

**ThekedarHub**

Synopsis

Submitted in partial fulfilment of the requirement of the degree of

**Bachelor of Technology**

In

**Computer Science and Engineering**

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## 1. Introduction

In today's fast-paced world, finding reliable contractors for home improvement and maintenance projects can be a daunting task for customers. Traditional methods often lead to frustration, lack of transparency, and inconsistent service quality. To address these challenges, we introduce Thekedar Hub, a dedicated online platform designed to bridge the gap between customers and local contractors (thekedars).

Thekedar Hub simplifies the hiring process by providing a user-friendly interface that facilitates direct interaction through a unique bidding system. Customers can easily post their project requirements, while thekedars can respond with competitive bids, allowing for informed decision-making based on price, expertise, and user reviews.

This platform not only empowers customers to find the right professionals for their needs but also helps thekedars showcase their skills and secure new opportunities. By fostering a transparent and efficient marketplace, Thekedar Hub aims to redefine the contracting experience, ensuring satisfaction for all users involved.

## 2. Problem Statement

- **Difficulty in Finding Reliable Contractors**

Customers often struggle to find trustworthy and skilled thekedars for their projects. Traditional methods of searching can lead to a lack of information, resulting in poor hiring decisions.

- **Inconsistent Quality of Service**

Without a standardized way to evaluate contractors, customers may end up with varying levels of service quality. This inconsistency can lead to dissatisfaction and wasted resources.

- **Inefficient Communication Channels**

Current methods of communication between customers and contractors are often fragmented and inefficient. This can lead to delays, misunderstandings, and a lack of clarity regarding project requirements.

- **Inadequate Feedback Mechanisms**

Customers often lack a reliable way to provide feedback on contractors, which can hinder future users from making informed decisions. A lack of reviews and ratings can perpetuate poor service and limit accountability.

- **Inefficient Communication Channels**

Current methods of communication between customers and contractors are often fragmented and inefficient. This can lead to delays, misunderstandings, and a lack of clarity regarding project requirements.

### **3. Feasibility Study**

#### **3.1 Technical Feasibility**

The technical development of ThekedarHub is well within reach using existing technologies. The platform can utilize modern web development frameworks such as React for the frontend and Node.js for the backend, ensuring scalability and responsiveness. Integrating blockchain technology for secure transactions and smart contracts is feasible with established platforms like Ethereum. Additionally, augmented reality (AR) features can be implemented using tools like Unity or AR.js, which are already effective in similar applications. Thus, the technical infrastructure for ThekedarHub can be successfully established with available resources and expertise.

#### **3.2 Financial Feasibility**

The initial costs associated with developing ThekedarHub will include expenses for web development, marketing, and operational support. Funding can be sought from various sources, including investors, grants, or crowdfunding campaigns. A subscription model for service providers, along with transaction fees for projects completed through the platform, can create a sustainable revenue stream. Based on market projections, attracting around 5,000 users in the first year could lead to potential earnings of approximately \$100,000. With prudent financial management and targeted marketing, ThekedarHub can achieve profitability within two to three years.

#### **3.3 Operational Feasibility**

The operational structure of ThekedarHub involves forming partnerships with contractors and ensuring they meet established quality standards. A dedicated team will be necessary to oversee operations, marketing, and customer support. Furthermore, the platform must adhere to local regulations governing home renovation services to operate legally. By prioritizing quality control and enhancing user experience, ThekedarHub can build a loyal customer base and foster strong relationships with service providers, ensuring efficient operations and customer satisfaction.

### **4. Need and Significance**

- **Need**

Home renovation can be overwhelming for customers. Finding reliable contractors and managing projects can be a challenge. There isn't a simple, easy-to-use platform that connects customers with trustworthy professionals while ensuring clear communication, secure payments, and effective project management. This scattered approach often leads to confusion, delays, and poor results.

- **Significance**

ThekedarHub solves these problems by offering a one-stop solution where customers can find verified service providers, visualize their renovations using augmented reality (AR), and efficiently manage their projects. By using blockchain technology, ThekedarHub enhances transparency, which helps reduce fraud and disputes. This platform makes the renovation process easier and more reliable for customers and provides contractors with a trustworthy place to showcase their work. Ultimately, ThekedarHub aims to improve the home renovation experience, making it more accessible and secure for everyone involved.

## 5. Objectives

- **Connect Customers and Professionals**

One of the primary objectives is to create a centralized platform that links customers with verified contractors, architects, and designers. This feature ensures that users can easily find and hire professionals who meet their specific needs for home renovation projects. By offering a reliable database of qualified service providers, ThekedarHub helps streamline the process of finding the right expert for every renovation task.

- **Enhance Project Visualization**

To improve decision-making, ThekedarHub will provide users with augmented reality (AR) tools that enable them to visualize renovation ideas before implementation. These tools will allow customers to experiment with different design elements, such as colors, layouts, and furnishings, directly in their living spaces. By enhancing project visualization, users can make more informed choices and feel confident about their renovation plans.

- **Ensure Secure Transactions**

Security is a top priority for ThekedarHub. Integrating blockchain technology will ensure secure and transparent contracts and payments. This feature reduces the risk of fraud, providing users with peace of mind during financial transactions. Smart contracts will automatically enforce agreements, ensuring that service providers are compensated only when they fulfill their obligations, thus fostering trust between users.

- **Streamline Project Management**

ThekedarHub aims to simplify the renovation process by offering a comprehensive project management system. This system will help customers track project progress, manage timelines, and facilitate communication with service providers. By centralizing all project-related information, users can stay organized and informed, reducing the stress often associated with home renovations.

## 6. Literature Review

| Author Name                                   | Year | Contribution  | Limitaions  |
|---|------|---|---|
| JenniferShane and Ghada M.Gad[1]              | 2014 | The contribution lies in providing a comprehensive synthesis of existing studies on trust in the construction sector, highlighting its impact on project success and collaboration.   | limitation is that the paper primarily focuses on the theoretical aspects of trust, with limited empirical evidence from real-world projects.                                 |
| Shishu Ding[2]                                | 2024 | The paper " <i>Integration of Mixed Reality and Digitalization in Construction Projects</i> " discusses the advantages of digitalization in enhancing collaboration among stakeholders in construction projects. Key contributions include.improved communication through digital tools and the implementation of mixed reality for better project visualization. | limitations arise from the technological adoption barriers within the industry, such as high costs and a lack of standardization, which may hinder widespread implementation. |
| MehmetHakan Küçükarslan and Mehmet Nur İbo[3] | 2023 | Efficiency Improvement , Transparency and Trust , Risk Mitigation , Enhanced Collaboration  | Technical Challenges ,Legal an.Regulatory Issues,Integration with.ExistingSystem s,Scalability Concerns   |
| Yao Wang, Yi-lin Yin[4]                       | 2013 | Identifies key elements that enhance trust in construction projects. Proposes a framework for trust mechanisms based on empirical data.   | Focuses primarily on qualitative aspects, lacking quantitative analysis.Limited generalizability due to a narrow sample size from specific regions.                           |
| Harry Virani and Manthan Kyada[5]             | 2022 | Offers a comprehensive review of existing security vulnerabilities and solutions in smart contracts. Proposes a classification framework for categorizing security issues.  | May not cover all recent developments due to the fast-paced nature of blockchain technology.Lacks empirical data to support some of the proposed solutions                    |

|   |      |  |   |
|---|------|--|---|
| N Manukyan ,<br>Eleni<br>Papadonikolaki[6]  | 2019 | The paper "Digitalisation in Construction: Mixed Blessing for Collaboration in Projects" highlights contributions to understanding how digital tools impact collaboration among construction stakeholders. It emphasizes both the positive and negative effects of digitalization, such as improved communication and potential information overload | limitations include a focus on specific case studies that may not represent broader industry trends and a lack of longitudinal data to assess long-term impacts.                |
| Heinz Herrmann , M. J. Cobo<br>Martín[7]    | 2021 | The paper " <i>Trust in Contractor Services: Empirical Evidence from the Construction Industry</i> " contributes by providing empirical insights into factors affecting trust in contractor services, helping to inform better practices in contractor-client relationships.   | Its limitations include a potential bias in sample selection and limited generalizability beyond specific contexts or regions.  |
| Weng Marc Lim<br>and Carmen Bowman [8]      | 2024 | The paper "Investigating the Role of Trust in Collaborative Projects: A Systematic Review" contributes to understanding trust dynamics in collaborative construction projects, emphasizing its importance for successful partnerships.   | Limitations include potential biases in selected studies and the lack of empirical data from diverse project contexts, which may affect generalizability.                       |
| D. Singh and<br>Robert L. K.<br>Tiong [9]   | 2006 | The paper " <i>Measuring the Effect of Trust on Team Performance in the Construction Industry</i> " contributes by identifying how trust influences team dynamics and project success in construction. It emphasizes the need for fostering trust to enhance collaboration.  | Limitations include a narrow focus on specific case studies, which may not be representative of broader industry practices, and potential subjective bias in trust measurement. |
| Esat Gashi<br>and.<br>Marjan Ivezaj<br>[10] | 2023 | The paper " <i>Factors Influencing Construction Project Success: A Literature Review</i> " contributes by synthesizing various factors that affect project success, including stakeholder engagement, communication, and risk management. It identifies critical   | Limitations include potential bias in selected studies and the variability of success definitions across different contexts.  |

## 7. Functional and Non-functional requirements

### 7.1. Functional Requirements

- **User Registration and Profile Management**

This feature allows users to create personal accounts easily. They can register through email or social media and manage their profiles by updating information and setting service preferences. Secure authentication methods will be implemented to ensure user safety and privacy.

- **Service Provider Directory**

A searchable database of verified contractors, architects, and designers will enable customers to find suitable professionals for their renovation projects. This directory will include detailed profiles showcasing each service provider's skills, past projects, and client reviews. Users will have filtering options to simplify their searches.

- **Project Visualization Tools**

Augmented reality (AR) tools will allow customers to visualize renovation ideas in real time. By using AR, users can see how design changes will look in their actual spaces before committing to any modifications. This feature enhances decision-making and reduces the likelihood of dissatisfaction with the results.

- **Secure Payment Gateway**

A secure payment system will facilitate safe transactions between customers and service providers. This gateway will support multiple payment options, ensuring that all financial interactions are encrypted and protected from fraud. Features like automated invoicing will help users manage expenses efficiently.

- **Review and Rating System**

The review and rating system will encourage accountability among service providers. Customers can leave feedback based on their experiences, contributing to a transparent rating system that helps others make informed choices. Positive reviews will motivate contractors to maintain high service standards.

- **Project Management Dashboard**

This dashboard will give customers a centralized space to track project progress, manage timelines, and communicate with service providers. Users can monitor key milestones, send messages, and request changes, enhancing overall organization and reducing misunderstandings.

- **Blockchain Integration**

Integrating blockchain technology will ensure secure and transparent agreements between users. Smart contracts will automate the execution of agreements, building



trust and minimizing disputes by ensuring that payments are only released when predefined conditions are met.

## **7.2. Non-Functional Requirements**

- **Usability**

Usability refers to how easy and efficient it is for users to interact with the platform. For ThekedarHub, a user-friendly interface is crucial. It should feature a clean design that allows users to navigate seamlessly without confusion. Intuitive icons, straightforward menus, and logical workflows can guide users through the process of finding contractors, visualizing projects, and managing renovations. Incorporating features like a search bar and categorized services will further enhance usability, ensuring that customers can quickly find the information they need. Usability testing should be conducted with real users to gather feedback and make necessary adjustments, ensuring that the platform meets the needs of its diverse audience.

- **Performance**

Performance is a critical aspect of any digital platform, as it directly affects user satisfaction. ThekedarHub must load quickly, with minimal waiting time, to keep users engaged. This can be achieved by optimizing the platform's code, using efficient databases, and employing content delivery networks (CDNs) to serve data more quickly. Additionally, the system should be able to handle multiple users simultaneously without lag. Performance testing should be regularly conducted to identify and resolve bottlenecks, ensuring that the platform remains responsive even during peak usage times, such as when many customers are searching for services or managing projects.

- **Security**

Security is paramount when dealing with sensitive user information and financial transactions. ThekedarHub must implement robust security measures to protect user data, including personal information and payment details. This can include encryption for data at rest and in transit, multi-factor authentication for user accounts, and regular security audits to identify vulnerabilities. Compliance with data protection regulations, such as GDPR or CCPA, is also essential. By prioritizing security, ThekedarHub can build trust with users, reassuring them that their information is safe and secure, which is crucial for maintaining a loyal user base.

- **Scalability**

Refers to the platform's ability to handle increased user demand without compromising performance. As ThekedarHub grows and attracts more users, the underlying infrastructure should support this growth. This can be achieved through cloud-based solutions that allow for easy expansion of resources as needed. The architecture should be designed to accommodate spikes in traffic, such as during marketing campaigns or seasonal trends in home renovation. Scalability also involves planning for future

features and integrations, ensuring that the platform can evolve without significant overhauls. This forward-thinking approach will help sustain growth and maintain user satisfaction over time.

## **8. Hardware and Software requirements**

### **8.1. Hardware Requirements**

- **Server Infrastructure**
  - Multi-core processor (e.g., Intel Xeon or AMD Ryzen) for handling multiple requests
  - Minimum 16 GB RAM (32 GB recommended) for efficient management of applications and user sessions.
  - SSD storage with at least 500 GB capacity for fast data retrieval and backup
- **User Devices**
  - Desktops, laptops, tablets, and smartphones.
  - Devices should be equipped with at least 4 GB of RAM and modern web browsers (Chrome, Firefox, Safari) to access the application efficiently.
- **Development and testing tools**
  - Quad-core processors, 16 GB RAM, and adequate storage for development tools
  - Machines that replicate various user environments (different browsers and operating systems)
- **Network Equipment**
  - High-speed internet connection (minimum of 100 Mbps) to support concurrent users
  - Dedicated hardware firewalls for enhanced security.

### **8.2. Software Requirements**

- **Development Tools**
  - Tools like Visual Studio Code or IntelliJ IDEA for coding and debugging.
  - Git for managing code versions and collaboration.
- **Database Management**
  - MySQL or MongoDB for managing user and project data
- **Front-end Technologies**
  - React.js or Angular for building responsive user interfaces
  - CSS frameworks like Bootstrap or Tailwind for UI design
- **Back-end Technologies**
  - Node.js with Express.js for handling server requests.

- Tools like Truffle or Hardhat for smart contract development. 10.5 Project Management Tool

- **Project Management Tools**

- Tools like Trello or Jira for task management and team collaboration.
- Confluence or Notion for project documentation.
- Jest or Mocha for unit testing, and Selenium for the testing.

## 9. Proposed Modules

- **User Management Module**

The User Management Module is the backbone of ThekedarHub, handling all aspects of user registration and profile management. Users can easily create accounts, log in, and update their personal information, such as contact details and preferences. This module ensures that users have a seamless onboarding experience, allowing them to personalize their profiles according to their needs. Features like password recovery and profile verification add extra layers of security and convenience. By offering a straightforward user management system, ThekedarHub enhances user satisfaction and encourages more individuals to engage with the platform.

- **Service Provider Module**

The User Management Module is the backbone of ThekedarHub, handling all aspects of user registration and profile management. Users can easily create accounts, log in, and update their personal information, such as contact details and preferences. This module ensures that users have a seamless onboarding experience, allowing them to personalize their profiles according to their needs. Features like password recovery and profile verification add extra layers of security and convenience. By offering a straightforward user management system, ThekedarHub enhances user satisfaction and encourages more individuals to engage with the platform

- **Payment Processing Module**

Security and convenience are paramount when it comes to financial transactions. The Payment Processing Module facilitates secure transactions between customers and service providers, integrating various payment gateways to accommodate different user preferences. Whether users choose to pay via credit card, bank transfer, or digital wallets, this module ensures that all financial interactions are encrypted and protected against fraud. Additionally, features such as invoice generation and transaction history tracking make it easy for users to manage their expenses, providing transparency and peace of mind throughout the payment process.

- **Review and Rating Module**

Feedback is essential for continuous improvement and user satisfaction. The Review and Rating Module allows users to leave feedback on the services they receive, contributing to a transparent rating system that helps future users make informed choices. Customers can share their experiences, rate contractors on various aspects, and offer constructive criticism. This module

encourages service providers to maintain high standards, as positive reviews can significantly impact their reputation and business growth. By fostering a culture of feedback, ThekedarHub promotes quality service and builds a community of trust among users.

- **Notification Module**

Keeping users informed is crucial for a positive experience. The Notification Module sends alerts and updates to users about important project statuses, new service providers, and upcoming deadlines. Customers will receive timely reminders for payments, scheduled appointments, and project milestones, ensuring they are always in the loop. This proactive communication helps users stay organized and engaged with their renovation projects, minimizing the risk of missed deadlines and enhancing overall satisfaction.

- **Search and Filter Module**

With a vast array of service providers and offerings, the Search and Filter Module ensures that users can easily find what they need. This module enables users to search for specific services or professionals using various filters based on location, ratings, specialties, and availability. By simplifying the search process, this module saves users time and effort, allowing them to focus on selecting the right service providers for their projects. A powerful search and filter system enhances user engagement and improves the overall effectiveness of the platform.

## **10. Expected outcome of the project**

The implementation of a blockchain-based insurance claims system is anticipated to yield a range of significant outcomes that enhance the efficiency, transparency, and overall user experience within the insurance industry. Below are the key expected outcomes of this project. Enhanced Efficiency in Claims Processing: One of the primary outcomes is a substantial reduction in the time taken to process insurance claims. By utilizing smart contracts, the system will automate various stages of the claims process, enabling faster validation and approval. This efficiency is expected to shorten claims settlement times from weeks or months to just a few days, significantly improving customer satisfaction.

- **Easy to Use**

One of the primary goals of ThekedarHub is to create an easy-to-use platform that simplifies the connection between customers and contractors. Users will find the interface intuitive, enabling them to navigate seamlessly through various services. From registration to project management, every aspect is designed with user experience in mind. Customers will be able to quickly locate contractors, review portfolios, and manage renovation projects—all in one convenient location. This streamlined process reduces the time and effort spent on finding and communicating with service providers, making the renovation journey smoother and more efficient.

- **Safe Transactions**

Security is paramount in any online platform, especially when financial transactions are involved. ThekedarHub utilizes blockchain technology to ensure that all contracts are secure

and payments are clear. By leveraging the advantages of blockchain, users can trust that their financial interactions are protected from fraud. This technology provides a transparent record of transactions, fostering trust between customers and contractors. Knowing that their agreements are secure allows users to engage more confidently with the platform, ultimately leading to higher satisfaction and repeated use

- **Better Quality Work**

The review and rating system within ThekedarHub is designed to promote quality work among service providers. Customers can leave feedback based on their experiences, contributing to a transparent rating system that helps future users make informed choices. This mechanism encourages contractors to deliver high-quality services in order to receive positive reviews. As a result, the platform becomes a space where accountability and excellence are valued, leading to happier customers. This system not only benefits customers looking for reliable service providers but also helps contractors build their reputations and attract more business.

- **Smooth Project Management**

Managing a renovation project can often be stressful and complicated. ThekedarHub aims to alleviate this pressure by providing customers with robust project management tools. Users will have access to a dashboard that allows them to track project progress, manage timelines, and control budgets. This feature ensures that customers stay organized and informed throughout the renovation process, minimizing surprises and delays. With better control over their projects, users can enjoy a more streamlined and less stressful renovation experience, ultimately leading to higher satisfaction.

## **11. Research Outcome**

- By centralizing contractor information, customers can easily find and connect with reliable service providers, reducing the risk of hiring unqualified professionals.
- The incorporation of augmented reality tools will enable customers to visualize renovation ideas, leading to better decision-making and satisfaction with final outcomes.
- Utilizing blockchain technology will ensure secure and transparent agreements, mitigating disputes and fostering trust between users.
- Analytics gathered from user interactions will provide valuable insights into service trends and user preferences, facilitating continuous improvement of the platform and its offerings.

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