Development Of A WEB-BASED Business Networking Platform

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APPROVAL

This project titled "**Development Of A WEB-BASED Business Networking Platform**", submitted by K. M. Emon Ahmed, Muhammdad Shahnewaz, and Arzo Shrestho Pinku to the Department of Computer Science and Engineering, Daffodil International University has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of B.Sc. in Computer Science and Engineering and approved as to its style and contents. The presentation has been held on December 8, 2020.

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DECLARATION

We hereby declare that, this project has been done by us under the supervision of **Mr.Ohidujjaman, Senior Lecturer, Department of CSE** Daffodil International University. We also declare that neither this project nor any part of this project has been submitted elsewhere for the award of any degree or diploma.

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ABSTRACT

We all know that today's world is a digitalized world, which is developing day by day. But not all sectors are developing in every country. Nowadays Getting a job is tougher than in the past. According to a recent study of the Bangladesh Institute of Development Studies (BIDS), The unemployment rate among university graduates in Bangladesh is 38.6%. That's why today the business has become extremely important. But starting a business is so challenging. Also, people who do a job, also they are trying to do side business as business improves the quality of life. That's why lots of new businesses are coming out day by day. There are lots of small and mid-range businesses all over the world. The problem that new, small, and mid-range entrepreneurs mostly face is market finding, they face hassle to sell and buy products with their desired profit. Also, there are lots of problems they face that are interrelated with that mentioned problem. Our project **BusinessToGlobe.com** is basically for those new, small, and mid-range entrepreneurs. We have tried to develop a very dynamic and optimized platform that will reduce their common challenges and also help them to expand their businesses not only in one place but also all over the world.

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CHAPTER 1
INTRODUCTION

1.1 Introduction

When we talk about entrepreneurship or businesses, a common problem we always discuss is it's hard to take a position in a marketplace for new, small and mid-level businesses and most of the time businesses involve middlemen to connect with buyers and sellers which increases the product price also. Businesses are facing this kind of problem because they are not getting the right platform to express themselves. Yes, there is some popular online marketplace that is working to connect global businesses but the competition there is so high. It's very essential to come out the new online marketplace that will connect global businesses. We have seen that there are lot's of e-commerce platforms coming out every day which are basically working on the business to consumer(B2C) marketplace, some are working to connect global businesses but as a side sector beside business to consumer. But we have developed this project only to connect global businesses. In our project Business to Business (B2B), networking is the main and only sector. There is no side sector around it.

Our Project ***BusinessToGlobe.com*** is a Business to Business(B2B) Platform which we have developed to connect businesses with each other. It is a web-based platform that will help small or mid-range businesses to expand their businesses worldwide. BusinessToGlobe connects buyers and sellers to find trade opportunities and promote their businesses online. We have developed the project as a dynamic and optimized online B2B marketplaces for businesses to expand them all over the world. Our vision is by using our web application businesses will expand worldwide and middleman innovation in business will completely cut-off sooner which will help to decrease product prices so that consumers will also be benefited.

1.2 Motivation

Here are the key points that motivated us for doing this project:

- ➢ Startup Businesses/entrepreneurs market finding problem.
- ➢ Lack of B2B Communication in mid or Small range Business.
- ➢ Increasing product price due to the middleman in involvement in businesses.
- ➢ High competition in popular B2B networking platforms.
- ➢ Not enough new business networking platforms compared to e-commerce.

1.3 Objectives

The objectives of our project "BusinessToGlobe" are:

- ➢ To provide a dynamic and optimized platform.
- ➢ To directly connect buyers and sellers from all over the world.
- ➢ To expand new, small, and mid-level businesses.
- ➢ To cut-off middleman involvement in businesses.
- ➢ To promote businesses worldwide.

1.4 Expected Outcome

The list of outcomes that we expect by developing this project are:

- ➢ Entrepreneurs will conduct new business opportunities.
- ➢ Market finding problems will reduce for new, small, and mid-range businesses.
- ➢ Businesses will promote their business worldwide also in a very smart way.
- ➢ Product price will reduce by cutting-off middleman involvement in businesses.
- ➢ A global business networking chain will make.

CHAPTER 2
BACKGROUND

2.1 Introduction

In today's world, we all know that Entrepreneurship has become so important, but it is not so easy to become an entrepreneur, There are a lot more challenges to face for building a company. Also, there are a lot of small and mid-range companies out there that very few people know. Some of the challenges companies face, which are market finding, find suitable companies to business with..etc. Most of the time companies contact a middleman to buy and sell goods, which is responsible for increasing product prices, and that makes consumers suffer.

So, we have tried to reduce some challenges by developing a dynamic and user-friendly web application for new, low, and mid-range businesses, And so that customers can also benefit. We have developed the application for new, low, and mid-range companies to provide them a dynamic virtual platform so that they can expand their businesses worldwide. We have developed it as a global Business-To-Business (B2B) networking platform.

On our website, we provide services to connect with companies and businesses.Companies/Businesses just have to open an account and verify them to get our services without paying any money as our service is completely free. Accounts can be three types of buyer, seller, and both (Buyer & Seller). After opening and confirming all the information they will get their own dashboard, where they can see notifications, add their product and buy requirements, update company profile, upload company video, request for promoting a video, check their send Inquiries and receive inquiries and much more.

The companies which are registered on our site will get an excellent and well organized personal business site according to their chosen site key for their company. which will show all detailed information about their company and contact information. Also, in that personal site their products and buy requirements will be listed nicely. They can share the

link anywhere to promote their business. Also, a registered company can inquire about other companies by using the personal site.

According to the three account types, For a Buyer, the account type will (Buyer). The Buyer can post buy requirements, search for products, view all posted products, inquiry about products, request for video promotion, get help from us, and many more. For Buyer, we will take his interest category of buying option. And we will send notifications as to their interest.

For the seller, the account type will (Seller). The seller can post buy products, search buy requirements, view all posted buy requirements, inquiry about buy requirements, also request for promotion and help, and many more. For sellers, we will get the type of selling products and send notifications according to their category of selling.

For account type Both(buyer & seller) they will get all functionality of buyer and sellers.

Also, we have developed a very dynamic business directory which will hold detailed information of worldwide companies which are registered in our site and sorted them in continents and country-wise and also differentiate them as buyer and sellers. So that visitors can easily find a company as they are looking for and contact them.

We have also developed an efficient global B2B timeline where posted products and buy-requirements are listed in a timely manner so that a visitor or member can view the latest products and buy requirements and also inquiry or view details about them.

A notable point is the buyer and seller must have to be a part of the company or a business. We have also listed products and buy requirements category wise like Computer and IT, Agro and agriculture...etc so that people can find and inquire about them easily.

Also, there is a lot more functionality we have developed to make a business networking platform so that companies can introduce them in front of the world and expand their businesses.

2.2 Related Works

2.2.1 Alibaba.com

Alibaba Group Holding Limited, also known as Alibaba Group and as Alibaba.com, is a very popular website for e-commerce, retail, Internet, and technology which founded on 4 April 1999, by Chinese business magnate **Jack Ma**, in Hangzhou, Zhejiang, China. Alibaba provides business-to-consumer (B2C), business-to-business (B2B) and, consumer-to-consumer (C2C) services via their web application. It is one of the world's largest retailer and e-commerce company. Alibaba provides its service worldwide, it has a lot of efficient workers, engineers, and data scientists for making their web application an artificial intelligence-based dynamic web application. According to Wikipedia Alibaba was rated as the fifth-largest artificial intelligence company.

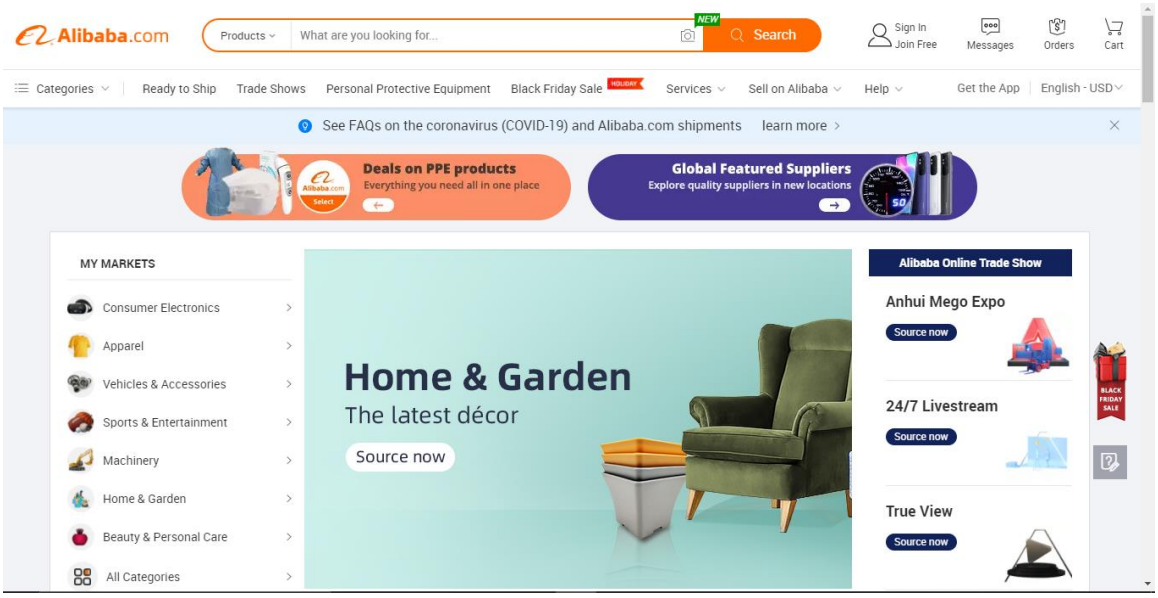

Figure 2.2.1 Home Page of Alibaba.com

2.2.2 Amazon.com

Amazon.com, also known as Amazon.com, Inc. is also a very popular website for e-commerce, founded on 5 July 1994, by a popular American internet entrepreneur, industrialist, media proprietor, and investor **Jeff Bezos**, in Washington, U.S. It has also other services that are cloud computing, digital streaming, and artificial intelligence. Amazon has been started as an online marketplace for books but today it is listed as one of the big five technology companies along with Microsoft, Google, Apple, and Facebook. It has been referred to as one of the most influential economic and cultural forces in the world. Amazon also serves their services worldwide but unfortunately, we don't get the full services of Amazon by now.

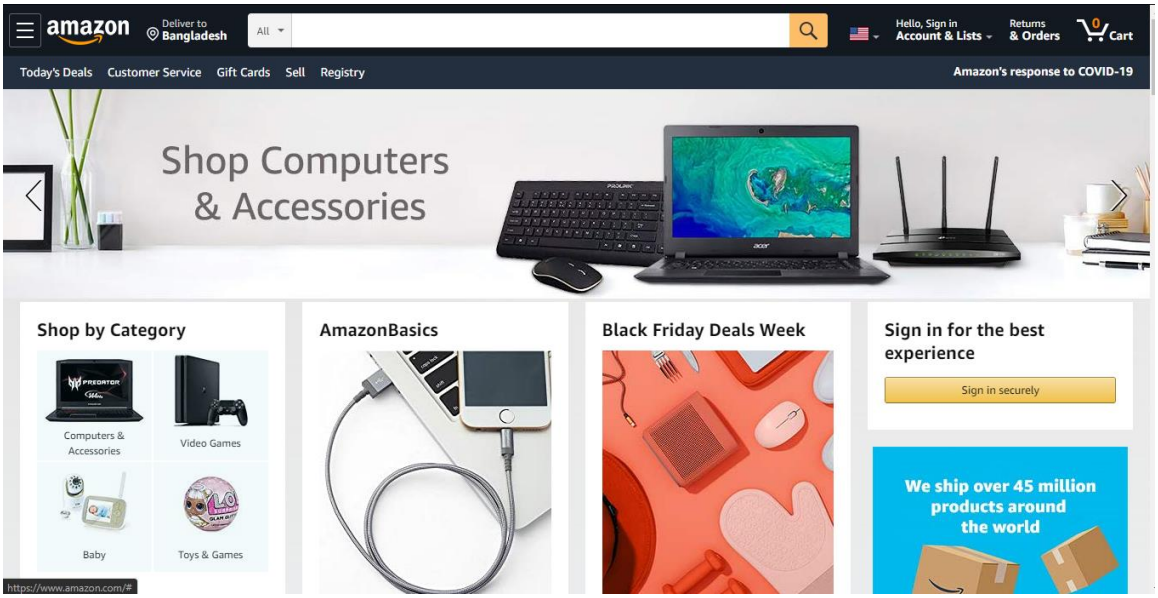

Figure 2.2.2 Home Page of Amazon.com

2.2.3 TradeWheel.com

TradeWheel.com, is a rising online marketplace that serves complete B2B online trading experience in the trans-border trade and digital marketing, founded in November 2016, by **Mr. Noman Javed**. Tradewheel services are mainly focused on business to business (B2B) marketing. It has got a lot of reputation for their service in just four years. As it is a rising online marketplace the internals improving their services day by day. Their web application adheres to the exact specifications of clients and delivers the buyers and suppliers with the ideal opportunities to connect and interact with each other. Tradewheel also working closely with the Government of China with a mission to boost china's international trade.

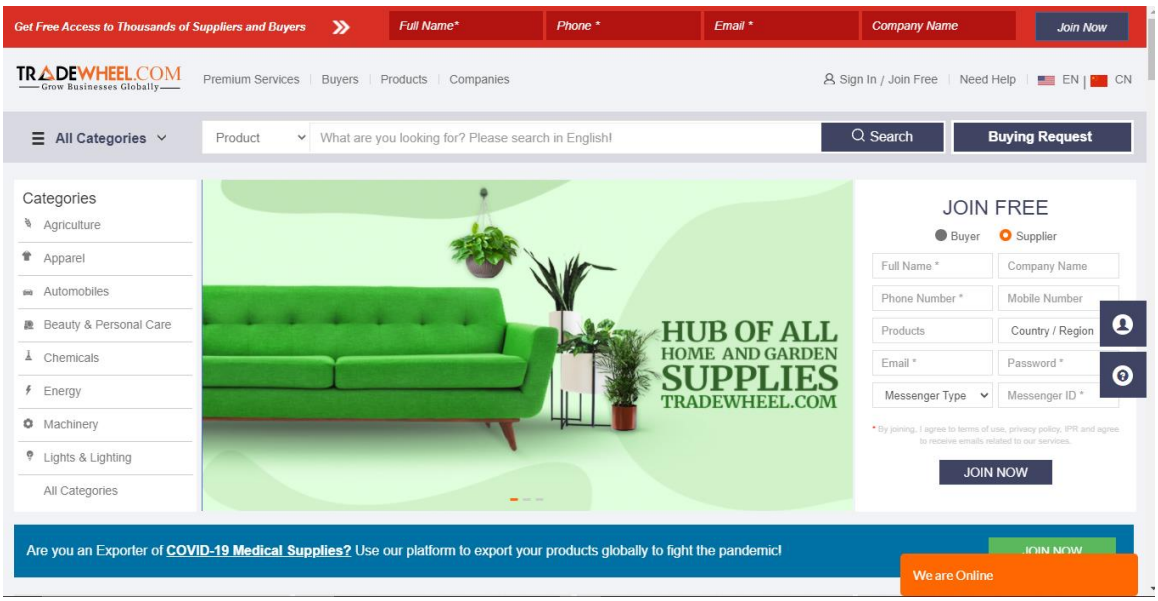

Figure 2.2.3 Home Page of TradeWheel.com

CHAPTER 3

REQUIREMENTS SPECIFICATION

3.1 Requirement Collection and Analysis

Here is the list of some main functional and non-functional requirements and their analysis. We have tried to fulfill all the listed requirements and also added a lot more functionality during development.

3.1.1 Functional Requirements

Table: 3.1.1: Requirement collection and analysis

SL NO.	Requirement	Analysis
1	Informative Homepage	Efficient real-time information from the database has to be provided on the homepage and the design must be attractive so that visitors get interested.
2	Register new user	The system will register a new user by providing a signup form with two-way validation and differentiate themselves by account type buyer, seller, and both by their filled form.
3	Password Hashing	The system must hash the user given password before adding it to the database by the hash function so that the site administrator can't also see the user given password.
4	Email verification	User given email must verify by system-generated code before adding a new user in the database.
5	User/Admin Login	The system must allow an authenticated user/admin to log in, here high security needed to implement.
6	Forget password functionality	The System has to provide a highly secure forgot password functionality for users so that users can change the password if they forgot.

7	Dynamic Navbar	Navbar content will be changed after the user login to System
8	Dynamic Dashboard	The designed dashboard must have three types (Buyer, Seller, and, Both). After login, the system needs to check the type of user and provide a dashboard according to their type.
9	Profile update progress check	All important functionality must lock by the system until profile update progress is less than 70% and account status is Approved.
10	Profile update email sent	The system must send the user and admin an email after a user updates the profile. User email about account status on review and Admin email manually verification the company.
11	Unlock All Functionality	The system must unlock all dashboard functionality after an admin approves a user after verification.
12	Personal web page allocation	The system will auto-generate a dynamic personal webpage for companies after user approval where all information about the company with their product and buy requirement is also presented.
13	Password change functionality	The system has to provide change password functionality for users.
14	List All product and buy requirements	Have to list all the products and buy requirements in by category and as a composite view which will descendingly be shorted by their posted time.
15	Implement a global business timeline	Has to implement a global business timeline, on that timeline all latest buy and sell posts need to be listed very nicely which will also be sorted as their descending posted time, so that latest post will be on top.
16	Implement a global business	A dynamic business directory will be

	directory	implemented where registered companies of our site will be listed as their continents and continents.
17	Inquiry functionality	The system should allow three types of inquiry - product, buy requirement, and company inquiry which will only be available for registered users.
18	Inquiry and Notification center	Received and sent inquiries will be shown on a live inquiry center, trash functionality and notification will need to be included with that.
19	Search Functionality	The dynamic search functionality needs to build for companies, buy requirements, and products.
20	Help Center	A dynamic help center will provide file attachment functionality and a token will auto-generate by the system.

3.1.2 Non-Functional Requirements

- ➔ Dynamic and user-friendly design and responsive for all devices.
- ➔ Well organized database model implementation.
- ➔ Efficient algorithm implementation for the system back-end.
- ➔ Increase the security of the application.

3.2 Use Case Modeling and Description

Here is the use case model and description of our project BusinessToGloble.com:

3.2.1 Use Case Modeling

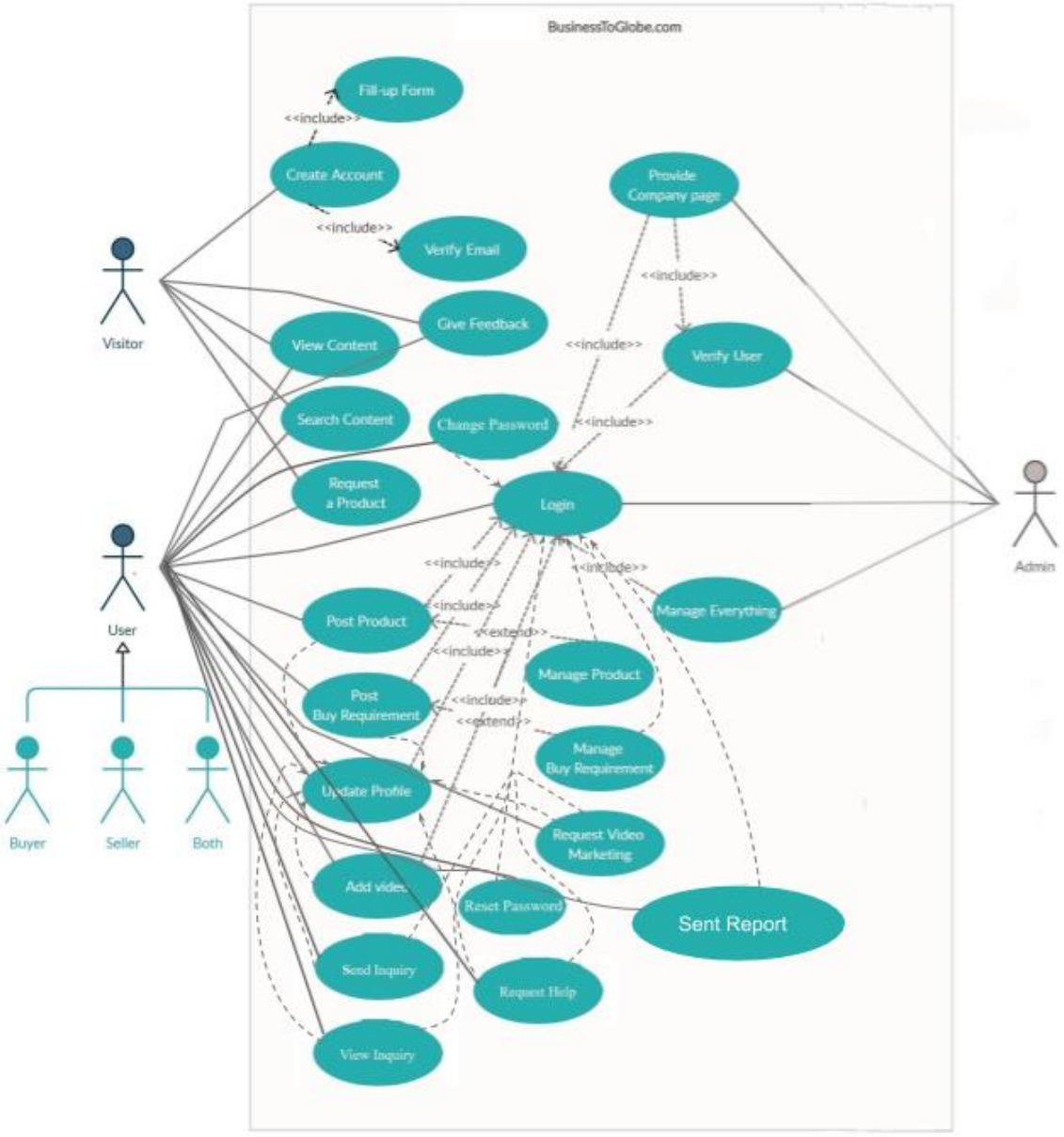

Figure 3.2.1 Use Case Diagram

3.2.2 Use Case Description

Table: 3.2.2.1: Use Case Description - View Content

Use Case Name	View Content
Description	View Content included view all publicly accessible pages of the web application, the pages are home, products, buy requirements, company profiles, business directory, global business timeline, contact to admin and about businesstoglobe.
Actors	Visitor, User (All)
Pre-conditions	Visit the web application
Post-conditions	Undefined
Flow of Events	1. Visit application 2. Click on a particular URL
Substitute Flows	1. Server error 2. Not Visited on the correct URL

Table: 3.2.2.2: Use Case Description - Search Content

Use Case Name	Search Content
Description	Three types of the search included here, which are Company search, product search, and buy requirements search, The search option is case insensitive.
Actors	Visitor, User (All)
Pre-conditions	Visit the application, Select an option for search, Write a search keyword.
Post-conditions	Undefined
Flow of Events	1. Visit application 2. Select an option 3. Write keyword 4.Click for search 5.System returns search results.
Substitute Flows	1. Invalid Input 2. The system didn't find content that matches the keyword.

Table: 3.2.2.3: Use Case Description - Request a Product

Use Case Name	Request a product
Description	If any visitor or user didn't find a product which they are looking for, they can directly request for a product to the admin by filling a form which is located on all product categories page.
Actors	Visitor, User (All)
Pre-conditions	Visit (All product categories) page, fillup the form, click to submit.
Post-conditions	Receive a success message from the system.
Flow of Events	1. Vision on all product categories page 2. Filled the form correctly 2. Click to submit a 3.Got success message.
Substitute Flows	1.Invalid input 2.Input field kept blank

Table: 3.2.2.4: Use Case Description - Give Feedback

Use Case Name	Give Feedback
Description	On the feedback page, visitors and users can openly give their ratings and feedback about the service of our application anonymously.
Actors	Visitor, User (All)
Pre-conditions	Visit the application, Select a rating option, click to submit.
Post-conditions	Redirect to the success page.
Flow of Events	1. Visit application 2. Select an option 3. Write feedback (optional) 4.Click to submit 5.System redirects to the success page.
Substitute Flows	1. Didn't select any rating before submitting.

Table: 3.2.2.5: Use Case Description - Create Account

Use Case Name	Create Account
Description	Visitors can create their account by filling up the signup form. Visitors have to fill the form correctly to create an account. The system will redirect to the verify email page after submitting the form but before that system will check whether the email and username already exists or not. If it exists then it will show an existing message instead of redirect to verify the email page.
Actors	Visitor
Pre-conditions	Filling the form correctly, submit the form, verify the provided email
Post-conditions	Redirect to the verify page.
Flow of Events	1.Visiti to signup page 2.Filled to form 3.Submit the form, 4.System checks username or email existence 5.Give exist message or redirect to verify email page.
Substitute Flows	1. Invalid input 2.Username or email exists 3.Didn't submit the form.

Table: 3.2.2.6: Use Case Description - Fill Up From

Use Case Name	Fill up Form
Description	Visitors have to fill-up a signup form to create an account. From validation will dynamically check user input and give necessary information and warning. Registered users can't access the form.
Actors	Visitor
Pre-conditions	Access to the signup page
Post-conditions	Redirect to verify the page for email verification
Flow of Events	1. Visitor access to signup page 2. Fill up the form
Substitute Flows	1. Invalid input

Table: 3.2.2.7: Use Case Description - Verify Email

Use Case Name	Verify Email
Description	When a visitor submits the signup form, then the system will generate a random code and will send it to the visitor-provided email. The visitor will input the received code, then the system will match both codes, if the code matches then the system will finally register the user and will save to the database.
Actors	Visitor
Pre-conditions	Submit the signup form, input received code
Post-conditions	Register user
Flow of Events	1. Filled up signup form 2. The system generates code and sends it to email 3. User input received code 4.System matches the code 5.Register the visitor as user.
Substitute Flows	1. Email send failed 2.Wrong code entry.

Table: 3.2.2.8: Use Case Description - Login

Use Case Name	Login
Description	User or Admin login to the system to access their specified functionality.
Actors	User (All), Admin
Pre-conditions	Input correct login credentials
Post-conditions	The system checks user type and redirects to their type of dashboard.
Flow of Events	1.Input login credentials 2.Click to login 3.System checks user type, log in to the particular dashboard
Substitute Flows	1. Incorrect login credentials

Table: 3.2.2.9: Use Case Description - Reset Password

Use Case Name	Reset password
Description	If a user forgets their password, they can request a password reset form by providing their email which was used during signup. The system will send a link with a security parameter to the user's email.
Actors	User (All), Admin
Pre-conditions	Must use registered email.
Post-conditions	Generate valid link
Flow of Events	1. User clicks to forget password 2. The system generates link 3.User reset the password
Substitute Flows	1. Invalid email 2.Link generation error

Table: 3.2.2.10: Use Case Description - Change Password

Use Case Name	Change Password
Description	User change password by providing old password.
Actors	User (All), Admin
Pre-conditions	Login, Provide old Password.
Post-conditions	Receive a success message.
Flow of Events	1. Accessed to change password 2.Provide old password 3.Provide new password 4.submit request 5.Got Success message.
Substitute Flows	1. Old password incorrect 2. The new password does not meet validation requirements.

Table: 3.2.2.11: Use Case Description - Update Profile

Use Case Name	Update Profile
Description	Users have to update their profile for admin approval for their account. A background progress check will be performed by the system. The account approval request will be sent to the admin by the system after progress >=70%.
Actors	User (All)
Pre-conditions	Login
Post-conditions	Undefined
Flow of Events	1. User Access profile update 2. Make changes and save 3.Progress check made by system 4. If progress >=70% send admin account activation requests.
Substitute Flows	1.Invalid information 2. Admin doesn't get mail.

Table: 3.2.2.12: Use Case Description - Request Help

Use Case Name	Request Help
Description	Users can request any kind of help from the admin by visiting the Help Center page. Users can also add any kind of file with their request. The system will generate a support ticket and send it to the user and admin through email.
Actors	User (All)
Pre-conditions	Login
Post-conditions	Receive success message
Flow of Events	1.Visit help center 2. Describe the request 3. Added file (optional) 4.submit the request 5.System generates ticket 6. Mailed to use and Admin 7.System gives success message.
Substitute Flows	1.Validation error 2. Support ticket generation error 3. Mail does not send correctly.

Table: 3.2.2.13: Use Case Description - Sent Report

Use Case Name	Sent Report
Description	The sent report also includes three types of report - Company, Product, and buy-requirement report, if the user finds something unusual then the user can report on them.
Actors	User (All)
Pre-conditions	Login
Post-conditions	Undefined
Flow of Events	1. Find something unusual 2.Describe problem 3. Submit Report
Substitute Flows	1. Submitted an unusual report

Table: 3.2.2.14: Use Case Description - Verify User

Use Case Name	Verity User
Description	Admin will verify a company manually for security purposes after the user updates their profile and progress made a minimum of 70%.
Actors	Admin
Pre-conditions	Login
Post-conditions	Admin change approval status
Flow of Events	1. Admin receives mail about user verify 2. Verity the user
Substitute Flows	1. Admin didn’t receive mail.

Table: 3.2.2.15: Use Case Description - Provide Company Page

Use Case Name	Provide Company Page
Description	After the admin verifies a company, the admin has to provide just a site key that matches the company name and send the url to the user through the mail. Just by providing a site key, the system dynamically made a company page for the company.
Actors	Admin
Pre-conditions	Login
Post-conditions	Admin change approval status
Flow of Events	1. Admin provide sie key 2. The system dynamically makes the company page 3.Admin provides links through the mail.
Substitute Flows	1. Wrong site-key input.

Table: 3.2.2.16: Use Case Description - Manage Everything

Use Case Name	Provide Company Page
Description	Manage Everything includes everything that can admin manage, like user manages, help center handle, product handle, etc.
Actors	Admin
Pre-conditions	Login
Post-conditions	Undefined
Flow of Events	1. Admin Manages all work
Substitute Flows	1. Managing mistake 2. System failure

Table: 3.2.2.17: Use Case Description - Post Product

Use Case Name	Post Product
Description	User can add new products to sell, This option is restricted for the buyer. Added products will be displayed on their personal company profile page, products page, category wise product page, and in global timelines.
Actors	User (Seller, Both)
Pre-conditions	Login
Post-conditions	Receive success message
Flow of Events	1. Visited add product page 2.Filled up the product details form 3.Post the product.
Substitute Flows	1.Validation error, invalid data.

Table: 3.2.2.18: Use Case Description - Manage Product

Use Case Name	Manage Product
Description	Manage Product includes view, edit, and delete the posted product.
Actors	User (Seller, Both)
Pre-conditions	Login
Post-conditions	Undefined
Flow of Events	1. Login 2.Visit Manage product page.
Substitute Flows	1. Database connection error, 2. Deleted the wrong product.

Table: 3.2.2.19: Use Case Description - Post Buy Requirement

Use Case Name	Post Buy Requirement
Description	User can add new buy requirements to buy the desired product, This option is restricted for Seller. Added buy requirements will be displayed on their personal company profile page, buy requirement page, category wise buy requirement page, and in global timelines.
Actors	User (Buyer, Both)
Pre-conditions	Login
Post-conditions	Receive success message
Flow of Events	1. Visited add buy requirement page 2.Filled up the buy requirement details form 3.Post the buy requirement
Substitute Flows	1.Validation error, invalid data.

Table: 3.2.2.20: Use Case Description - Manage Buy Requirement

Use Case Name	Manage Buy Requirement
Description	Manage Buy Requirement includes view, edit, and delete posted buy requirements.
Actors	User (Buyer, Both)
Pre-conditions	Login
Post-conditions	Undefined
Flow of Events	1. Login 2.Visit Manage Buy Requirement page.
Substitute Flows	1. Database connection error, 2. Deleted wrong buy requirement.

Table: 3.2.2.21: Use Case Description - Add Video

Use Case Name	Add Video
Description	User can add their company video through youtube embedded url
Actors	User (All)
Pre-conditions	Login
Post-conditions	Undefined
Flow of Events	1.Visit add video page 2. Add youtube embedded url.
Substitute Flows	1.Wrong url Added

Table: 3.2.2.22: Use Case Description - Request Video Marketing

Use Case Name	Request Video Marketing
Description	Add video marketing also through youtube embedded video url, which will display on the main home page.
Actors	User (All)
Pre-conditions	Login
Post-conditions	Revive success message
Flow of Events	1.Visit company vides marketing page 2. Add youtube embedded url 3. Add a thumbnail for the video 4. Submit video 5. Receive a success message.
Substitute Flows	1.Wrong url Added 2. The wrong thumbnail added

Table: 3.2.2.23: Use Case Description - Send Inquiry

Use Case Name	Send Inquiry
Description	Send an inquiry includes three types of inquiry which are company inquiry, product inquiry, and buy requirement inquiry.
Actors	User (Specified functionality by type)
Pre-conditions	Login
Post-conditions	Revive success message
Flow of Events	1. Visit page 2. Inquiry about company, product or buy requirements.
Substitute Flows	1.Wrong inquiry sent

Table: 3.2.2.24: Use Case Description - View Inquiry

Use Case Name	View Inquiry
Description	The Inquiry Center user can see their received inquiry, sent inquiry, and also can see the notification. Users can move the sent and received inquiries to the trash box also.
Actors	User (All)
Pre-conditions	Login
Post-conditions	Undefined
Flow of Events	1. Visit page 2. View and manages inquiry center
Substitute Flows	1. Wrong item deleted

3.3 Logical Data Model

3.3.1 ER Diagram (UML Notation)

We have designed a Physical ER Diagram With UML Notations which shows all relationships and properties and data flows of our project database.

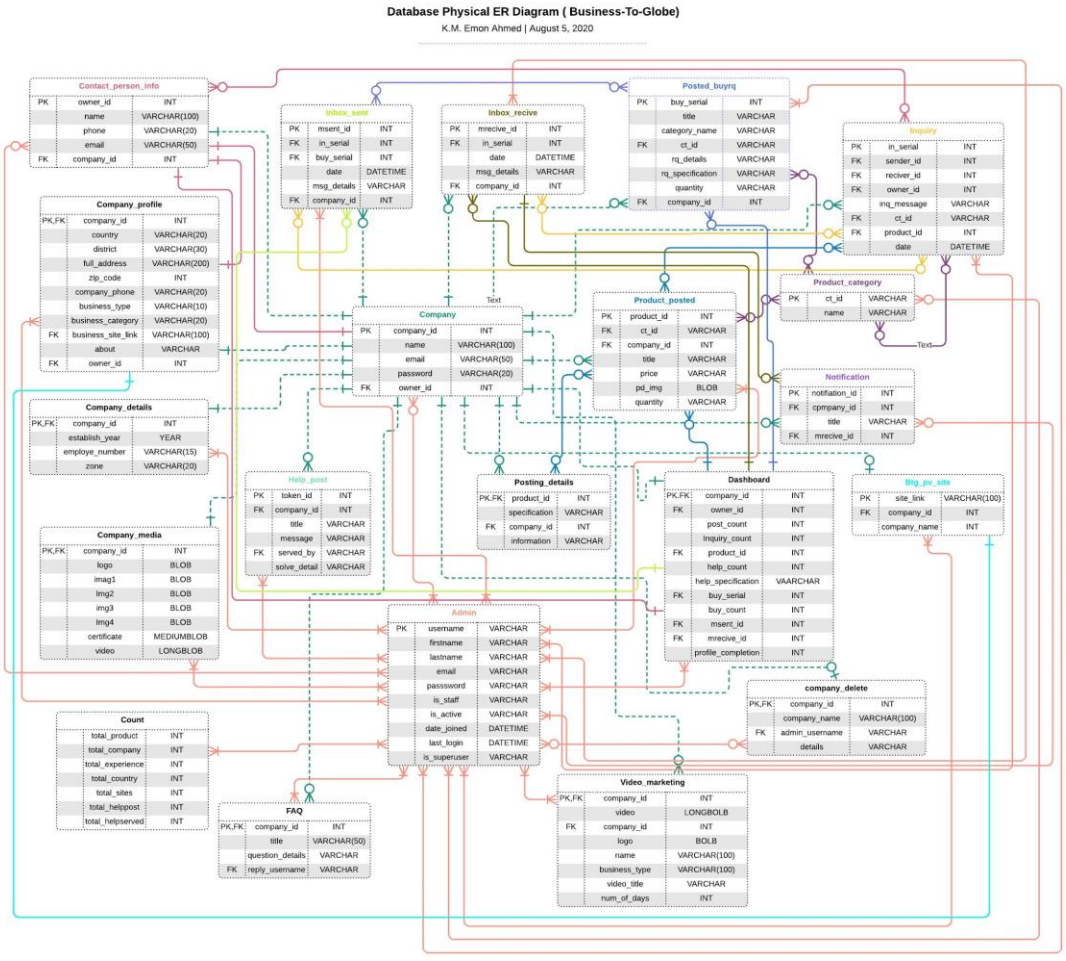

Figure 3.3.1 ER Diagram (UML Notation)

CHAPTER 4
DESIGN SPECIFICATION

4.1 Front-end Design

We have designed a dynamic UI in the front-end for our client which is interactive, user-friendly, and responsive for any type of device. We have implemented dynamic validation in forms from the front-end. Front-end dynamic functionality and interactions are controlled by the Back-end developer structured Django MVC (Model View Controller) - MVT(Model View Template) Pattern.

In the front-end, we have used

- HTML
- CSS
- Bootstrap
- JavaScript
- JQuery
- Django MVC - MVT Pattern

4.2 Back-end Design

We have implemented an efficient algorithm in the back-end for our web application which is highly secured. We have implemented an efficient Django model for our database so that we can access almost every type of database like SQLite, MySQL, PostgreSQL, etc by just making migrations. Backend security is directly provided from Django. Also, we have used password hashing to secure the user's password and data filtering for database security, in addition, backend form validation is also implemented. Also, Back-end views algorithms are responsible for client-site view control, user interaction, and dynamic functionality.

In the Back-end, we have used

- Python
- Django (Framework)
- SQLite Database (In Development)
- MySQL Database (In Production)
- LiteSpeed Web Server (In Production)
- Git (Version Control)

4.3 Implementation requirements

Functionalities

- Informative Homepage
- Register new user
- Password Hashing
- Email verification
- User/Admin Login
- Forget password functionality
- Requirement
- Dynamic Navbar
- Dynamic Dashboard
- Profile update progress check
- Profile update email sent
- Unlock All Functionality
- Personal web page allocation
- Password change functionality
- List All product and buy requirements
- Implement a global business timeline
- Requirement
- Implement a global business directory
- Inquiry functionality
- Inquiry and Notification center
- Search Functionality
- Help Center
- Report
- Feedback

Others

- Web programming language python and Django Framework.
- Interactive and responsive design.
- JavaScript and Jquery for form validation.
- Web Application security.
- Preferred Database and Web Server.

CHAPTER 5
IMPLEMENTATION AND TESTING

5.1 Implementation of Database

We have implemented our database through the Django database model, In our project, there is models.py which contains all the logic of our database. In the Django framework, we implement database model classes then run the make-migrations command. The makemigrations check all our logic in the model class and generates SQL commands for the database we have connected to the database. Then when we run the command migrate then the framework pushes the SQL commands to the connected database and creates a table as our implemented logic.

Django Database Migration Flow

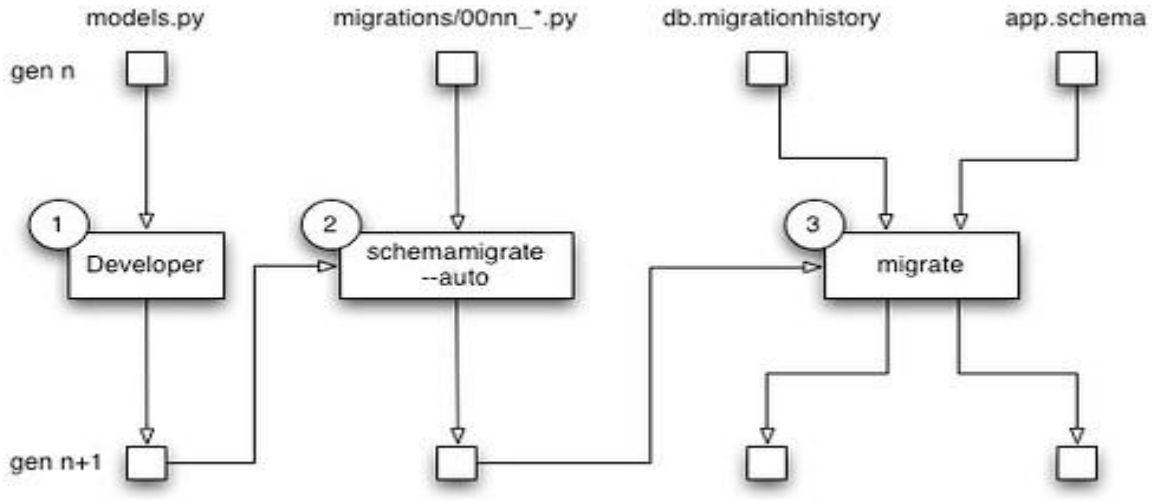

Figure 5.1 Django Database Migration Flow

Example - Logical code of Customer support table

Class Creation

```
class Customers_support(models.Model):
    token = models.CharField(primary_key=True,max_length=10)
    user = models.ForeignKey(User, on_delete=models.CASCADE)
    subject = models.TextField(max_length=300)
    description = models.TextField(max_length=500)
    file = models.FileField(upload_to='customer-help')
    status = models.CharField(max_length=50,default='pending')
    action = models.CharField(max_length=50,null=True,blank=True)
    created_at = models.DateTimeField(default=timezone.now)

    def __str__(self):
        return str(self.token)
```

Framework Created Operation

```
class Migration(migrations.Migration):

    dependencies = [
        ('btg', '0024_auto_20200917_2041'),
    ]

    operations = [
        migrations.AlterField(
            model_name='company_certificate',
            name='certificate_image',
            field=models.ImageField(blank=True,           null=True,
upload_to='certificate_images'),
        ),
    ]
```

Like this customer support table class we have written python class for all 40 database tables of our project and 107 migrations have been made during the development of our project.

5.2 Implementation of Front-end Design

On the client-side, we have worked on a total of 68 HTML pages which routes to 66 individual URLs. Our front-end design is very user-friendly and fully responsive for any kind of device which has been done by custom bootstrap. Our client-side is associated with back-end Django MVC which makes our site user interaction dynamic. In this documentation attaching screenshots of some main client-side implemented pages.

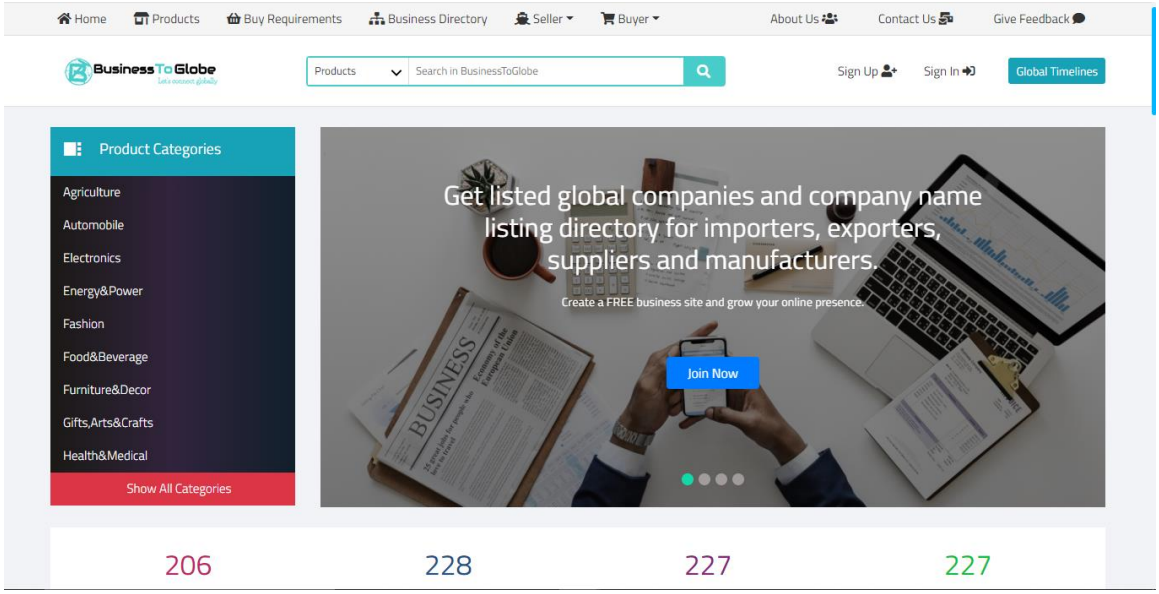

Figure 5.2.1 BusinessToGlobe.com Homepage Desktop View

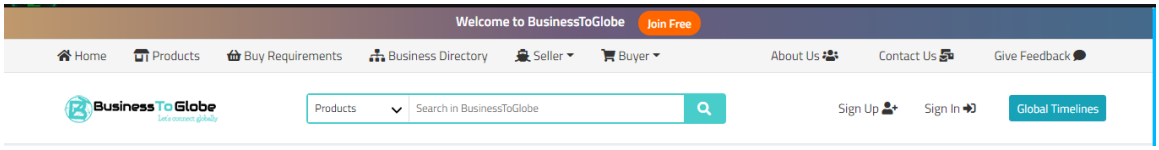

Figure 5.2.2 Dynamic Navigation Bar Before Login

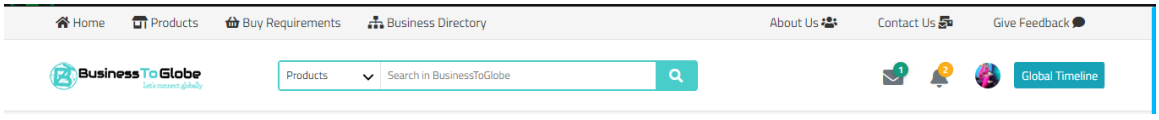

Figure 5.2.3 Dynamic Navigation Bar After Login

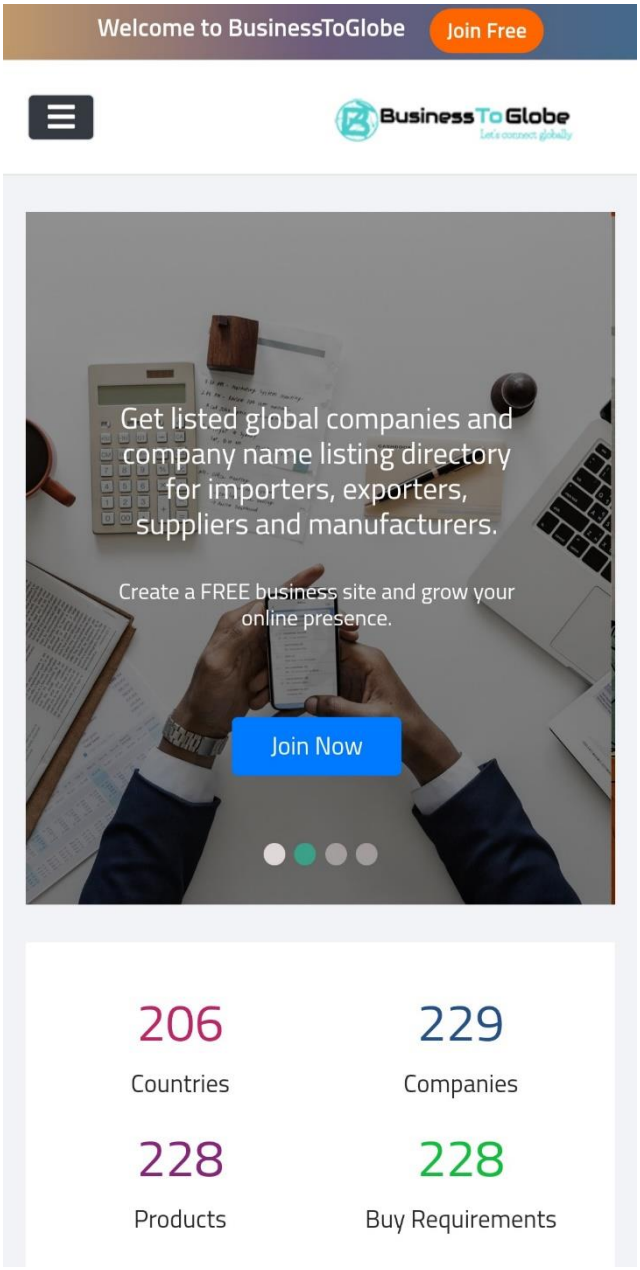

Figure 5.2.4 Homepage Responsive View

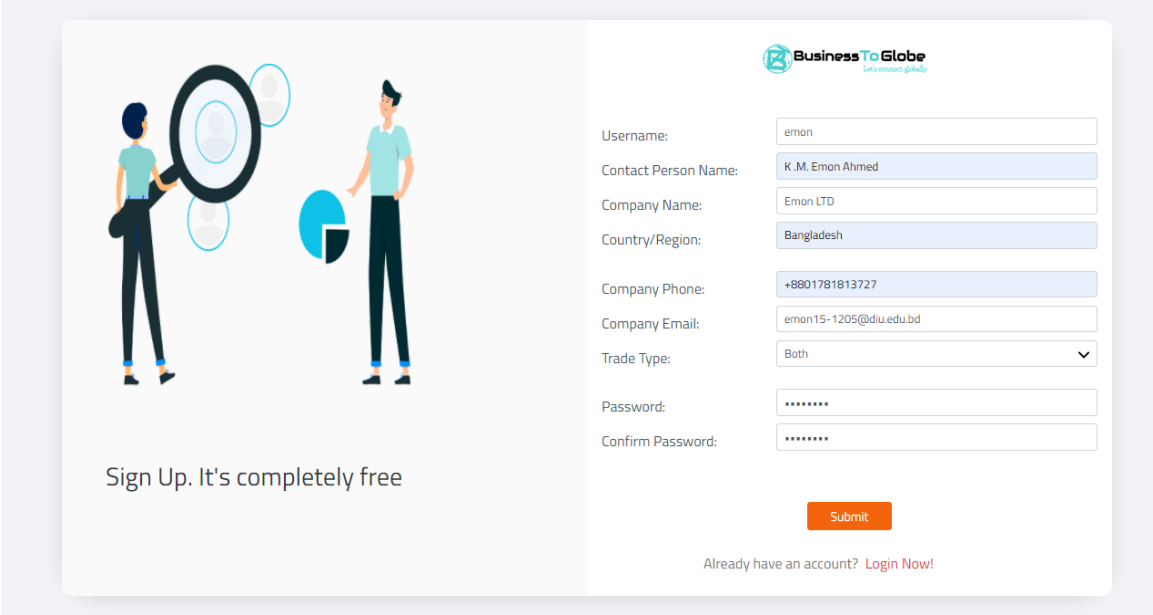

Figure 5.2.5 Signup Page

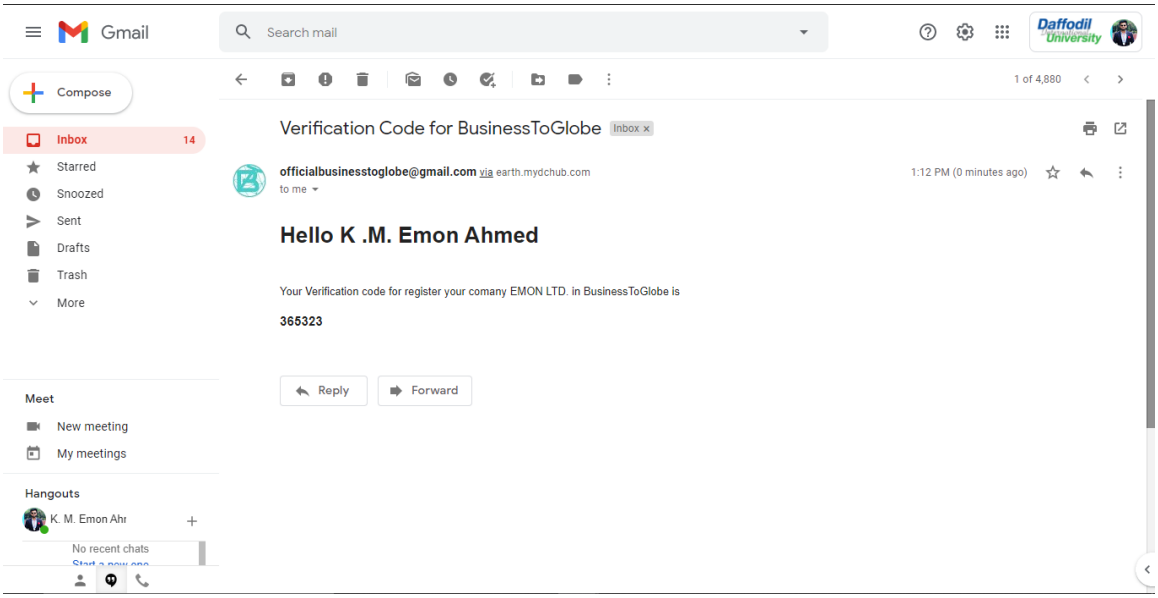

Figure 5.2.6 Verification code on Email

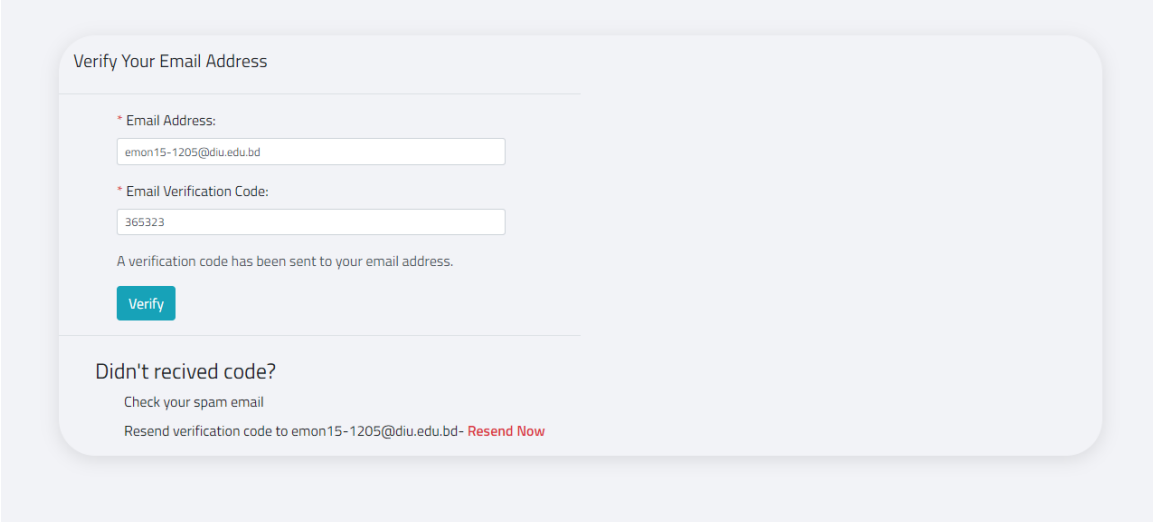

Figure 5.2.7 Email Verification Page

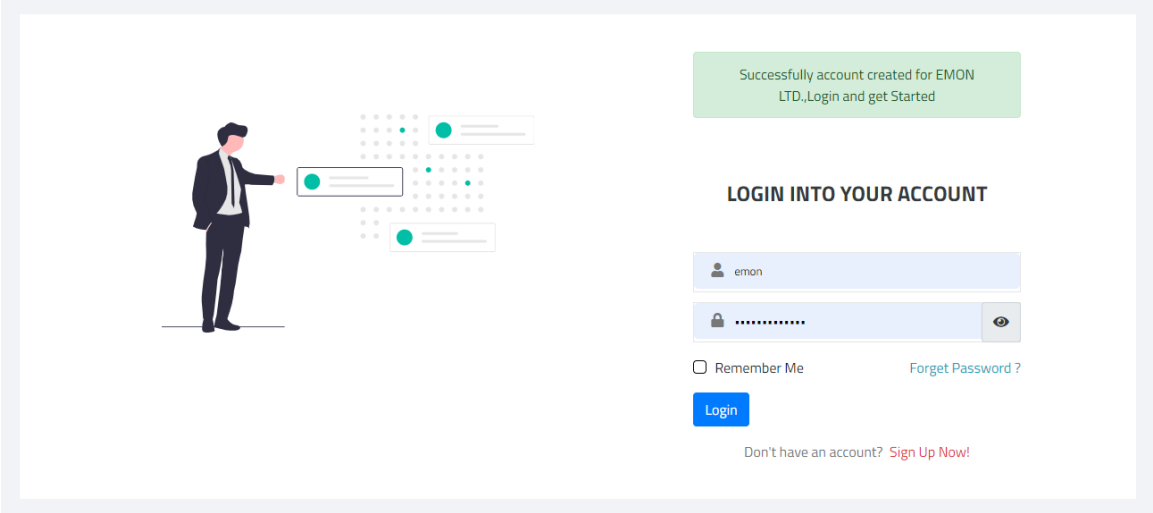

Figure 5.2.8 Login Page

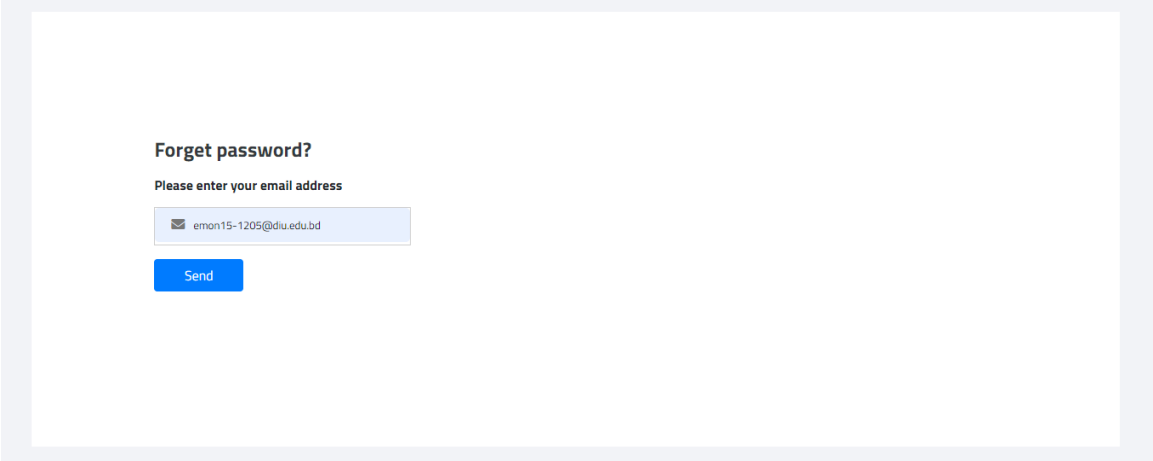

Figure 5.2.9 Password Reset Page

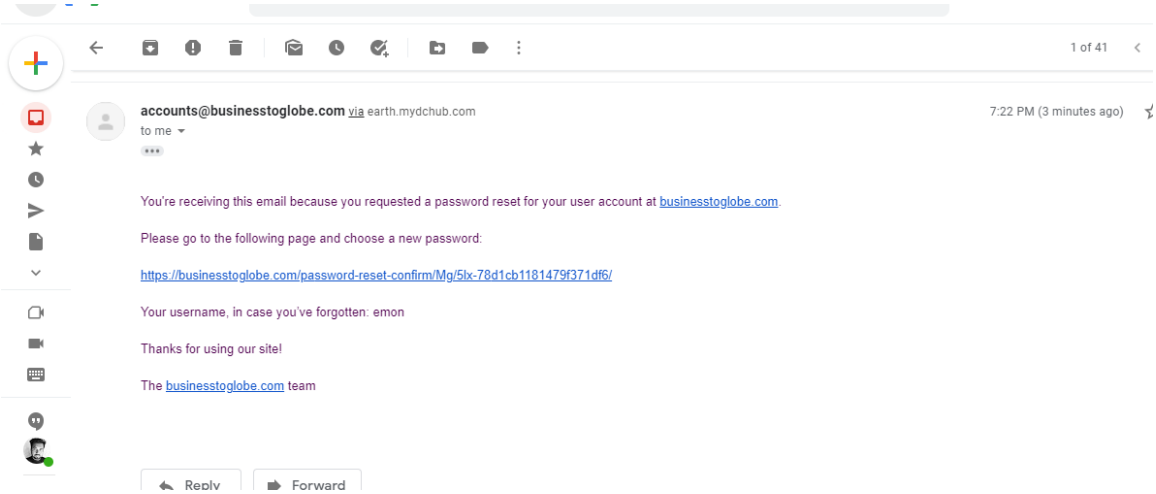

Figure 5.2.10 Password Reset link on Email (Send by the system)

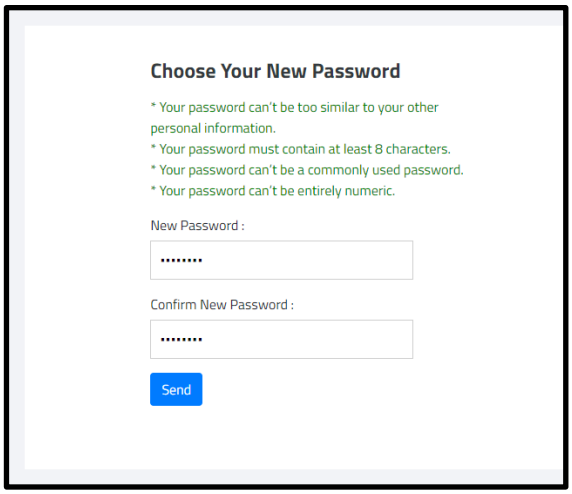

Figure 5.2.11 Password-reset-confirm

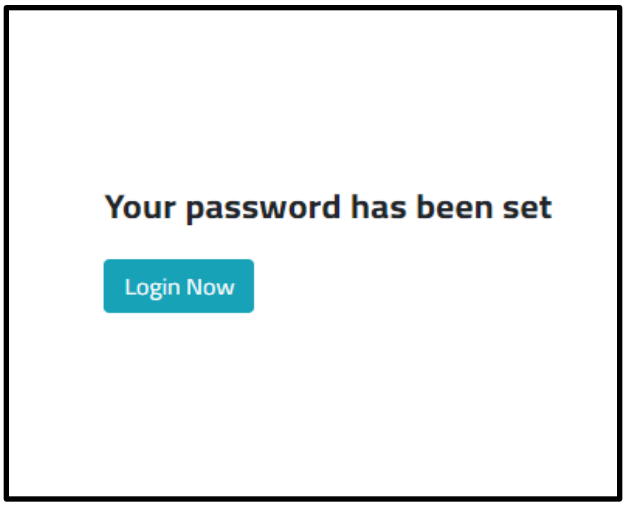

Figure 5.2.12 Password-reset-confirm

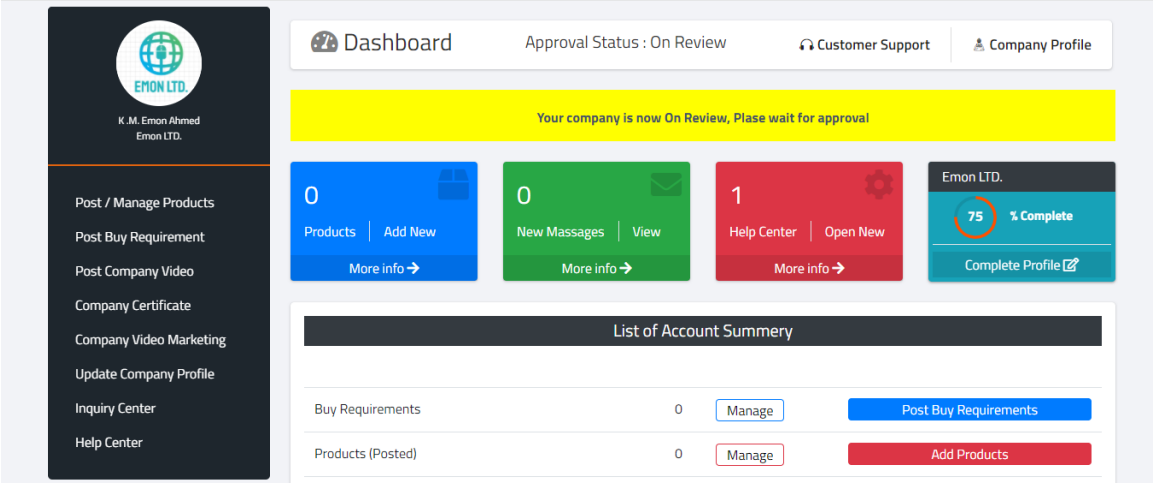

Figure 5.2.13 Dashboard Page

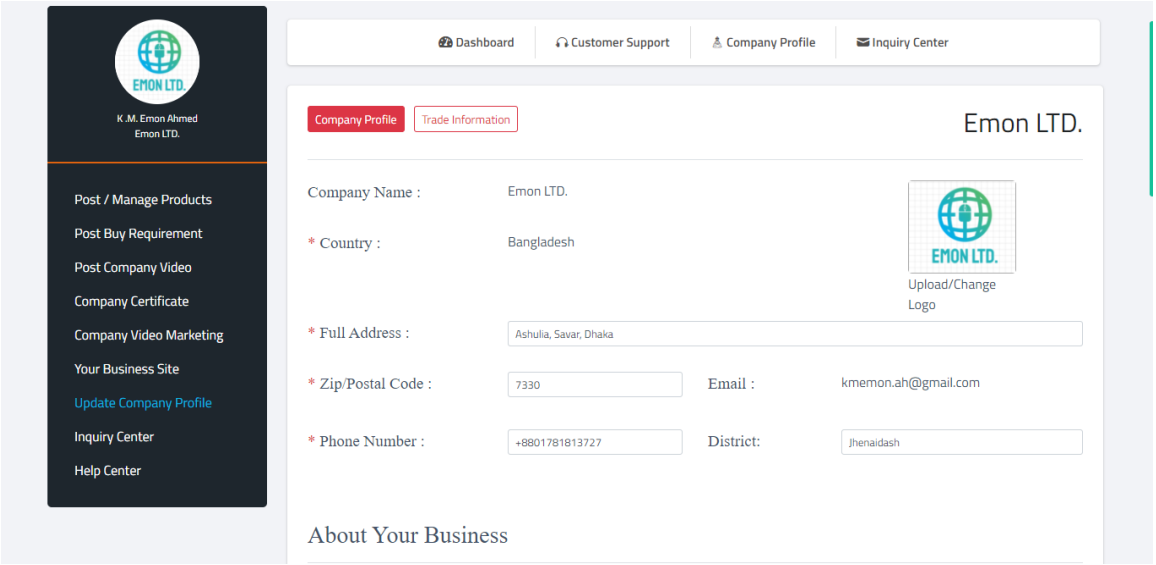

Figure 5.2.14 Company Profile Page

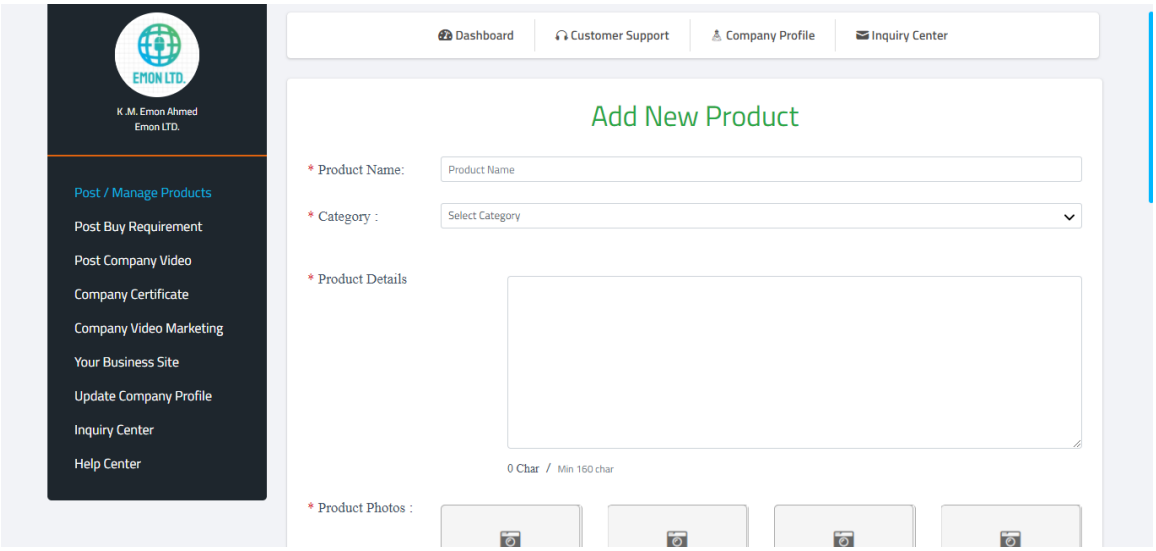

Figure 5.2.15 Add New Page (Product Shown)

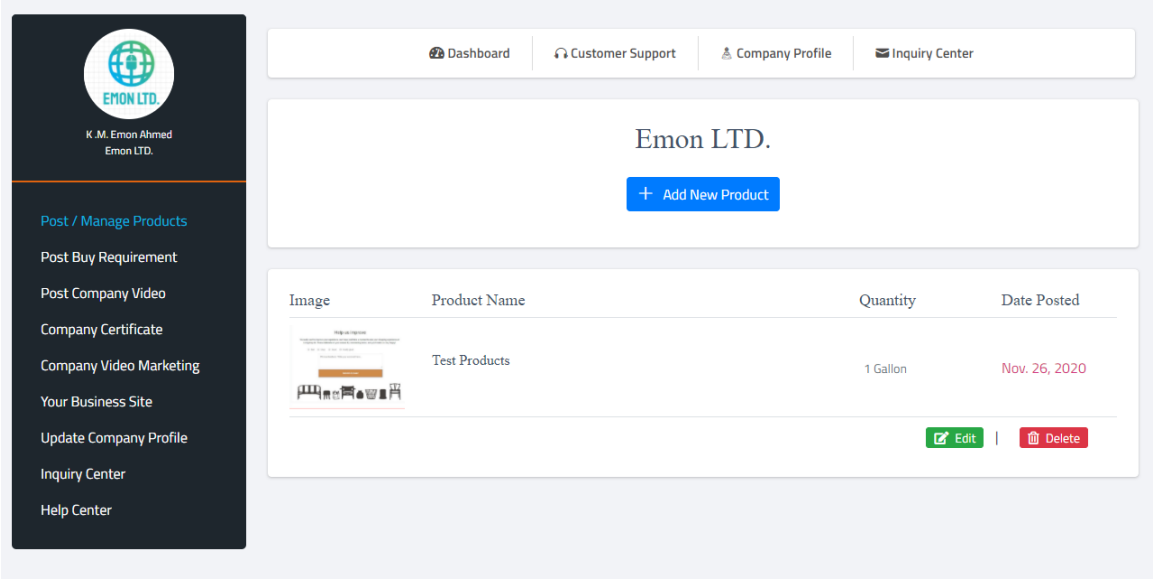

Figure 5.2.16 Manage Page (Product Shown)

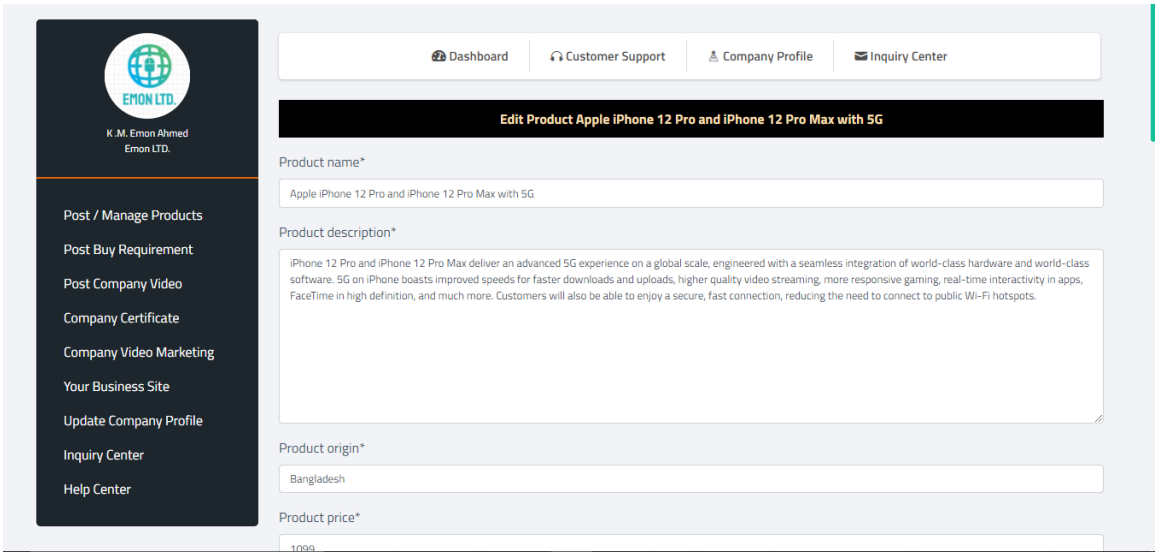

Figure 5.2.17 Product Edit Page

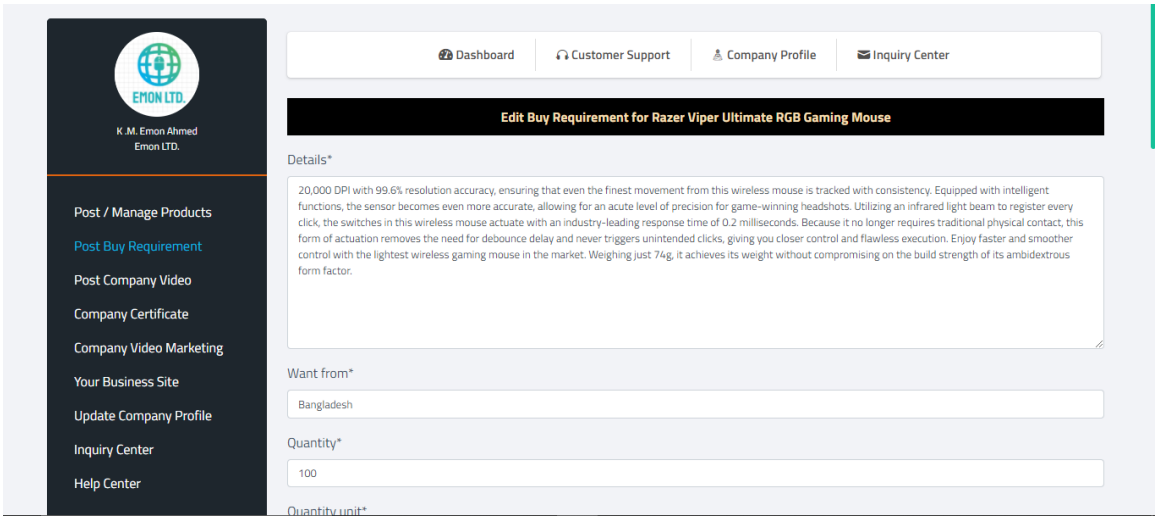

Figure 5.2.18 Buy Requirement Edit Page

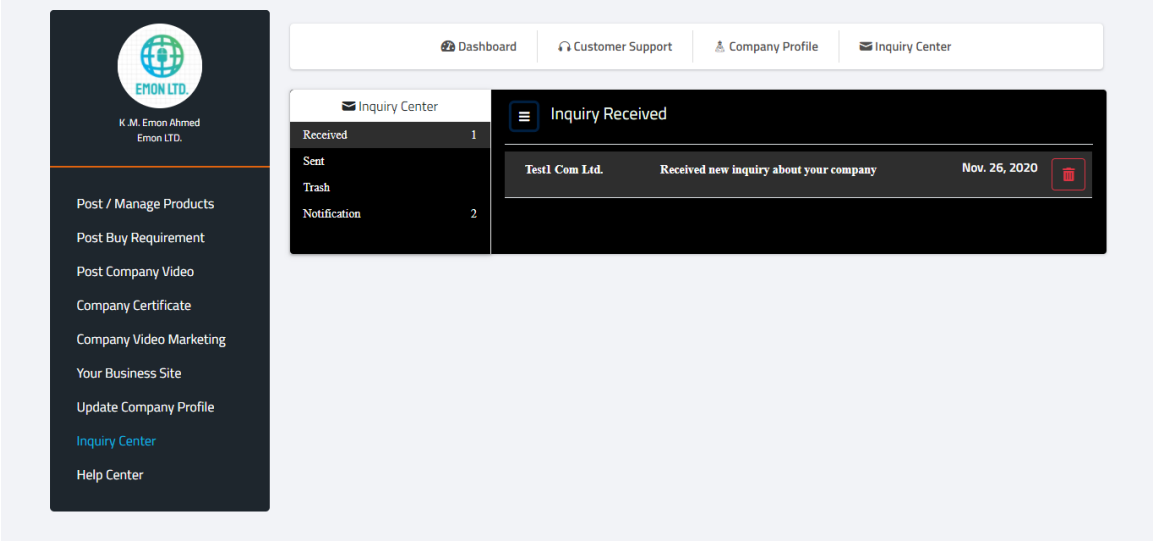

Figure 5.2.19 Inquiry-Center Page (Received Shown)

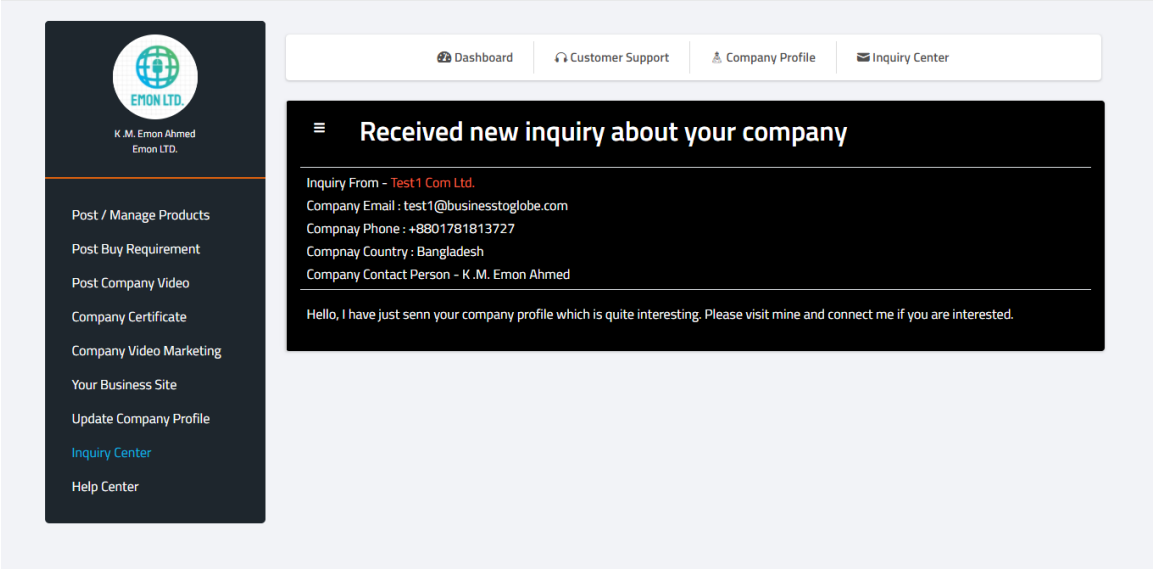

Figure 5.2.20 Inquiry Details Page (Received Shown)

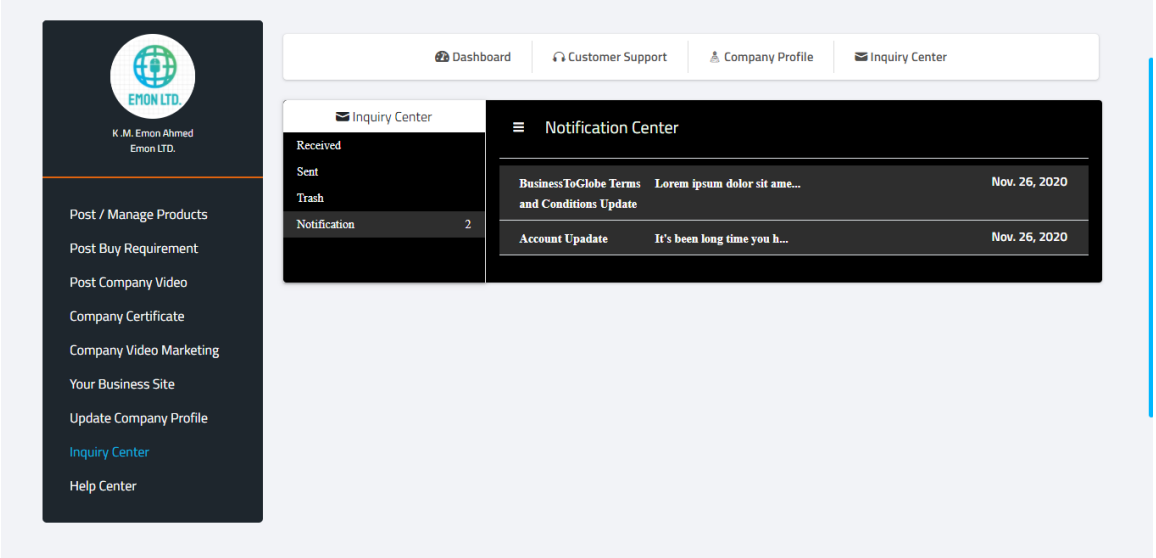

Figure 5.2.21 Notification-Center Page

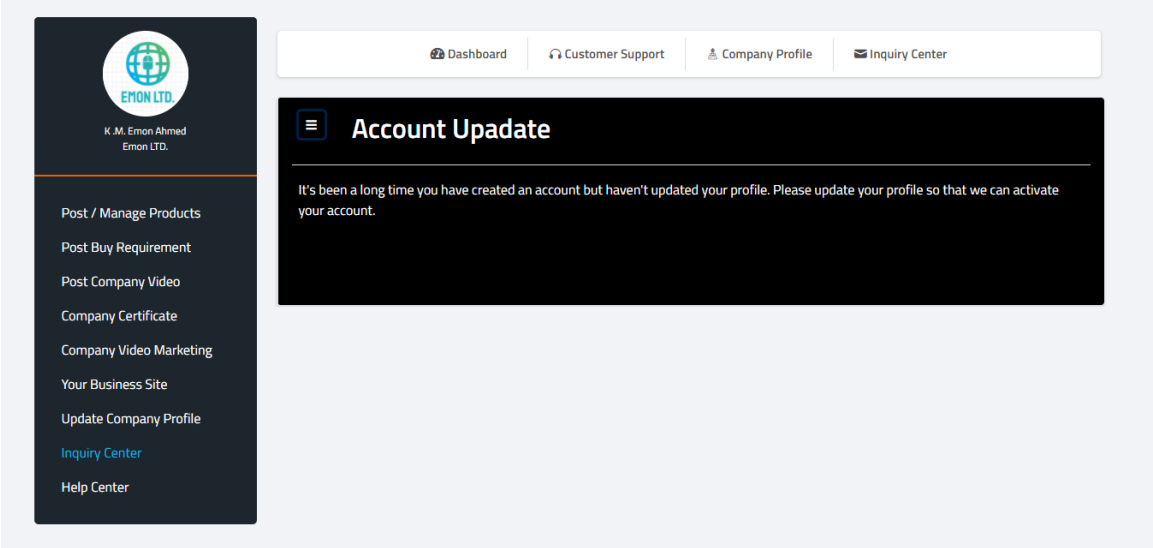

Figure 5.2.22 Notification Details Page

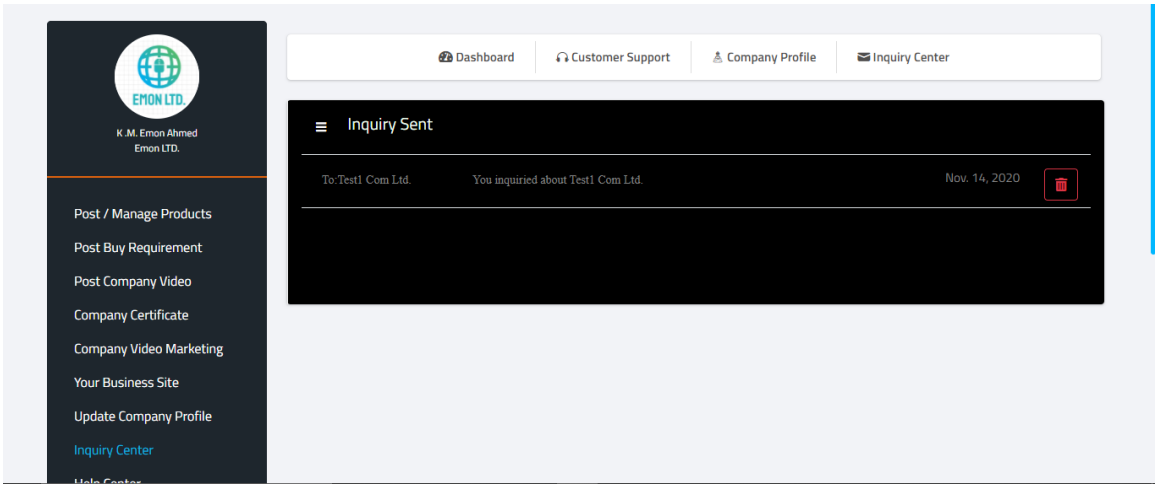

Figure 5.2.23 Inquiry-Center Sent Inquiry Page

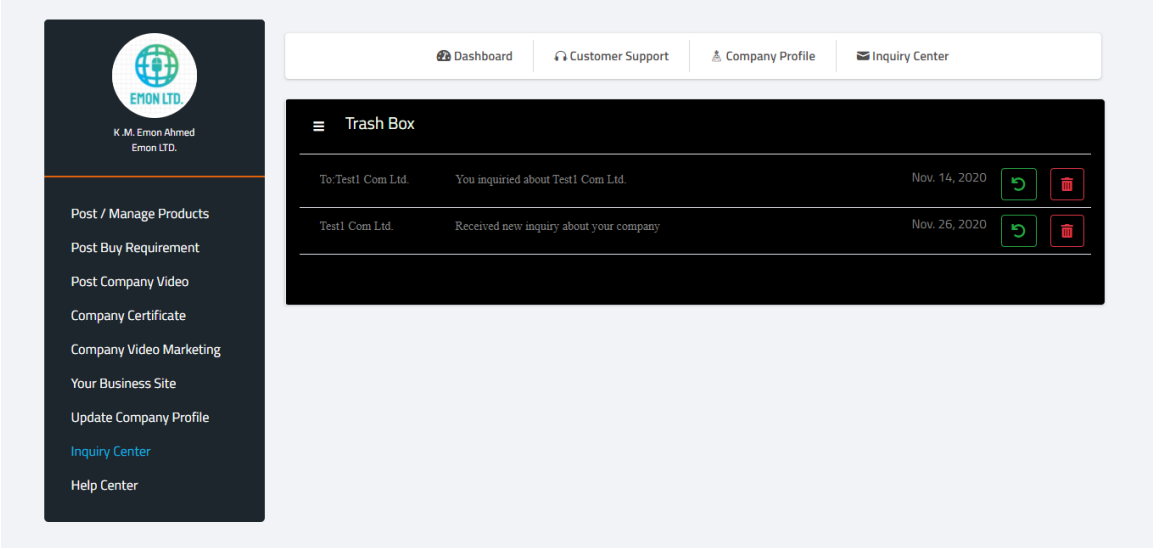

Figure 5.2.24 Trash-Box Page

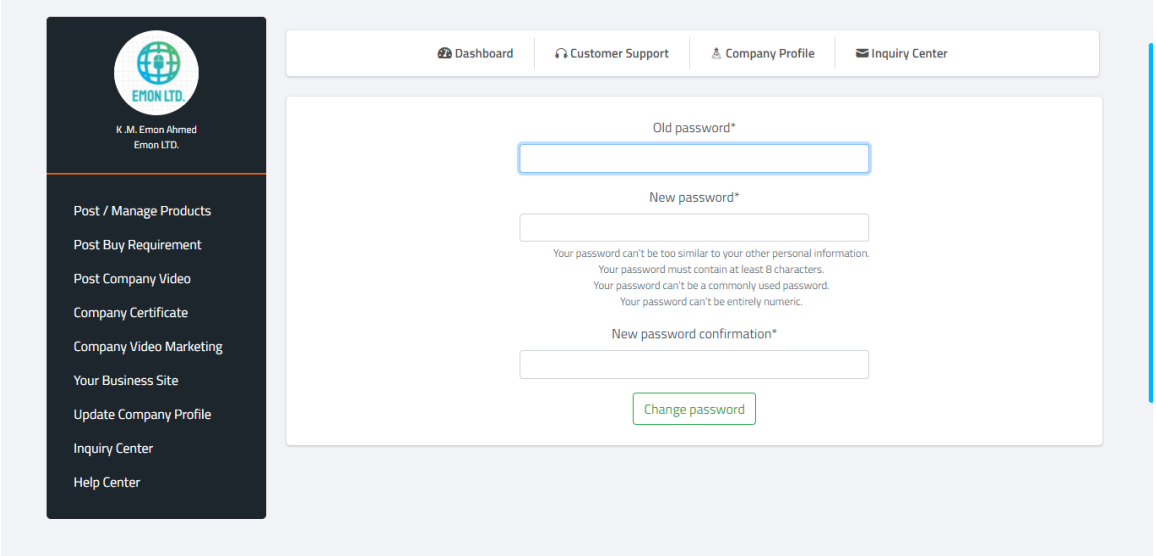

Figure 5.2.25 Change Password Page

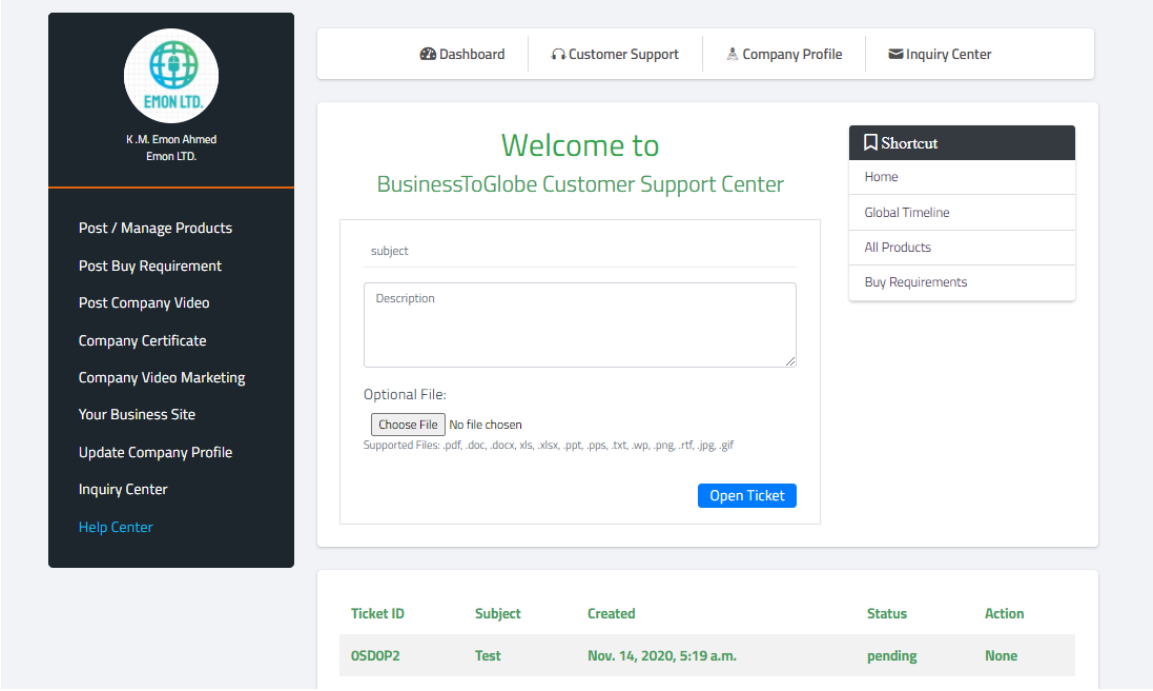

Figure 5.2.26 Customer Support Page

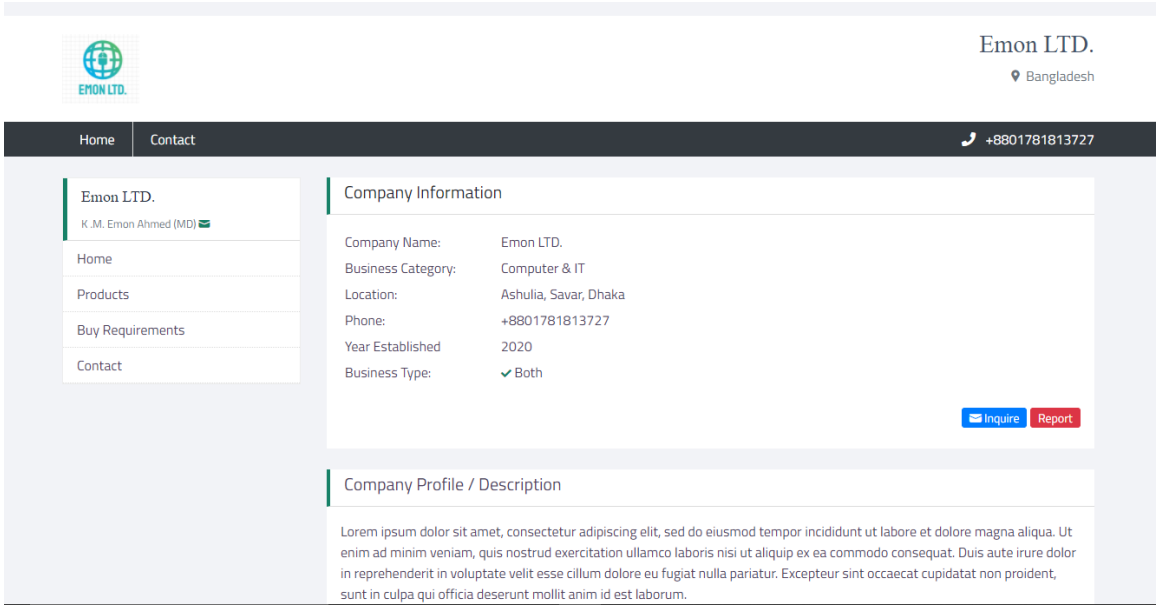

Figure 5.2.27 BusinessToGlobe Generated Individual Business Site Homepage

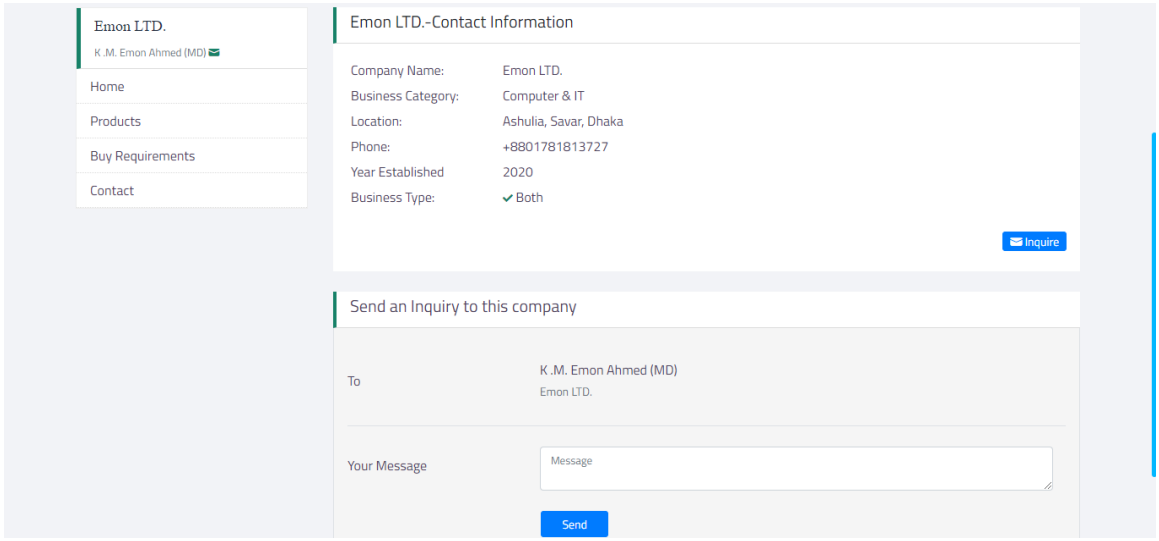

Figure 5.2.28 BusinessToGlobe Generated Individual Business Site Contact Page

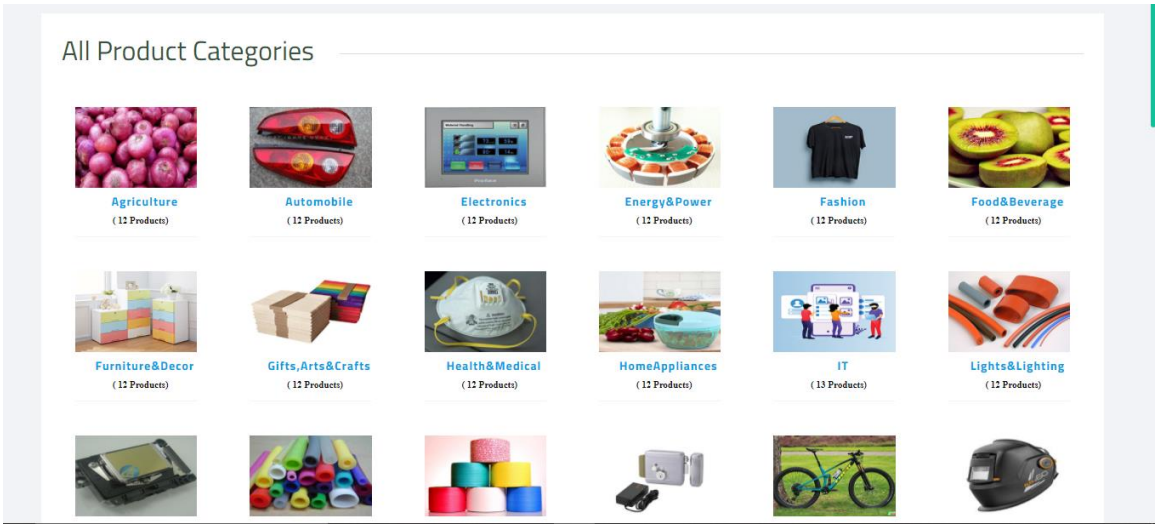

Figure 5.2.29 Product Category Page

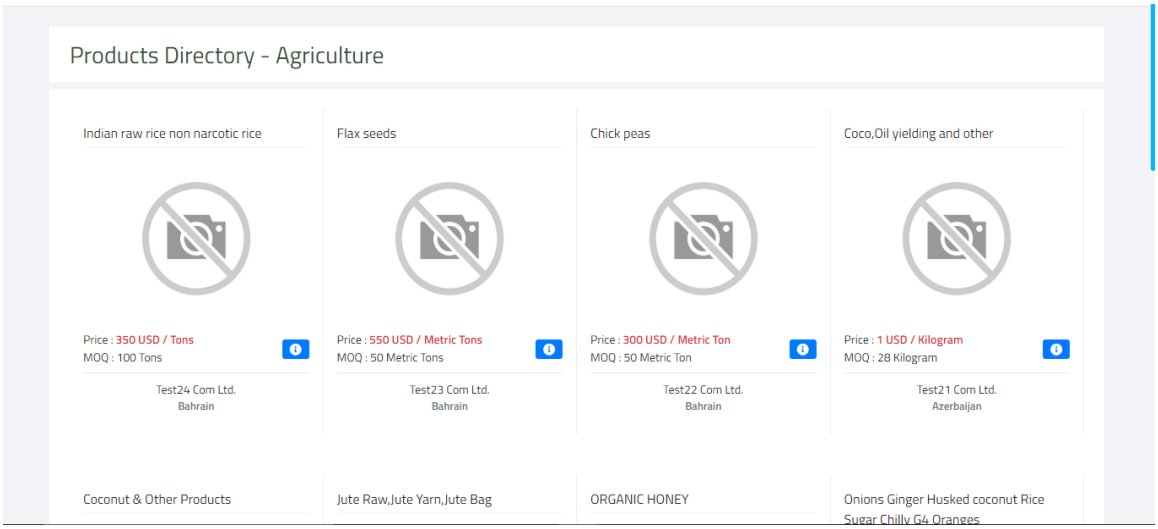

Figure 5.2.30 Category wise product Page (Agriculture category shown)

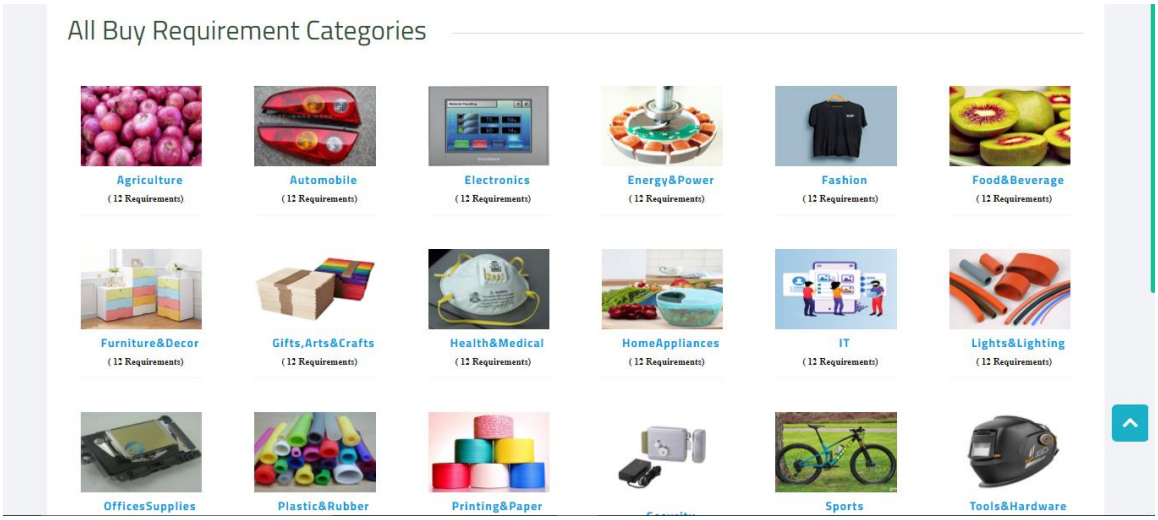

Figure 5.2.31 Buy-Requirement Category Page

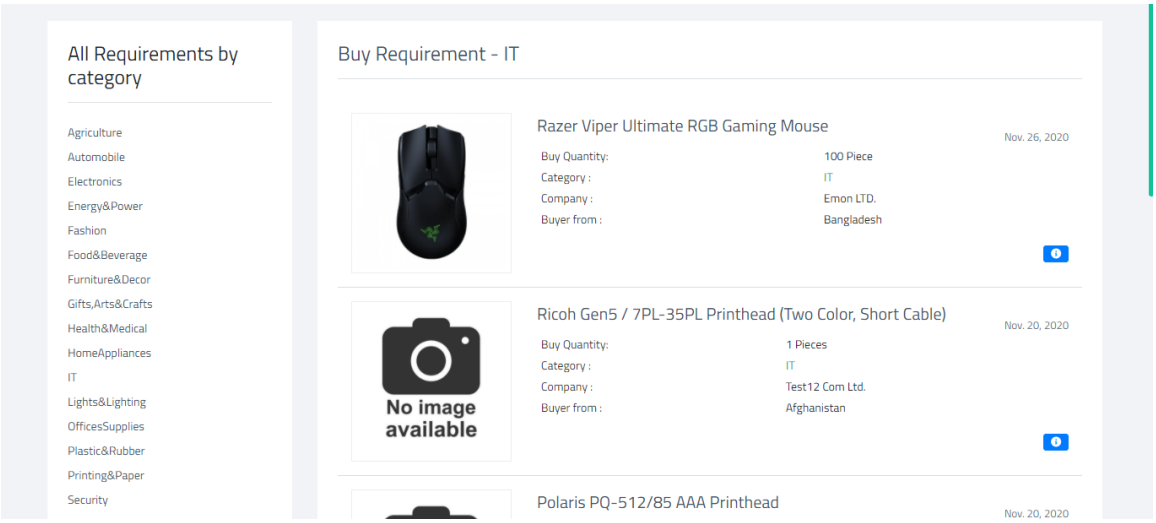

Figure 5.2.32 Category wise buy requirement page (IT category is shown)

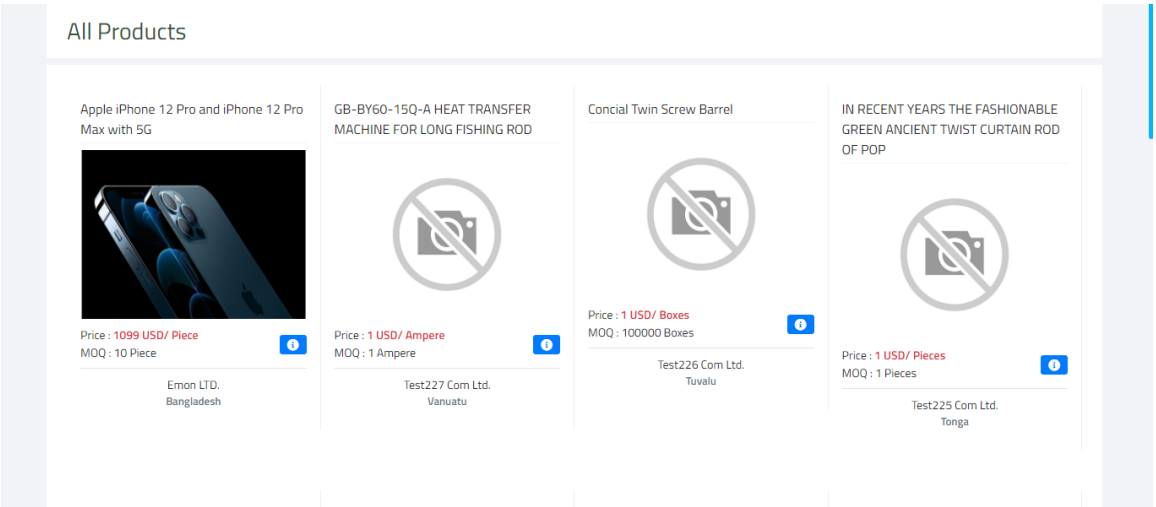

Figure 5.2.33 All Products Page

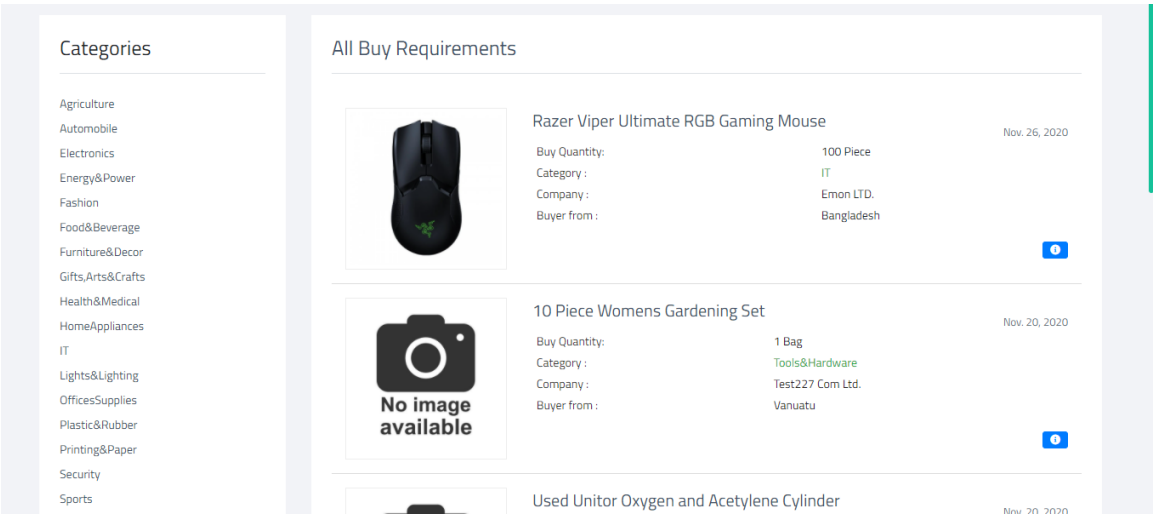

Figure 5.2.34 All Buy Requirements Page

Figure 5.2.35 Product Detail Page

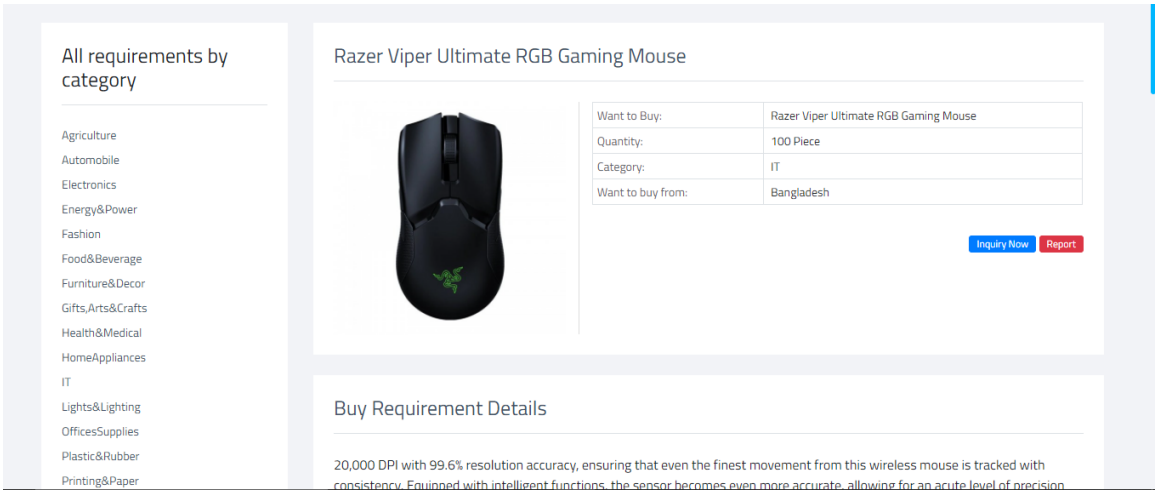

Figure 5.2.36 Buy Requirement Detail Page

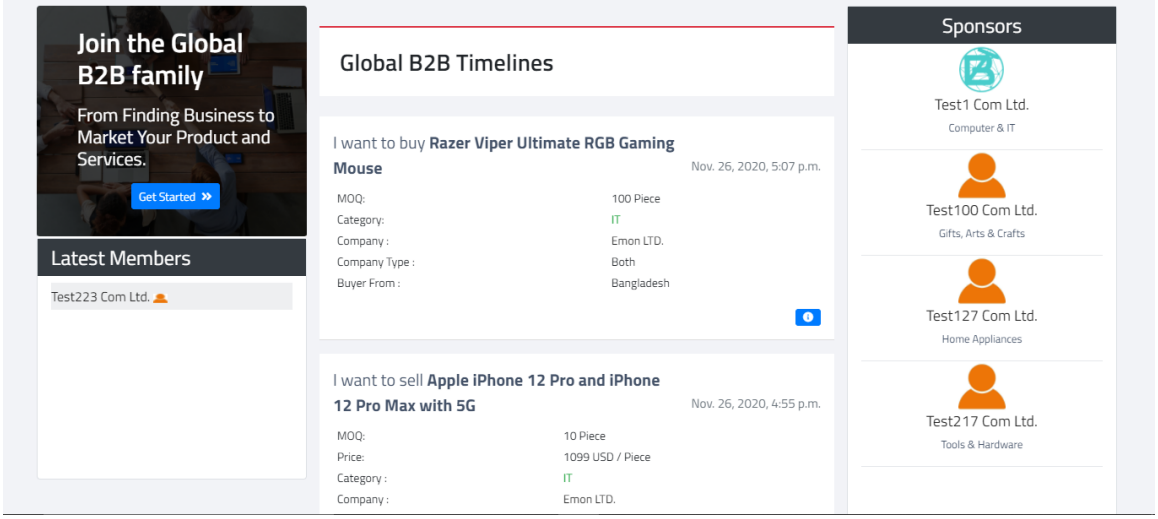

Figure 5.2.37 Global Business Timeline Page

Figure 5.2.38 Business Directory Page

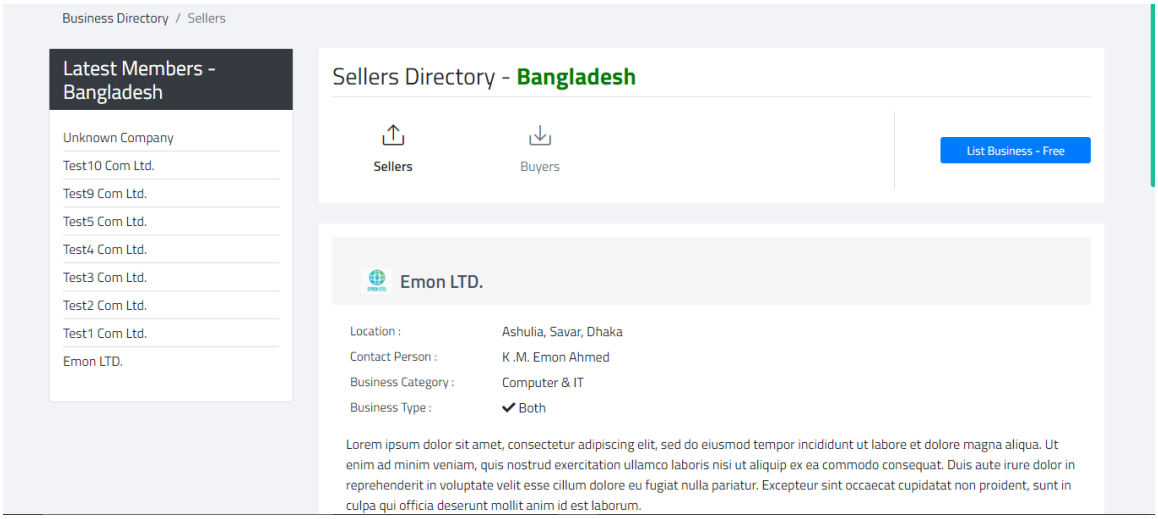

Figure 5.2.39 Country wise seller directory Page

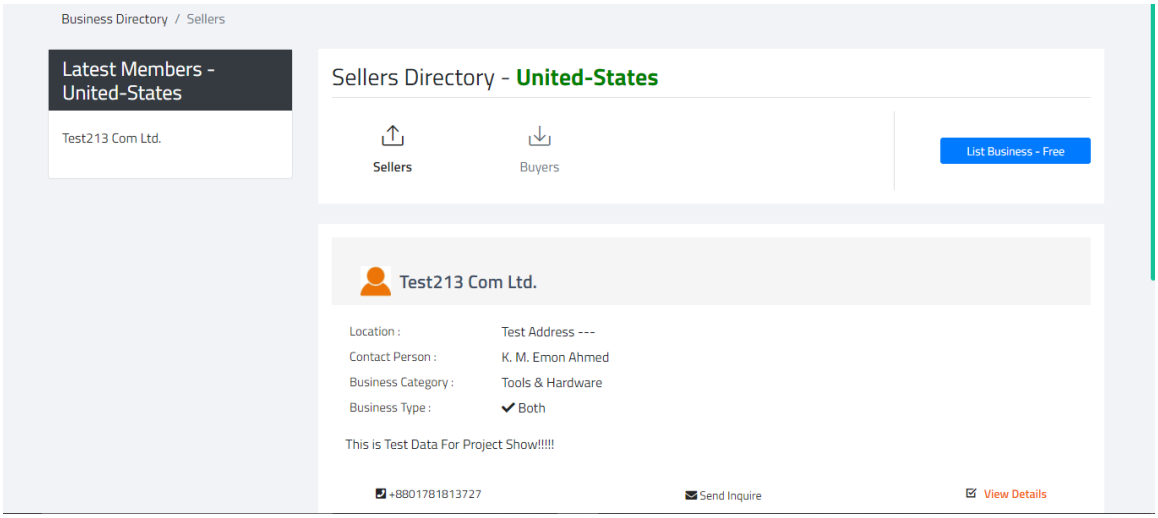

Figure 5.2.40 Country wise buyer directory Page

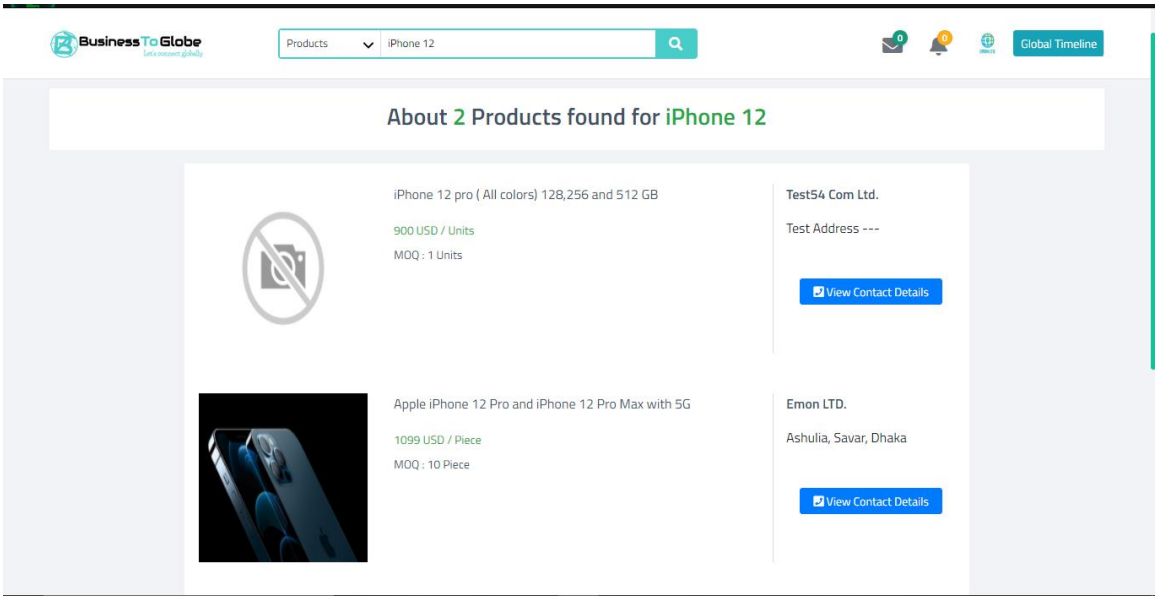

Figure 5.2.41 Search Result Page (Product Search Shown)

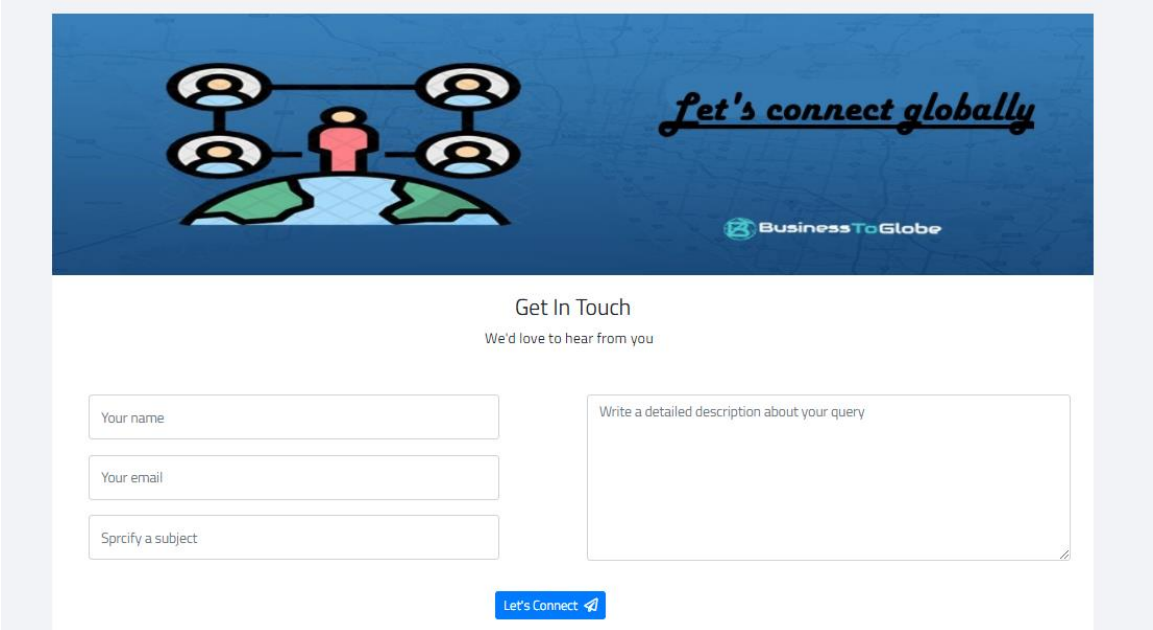

Figure 5.2.42 Contact-us Page

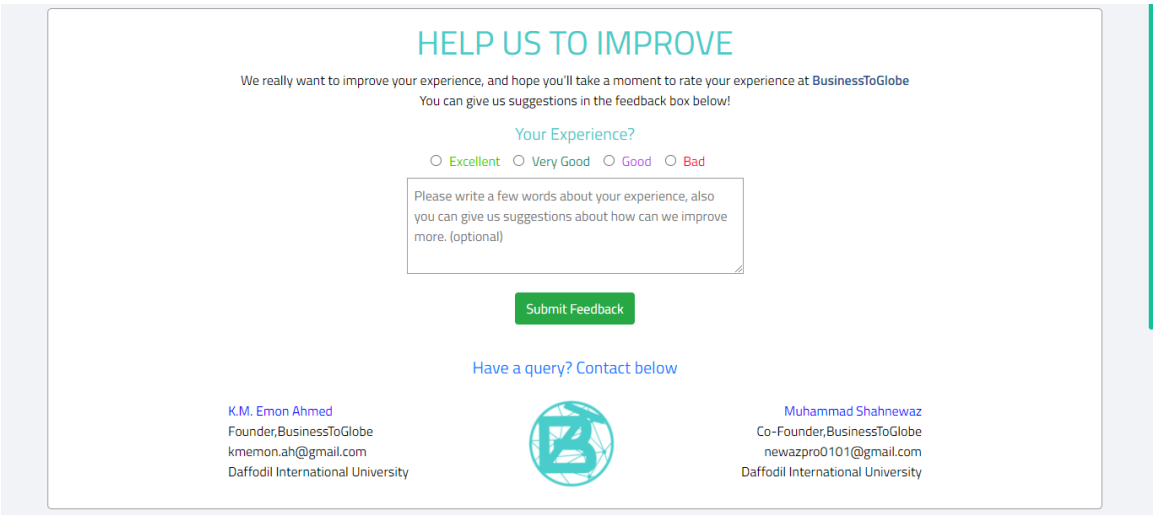

Figure 5.2.43 Feedback Page

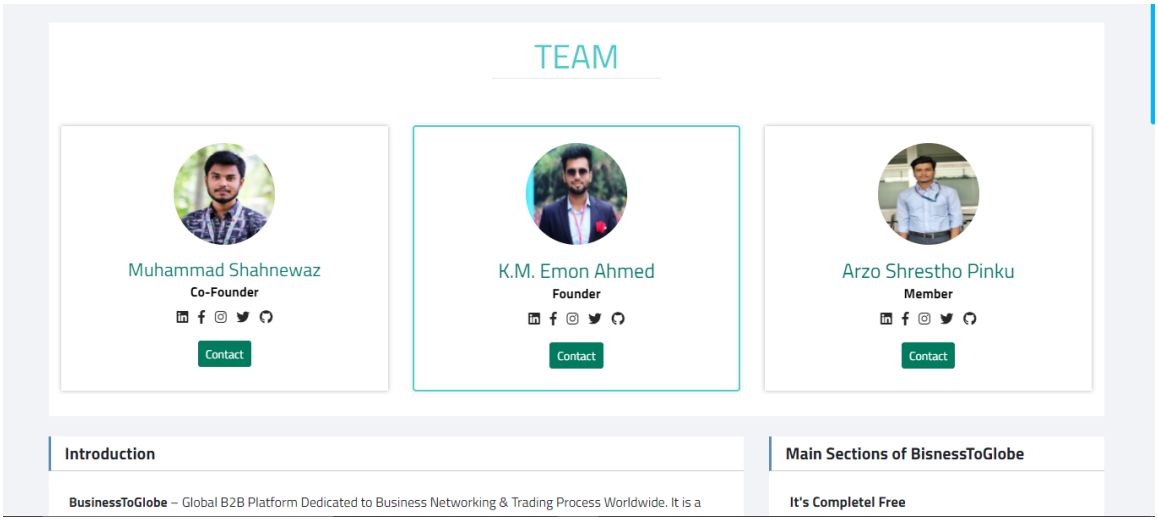

Figure 5.2.44 About-us Page

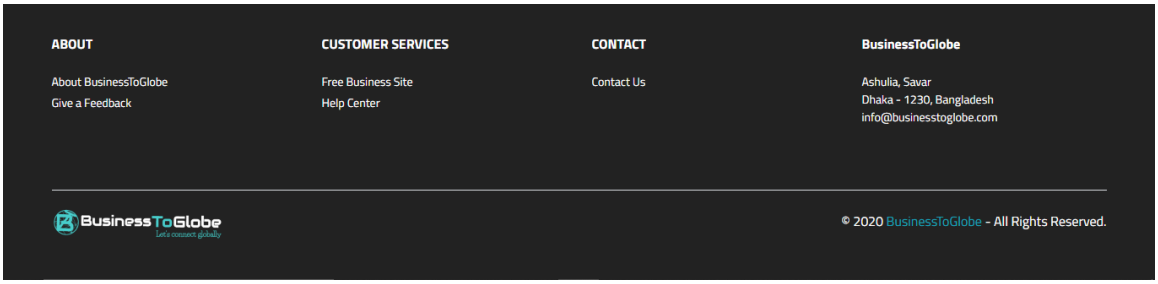

Figure 5.2.45 BusinessToGlobe.com Footer

5.3 Implementation of Interactions

There are a total of 50 individual routes for administrations to manage our project "BusinessToGlobe.com". We have developed interaction by efficient view algorithms in the Django framework. We have used both the function-based view and the class-based view to developing interaction. We have also implemented form validation and data filtering in the backend of our project which makes our server-side secure. Also, we have used an image compressing method to reduce the size of user-uploaded images. User passwords are always safe on our site because of the password hash method before the password saving database which means only the user will know the real password of the user account so that admin can't also view the real password of a user account. Like this, we have developed the security of our web application. We have hosted our website on a secured web hosting service and our web-application runs on Lightspeed Web server. In this documentation attaching some main screenshots of our project administration.

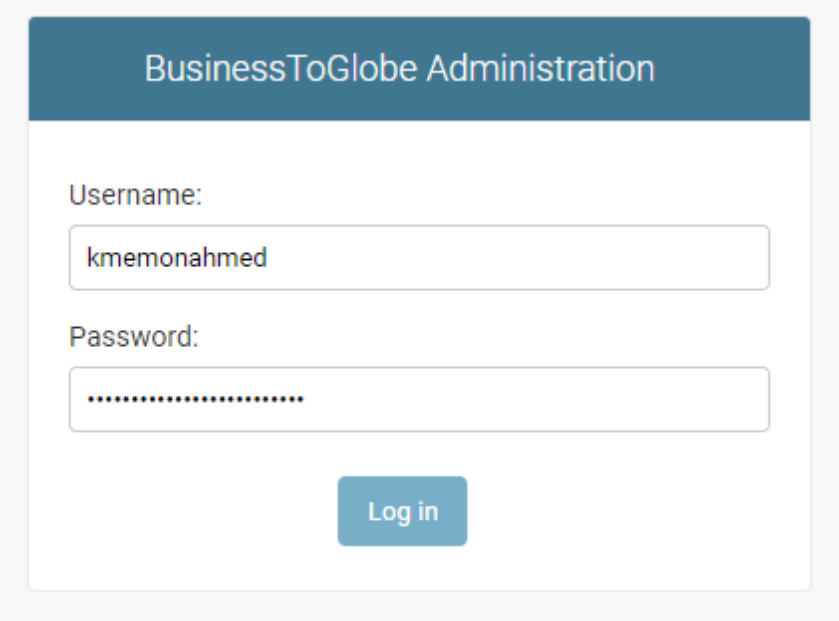

Figure 5.3.1 Admin Login

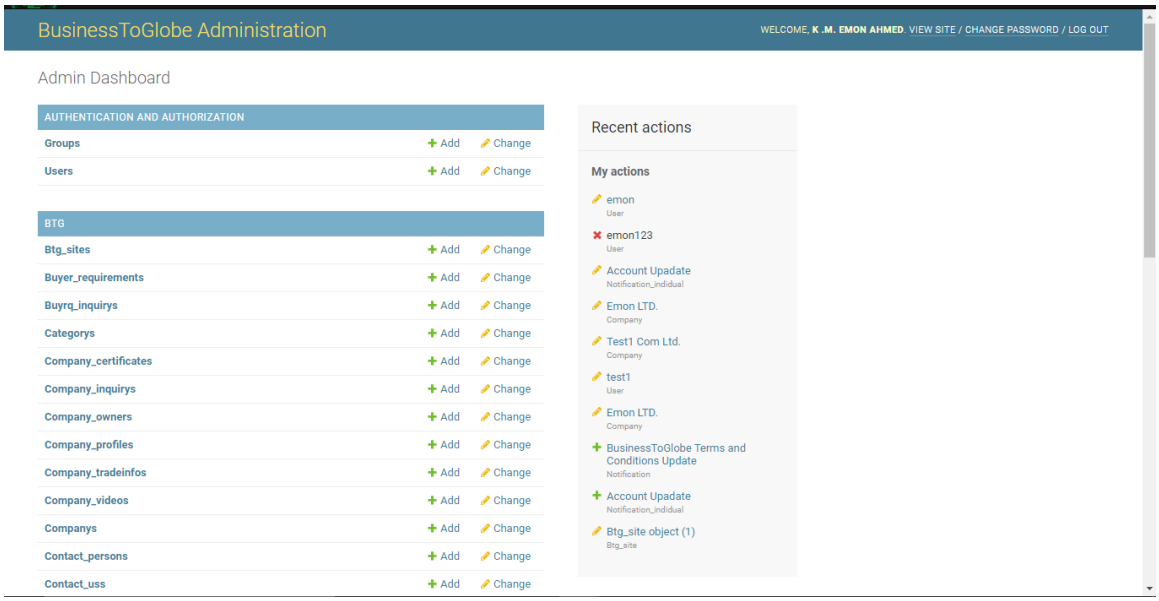

Figure 5.3.2 Admin Dashboard

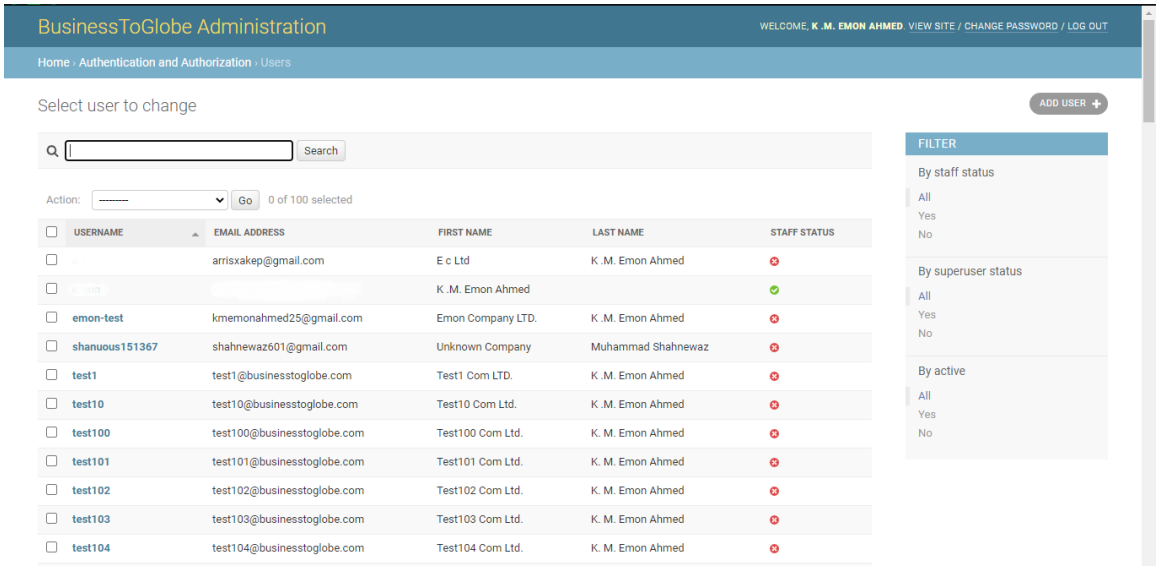

Figure 5.3.3 All Users Manage

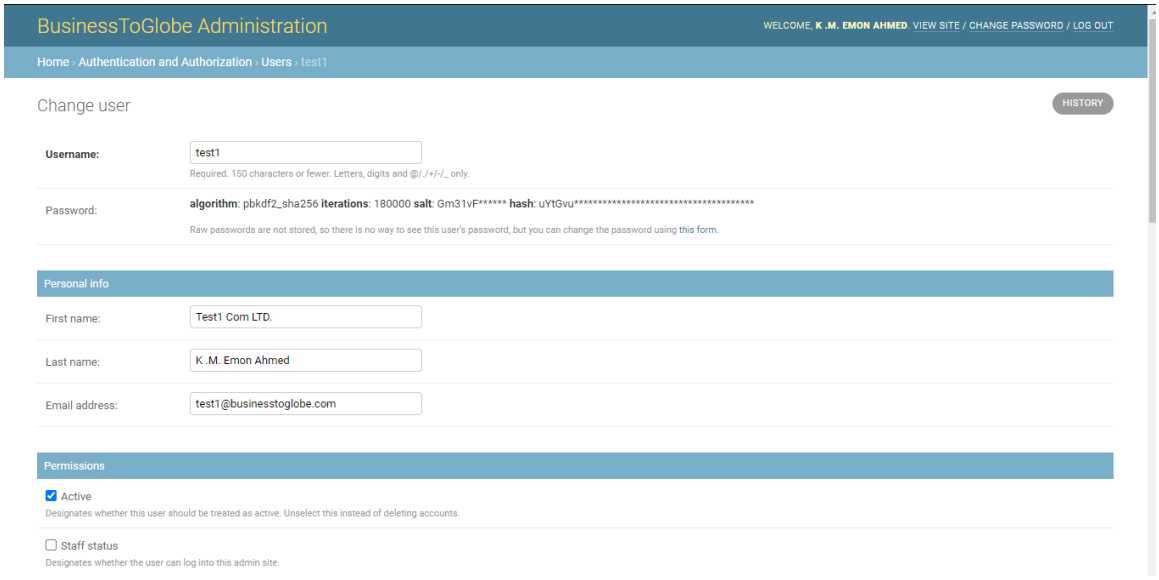

Figure 5.3.4 Individual User Manage

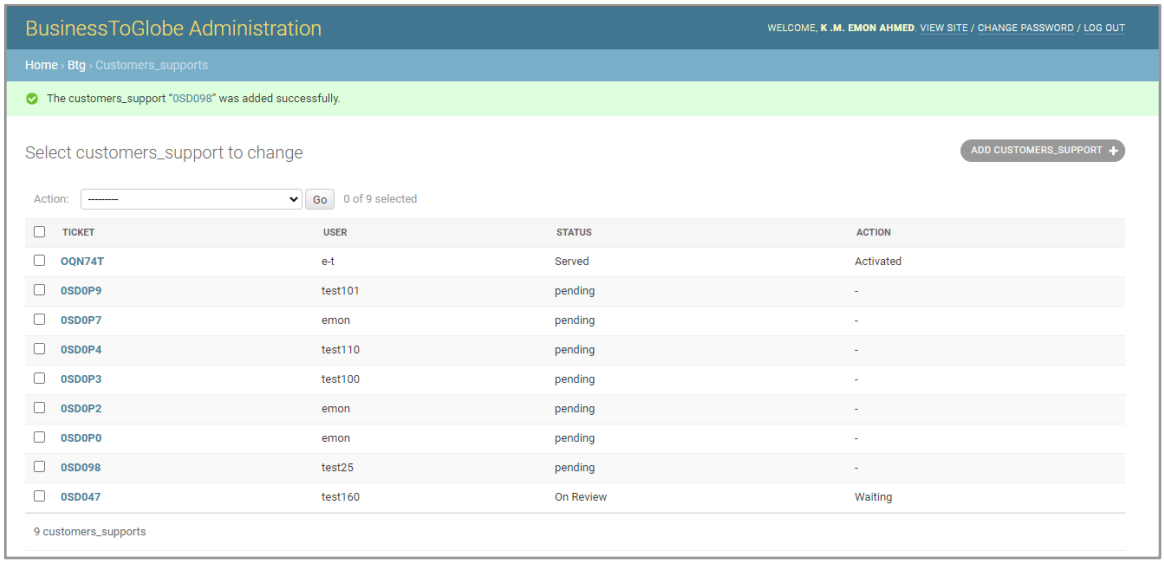

Figure 5.3.5 User Support Manage

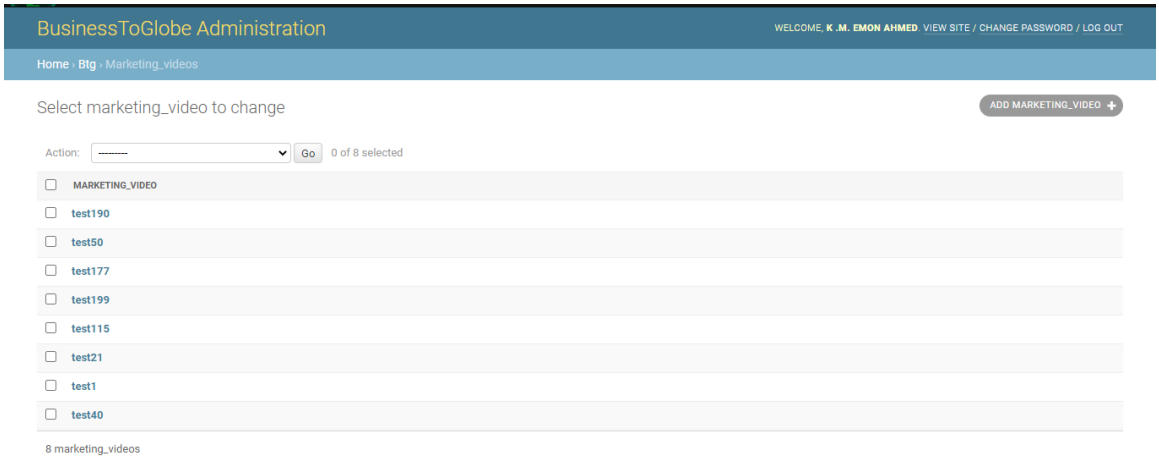

Figure 5.3.6 Video Marketing Manage

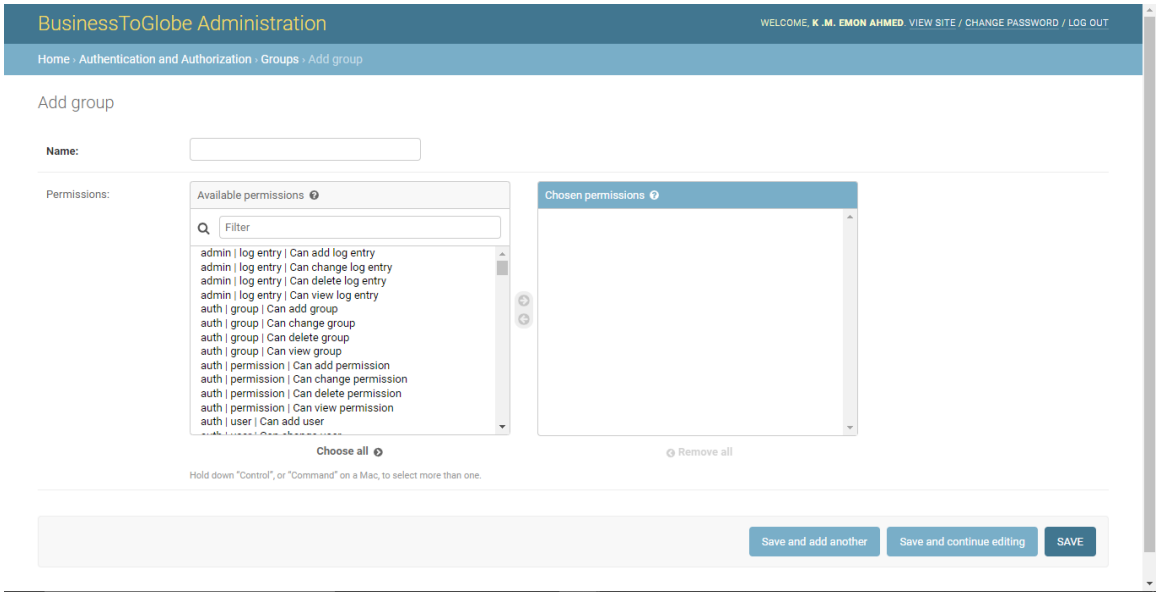

Figure 5.3.7 Admin Panel Permission Group Manage

5.4 Testing Implementation

We have implemented different kinds of Testing to find the vulnerability in our web application. Listing the name of tests which we have done during and after completing our web application.

Table: 5.4: Implemented Tests

SL No.	Test Name
01	HTTP Request Test
02	Functionality Test
03	Form Validation Test
04	Usability Test
05	Performance Test
06	Responsive Test
07	Database Test
08	Compatibility Test
09	Security Test
10	Crowd Test

5.5 Test Results and Reports

Table: 5.5: Test Report

Test Name	Test Cases	Test Result	Comment
HTTP Request Test	HTTP get request for web pages to view with static file	All page gives HTTP "200"	Working As expected
Functionality Test	Email Sending Functionality	Sent Successfully	Working As expected
	Internal Links Click	Goes to route	Working as expected
	Conditions Check	Template and backend conditions running	Working as expected
Form Validation Test	Blank Input	Gies Warning	Working as Expected
	Invalid Input	Gives Warning	Working as expected
	Valid Input	Request Sent	Working as expected
Usability Test	Broken Link	Not Found	Passed
	System run by end-user check	Runs the system without frustration	Working as Expected
Performance Test	Response time	2.1 s	Working slightly less than expected, Need to host in a dedicated server
	Normal load	Smoothly functioning	Working as expected
	Peak Load	Server slows down	Dedicated server

			Needed
	Cumulative Layout Shift	0.14	OK, but consider an improvement
	Time to Interactive	7.0s	OK
Responsive Test	Mobile Galaxy S5	No page break	Working as expected
	Mobile - iphoneX	No Page break	Working as expected
	Tablet-Surface Duo	No page break	Working as expected
	Tablet-iPad Pro	No page break	Working as expected
	Laptop - HP(1326*367)	No page break	Working as expected
Database Test	Queries Execution	No errors are shown	Working as expected
	Save data from the input	Saved Successfully	Working as expected
	Filter data before saving	Filtering	Working as expected
	Serve Data by requesting in server	Serving properly	Working as expected
Compatibility Test	Chrome	All(Html, JavaScript,Image,Front,Animation) working fine	Working as expected
	Firefox	All(Html, JavaScript,Image,Front,Animation) working fine	Working as expected
	Safari	All(Html, JavaScript,Image,Fr	Working as expected

		ont,Animation) working fine	
Security Testing	Hash user password before saving	Password hashed successfully	Working as expected
	SQL injection attacks	Preventing successfully	Working as expected
	Verify user roles and rights	Algorithm working properly	Working as expected
Crowd Test	Group of 10 people	Serving Smoothly	Working as expected

CHAPTER 6
CONCLUSION AND FUTURE SCOPE

6.1 Discussion and Conclusion

By doing this project "businesstoglobe.com", we have gained a lot of experience. There are a lot of things about web development was unclear to us, after doing this project we have gained good knowledge about HTML, CSS, Bootstrap, JavaScript, VueJS, Django template programming, Django backend server design, Django Database model, SQLite, and MySQL. The knowledge we gather from this development will help us in our future work as well. We have developed this project as a dynamic web-application which will hopefully help small and mid-range businesses expand worldwide. We have tested our application so carefully and developed security for our users so that they can use our application without any hassle. The motto of our project is "Let's connect globally" and we hope it will serve the users the best experience in the technology-based business networking system.

6.2 Scope for Further Developments

We will work on many new features as well as old features also to make our web application more efficient so that it can expand businesses in front of the world more smartly. As our project is a business to business networking project, it gives many development scopes for us. Listing some of the features which we will develop near future.

- Follow features between companies - Which company will follow, that company will notice when their followed company will post a new product or buy requirement.
- Business timeline for each user - Each user will get an option where they can view the latest posted products and buy-requirements from the company they are following.

- We Will, add data mining and analysis to our project - We will track the activity of the user on our application, then we will develop a data analysis algorithm which will suggest users product/buy-requirement by analyzing user activity data.
- Ai based search - We will develop a new ai based searching algorithm which will help the user to complete their query by depending on their previous search data.
- We will work more on the existing security, user-interface, and server algorithm area of our project which will increase security, algorithm efficiency, and user experience of our web application.

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