Engineering Construction Marketplace

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Title: Engineering Construction Marketplace: Revolutionizing Construction Services in Nepal

Introduction

- Problem: Nepal's construction sector struggles with inefficiencies, limited access to reliable service providers, and manual processes causing delays and cost overruns.
- Solution: The Engineering Construction Marketplace is a secure, web-based platform built with React.js (frontend), Django (backend), and PostgreSQL to connect clients, construction firms, and suppliers.
- Features: Service bookings (rentals, consulting, materials), project tracking, secure payments (Stripe), safety training, and role-based access.
- Impact: Boosts transparency, empowers small-medium enterprises, and streamlines construction services across Nepal.

Aims And Objectives

- Develop a scalable web platform for Nepal's construction marketplace.
- Enable seamless service bookings, project tracking, and material sourcing.
- Integrate secure payments (Stripe) and role-based access control.
- Provide safety training and post-construction support for stakeholders
- Enhance transparency, efficiency, and SME growth in Nepal's construction sector.

Academic Questions

In what ways would it be possible to advance the Nepalese construction sector by offering an environment that is open for members of the public, and providing high-quality service at the same time?

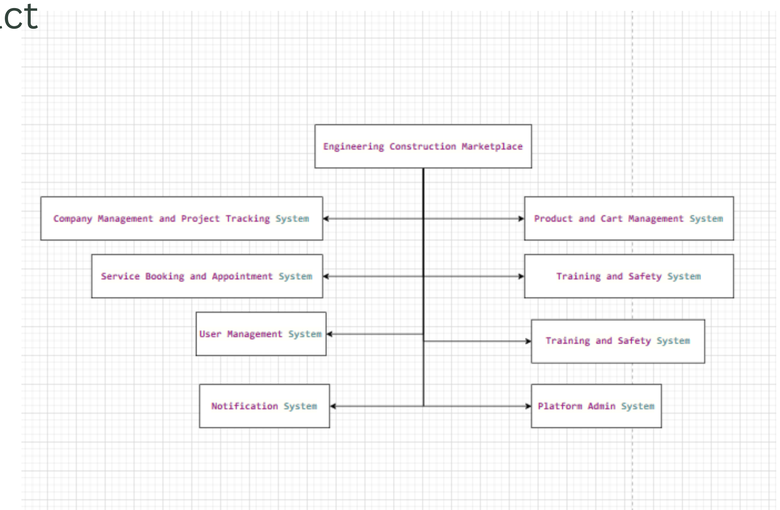
Testing Approaches

Functional Testing

Literature Review

Source	Description	Similarities to Project	Differences from Project
Procore	Web-based construction management software for project tracking, document sharing, and cost control.	Project tracking, secure document sharing, and project management focus.	Expensive subscriptions; complex for small firms; lacks Nepal-specific features like local payments.
PlanGrid	Mobile-focused platform for blueprint management and field team collaboration.	User-friendly interface, real-time document collaboration.	Limited project management tools; no material procurement or safety training modules.
Selection and Application of Building Material Suppliers Using IFAHP	Proposes IFAHP model for supplier selection (cost, quality, risk)	Supplier ranking aligns with material marketplace.	Complex model, challenging in Nepal's resource-scarce settings.
Integrated Digital Delivery in Construction Projects	Analyzes IDD benefits (cost, collaboration) in Hong Kong.	Collaboration, cost focus support project goals.	Hong Kong-specific, less applicable to Nepal.
Integrating BIM with Digital Technologies in Construction	Examines BIM with AI, IoT, blockchain for productivity (Middle East/India).	AI, blockchain, monitoring align with project tech.	Limited focus on Nepal's resource constraints.

Artefact



Project Process

- **Requirement Analysis: Identified Nepal's construction needs (e.g., service access, transparency, safety training).**
- **Tech Stack: React.js, Django, PostgreSQL**
- **Methodology: Agile with sprints for iterative platform development.**
- **Development: Built modules for bookings, project tracking, payments (Stripe), and safety training.**
- **Testing: Unit and user acceptance testing for functionality (e.g., login, service booking).**
- **Artefact: Use Case Diagram, Work Breakdown Structure, Gantt Chart.**

Evaluatiion/Reflection

Successes:

- **Localized platform connects clients, firms, and suppliers effectively.**
- **Secure payments (Stripe) enhance trust and transparency.**
- **Safety training modules improve worker compliance and site safety.**

Challenges:

- **Limited digital infrastructure in Nepal make it difficult in rural access.**
- **Small and Medium-sized Enterprises (SME adoption slowed by cost concerns and tech familiarity.**
- **Reflection: Agile methodology allowed quick feature adjustments, but infrastructure gaps underscore the need for offline capabilities.**

Conclusion and Future Scope

- Conclusion: The Engineering Construction Marketplace streamlines Nepal's construction sector by connecting clients and firms through a secure, accessible platform, fostering trust and efficiency.
- Future Scope:
- Implement a delivery system for rented items, allowing couriers to handle transport to sites, reducing client pickup/return efforts.
- Enable offline booking options to support rural users with limited internet connectivity.
- Add Nepali language support to improve usability for local SMEs and clients.