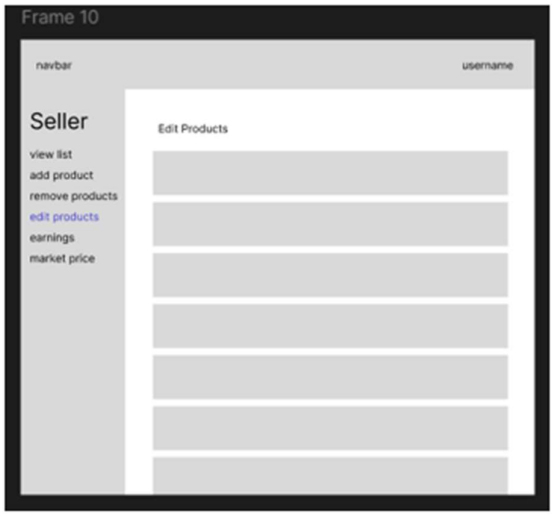
Home Page



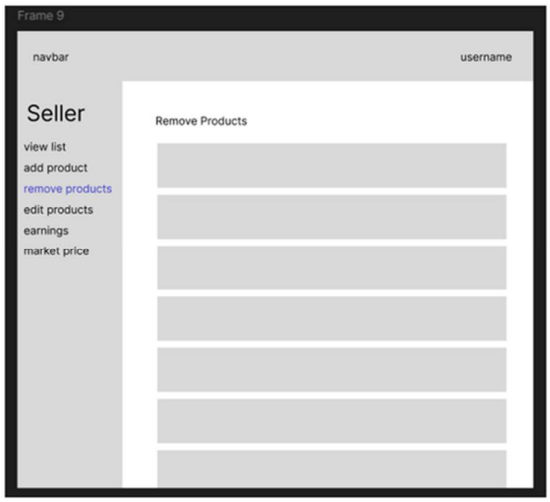
Login Page

Seller - Earnings

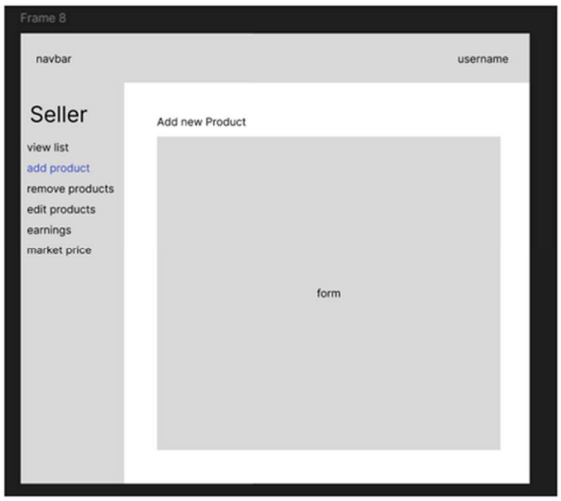
Seller - Edit Products



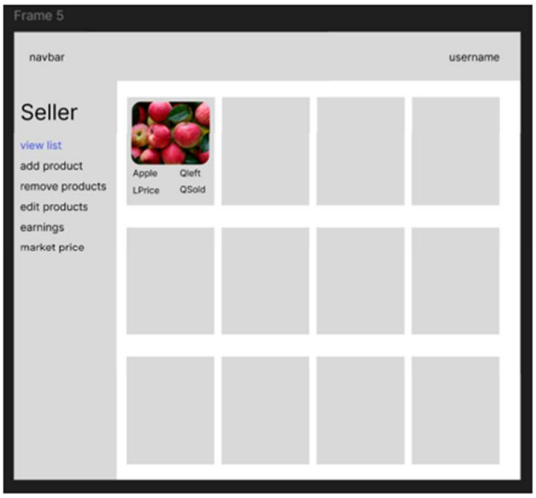
Seller - Remove Products



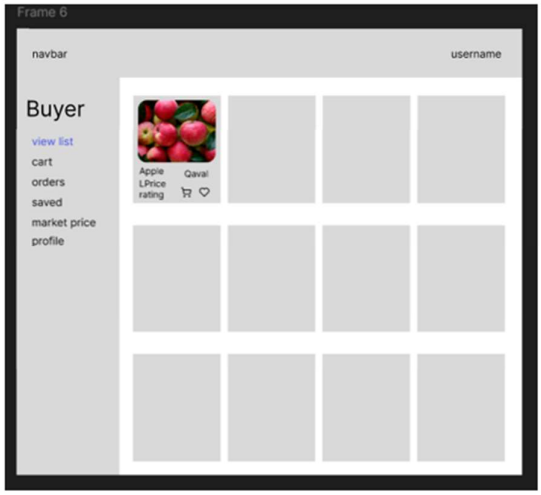
Seller - Add Product



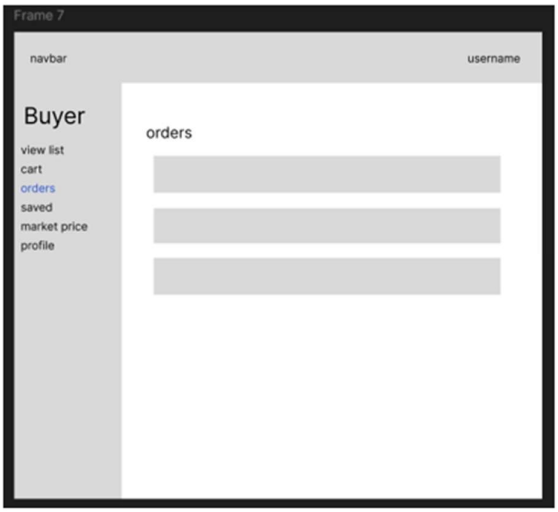
,, Seller - view listings



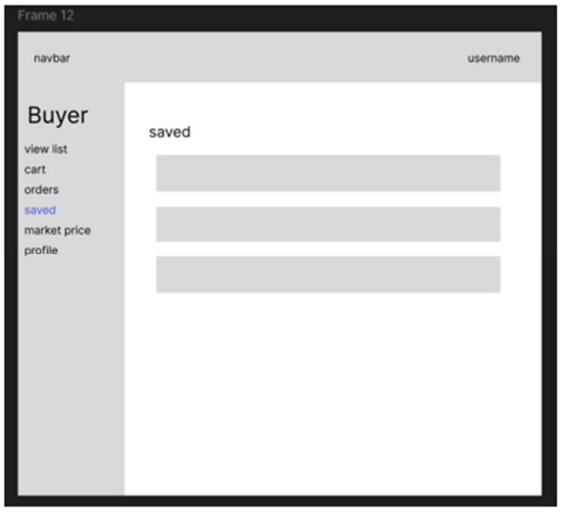
Buyer - view products



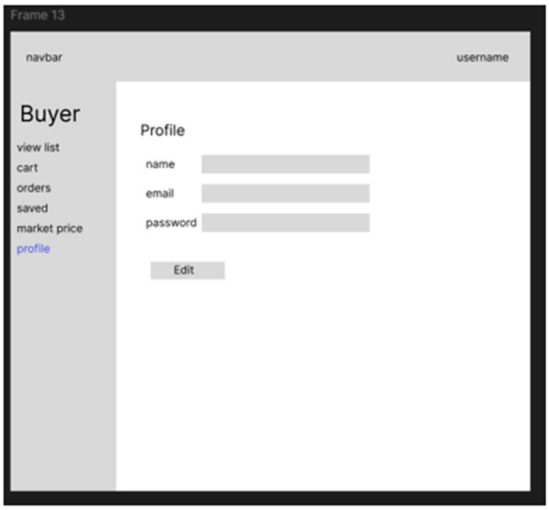
Buyer - Orders



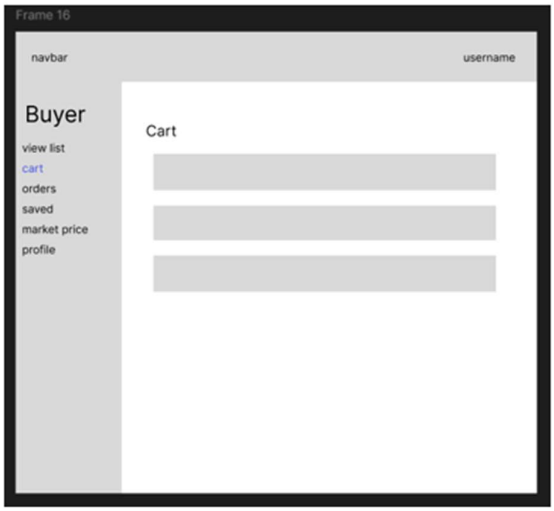
Buyer - Saved



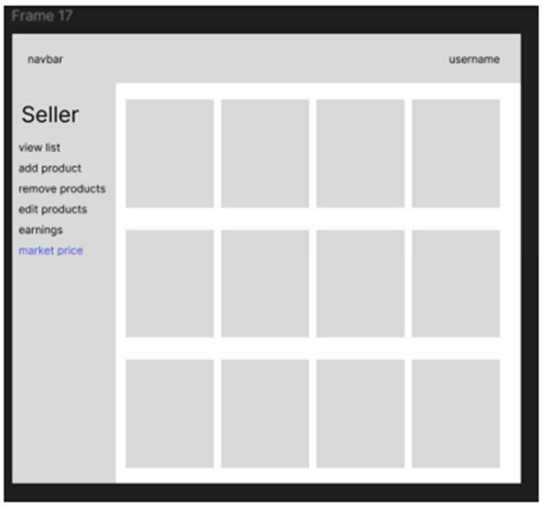
Buyer - Profile



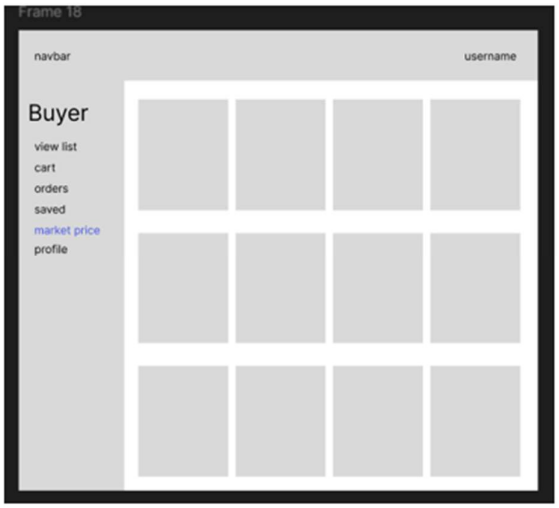
Buyer - Cart



Seller - Market Prices



Buyer - Market Prices



Buyer - Payment Portal