PRICING OPTIMIZATION VIEW

The **Price Optimization Tool** is a web-based application designed to help businesses optimize their pricing strategy by analyzing product data, demand forecasts, and market conditions. The tool offers a multi-functional interface with the following key features:

1. **Product Management**:
   a. Allows users to create, view, update, and delete product information including details like name, category, cost, selling price, stock, and sales based on their roles.
   b. Provides advanced search and filtering capabilities to efficiently find and organize products.
2. **Demand Forecast Integration**:
   a. Users can view demand forecasts for various products, displayed in a linear graph showing the relationship between demand and selling price.
3. **Pricing Optimization**:
   a. Recommends optimal prices for products based on demand, cost, and market conditions, helping businesses maximize profitability.
4. **User Roles and Permissions**:
   a. Implements dynamic user roles and permissions to ensure flexible access control, supporting various user types like admins, buyers, and suppliers.

The tool is built using Python with Django Rest Framework for backend development and React.js for the frontend, ensuring scalability and responsiveness. Data is stored in a relational database (PostgreSQL) with efficient indexing for performance.

User Roles and Permissions

The Price Optimization Tool incorporates dynamic user roles with different levels of access to ensure that each user type can perform the necessary tasks. The three primary user roles are **Admin**, **Supplier**, and **Buyer**, each with varying degrees of permissions:
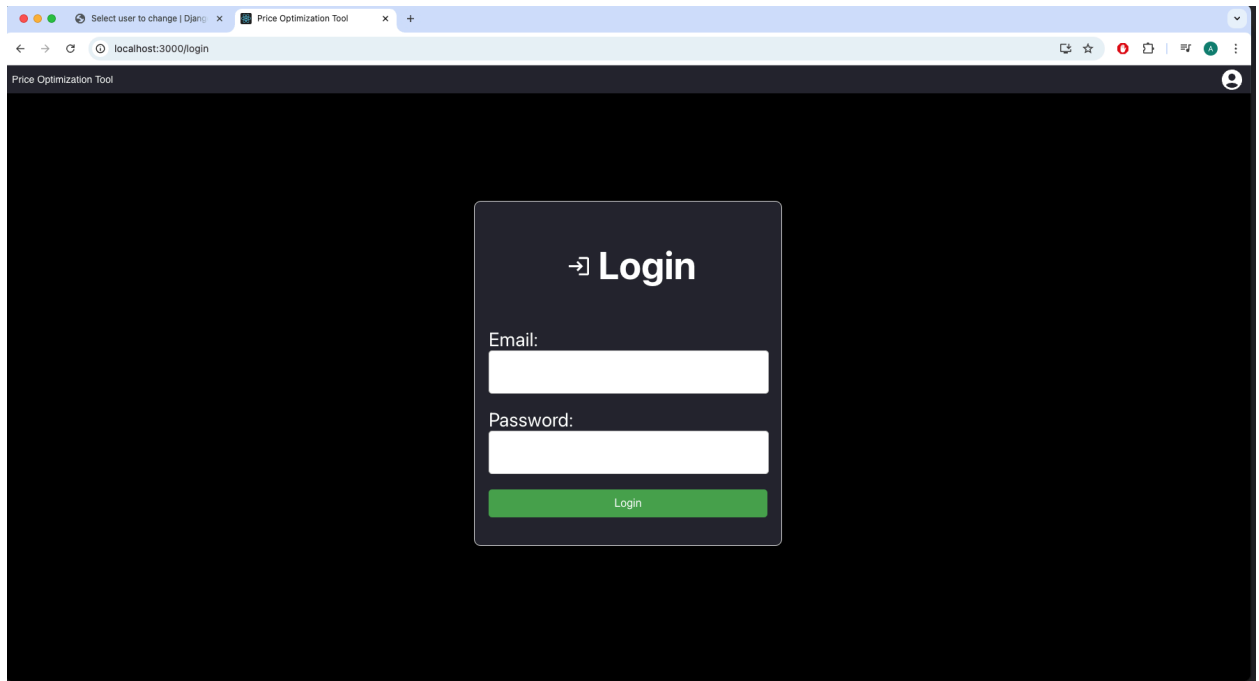
1. **Admin**:
   - **Product Management**: Can **view, add, update, and delete** product information.
   - **Demand Forecast**: Can view demand forecasts for all products.
   - **Pricing Optimization**: Can access and view optimized pricing recommendations for all products.
2. **Supplier**:
   - **Product Management**: Can **view, add, update, and delete** product information.
   - **Demand Forecast**: Can view demand forecasts for products they are associated with.
   - **Pricing Optimization**: Can access and view optimized pricing recommendations for their products.
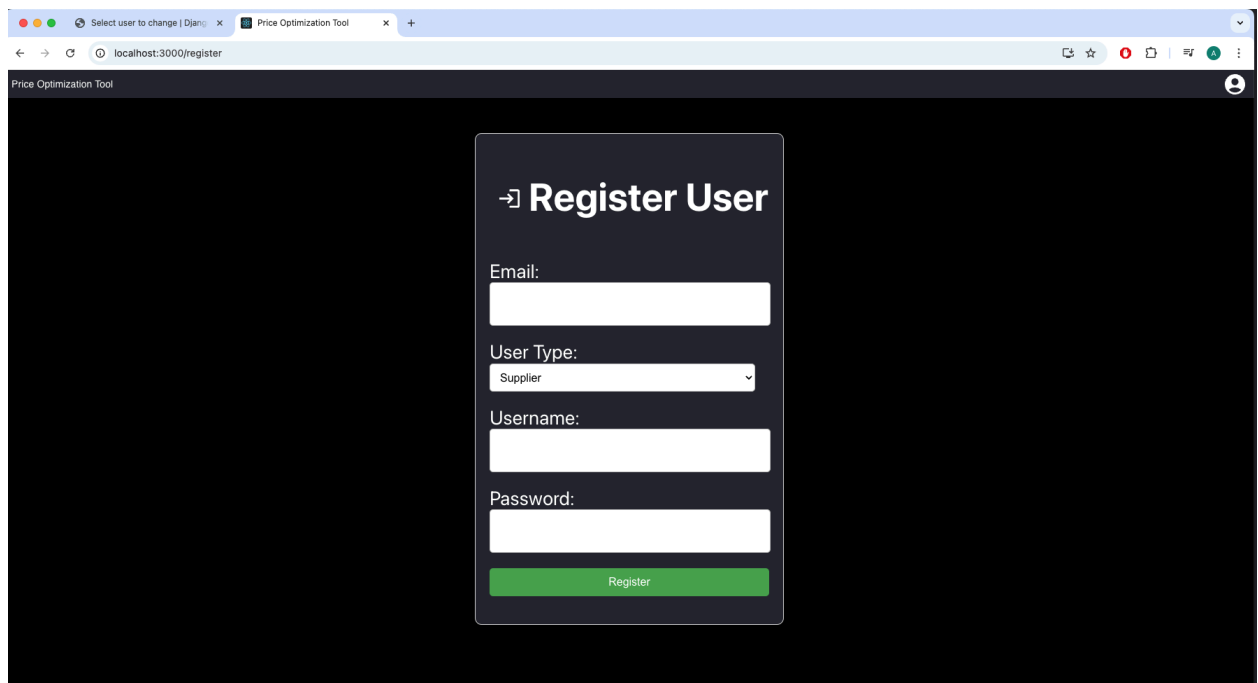3. **Buyer**:
   - **Product Management**: Can **only view** product information (no permissions to add, update, or delete).
   - **Demand Forecast**: Can view demand forecasts for the products.
   - **Pricing Optimization**: Can view optimized pricing recommendations, but cannot modify or manage them.

A. **Landing Page :** The landing page serves as the initial point of entry to the application. It provides an overview of the available features and options for both registered and unregistered users. The landing page includes call-to-action buttons for registration, login, and access to other key sections of the application.
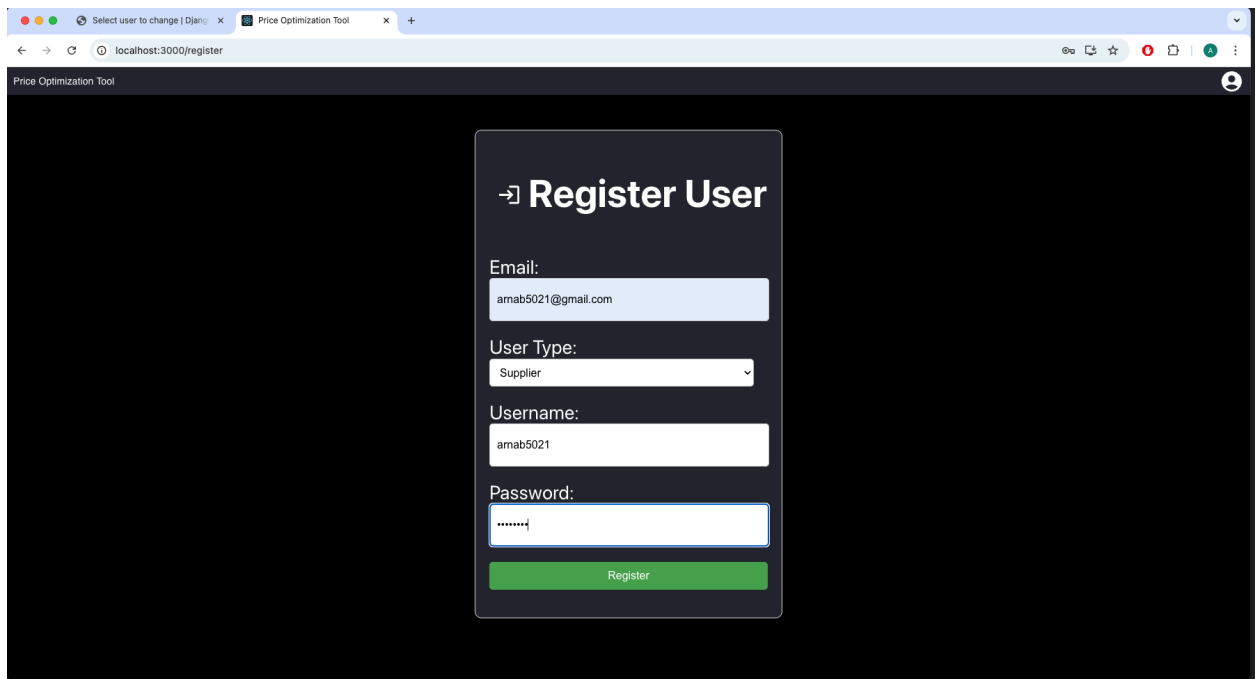
B. **Registration Page :** The registration page allows new users to create an account within the system. The page collects essential user details such as name, email, password, and role (Supplier, Buyer, or Admin). Upon submission, the system validates the input data and proceeds with the registration process, either showing a success message or displaying validation errors for corrections.

C. Registering User as Supplier : During registration, the user is prompted to select their role. If they choose "Supplier," they are registered as a supplier within the system. This role grants them specific permissions, such as the ability to add, update, delete, and view products. After completing registration, they receive instructions to verify their email address before gaining full access.
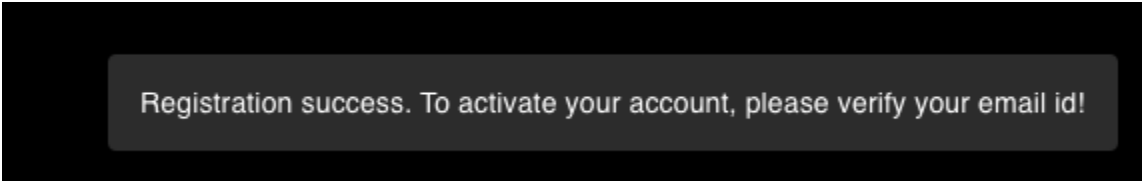
D. Notifying the user about successful registration and asking them to verify their email address : Once a user successfully completes the registration process, a confirmation message is displayed. This message informs them of successful registration and requests that they check their inbox for an email verification link. Without email verification, the user will have restricted access to the application.

Registration success. To activate your account, please verify your email id!

E. Registration verification email : The registration verification email is sent to the user's provided email address upon successful registration. This email contains a verification link that the user must click to confirm their email address.

Verify Your Email Address Inbox ×

djangouserdemoproject@gmail.com
to me ▾
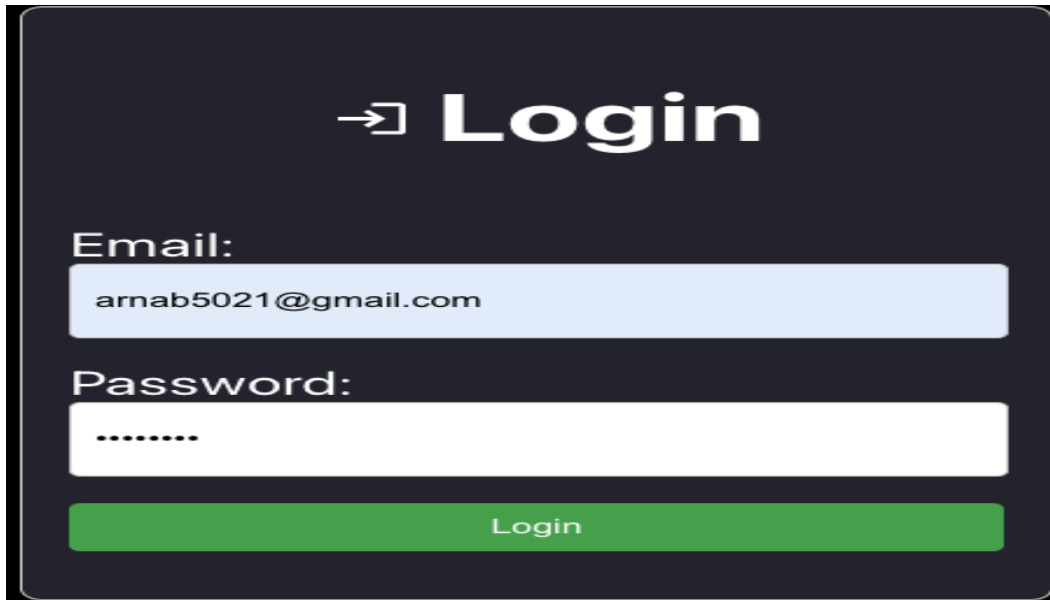
Hi arnab5021,

Thank you for registering. Please click the link below to verify your email address:

Verify Email

If you did not register, please ignore this email.

F. User logging in post successful registration : After completing email verification, the user can log into the application using the credentials they provided during registration. On successful login, they are redirected to their personalized dashboard, where they can begin managing products or access other sections of the platform based on their assigned role.

G. Dashboard Landing Page : The dashboard is the central hub for users upon logging in. It provides quick access to various sections such as product management, pricing optimization, demand forecast, and user settings. The dashboard dynamically adjusts the available options based on the user's role (Admin, Supplier, or Buyer).
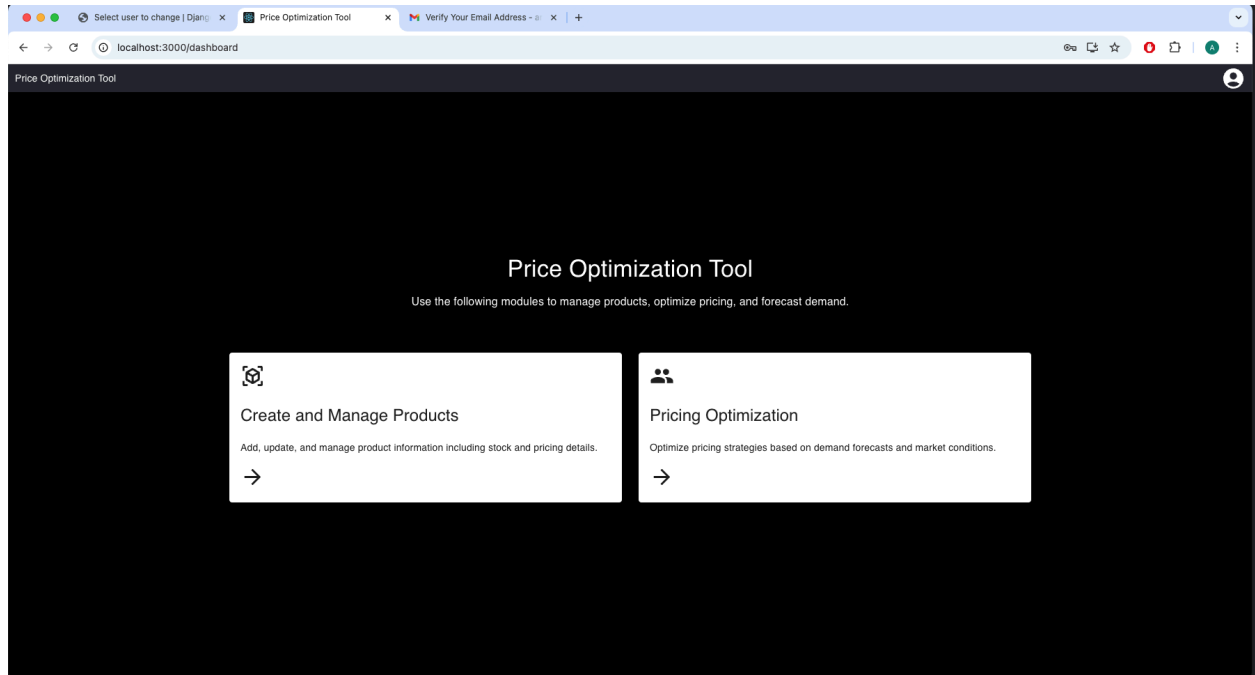
H. Product Management View : The product management view allows users to view, manage, and update product information. This view displays a list of all products with key details such as product name, description, cost price, selling price, available stock, and units sold. Admins and suppliers can add new products, edit existing ones, or delete products.
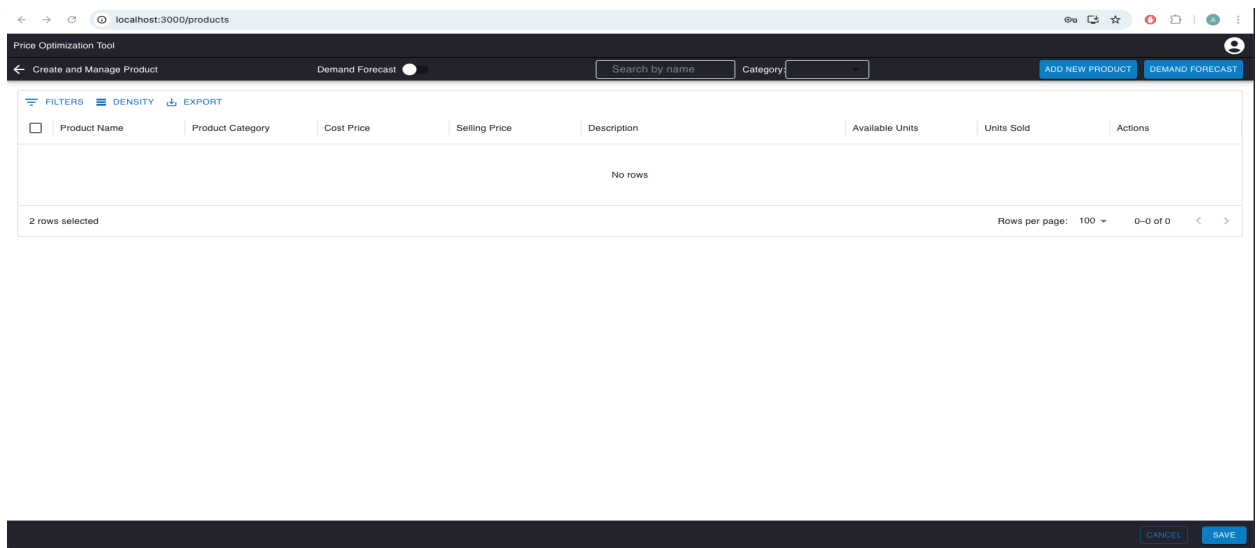
I. Adding a new product : To add a new product, users can fill out a form with product details, including name, category, cost price, selling price, available stock, and description. Once submitted, the new product is saved in the database, and a success message is displayed confirming the addition.

Add New Product

Product Name
Wireless Earbuds

Category *
Electronics

Cost Price *
25

Selling Price *
59.99

Description *
Bluetooth 5.0 wireless earbuds with noise cancellation and long battery li

Stock Available *
300

Units Sold *
150

Customer Rating *
5

Optimized Price *
55.0

Demand Forecast *
180

CANCEL   SAVE

J. New product added and data is displayed in the Product Management View : After adding a new product, the product appears immediately in the product management view. The data for the newly added product is displayed in the corresponding columns (name, price, stock, etc.) within the product list. This ensures real-time updates and efficient product management.

	Product Name	Product Category	Cost Price	Selling Price	Description	Available Units	Units Sold	Actions
☐	Wireless Earbuds	Electronics	25	59.99	Bluetooth 5.0 wireless earbuds with noise cancellation…	300	150	👁 ✏ 🗑

← Create and Manage Product   Demand Forecast ●   Search by name   Category: ADD NEW PRODUCT   DEMAND FORECAST

FILTERS   DENSITY   EXPORT

2 rows selected   Rows per page: 100 ▼   1–1 of 1   ‹ ›

K. Viewing the product (This is a view only screen) : Users can view detailed information about a product by selecting it from the product list. This screen is view-only, meaning users cannot modify the product data. It displays all key information like product name, description, pricing, and stock levels, with an intuitive layout for easy reference.

L. Editing the Product (Cost Price and Available Stock Updated) :
Admins and suppliers can edit existing product details, such as updating the cost price or available stock. Once the user makes the necessary changes and saves them, the product's information is updated in the system.

Edit Product

Product Name
Wireless Earbuds

Category *
Electronics

Cost Price *
30

Selling Price *
59.99

Description *
Bluetooth 5.0 wireless earbuds with noise cancellation and long battery li

Stock Available *
200

Units Sold *
150

Customer Rating *
5

Optimized Price *
55.0

Demand Forecast *
180

CANCEL   SAVE

M. Updated Cost Price and Stocks Available reflected correctly : After editing a product, the updated cost price and stock are immediately reflected in the product management view. This ensures that all users see the most current and accurate data.

	Product Name	Product Category	Cost Price	Selling Price	Description	Available Units	Units Sold	Actions
☐	Wireless Earbuds	Electronics	30	59.99	Bluetooth 5.0 wireless earbuds with noise cancellation...	200	150	👁 ✏ 🗑
☐	Bluetooth Speaker	Electronics	15.0	45.99	Portable Bluetooth speaker with excellent sound quality.	400	210	👁 ✏ 🗑

FILTERS ☰ DENSITY ⬇ EXPORT

2 rows selected — Rows per page: 100 ▾ — 1–2 of 2

N. Products View after toggling Demand Forecast : The product management view includes a toggle option for viewing demand forecasts. When activated, it displays additional demand data for each product, helping users understand how demand trends relate to pricing and stock levels.

Price Optimization Tool

← Create and Manage Product — Demand Forecast ⬤ — Search by name — Category: — ADD NEW PRODUCT — DEMAND FORECAST

FILTERS ☰ DENSITY ⬇ EXPORT

	Product Name	Product Category	Cost Price	Selling Price	Description	Available Units	Units Sold	Calculated Demand ...	Actions
☐	Wireless Earbuds	Electronics	30	59.99	Bluetooth 5.0 wireless earbuds with noise cance...	200	150	180	👁 ✏ 🗑
☐	Bluetooth Speaker	Electronics	15.0	45.99	Portable Bluetooth speaker with excellent sound...	400	210	240	👁 ✏ 🗑

2 rows selected — Rows per page: 100 ▾ — 1–2 of 2

O. Searching product by name : Users can search for products by name using the search bar. This search returns results that match the entered product name, enabling quick access to specific products.

P. Searching by category : Products can be filtered and searched based on categories, such as electronics, apparel, or home goods. This allows users to narrow down the product list according to their specific needs.

Q. Searching with any search filters using various operators : Users can apply advanced search filters to refine product results. The system supports various operators (e.g., equals, contains, greater than, less than) for each product attribute, such as price, stock level, and category.

Columns	Operator	Value
✕ Product Name	▲ contains	▾ Filter value

Product Name	Earphones	30.00
Product Category		
Cost Price		
Selling Price		
Description		
Available Units		
Units Sold		
Calculated Demand Forecast		

R. **Pricing Optimization View displaying optimized price against each product :** The pricing optimization view shows each product with its recommended optimized price based on market demand, cost, and competition. This allows users to easily assess the pricing strategy for each product.

| Product Name	Product Category	Description	Cost Price	Selling Price	Optimized Price
Bluetooth Speaker	Electronics	Portable Bluetooth speaker with excellent sound quality.	15	45.99	43
Wireless Earbuds	Earphones	Bluetooth 5.0 wireless earbuds with noise cancellation and long…	30	59.99	55

Rows per page: 100 ▾   1–2 of 2

S. **Selecting multiple products to check their demand forecast :** Users can select multiple products to view their respective demand forecasts. This feature provides a comprehensive view of how demand is expected to change for several products, aiding in better decision-making for pricing and stock management.

☑ Product Name	Product Category	Cost Price	Selling Price	Description	Available Units	Units Sold	Actions
☑ Bluetooth Speaker	Electronics	15.00	45.99	Portable Bluetooth speaker with excellent sound quality.	400	210	👁 ✏ 🗑
☑ Wireless Earbuds	Earphones	30.00	59.99	Bluetooth 5.0 wireless earbuds with noise cancellation…	200	150	👁 ✏ 🗑
☑ Fitness Tracker	Wearables	30.0	59.99	Wearable fitness tracker with sleep monitoring.	350	180	👁 ✏ 🗑

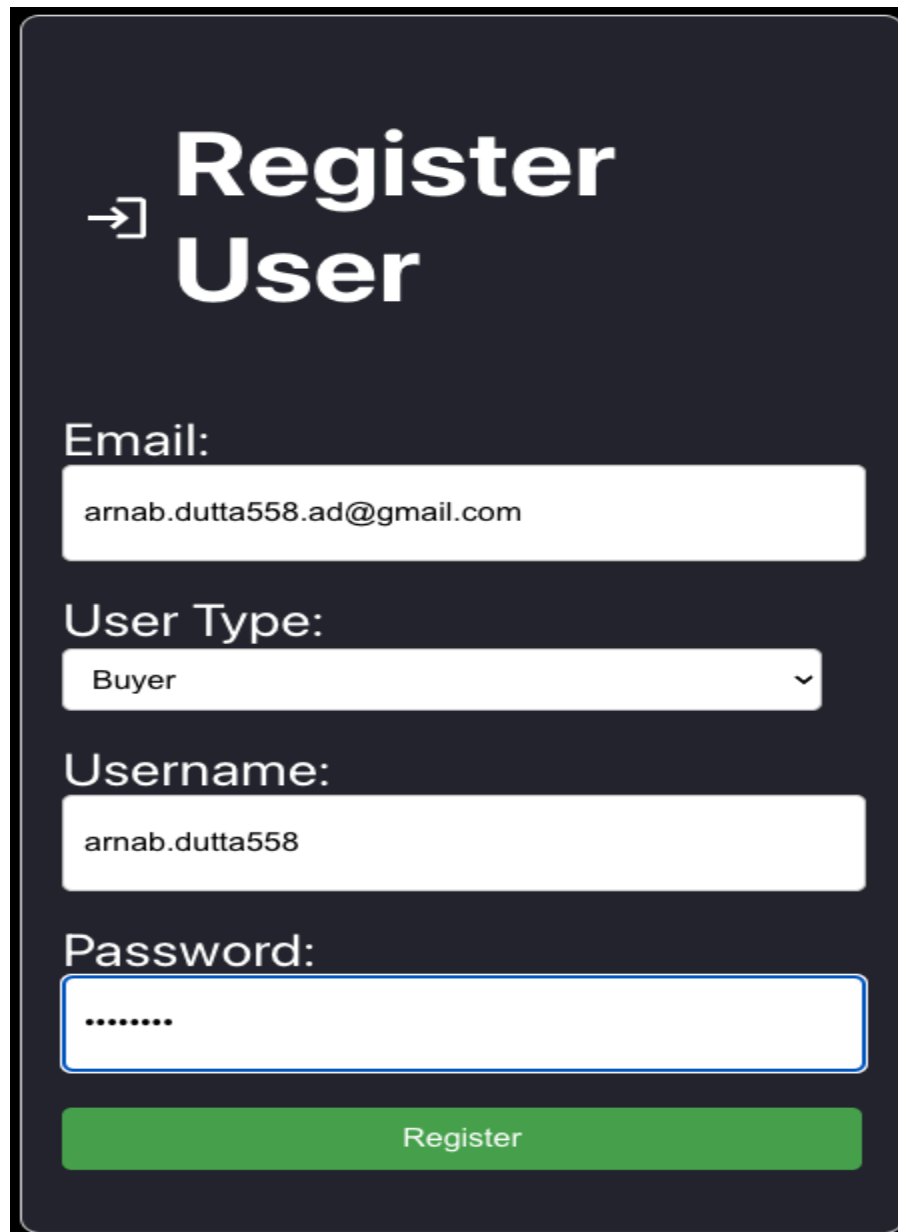3 rows selected   Rows per page: 100 ▾   1–3 of 3

T. Demand Forecast View : The demand forecast view provides a graphical representation (e.g., linear plot) of the expected demand for each product over time. This view allows users to see the impact of pricing and stock on product demand, aiding in the creation of data-driven pricing strategies.
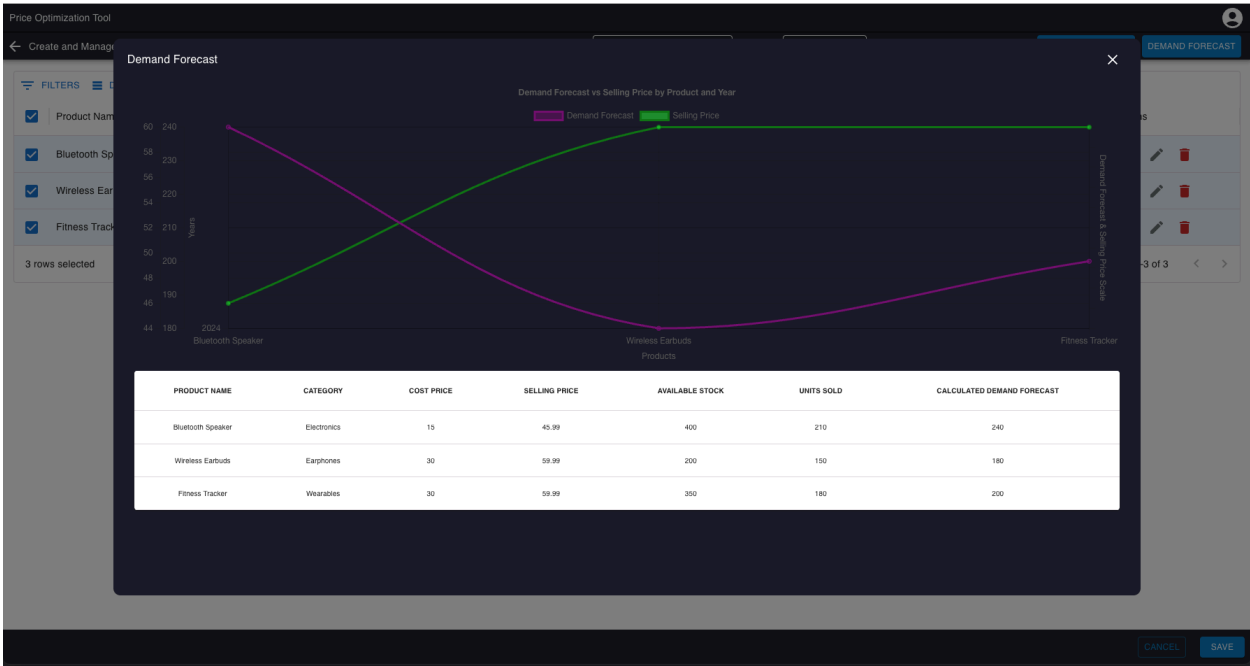
U. Logout Button : The log out button allows users to securely log out of the application when they are finished. This ensures that their session is terminated and prevents unauthorized access to their account.
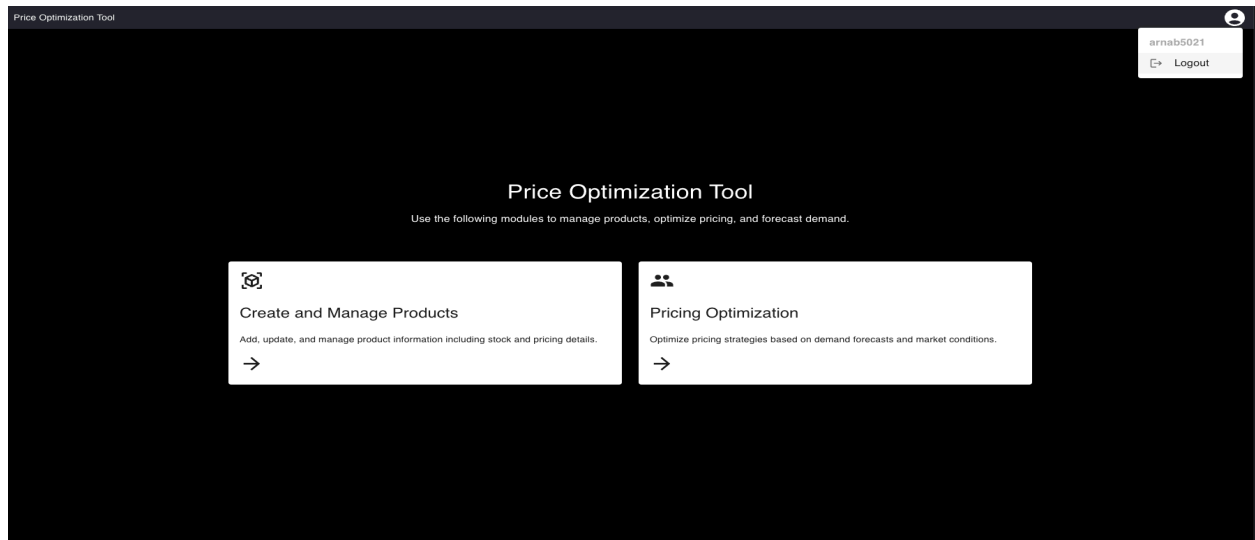
V. Registering a new user as Buyer : When a user registers as a Buyer, they can access the product catalog, view demand forecasts, and see pricing optimization results. However, they do not have permissions to add or update products. This role is designed for users who need to monitor product details and trends but do not manage the product catalog.

Y. Buyer trying to update a product : Buyers are restricted from editing products. If a Buyer attempts to update product details, they are presented with an error message or denied access to the update functionality.

Edit Product

Product Name

Bluetooth Speaker

Category *

Electronics

Cost Price *

15.00

Selling Price *

45.99

Description *

Portable Bluetooth speaker with excellent sound quality.

Stock Available *

400

Units Sold *

210

Customer Rating *

4

Optimized Price *

43

Demand Forecast *

240

CANCEL   SAVE

Z. **Record Updation Failed as Permission for buyer is denied** : When a Buyer or any user without sufficient permissions attempts to update a product, the system will display a message indicating that they do not have the necessary permissions to make changes. This helps maintain proper access control and ensures that only authorized users can modify product data.