

**Local Link**  
**(A Web Platform for Community based Service Exchange)**

Synopsis for Project (ICS 751)

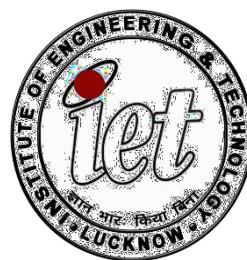
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## **DECLARATION**

We hereby declare that the project report entitled “**Local Link**”, submitted to the **Institute of Engineering & Technology, Lucknow, Computer Science Engineering Department**, is a genuine record of the original work carried out by us during the course of our studies. The work presented in this report is the result of our own effort, research, and analysis completed under the valuable guidance and supervision of **Dr. Pawan Kumar Tiwari, Mr. Aakash and Ms. Varsha Sharma**.

We further affirm that this work has **not been submitted**, in part or whole, to any other university, institute, or organization for the award of any degree, diploma, certificate, or any other academic recognition. All information, data, diagrams, software modules, and materials used in this report are based on our own contributions, except where specific references or acknowledgments have been provided.

We also confirm that we have adhered to the ethical norms of academic integrity. Any sources, tools, or external materials consulted have been appropriately cited to the best of our knowledge. We fully understand that any instance of plagiarism, fabrication of data, or violation of academic honesty may lead to disciplinary action as per the rules and regulations of the institution.

We take full responsibility for the authenticity and accuracy of the content presented in this report.

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## **CERTIFICATE**

This is to certify that the Project Report entitled "**Local Link**", submitted by **Abhishek Singh** (2200520100004), **Akhilesh Pratap Singh** (2200520100026) and **Ashutosh Mishra** (2200520100018), in partial fulfillment of the requirements for the award of the degree of **Bachelor of Technology (B.Tech.)** in the **Department of Computer Science and Information Technology, Institute of Engineering & Technology, Lucknow**, is a bona fide record of the work carried out by the candidates under my supervision and guidance.

The work presented in this report is the result of their sincere effort, technical understanding, and active participation throughout the project duration. To the best of my knowledge, the contents of this report are original, and the work embodied herein has not been submitted, either in part or full, to any other institute or university for the award of any degree, diploma, or any other academic recognition.

The candidates have shown dedication, discipline, and a clear understanding of the concepts involved in the successful completion of this project. I commend their effort and wish them success in all their future academic and professional endeavors.

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## **ACKNOWLEDGEMENT**

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We would also like to express our sincere gratitude to **Prof. Girish Chandra**, Head of the CSE Department, for his dynamic leadership, encouragement, and commitment to academic excellence. As our teacher and mentor, he has inspired us with his knowledge, discipline, and dedication. He has taught us far more than we could ever adequately express in words, and his support has greatly enriched our learning experience.

Finally, we would like to thank our classmates, friends, and family members for their constant motivation, understanding, and moral support. Their belief in us has kept us focused and determined throughout the duration of this project.

We wholeheartedly acknowledge all the contributions that have made this project a meaningful and successful learning experience.

## **ABSTRACT**

Local Link is a MERN-stack based web application designed to bridge the gap between local vendors, skilled service providers, and customers seeking trustworthy, nearby options. While large e-commerce platforms like Amazon provide convenience, they often lack transparency regarding product origins, reducing customer confidence. Similarly, although platforms like Zomato or Swiggy successfully connect users with local food outlets, there is no unified platform that enables local shops and skilled workers to digitally showcase their complete range of products and services.

Local Link aims to solve this problem by creating a hyperlocal online marketplace that empowers kirana shops, clothing stores, artisans, carpenters, plumbers, painters, and other professionals to advertise and sell their products or services directly to nearby customers. Users can browse listings, place orders, book services, and choose delivery or self-pickup options while retaining the assurance of dealing with a known and locally accessible seller. This model not only boosts the visibility and reach of small businesses and skilled workers but also promotes local commerce, reduces logistical complexity, and enhances customer trust.

The platform is developed using the MERN stack with separate frontend and backend architectures. It incorporates core functionalities such as vendor registration, product and service listing, geolocation-based search, customer orders, and vendor management. Local Link has the potential to evolve into a scalable digital marketplace that strengthens local economies by connecting people, products, and skills within their communities.

# INTRODUCTION

## 1.1. Background

In recent years, digital marketplaces have transformed how people shop for products and services. E-commerce platforms such as Amazon, Flipkart, and others have made purchasing convenient, but a significant gap still exists in customer trust and seller transparency. Many customers prefer to buy from known local shops because they value accountability, familiarity, and the ability to verify product quality directly. However, most local vendors lack the digital visibility needed to compete with large online marketplaces.

Similarly, apps like Zomato and Swiggy successfully connect users with local restaurants, demonstrating that hyperlocal platforms can thrive when they focus on nearby, trusted providers. Yet, no major platform currently offers a unified solution for discovering not only food, but also local products and skilled services — such as carpenters, electricians, painters, tailors, or small-scale artisans.

Local businesses and service providers often rely on traditional offline methods such as word-of-mouth, printed flyers, or limited social media presence. This restricts their reach and growth potential. On the other hand, customers searching for reliable services or nearby shops often struggle due to the lack of centralized and verified information.

Local Link emerges from this gap. It aims to create an ecosystem where local shops and skilled workers can digitally showcase their inventory or services, connect easily with customers, and expand their reach beyond physical boundaries. By bringing hyperlocal commerce and service discovery into a single platform, Local Link promotes convenience, trust, transparency, and community-driven economic growth.

## 1.2. Objectives

The primary objective of Local Link is to develop a hyperlocal digital marketplace that connects customers with trusted local vendors and skilled service providers. The project focuses on addressing gaps in transparency, accessibility, and digital presence for small businesses and workers. The detailed objectives are as follows:

1. **To create a platform where local shops can list and advertise their products**  
Enabling kirana stores, clothing shops, and small retailers to showcase their full inventory online.
2. **To provide skilled workers a space to offer their services**  
Allowing carpenters, plumbers, electricians, painters, artisans, and other professionals to reach a wider audience.
3. **To enhance customer trust by offering seller transparency**

Ensuring customers know exactly which local shop or individual is fulfilling their order or service request.

4. **To promote local commerce and support small businesses**

Helping vendors and service providers increase visibility and customer reach without needing advanced technical knowledge.

5. **To develop a geolocation-based discovery system**

Allowing customers to find nearby shops or services based on their current location.

6. **To implement a smooth and reliable order and booking system**

Including features such as product browsing, service booking, order placement, delivery/pickup selection, and status tracking.

7. **To build the platform using the MERN stack with separate frontend and backend architectures**

Ensuring scalability, modularity, and industry-standard development practices.

8. **To create a user-friendly interface for customers, vendors, and workers**

Prioritizing ease of use, clean navigation, and clear communication flows.

9. **To establish a foundation for future expansion**

Including possibilities for digital payments, rating systems, delivery partnerships, and automated vendor recommendations.

## MOTIVATION

The motivation behind developing Local Link comes from the growing need to empower local businesses and skilled workers in a rapidly digitizing world. While large-scale e-commerce platforms offer vast product catalogues, they often overlook the importance of trust, locality, and personal connection that customers value when purchasing from familiar neighborhood shops. Many people still prefer buying from known sellers or hiring local professionals because they feel more secure and confident when the source is transparent and accessible.

However, most small vendors and local service providers struggle to establish an online presence due to limited technical expertise, high platform fees, or lack of exposure. This prevents them from reaching potential customers and reduces their competitiveness in comparison to large brands or online retailers. At the same time, customers often face difficulty discovering trustworthy local services or hidden small shops that offer high-quality products but have no digital visibility.

Platforms like Zomato and Swiggy have demonstrated the success of connecting customers with local food outlets. This raises the question — why not extend this model beyond food to products and everyday services? This idea fuels the creation of Local Link: a unified solution that brings both local shops and skilled workers onto a single digital platform.

By developing Local Link, the project aims to promote local entrepreneurship, strengthen community interaction, increase livelihood opportunities, and foster trust-based commerce. The motivation is not just to build a marketplace but to create a positive social impact by giving small businesses and individuals a fair chance to grow in the digital economy.

## PROBLEM STATEMENT

In the current digital marketplace ecosystem, customers have access to global e-commerce platforms, but these platforms often lack transparency regarding the origin of products and the identity of sellers. This reduces trust and discourages customers from purchasing items where accountability is important. At the same time, most local shops and skilled workers—such as carpenters, plumbers, painters, and artisans—struggle to gain digital visibility due to limited resources, technical knowledge, or access to online platforms. This creates a significant gap between local supply and local demand.

Although apps like Zomato and Swiggy connect users with nearby food outlets, there is no unified platform that allows users to discover and purchase a wide range of local products and services from trusted neighborhood vendors. Customers looking for reliable local services often rely on word-of-mouth, while small businesses lose potential customers due to lack of exposure. The absence of a structured, centralized platform makes it difficult to bridge this gap, limiting the growth of local commerce.

Therefore, there is a need for a **hyperlocal, trust-based online marketplace** that allows local vendors and skilled workers to list their products and services, and enables customers to easily discover and engage with them. Local Link aims to solve this problem by providing a digital platform that enhances transparency, accessibility, and trust between local providers and customers.

## LITERATURE REVIEW

The rise of digital marketplaces has been widely studied in the fields of e-commerce, hyperlocal delivery systems, and service-based platforms. Existing literature highlights how technology bridges information gaps between providers and consumers, improves accessibility, and enhances convenience. However, studies also reveal several shortcomings in current systems that fail to adequately support local vendors and skilled workers.

### **1. E-commerce Platforms and Transparency Issues**

Research on e-commerce giants such as Amazon and Flipkart shows that while these platforms provide scalability and convenience, they often lack transparency about product origins and seller identities. According to studies focused on consumer behavior, trust plays a crucial role in online buying decisions, and anonymity of sellers can discourage customers from purchasing certain categories of products. Literature also points out that global e-commerce tends to overshadow small local businesses, limiting their digital presence.

### **2. Hyperlocal Delivery Models**

Platforms like Zomato, Swiggy, Dunzo, and Urban Company have demonstrated the effectiveness of hyperlocal delivery by connecting users with nearby food outlets, grocery stores, and household service providers. Academic studies on hyperlocal commerce show that users prefer platforms that offer real-time availability, nearby vendors, and quick delivery. However, these platforms remain domain-specific—food delivery apps focus on restaurants, while service apps limit themselves to home services. There is no unified model that integrates both products and skilled services under one ecosystem.

### **3. Local Vendor Digitization Challenges**

Research on small business digitization indicates that local vendors face barriers such as lack of technical expertise, limited marketing reach, and high onboarding costs on existing platforms. Many small shops operate entirely offline, making it difficult for customers to discover them. Literature emphasizes the need for low-cost, easy-to-use platforms tailored for small businesses and freelancers.

### **4. Service Marketplaces and Skill Discovery**

Studies on platforms like Urban Company highlight the importance of skilled worker visibility and service standardization. Users prefer booking services online due to the convenience of verified professionals, predefined pricing, and easy scheduling. However, literature also notes that these platforms primarily onboard trained professionals, leaving out many local, self-employed workers who lack a digital portfolio but possess strong skills.

### **5. Community Commerce and Trust Factor**

Academic work on community-based commerce suggests that customers are more likely to trust and support local businesses when given the option. Literature shows a clear preference for platforms that promote local economies, build trust through transparency, and offer avenues for direct interaction between buyers and local sellers.

## **Summary of Gaps Identified**

The literature collectively highlights several gaps:

- No platform integrates **local products and skilled services** into one ecosystem.
- Local vendors remain digitally underrepresented.
- Customers lack transparent access to nearby sellers and service providers.
- Existing platforms do not fully promote trust-based, hyperlocal commerce.

Local Link intends to address these gaps by creating a comprehensive hyperlocal marketplace that connects users with trusted nearby vendors and skilled professionals, promoting accessibility, transparency, and community-driven digital commerce.

## METHODOLOGY

The development of *Local Link* follows a systematic and structured methodology to ensure that the platform is scalable, user-friendly, and capable of integrating both product listings and service-based functionalities. The methodology consists of multiple stages, each contributing to the overall design and implementation of the system.

### 1. Requirement Analysis

This phase focuses on identifying the functional and non-functional requirements of the system:

#### Functional Requirements

- User registration and login for customers, vendors, and skilled workers
- Vendor dashboard for adding, updating, and managing product or service listings
- Customer interface for browsing and filtering items based on location or category
- Order placement, service booking, and real-time status updates
- Geolocation-based search to find nearby shops and providers
- Admin panel for platform moderation
- Secure data storage for users, vendors, products, and services

#### Non-Functional Requirements

- **Scalability:** The platform should support the onboarding of multiple vendors and service providers.
- **Performance:** Fast loading times, efficient database queries, and real-time updates.
- **Security:** Authentication, authorization, and protection of user data.
- **Maintainability:** Clear separation of frontend and backend for easy updates.
- **Compatibility:** Responsive design for mobile and desktop devices.

This analysis ensures that all user needs and system constraints are understood before development begins.

### 2. System Architecture Design

The architecture is built using the **MERN stack** with a clear separation of the frontend and backend layers.

#### System Components

- **Frontend (React.js):**  
Handles UI rendering, user interactions, routing, and communication with backend APIs.
- **Backend (Node.js + Express.js):**  
Manages business logic, API endpoints, authentication, and communication with the database.
- **Database (MongoDB):**  
Stores user information, product listings, service listings, vendor profiles, and order data.

## Architecture Style

- Follows **RESTful API** architecture for communication between frontend and backend.
- Uses **JWT-based authentication** for secure login.
- Implements **MVC structure** on the backend for modular design.

This architecture ensures scalability, clear data flow, and efficient separation of concerns.

## 3. Implementation of Real-Time Communication

To support real-time order updates, vendor notifications, and service status tracking, technologies like:

- **WebSockets** (via Socket.io)
- **Event-driven architecture**

are integrated into the backend.

## Real-Time Features Implemented

- Instant notification to vendors when a new order or service request is placed
- Real-time status updates for customers (e.g., *Order Confirmed, Out for Delivery*)
- Live chat or communication between vendor and customer (optional extension)

This ensures fast and interactive communication between all platform users.

## 4. UI/UX Development

The UI/UX design aims to ensure an intuitive and seamless experience for customers, vendors, and skilled workers.

### Design Principles

- **Simplicity:** Clean layouts and easy navigation
- **Consistency:** Uniform color themes, fonts, and icons
- **Responsiveness:** Smooth experience on mobile, tablets, and desktops
- **Accessibility:** Readable text, proper spacing, and clear action buttons

### Key Screens Designed

- Homepage with category-wise product & service sections
- Vendor dashboard for listings
- Customer product/service browsing page
- Order/booking confirmation and tracking screens
- Login, signup, and profile pages

Modern frontend libraries and components (React, Tailwind/Material UI) are used to deliver a rich

interface.

## 5. Testing & Validation

Testing ensures that all components work as expected and the platform is reliable.

### Testing Techniques

- **Unit Testing:**  
Testing each component/module (frontend and backend) individually.
- **Integration Testing:**  
Ensuring smooth interaction between frontend, backend, and database.
- **System Testing:**  
Testing the complete system to verify all features.
- **User Acceptance Testing (UAT):**  
Ensuring the platform meets real-world needs of customers and vendors.

### Validation

- Ensuring data correctness and form input validation
- Security validation for authentication and API protection
- Performance validation for fast loading and response times

Testing guarantees that the Local Link platform is stable, accurate, and ready for deployment.

## FLOW CHART

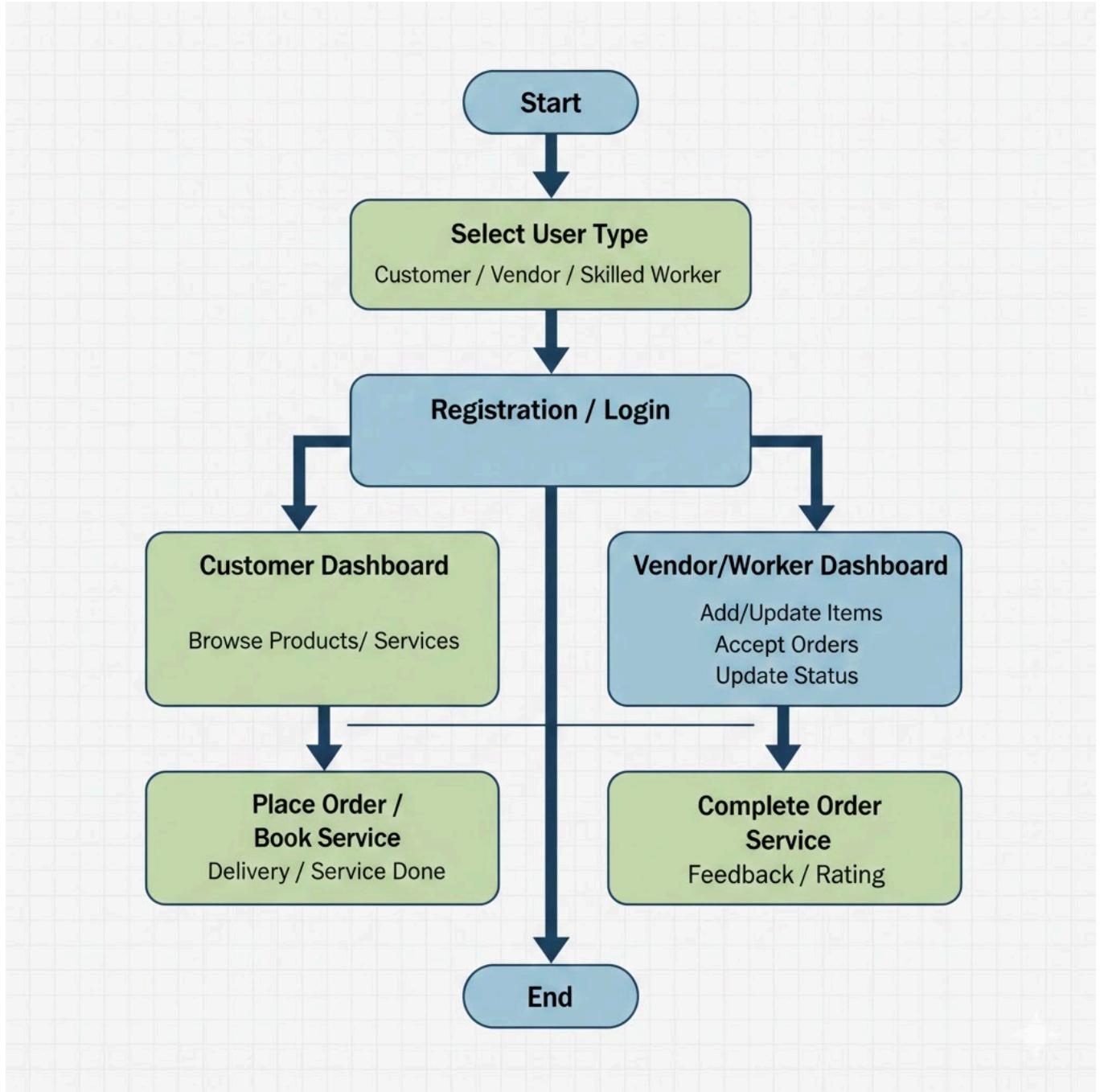


Figure: Functional Flow Diagram of the Proposed System

## **EXPECTED RESULTS AND OUTCOMES**

The development of **Local Link** aims to deliver a fully functional hyperlocal marketplace connecting local vendors, skilled service providers, and customers. Upon successful implementation, the following results and outcomes are expected:

### **1. Enhanced Local Vendor Visibility**

Local shops, artisans, and service providers will be able to showcase their products and services online, reaching a wider audience beyond their immediate geographic location.

### **2. Customer Convenience and Trust**

Users can discover and purchase products or book services from nearby, trusted vendors, ensuring transparency and reducing hesitation in online transactions.

### **3. Integrated Product and Service Marketplace**

Unlike existing platforms that focus on either food delivery or professional services, Local Link will provide a unified platform for both product purchases and service bookings.

### **4. Real-Time Communication and Order Tracking**

Customers and vendors will receive instant notifications regarding order placement, status updates, and service confirmations, enhancing the overall user experience.

### **5. Improved Community-Based Commerce**

By promoting local vendors and skilled workers, Local Link will encourage the growth of local businesses and strengthen the local economy.

### **6. User-Friendly and Scalable Platform**

The application is expected to provide a seamless interface for vendors and customers while being scalable for future expansion, such as integrating digital payments, rating systems, and delivery partnerships.

### **7. Data-Driven Insights for Vendors**

Vendors can gain insights into customer preferences, popular products/services, and sales trends, enabling better business decisions.

### **Outcome Summary:**

Local Link is expected to establish a trusted, hyperlocal digital marketplace that benefits both customers and local businesses. It will enhance accessibility, trust, and convenience, while providing a foundation for future growth and community-driven commerce.

## **CONCLUSION**

The Local Link project presents a comprehensive solution to bridge the gap between local vendors, skilled service providers, and customers in a hyperlocal digital ecosystem. By integrating both product listings and service offerings into a single platform, Local Link addresses the limitations of existing e-commerce and service-based applications, which often lack transparency, trust, and focus on local businesses.

Through the implementation of a MERN-stack architecture, real-time communication, and an intuitive UI/UX design, the platform enables seamless interactions between vendors and customers. Vendors gain a digital presence and increased visibility, while customers benefit from trustworthy, nearby options for products and services. The platform also supports the growth of local commerce, fostering community-based economic development.

In conclusion, Local Link not only serves as a marketplace for products and services but also creates an ecosystem that empowers local entrepreneurs, promotes transparency, and enhances customer confidence. Its scalable and modular design lays a strong foundation for future enhancements, positioning it as a practical, socially impactful, and innovative solution in the digital marketplace landscape.

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