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Home Material Solutions for You

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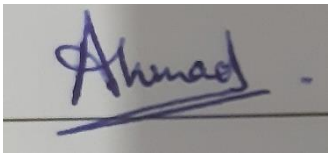
Signature: 

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Abstract

One of the dreams of every Pakistani citizen is to construct his own home but converting this dream into a reality is not that effortless or trouble-free. Usually, a normal person is not that professional and has any expertise related to this field of work. The first step of process of constructing the home includes estimating the amount of required construction material and how much it will cost to consumer. A consumer finds it very burdensome to search for a high quality material at ideal price because whole cycle is based on guesswork. The extensive alarm for consumer is that all his efforts will results in loss of time and funds because he is not carrying satisfactory market information or understanding. The aim of this project is to revolutionize the traditional way of construction by providing such a platform to people who are interesting in constructing their home. The main idea behind this project is to provide complete guidance to user regarding the excellent material at ideal costs.

Executive Summary

First chapter of the FYP report starts with the introduction of our project. In introduction, we describe the background information behind our idea that constructing a home is not an easy task for any normal person and this condition becomes more complicated when that person realize that he is not carrying satisfactory knowledge of market. At this point we are going to introduce a platform which will provide the facility to users that they will be able to estimate the amount of material required, based on the information they provide and further suggesting them best quality material sellers of all materials corresponding to their mentioned budget. Further we describe the audience which our project will target. User of out platform will be customer or purchasers, who are interested in buying construction material and other users will be material suppliers or distributors, who are interested in expanding their business by registering online shops on this platform.

In Second chapter of FYP report we define the problem domain of our project which is related to construction and building field. Problem statement of our project is that we have digitalized version of every business and field for example, ecommerce, e-learning and email. There is no online platform which can guide the people who are interested in constructing their home and that kind of platform is much needed to revolutionize the traditional way of construction. Further we talk about the goals and objective of our project which are reducing mental load of users by doing research and development for them and recommending the optimal choice available for them. Not only this rating and recommendation system of application will ensure the growing environment and help the service provider to introduce high quality products at suitable prices. Focusing on Sustainable development goal, out project supports three of its goals which are decent work and economic growth, industry innovation and infrastructure, and partnership for the goals. Further we discuss in detail that which constraints we can face during development of application. These constraints includes daily updates, managing a dataset, marketing of platform to attract audience and security of application.

In third chapter of FYP report we discussed the features and comparison of already existing platform which are similar to our idea. Critical analysis of these platforms which are maymaar.pk, zarea.pk and materialz1.com reveals that they have more weaknesses in their models as compared to strengths. Further we explore about the technology stack on which all these platforms were made. In the end we made a literature review summary table in which we do comparison of all three platforms and chapter ends with conclusion.

In chapter 4, we mention all the technical information related to our project. First, we elaborate the features of our project and we write about all the functional as well as non-functional requirement. Functional requirements consist of all the basic functions which our application will be able to do for example all functionalities related to admin, vendor and user. Non-functional requirements consist of general properties of our system. We are providing use cases, Database design, ER diagram, GUI and risk analysis of project. Database design will show that how our database will look like and GUI are there as sample representation of our application’s interfaces.

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Chapter 1: Introduction

In our country, constructing your own home is not less than a challenging mission. This condition becomes more complicated when the person who wants to construct his home knows nothing about the market trends. In this whole construction process, the things which is mostly concerned is high quality material at optimal price. This application will provide the facility to users that they will be able to estimate the amount of material required, based on the information they provide and further suggesting them best quality material sellers of all materials corresponding to their mentioned budget. This system will do the thoroughly analysis for its user and provide them with the best scheme which is going to be in their best interest. This application will ensure its users that their huge investment will use up in an optimal way.

This document starts with the description of project, in which the basic problem and need for the project as a solution of that particular problem is explained. After that, we mention the detailed description about the scope and vision of project and what goals and objectives will be achieved through this project. Further we mention and write about the similar platform that is already in the marketplace and on which technology they are based on. In the end, we move to the core part of our project where we describe all the requirements and we also included Graphical user interface, Database design and Class diagram.

1.1 Purpose of this Document

The purpose of this document is to deliver complete understanding of this project to its reader. It contains the proper outline related to every aspect of project. In this document we highlights the problem and proposed its best solution by this project. This document further contains information related to project's design, requirement and implementation.

1.2 Intended Audience

Customers or purchasers and construction material suppliers or distributors

1.3 Definitions, Acronyms, and Abbreviations

List all important definitions, the acronyms and abbreviations used in this document.

SDG: Sustainable Development Goal

E-commerce: Electronic commerce

E-learning: Electronic learning

R&D: Research and development

Chapter 2: Project Vision

The vision of the project is to digitalize the construction ecosystem and provide a growing environment to people in this field. This project is introduced to assist people who are finding, constructing a home, a challenging task. This platform will bring a revolutionary change in the traditional way of construction and promises a productive outcome in end. It means consumer will have a surety that all his efforts will end up with fruitful results and there will be no loss of his time and money.

2.1 Problem Domain Overview

The problem which we highlighted is related to construction and building. If someone is interested in constructing home and want to purchase a construction material which should be of high quality at ideal price. This becomes a problem if that person don't have enough knowledge about market and find it a challenging task to do. Here our project will help that person to accomplish his goal. We are providing a web-based platform where different vendors or distributors of construction material can register themselves, in short, they can register their online shop. Important feature of this platform is that, first it will help the users to estimate the required amount of construction material for their home and secondly it will suggest them best quality material sellers of all material corresponding to their mentioned budget. The focus of this application is to provide the user with optimal scheme or plan in order to construct the home.

2.2 Problem Statement

Today, we have digitalized version of every business and field for example, ecommerce, e-learning and email. There is no online platform which can guide the people who are interested in constructing their home and that kind of platform is much needed to revolutionize the traditional way of construction. The extensive alarm for consumer is that all his efforts will results in loss of time and funds because he is not carrying satisfactory market information or understanding. To fill this gap, we need an application which can escort the consumer at this point and provide them with optimal scheme to follow while constructing their home. The main idea behind this project is to provide complete guidance to user regarding the excellent material at ideal costs.

2.3 Problem Elaboration

As the problem starts from that, life goal of every person is to construct his own home but this task is not that easy or effortless. Generally, a normal person is not that professional in this field and he finds it a challenging task and this problem becomes more complicated when that person is not carrying necessary market information for example how much construction material is required and from where to buy authentic and quality material. The first step of process of constructing the home includes estimating the amount of required construction material and how much it will cost to consumer. Second step is to find out that from where to buy quality product at optimal price corresponding to mentioned budget of user. The trouble in this whole process is that it based on the guesswork and there is no application which can guide the user. The main issue in this whole constructing process is that there is no surety that user's efforts will results in fruitful way and there are chances of loss of time and funds. For this purpose, we need such an application which can guide the person about market and from where he can buy required products of good quality at optimal price. The aim of project is to ensure that user's investment is going to utilize in the optimal way and it will not go in vain.

2.4 Goals and Objectives

Primary goals of our project are:

- Revolutionizing the traditional way of construction by providing online platform to users
- It will help the users to estimate the amount of material required for construction
- Providing the best suitable scheme to user to ensure that their huge investment will pay off in their best interest
- Reducing mental load of users by doing R&D for them and recommending the optimal choice available for them
- Application will allow multiple vendors to register which will promote the construction world
- Rating and recommendation system of application will ensure the growing environment and help the service provider to introduce high quality products at suitable prices.
- Providing all the necessary market information to user so he do not find a need to visit the market

2.5 Project Scope

This project will help the users to understand the marketplace and suggest them optimal scheme to follow in order to construct their homes. This application will consist of creating a web-based application where audience will be users who are interested in buying construction material and sellers or middleman who will sell products. This application will be the first step of every person who is going to construct his new home. Rating and recommendation system of this app will be AI based which will help our users to find optimal schemes or solutions. Further user can also search for material using keywords or location filters etc. Multiple vendors can register on this platform which will make our system a global market. Rating and Reviews of specific seller will help us in recommendation system. Multiple payment option will be they're in app which includes cash on delivery or via a debit card.

2.6 Sustainable Development Goal (SDG)

The three SDG area which our project will going to target are Decent work and Economic growth, Industry Innovation and Infrastructure, and partnership for the goals. First one is decent work and economic growth, from economic point of view, this project will give economic opportunities to individuals without exploiting any right because it ensure us productivity. On the side, our project will also focus on employment and its basic rights, which is by providing safe working conditions. The Purpose of this project is to give opportunity to vendors to expand their business and provide protection to consumer's funds and time which will surely going to impact economic growth in a positive way and will add more decency in this field of work. Second one is Industry, Innovation and Infrastructure and this SDG is concerned with improving our existing infrastructure, develop sustainable industrialization and foster innovation. As construction field mainly reply on materials, labor and services, which is the basic framework of many businesses. We know that innovation leads to improvement in existing infrastructure so we proposed this idea for the advancement of construction field. Third SDG is partnership for the goals as in our project we are providing a platform where both parties, sellers and buyers are collaborating with each other and fulfilling each other's goals and targets. The purpose of system is to digitize the construction ecosystem which will provide more exposure to this field. Both users, suppliers and consumers are making bond of beneficial partnership and help each other to achieve desired targets.

2.7 Constraints

There are some constraints which we are going to face in developing the online platform to digitalize the construction ecosystem. The first challenge of our project should be that how to make our interfaces user-friendly. Interfaces for both suppliers and consumer should be friendly enough that they can understand and manage it easily. As this application deals with selling and buying of product so there should be a proper schedule of making real-time updates according to current situation for example change in the price of any specific product and an alert message or notification to supplier and consumer in case of out-of-stock condition. Considering the above situations, our main focus will be on maintenance of application and managing daily updates. One more constraint which we have to deal with is to manage a datasets of construction material for our website. The concept of digitalizing construction ecosystem is latest and we are not available with any dataset which can help us to perform technique on it and do market analysis. At this point we have to gather information through surveys and polling to assemble our own dataset which should be best suitable for us. The last hurdle which we have to conquer is the marketing of this system and should take our users into confidence that this is the trusted system.

2.8 Business Opportunity

There is a business opportunity for all the users of application. There will be a fixed commission amount which will be pre-added in the price of product and that commission amount will directly transferred to owner after every successful transaction. Moreover, Platform can also earn money through different sponsorships. On the other hand, Sellers has option to pay the application for the advertisement of their online shop and that shop will be on promotion page of system. In short, we can say that seller will pay the admins of app for their shop's advertisement and that will further give exposure to their business which results in more productivity. We can say that this system will going to profitable for both parties. Further application has rating and recommendation system which will ensure the growing environment and help the service provider to introduce high quality products at suitable prices.

2.9 Stakeholders Description/ User Characteristics

All the users of application will be considered as its stakeholders which involves consumers, sellers and owners or IT team of system. First, we have consumers which are there to buy their desired products or we can say them our targeted audience. Success of platform is directly depending on its targeted audience. Then we have sellers which are online shop owners. These sellers will register their online shops on this platform and sell their products on it. In the end, we have owners or IT team of system which maintains this application and will have limit the access of other users. All these mentioned members are stakeholders because they will be impacted by the outcome of a project. In future, if platform has investor and shareholders they will also considered as stakeholders.

2.9.1 Stakeholders Summary

Users which are involved in or buy from a project and has an interest in its success are stakeholders and it includes consumers, suppliers and owner or administration team of website. Consumers are the buyers or you can say the main audience of platform. Suppliers are

those who has registered online shops on system and in the end, we have owners or IT team which are managing that application.

2.9.2 Key High-Level Goals and Problems of Stakeholders

Key high-level goal of owners or administration team of application is to digitalize the construction ecosystem and provide a growing environment to its audience, which includes consumers and sellers. Substantial hurdle for owner is to provide the detailed analysis of market which consumers can trust on. This process will help to attract audience on platform and earn profit from the transactions. By using this platform, suppliers' main motive will be giving exposure to their construction business and earn the trust of customers. The hindrance which online shop owners will face is to compete with their competitors and maintain a good reputation among others. On the other hand, intention of consumers will be that they need a trusted optimal plan to follow in order to start their work from scratch.

Chapter 3: Literature Review / Related Work

This chapter examines some of the previous work done related to our project and explore their methods and algorithm. As this concept of digitalizing construction ecosystem is latest and very few applications are active in market. For research purpose, we have studied different platform which have same working criteria. There are many international online platforms which are dealing with marketing of construction material but this trend is not so popular here in Pakistan. We have three web based applications which are currently active in Pakistan.

First one is maymaar.pk and it deals in selling and purchasing of gray material, Construction tools and solar panels. This is not a multi-vendor application means multiple vendors cannot register their online shops on this platform. Similarly, second one is zarea.pk and it deals with both gray and finishing material. This platform claimed to be Pakistan's 1st online marketplace for construction material and multiple vendors can register themselves on it. The last one is materialz.com. This application is not multi-vendor and it deals in both gray structure and finishing material. Further we will discuss all the features of these above mentioned applications and do comparison with our proposed idea in detailed literature review.

3.1 Definitions, Acronyms, and Abbreviations

High-tech: High technology
B2C: Business-to-consumer
B2B: Business-to-business

3.2 Detailed Literature Review

In this era of technology where everything is being digitalized and there is use of high-tech system in almost every field. Only field of construction stayed unaffected from this process specially in our country. Today we have many online international platforms which are providing modern ecosystem of construction but here in Pakistan we have very few applications which are providing service of online construction material. These applications are zarea.pk, maymaar.pk and materialz1.com. Here we will discuss these similar apps and their features in detail.

When a person start a work of constructing his own home from the scratch, the first hurdle he faces is that he has no knowledge about the required construction material and at which price all the construction material going to cost him. At this point, both application maymaar.pk and materialz1.com are not that capable to guide the consumer about the estimation required material and cost on the other hand zarea.pk has feature of cost calculator which help the consumer to estimate the cost amount. Further talking about the type of application, both maymaar.pk and materialz1.com are not multi-vendor platform means they do not support registration of multiple online shops. Both applications are only supporting B2C type. On the other hand, zarea.pk is a multi-vendor application and it supports both B2B and B2C. As both application maymaar.pk and materialz1.com are not multi-vendor so there is no purpose of rating and review system as well as recommendation system. Scope of both applications is very limited. On the other hand, zarea.pk is a muti-vendor application and it has rating and review system which helps the consumers to choose what is suitable for them. Not only this but it also assist in maintaining a growing environment.

3.2.1 Related Research Work

Application which are similar to our project are zarea.pk, maymaar.pk and materialz1.pk. All these applications are closed source code websites. We use an application named builtwith.com to break down the technology stack behind these applications and do analysis of technology used for their development.
In zarea.pk the technology stack is made up of HubSpot, Facebook pixel and google Analytics for purpose of Analytics and tracking. For content management system, it has WordPress. Web hosting provider and server is Cloudflare DNS and server. Widgets are WordPress Plugins, Slider Revolution and Yoast Plugins.
In maymaar.pk, for purpose of Analytics and Tracking we have Google Analytics. Widgets are WordPress Plugins, FastClick and Yoast Plugins. Framework of application is in PHP. For content management system, it has WordPress. Web hosting provider and server is GoDaddy DNS and server.
In materialz1.pk, for purpose of Analytics and Tracking we have Google Analytics. Widgets are WordPress Plugins, MailChimp and Yoast Plugins. Framework of application is in REHub. For content management system, it has WordPress and Ninja Team. Web hosting provider and server is LiteSpeed server.

3.2.1.1 Summary of the research item

To summarize the whole research work of application which are similar to our idea. We end up with the results that all the platforms are built on strong technology stack for example google analytics, PHP, WordPress and Ninja Team. Purpose of breaking down the technology stack is to have an idea that what technology we should have to use for the development of our project.

3.2.1.2 Critical analysis of the research item

Critical Analysis of the research item provide us with both strengths and weaknesses of all the models. For example, the weakness of application like maymaar.pk and materialz1.com is that they are not supporting multi-vendor environment which means no registration of multiple online shops on platform. Both platforms also do not have rating and recommendation system which not offering a growing environment. On the other hand, both platforms are more secure because it is easier to manage access authority as compared to that of multi-vendor application. Talking about zarea.pk which is a muti-vendor website and has also rating and recommendation system due to presence of many sellers. Weakness of this platform is that it is not easy to manage access authority because of its wide range scope. This further rises the issue of security and protection, for both users and owners.

3.2.1.3 Relationship to the proposed research work

Our proposed idea is very similar to application mentioned in research work. In our platform we are managing registration of multiple vendors like other application. Due to this we will face same issues of security and protection. Purpose of researching of application similar to our concept is to learn methods and techniques from them to solve that particular problem. As our platform is going to have large number audience like other platforms have so it is important to do research that how these platforms manage such a large number of audience and protect their data. Overall, the working model of all platforms is same and relating to each other.

3.3 Literature Review Summary Table

The following table summarizes the key features of the related applications:
where,

Table 1: Comparison of different platform
The table shows the comparison of functionalities of different platforms.

Features	**Maymaar.pk**	**Zarea.pk**	**Materialz1.com**
Login/Sign Up	positive	positive	positive
User Authentication	negative	negative	positive
Construction material calculator	negative	negative	positive
Multi-Vendor Application	negative	negative	positive
Budget based recommendation system	negative	negative	negative
Rating and reviews	negative	negative	positive
Multiple Payment Method	positive	positive	positive
Availability of optimal construction plan for users	negative	negative	negative

3.4 Conclusion

To conclude, we end up with the results that overall, the working model of all the applications is same which are discussed in research work but there are some weakness and strength in the which we should have to focus on which will make our application more secure and unique. There are some features which are not present in other platforms but we are determined to introduce that feature in our project. Like in maymaar.pk and materialz1.com there is no option for other users to register their shops on it but we are offering that option in our platform. Further there is no recommendation system in these platforms including zarea.pk but we are developing that system which will guide the consumers according to their given budget.

Chapter 4: Software Requirement Specifications

List all important features of your system here.

4.1 Functional Requirements

The functional requirements fully describe the external behavior of the system. Identify and list each functionality and give a brief description, along with the user of each functionality.

Functional Requirements for Users

4.1.1.1 Create Profile with email

The System shall allow the user to create an account with a valid email address and maintain that profile.

4.1.1.2 Login

The system will let the user login into an already registered account through email or Facebook.

4.1.1.3 Reset Password

The system should allow user to reset their password in case they forget it.

4.1.1.4 See Promotions

The user would be able to see the on-going promotions and click to see them.

4.1.1.5 Payment

The user will be able to make payment via the payment gateway they wish to opt.

4.2.1.6 Edit User Profile

The user will be able to edit their profile and update their personal information.

4.2.1.7 Cost Estimation

The user will be able to estimate Material cost on the basis of dimensions.

4.2.1.8 Buy Product

The user will be able to buy product.

4.1.2 Functional Requirements for Admin

4.1.2.1 Add User

Admin will be able to add new user.

4.1.2.2 Remove User

Admin will be able to remove user.

4.1.2.3 Approve Promotions

Admin will be able to approve promotions requested by the user.

4.1.2.4 Remove/End Promotions
Admin will be able to remove or end existing promotions.

4.1.2.5 Manage Actions
Admin will be able to enable/disable any action.

4.1.3 Functional Requirements for Vendor

4.1.3.1 Add Product
Vendor will be able to add Product in his shop.

4.1.3.2 Update Product
Vendor will be able to update product price and information about product.

4.1.3.3 Register Shop
Vendor will be able to register new shop.

4.1.3.4 Login
Vendor will be able to Login to his shop.

4.1.3.5 Update Stock
Vendor will be able to Update quantity available in stock.

4.2 List of features
Following are important feature which our system will perform:

4.1.1 Material Estimation
Our System will be able to estimate material required on the basis of dimensions given by the user.

4.1.2 Payment Methods
Our system will be able to allow its user to pay cash by different methods.

4.1.3 Filtering
Our system will be able to search data by applying different filters based on price and different brands.

4.1.4 Recommendation System
Our system will recommend vendors to our user based on their rating given by different users.

4.1.5 Optimal Construction Plan
Our system will be able to give user best optimal plan for user based on the price range given by user.

4.3 Non-Functional Requirements
The non-functional requirements are as follows:

Performance
As our application is web-based, therefore, it will be accessed by various users at their end systems easily. System would be capable of catering at least 100 users at a time.

Sustainability
The system application can be accessed from any computer browser with mentioned specifications in hardware requirements.

Usability
System interface would be easy to use and attractive and will guide users in an intuitive manner.

Transparency
The payment procedure would be completely transparent.

Availability
The system should be available all the time. To ensure a better customer experience, it should be provided that there is low or no downtime

4.4 Assumptions
For specification, the only assumption we will made is that we have the dataset which is from directly from market.

4.5 Hardware and Software Requirements
Following is the list of hardware and software requirements that will be required to develop and deploy the project.

4.5.1 Hardware Requirements
For development, the hardware requirements are the following:
- Desktop with 8GB RAM and 64-Bit operating system
- High speed online servers

For usage, the hardware requirements are the following:
- Desktop with 4GB RAM, 64-bit operating system
- Good internet connection.

4.5.2 Software Requirements
For development, the software requirements are the following:
- React.js: A JavaScript Library for frontend
- Express.js: Web application framework
- Elastic Search: Data base for storing processed data
- Node.js: JavaScript Runtime environment
- Tailwind CSS: React UI framework
- Mongo DB: No SQL database for crucible data
- Python: For Machine Learning and Artificial Intelligence

4.6 Use Cases
4.6.1 Login

Name	Login

Actors	User, Vendor
Summary	The user or vendor shall provide their email and password on the login form and after successful verification, redirect the user or vendor to the home page.
Pre-Conditions	The user or vendor must be in the database records either added by any of the authorized users or added manually by a developer. The user or vendor must not already be logged in.
Post-Conditions	The user's or vendor's session is successfully established and shall be redirected to the home page.
Special Requirements	None

Basic Flow			
Actor Action		**System Response**	
1	The user or vendor opens the login page.	2	The login page is displayed asking for email and password.
3	The user or vendor enters valid email and password.	4	The system verifies the email and password, establishes a session for the user or vendor and redirects the user or vendor to the home page.
Alternative Flow			
3	The user or vendor enters invalid email or password.	4-A	The system responds with an error message: Incorrect email or password entered.

4.6.2 Sign up

Name	Sign up
Actors	User
Summary	The user shall be allowed to sign up through email or google account or Facebook account.
Pre-Conditions	The system should be functioning correctly.
Post-Conditions	The user's account shall successfully create.
Special Requirements	None

Basic Flow			
Actor Action		**System Response**	
1	The user opens the sign up page.	2	The sign up page is displayed asking for sign up through email or google account or facebook account.
3	The user enters valid email or google account or facebook account details.	4	The system creates an account.
Alternative Flow			
3	The user enters invalid email or google account or Facebook account details.	4-A	The system responds with an error message: Incorrect Information

4.6.3 Reset Password

Name	Reset Password		
Actors	User, Vendor		
Summary	The user or vendor shall allow to reset the password.		
Pre-Conditions	The user or vendor must be logged in.		
Post-Conditions	The user or vendor shall successfully change the password.		
Special Requirements	None		
Basic Flow			
Actor Action		**System Response**	
1	The user or vendor opens the reset password page by clicking on Forget Password.	2	The reset password page is displayed asking for email.
3	The user or vendor enters valid email.	4	The system sends the code to email asking for entering code.
5	The user or vendor enters the code received in email.	6	The new password option is displayed asking for new password.
7	The user or vendor enters the new password and press submit option.	8	The system displays message: Password successfully changed.
Alternative Flow			
3	The user or vendor enters invalid email.	4-A	The system responds with an error message: Incorrect email.
5	The user or vendor enters invalid code.	6-A	The system responds with an error message: Incorrect code.

4.6.4 Place Order

Name	Place Order		
Actors	User		
Summary	The user shall be allowed to place order of different products.		
Pre-Conditions	The user must be logged in.		
Post-Conditions	The user shall successfully added products to cart.		
Special Requirements	None		
Basic Flow			
Actor Action		**System Response**	
1	The user opens the place order page.	2	The place order page is displayed asking for enter address, name, city, contact.no.

3	The user enters valid information.	4	The system saves the information asking for payment methods.
5	The user chooses one of payment methods.	6	The system shows the order summary.
7	The user press place order button.	8	The system displays message: Order successfully place.
Alternative Flow			
3	The user enters invalid information.	4-A	The system responds with an error message: Incorrect Information.

4.6.5 Become Vendor

Name	Become Vendor		
Actors	User		
Summary	The user shall be allowed to become vendor.		
Pre-Conditions	The user must be logged in.		
Post-Conditions	The user shall successfully become vendor.		
Special Requirements	None		
Basic Flow			
Actor Action		**System Response**	
1	The user opens the become vendor page.	2	The become vendor page is displayed asking for email and password.
3	The user enters valid email and password.	4	The system verifies the email and password asking for register shop.
5	The user selects register shop option.	6	The system displays enter shop name and product names.
7	The user enter the details and press submit button.	8	The system displays a message: Shop successfully register, Now you are Vendor.
Alternative Flow			
3	The user enters invalid email or password.	4-A	The system responds with an error message: Incorrect email or password entered.

4.6.6 Add Product

Name	Add Product
Actors	Vendor
Summary	The vendor shall be allowed to add products.
Pre-Conditions	The vendor must be logged in.

Post-Conditions	The vendor shall successfully add products.		
Special Requirements	None		
Basic Flow			
Actor Action		**System Response**	
1	The vendor opens Products page.	2	The Products page is displayed asking for add product, remove product, and update product options.
3	The vendor selects the add product option.	4	The system displays Enter product name and quantity.
5	The vendor enters the details and press submit button.	6	The system sends the product ID to the email asking for enter product ID.
7	The vendor enters the Product ID and press enter button.	8	The system displays a message: Product successfully added.
Alternative Flow			
7	The vendor enters invalid product ID.	8-A	The system responds with an error message: Incorrect product ID.

4.6.7 Remove Product

Name	Remove Product		
Actors	Vendor		
Summary	The vendor shall be allowed to remove products.		
Pre-Conditions	The vendor must be logged in.		
Post-Conditions	The vendor shall successfully remove products.		
Special Requirements	None		
Basic Flow			
Actor Action		**System Response**	
1	The vendor opens Products page.	2	The Products page is displayed asking for add product, remove product, and update product options.
3	The vendor selects the remove product option.	4	The system displays Enter Product ID.
5	The vendor enters the product ID and press submit.	6	The system shows the details of product asking for remove product.
7	The vendor clicks the remove button.	8	The system displays a message: Product successfully removed.
Alternative Flow			
5	The vendor enters invalid product ID.	6-A	The system responds with an error message: Incorrect product ID.

4.6.8 Update Product

Name	Update Product		
Actors	Vendor		
Summary	The vendor shall be allowed to update products.		
Pre-Conditions	The vendor must be logged in.		
Post-Conditions	The vendor shall successfully update products.		
Special Requirements	None		
Basic Flow			
Actor Action		**System Response**	
1	The vendor opens Products page.	2	The Products page is displayed asking for add product, remove product, and update product options.
3	The vendor selects the update product option.	4	The system displays Enter Product ID.
5	The vendor enters the product ID and press submit.	6	The system shows the details of product asking for updating product.
7	The vendor clicks the update button.	8	The system displays: You want to update both name and quantity of product or just name or just quantity?
9	The user selects the option and updates the name of product or quantity of product or both and press submit button.	10	The system displays a message: Product successfully updated.
Alternative Flow			
5	The vendor enters invalid product ID.	6-A	The system responds with an error message: Incorrect product ID.

4.7 Graphical User Interface

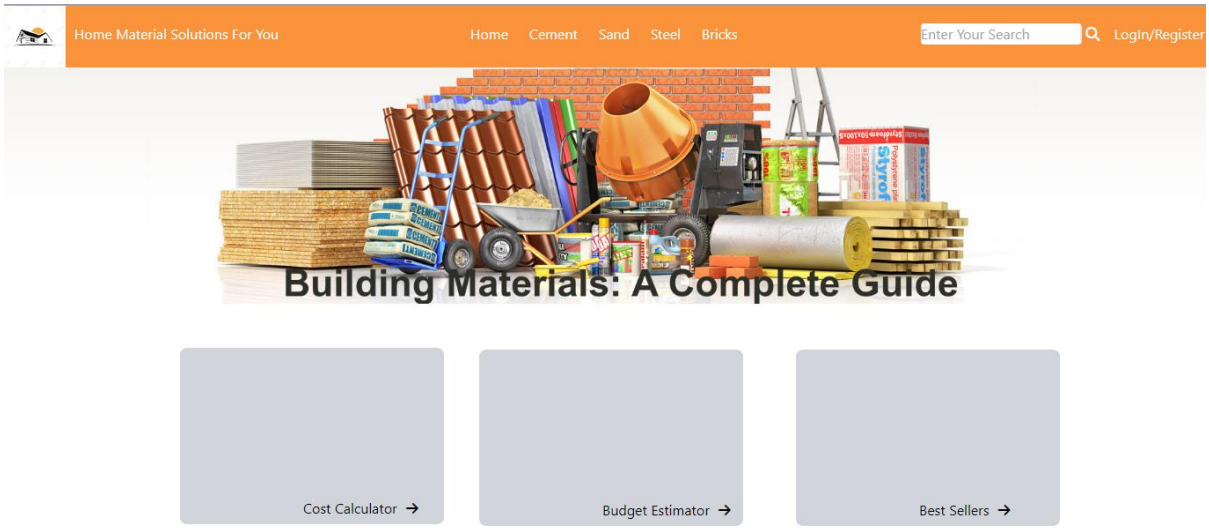

Figure 1: HomePage
Figure shows HomePage

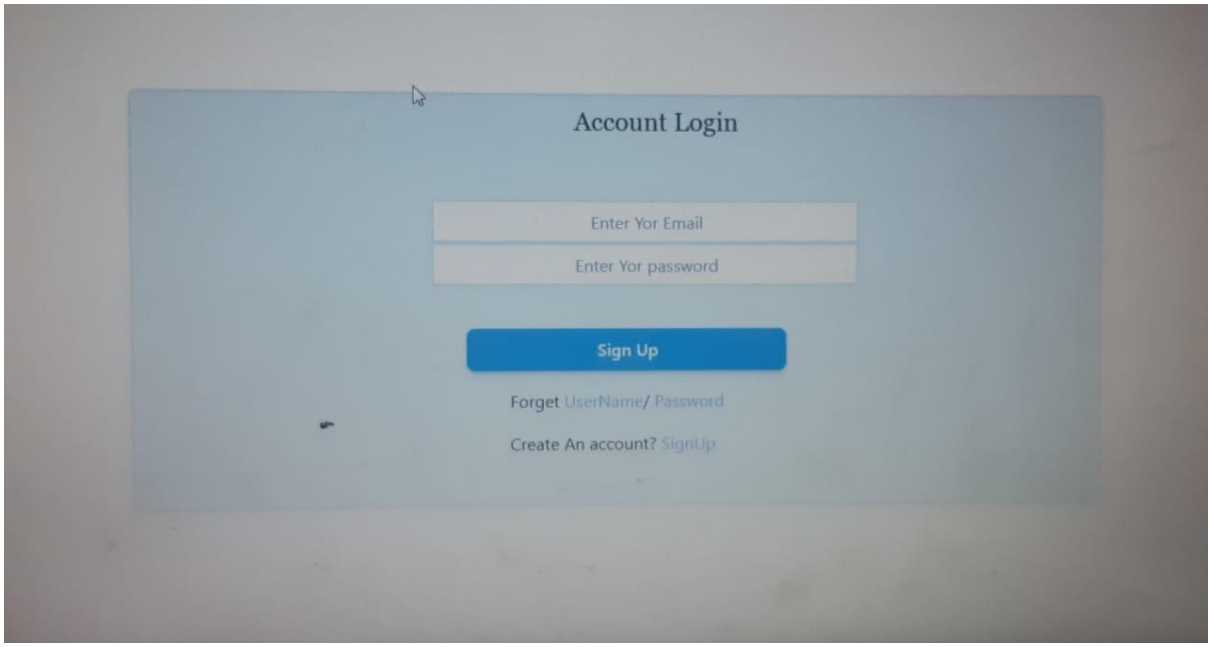

Figure 2: Login page
Figure shows login page

Figure 3: Sign-out confirm page
Figure shows Sign-out confirm page

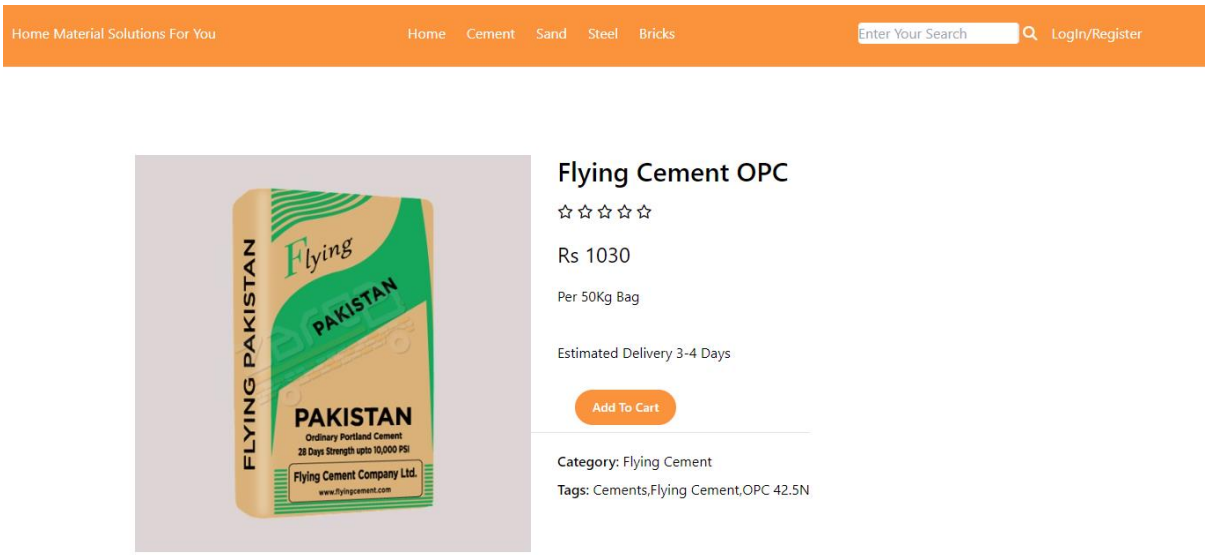

Figure 4: Item description
Figure shows item description

4.8 Database Design

4.8.1 ER Diagram

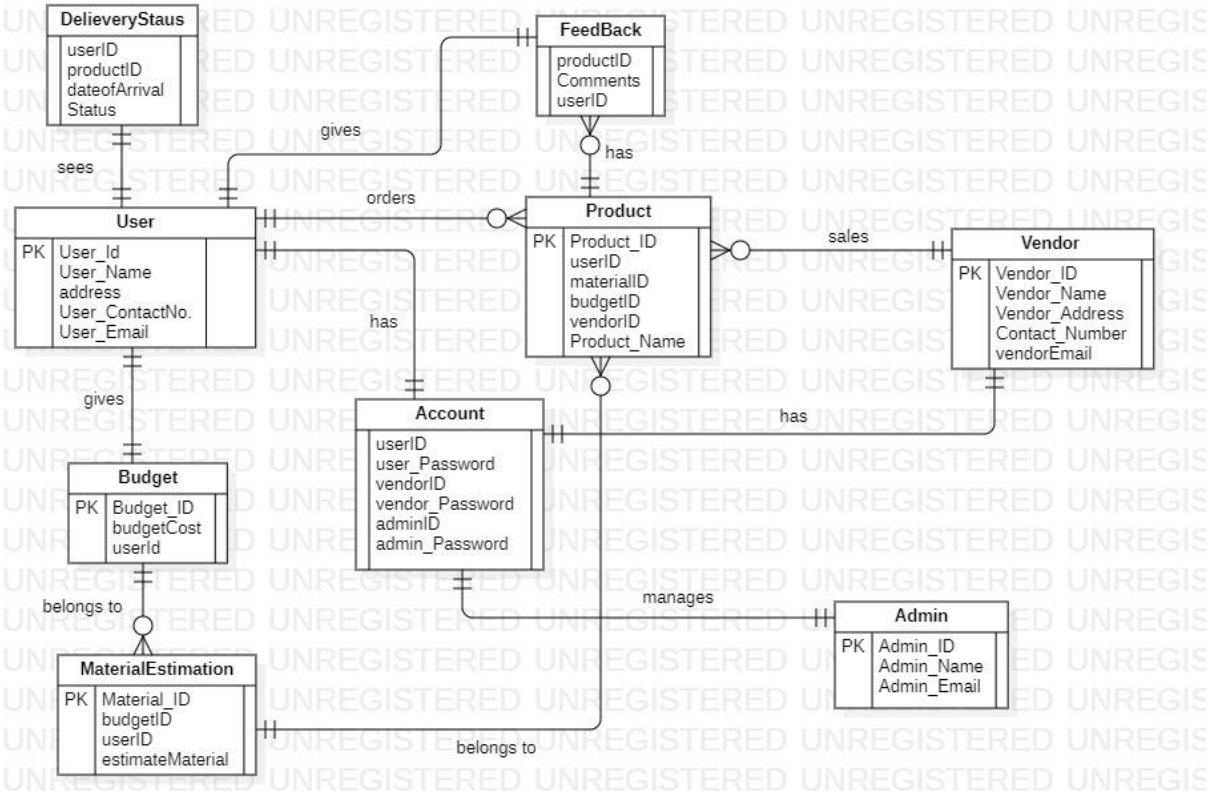

Figure 5 :ER Diagram

Figure shows ER Diagram

4.8.2 Data Dictionary(table)

Table 2:User Data Dictionary

This is the data dictionary of the user table

User

Attribute	Data Type	Relation To	Relation Type	Description
User_Id	string	**Account**	Has One to One	ID of User (Primary Key)
User_Name	string	**Product**	Orders One to Many	Name of the User
Address	string	**Budget**	Gives One to One	Address of the User
User_ContactNo.	string	**DeliveryStatus**	Sees One to One	Contact No. of the User
User_Email	string	**FeedBack**	Gives One to One	Email of the User

Table 3:Admin Data Dictionary
This is the data dictionary of the admin table

Admin

Attribute	Data Type	Relation To	Relation Type	Description
Admin_ID	String	Account	Manages One to One	ID of Admin (Primary Key)
Admin_Name	String			Name of the Admin
Admin_Email	string			Email of the Admin

Table 4: Vendor Data Dictionary
This is the data dictionary of the vendor table

Vendor

Attribute	Data Type	Relation To	Relation Type	Description
Vendor_ID	string	Product	Sales One to Many	ID of Vendor (Primary Key)
Vendor_Name	string	Account	Has One to One	Name of the Vendor
Vendor_Address	string			Address of the Vendor
Contact_Number	string			Contact Number of the Vendor
Vendor_Email	string			Email of the Vendor

Table 5:Account Data Dictionary
This is the data dictionary of the account table

Account

Attribute	Data Type	Relation To	Relation Type	Description
userID	string	User	One to One	ID of User (Foreign Key)
user_Password	string	Vendor	One to One	Password of the User
vendorID	string	Admin	One to One	ID of Vendor (Foreign Key)
vendor_Password	string			Password of the Vendor
adminID	string			ID of admin (Foreign Key)
admin_Password	string			Password of the Admin

Table 6:Product Data Dictionary
This is the data dictionary of the product table

Product

Attribute	Data Type	Relation To	Relation Type	Description
Product_ID	string	User	Ordered by Many to One	ID of the Product (Primary Key)
Product_Name	string	FeedBack	Has One to Many	Name of the Product
userID	string	Vendor	sales by Many to One	ID of User (Foreign Key)
materialID	string	MaterialEstimation	Many to One	ID of Material (Foreign Key)
vendorID	string			ID of Vendor (Foreign Key)
budgetID	string			ID of Budget (Foreign Key)

Table 7:Budget Data Dictionary
This is the data dictionary of the Budget table

Budget

Attribute	Data Type	Relation To	Relation Type	Description
Budget_ID	string	User	given by One to One	ID of Budget (Primary Key)
budgetCost	float	MaterialEstimation	Belongs to One to Many	The amount entered by User
userID	String			ID of User (Foreign Key)

Table 8:Material Estimation Data Dictionary
This is the data dictionary of the Material estimation table

MaterialEstimation

Attribute	Data Type	Relation To	Relation Type	Description
Material_ID	string	Budget	Has Many to One	ID of Material (Primary Key)
budgetID	string	Product	Belongs to One to Many	ID of Budget (Foreign Key)
userID	string			ID of User (Foreign Key)
estimateMaterial	float			Estimate the Materials e.g. 2 bags of cement

Table 9:Feedback Data Dictionary
This is the data dictionary of the feedback table

Feedback

Attribute	Data Type	Relation To	Relation Type	Description
productID	string	User	given by One to One	ID of Product (Foreign Key)
userID	string	Product	Of Many to One	ID of User (Foreign Key)
Comments	string			Comments about the Products e.g. fantastic quality of cement

Table 10:Delivery Status Data Dictionary
This is the data dictionary of the delivery status table

DeliveryStatus

Attribute	Data Type	Relation To	Relation Type	Description
userID	string	User	seen by One to One	ID of User (Foreign Key)
productID	string			ID of Product (Foreign Key)
dateofArrival	date			Arrival date of Product
Status	string			Current state of Delivery Product

4.9 Risk Analysis

The risk which we may face in the development of this project are failure or crash of application which will result in loss. As this application is dealing with online transaction so there is high risk of attack on data or credential of users so it is our duty to make it secure. Technical Business risk is that how we are going to attract audience on our platform for this we have to take support of marketing.

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