

Original Article

# Rozgar Setu: A Digital Employment Bridge for Job Seekers and Employers

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**Abstract** - India's labour market is largely informal, where service discovery often depends on unstructured personal networks. This approach frequently leads to inefficiencies, limited transparency, and reduced trust between service providers and users. To address these challenges, this study presents Rozgar Setu, a digital platform designed to improve service delivery within informal and semi-formal employment sectors. The platform integrates authenticated user accounts, skill-based worker profiling, and location-aware search to enable efficient and reliable matching between job seekers and employers. In addition, a structured communication system and feedback mechanism are incorporated to enhance accountability and service quality. The study addresses the lack of an inclusive and location-sensitive digital solution specifically tailored for informal sector workers in India. The proposed system was evaluated using simulated datasets, where it demonstrated a significant reduction in worker discovery time (approximately 80–90%) and an improvement in matching accuracy of around 30% compared to conventional referral-based methods. The results suggest that Rozgar Setu provides a scalable, transparent, and user-focused approach for improving employment connectivity and reducing inefficiencies in India's informal labour market.

**Keywords** - Digital Service Platform, Informal Employment, Location-Based Services, Skill-Based Worker Discovery, Service Transparency.

## 1. Introduction

The Indian labour force is largely characterised by informality, with a significant proportion of workers engaged in employment arrangements that lack formal contracts and social security benefits. According to the International Labour Organization (ILO), nearly 90 percent of India's workforce operates within the informal sector [10]. In such settings, service discovery continues to rely heavily on personal networks, intermediaries, and word-of-mouth communication, often resulting in inefficiencies, limited reach, and information asymmetry between users and service providers. The rapid growth of smartphones and mobile internet has created new opportunities for digital platforms to improve access to employment and service delivery. However, most existing platforms are designed for formal sector professionals or urban populations, leaving informal workers largely excluded from the digital employment ecosystem [9]. This gap is further intensified by limited digital literacy, the absence of localized platforms, and the lack of reliable worker verification mechanisms.

### 1.1. Research Gap

Existing digital employment platforms such as Urban Company, TaskRabbit, and Naukri.com primarily target structured or urban employment markets. These platforms do

not adequately address the requirements of informal sector workers, who form the majority of India's workforce. In particular, there is a lack of integrated systems that combine skill-based matching, location-aware discovery, verified worker profiles, and structured feedback mechanisms within a single platform tailored to informal employment conditions.

### 1.2. Research-Questions

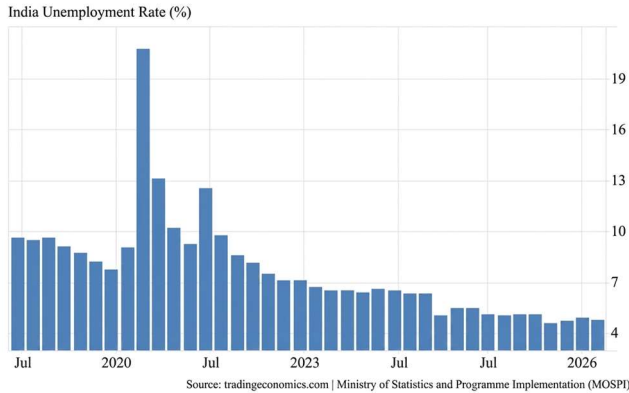
(RQ1) How can a digital platform improve worker discovery efficiency in informal labour markets?  
(RQ2) What mechanisms can be implemented to enhance trust and transparency between users and informal sector workers?  
(RQ3) How effective is skill-based and location-aware matching compared to traditional referral-based approaches?

To address this gap, the present study introduces *Rozgar Setu*, a digital employment platform designed to enable verified, skill-based, and location-aware connections between job seekers and employers in the informal sector. The system focuses on improving accessibility, transparency, and efficiency in service discovery.

The remainder of this paper is organized as follows: Section 2 reviews relevant literature; Section 3 presents the problem statement; Section 4 describes the system



architecture; Section 5 outlines the methodology; Section 6 discusses results and performance evaluation; Sections 7 and 8 cover limitations and conclusions; and Section 9 presents future scope.



**Fig. 1 Monthly Trends in India's Unemployment Rate (%) from 2019 to 2026**

As illustrated in Figure 1 above, the graph represents the pattern of the unemployment rate of India between 2019 and 2026, where we observe considerable variations. A steep rise in unemployment was witnessed in 2020, which marked the outbreak of COVID-19. The unemployment rate recorded an unusual surge in the year of economic turmoil due to the coronavirus disease.

After 2020, there is evidence of declining unemployment rates due to the economic activity returning to normal. Statistical evidence suggests that the unemployment rate has shown minimal variation in the recent past. However, from the available data, it can be observed that there are inherent issues related to employment generation, especially in the informal sectors of the economy.

## 2. Literature Review

The increasing adoption of digital platforms has significantly transformed service delivery and labour market interactions across both developed and developing economies. International Labour Organization (ILO) reports highlight the growing influence of digital labour platforms in reshaping employment structures, particularly through algorithmic matching and flexible work arrangements [1]. In the Indian context, NITI Aayog [2] reports a rapid expansion of the gig and platform economy, with workforce participation projected to increase substantially in the coming years. Despite this growth, a large proportion of informal workers remains excluded from these digital systems.

Empirical evidence from India further demonstrates the potential of digital platforms in improving employment outcomes. Magruder et al. [3] show that online job platforms

can enhance job search efficiency and matching quality. However, such systems are often designed for structured employment environments and may not effectively address the complexities of informal labour markets. Cruz and Gameiro [4] analyse the structural dynamics of digital work platforms, emphasising how platform design influences interactions between workers and clients, but do not fully account for localized and informal employment settings.

Several studies have highlighted the socio-economic challenges faced by platform workers. Tripathi et al. [5] examine the psychological and occupational pressures experienced by gig workers, while Wood and Lehdonvirta [6] discuss issues of reputation systems, precarity, and worker recognition within digital platforms. These findings underscore the importance of trust, transparency, and fairness in platform design—factors that are particularly critical in informal employment contexts.

In the Indian scenario, reports by GIZ [7] and ILO-CIE [8] indicate that informal workers contribute significantly to the national economy while facing barriers such as a lack of digital access, limited verification mechanisms, and the absence of structured employment records. These challenges highlight the need for platforms that are specifically tailored to informal sector requirements. From a technical perspective, studies such as Ong and Lim [9] demonstrate the effectiveness of data-driven and skill-based recommendation systems in improving matching outcomes, though their application to informal labour markets remains limited.

Additionally, broader research on gig economy dynamics, such as the work of Hall and Krueger [11] and De Stefano [12], provides insight into the evolving nature of platform-based employment and the associated regulatory and structural challenges. These studies emphasise flexibility and scalability but also highlight gaps related to worker protection and inclusion.

### 2.1. Research Gap Synthesis

The existing body of literature demonstrates that while digital platforms have improved efficiency and accessibility in labour markets, most solutions are oriented toward formal employment systems or structured gig economies. Limited attention has been given to localized, informal sector employment challenges in developing countries such as India. Furthermore, current platforms typically lack an integrated framework that combines skill-based matching, location-aware discovery, verified worker profiles, and structured feedback mechanisms.

To address these limitations, the proposed system, *Rozgar Setu*, introduces a unified platform specifically designed for informal sector employment, integrating these features to improve accessibility, transparency, and trust in service delivery.

### 3. Problem Statement

Technological Despite significant advancements in digital service platforms, a large proportion of India’s workforce remains excluded from structured digital employment systems. Available reports indicate that nearly 90% of the workforce operates within the informal sector [10], with approximately 70–80% of workers lacking verifiable employment records. Although the informal economy contributes substantially to national output, it continues to remain largely unrepresented within digital service ecosystems.

Service discovery in the informal labour market primarily relies on personal networks, intermediaries, and word-of-mouth communication. Such practices often lead to information asymmetry, inefficiencies in access, and limited transparency between service providers and users. As a result, users face challenges in assessing the reliability, experience, and quality of workers, while workers lack mechanisms to build credible and verifiable service histories.

In addition, several structural barriers further restrict the participation of informal workers in digital labour markets. These include limited digital literacy, absence of localized and user-friendly platforms, and lack of standardized verification systems. Collectively, these limitations highlight the need for a digital solution that is both accessible and tailored to the specific requirements of informal employment.

Based on these challenges, the present study formulates the following hypothesis: “A skill-based, location-aware digital platform with verified worker profiles can significantly improve matching efficiency and reduce worker discovery time compared to conventional referral-based methods in India’s informal employment sector.”

### 4. System Architecture

The system architecture of Rozgar Setu follows a modular design, comprising multiple layers that support user interaction, data processing, verification, and service discovery. Each component is designed to operate independently while maintaining seamless integration within the overall system/

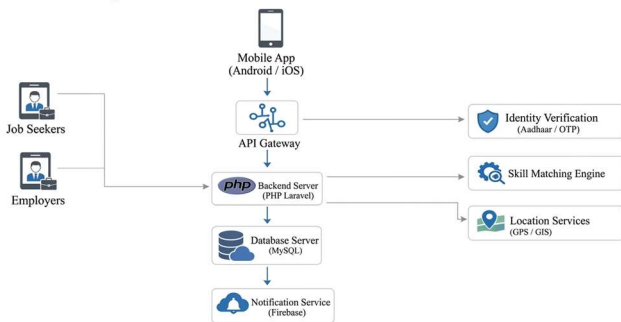


Fig. 2 System Architecture of Rozgar Setu Platform

At the top layer, the user interface enables interaction between job seekers and service providers. This functionality is implemented through a mobile application compatible with both Android and iOS platforms, allowing users to create accounts, build profiles, and search for available workers.

User-generated requests are transmitted to an API gateway, which acts as an intermediary between the client application and backend services. The API gateway is responsible for request handling, authentication, and secure data transmission, ensuring that all interactions between the frontend and backend components are efficiently managed.

To establish trust and reliability within the platform, a Verification Services module is incorporated. This component facilitates identity validation and supports credibility by maintaining verified user and worker profiles along with associated ratings.

A Location Services module is integrated to enable geo-tagging and proximity-based recommendations. This ensures that users are connected with workers available within a defined geographical range, thereby improving response efficiency and reducing service delays.

All system data, including user profiles, service requests, interaction history, and ratings, is stored in a relational database. This ensures secure, structured storage and efficient data retrieval during the matching process.

Overall, this architectural design enables Rozgar Setu to provide a secure, scalable, and efficient service connection platform tailored to the needs of the informal labour sector.

### 5. Materials and Methods

Rozgar Setu was developed using an Agile Software Development Life Cycle (SDLC), enabling iterative development, continuous testing, and continuous refinement of system functionalities. The development process was structured into four major phases: requirement analysis, system design, implementation, and performance evaluation.

#### 5.1. Requirement Analysis

System requirements were identified through a review of existing literature and analysis of challenges faced by informal sector workers and service users. The key functional requirements included user authentication, worker profile creation, skill-based search, location-based discovery, and a feedback mechanism to enhance trust and service quality.

#### 5.2. System Design

The platform follows a modular architecture consisting of a React Native mobile frontend, a Node.js-based API layer, Python-based backend services, and a PostgreSQL database. This architecture ensures scalability, efficient data management, and flexibility for future enhancements.

### 5.3. Matching Approach

The platform replaces traditional referral-based discovery with a structured matching process that recommends relevant workers based on three primary factors: skill relevance, geographical proximity, and user ratings. Workers whose skills match the service requirement are prioritized, followed by those located within a closer geographic range. User ratings are used to further refine recommendations by reflecting past performance and reliability. Based on these factors, a ranked list of suitable workers is generated and presented to the user, improving both efficiency and decision-making.

### 5.4. Dataset and Simulation

Due to the absence of publicly available structured datasets for informal sector employment, a simulated dataset was created to approximate real-world conditions. The dataset consists of 500 worker profiles and 300 service requests across common informal occupations such as electrician, plumber, driver, domestic helper, carpenter, mason, and tailor. Worker profiles include attributes such as skill category, years of experience (ranging from 1 to 20 years), approximate geographic location within a defined service radius, and user ratings. Service requests were designed to reflect practical user needs, including required skills and location constraints. The dataset was structured to capture variations in worker availability, skill distribution, and demand patterns, thereby providing a realistic approximation of informal service environments.

### 5.5. Performance Metrics

The performance of the system was evaluated using three key metrics: Matching Accuracy, defined as the proportion of recommended workers that satisfied both skill and location requirements; Response Time, defined as the average time required to generate recommendations after a request; and Interaction Reliability, defined as the percentage of successful service interactions without system errors. The reported results are averaged over multiple simulation runs to ensure consistency and reduce randomness.

## 6. Result and Performance Evaluation

The results presented in this section are based on simulated experimental data and are intended to demonstrate the effectiveness of the proposed system under controlled conditions. The performance of the Rozgar Setu platform was evaluated using the dataset described in Section 5.4, focusing on three key metrics: matching accuracy, response time, and interaction reliability. A comparative analysis was conducted against a baseline referral-based model representing traditional informal sector worker discovery.

The results indicate that the proposed system consistently outperforms the baseline across all evaluation parameters. Matching accuracy improved from approximately 50–60% under the referral-based approach to 80–90% with Rozgar Setu, reflecting a significant improvement in recommendation

quality. Similarly, the average response time for worker discovery was reduced from an estimated 2–3 days to 10–30 minutes, demonstrating a substantial reduction in service delay. Interaction reliability also improved, exceeding 95% compared to 60–70% in conventional approaches.

These improvements can be attributed to the structured matching approach, which integrates skill relevance, geographic proximity, and user feedback to produce more accurate recommendations. Additionally, the API-based architecture enables automated request processing, thereby reducing delays typically associated with manual referral-based methods.

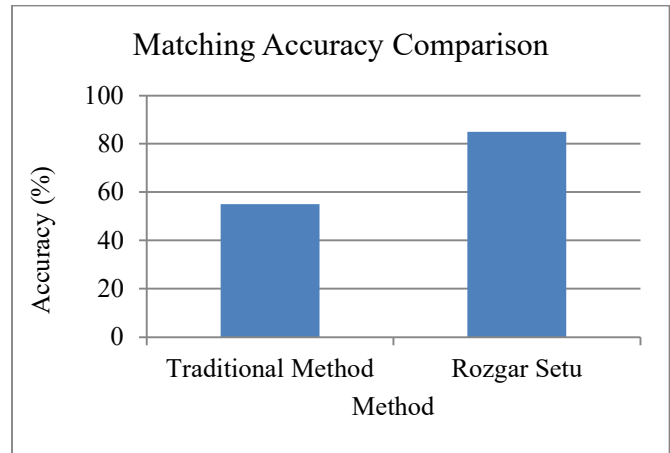


Fig. 3 Comparison of Matching Accuracy between Traditional Method and Rozgar Setu

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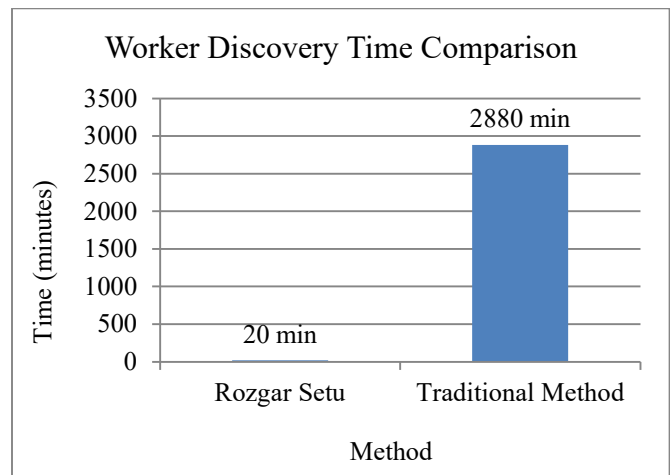


Fig. 4 Comparison of Worker Discovery Time between Traditional Method and Rozgar Setu

The comparison clearly highlights a substantial reduction in worker discovery time achieved by the proposed system. In traditional referral-based methods, users typically require 2–3 days to identify a suitable worker due to reliance on personal networks and intermediaries. In contrast, Rozgar Setu reduces this time to approximately 10–30 minutes through automated matching and real-time data processing.

This significant improvement demonstrates the effectiveness of integrating location-based filtering and digital communication mechanisms, which enable faster identification and selection of relevant workers. The reduction in response time not only enhances user convenience but also improves overall system efficiency in service delivery.

**Table 1. Quantitative Comparison of Rozgar Setu vs. Traditional Methods**

Parameter	Traditional Method	Rozgar Setu (Proposed)	Improvement
Worker Discovery Time	2–3 Days	10–30 Minutes	~80–90% Faster
Matching Accuracy	~50–60%	~80–90%	+30 Percentage Points
Transparency Level	Low	High (Digital Records)	Significant
Intermediaries Dependency	High	None (Direct Connection)	Eliminated
Worker Verification	Not Available	Document-Based	Improved Trust
User–Worker Communication	Indirect / Verbal	Direct (In-App Chat)	More Efficient
Interaction Reliability	~60–70%	~95%+	+25–35 Percentage Points

The integration of digital record-keeping and feedback mechanisms further enhances transparency and accountability, enabling users to make informed decisions based on past interactions. These findings support the hypothesis presented in Section 3 and demonstrate that the proposed platform provides a more efficient and reliable alternative to conventional service discovery methods.

which rely on formal qualifications and structured employment records, the proposed system accommodates workers with informal experience. This distinction represents the primary contribution and novelty of the platform.

**6.2. Ethical Considerations**

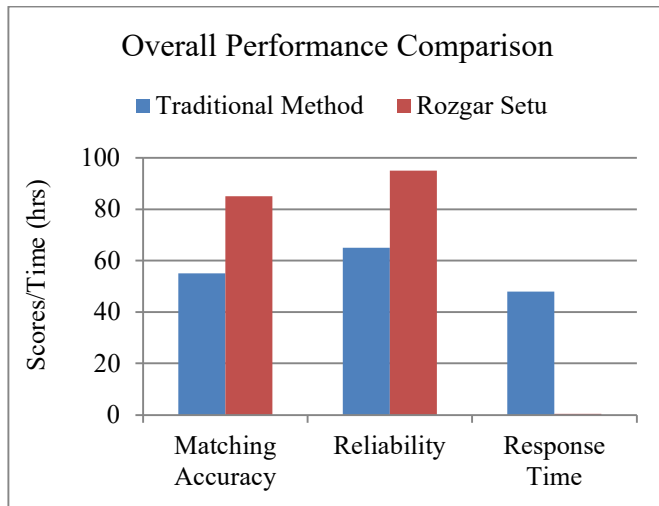
The deployment of the Rozgar Setu platform involves several ethical considerations. With respect to data privacy, all user and worker data are stored using encrypted mechanisms, with access restricted through role-based authentication. Personal information is not shared with third parties without explicit user consent.

From a fairness perspective, the system prioritizes objective criteria such as skill relevance and geographic proximity, reducing the likelihood of biased recommendations. However, rating-based feedback may introduce bias, which is acknowledged as a limitation and an area for future improvement.

In terms of accessibility, reliance on smartphones and internet connectivity may limit adoption in remote or low-resource areas. Future enhancements may include support for low-bandwidth environments and alternative access mechanisms. Additionally, the possibility of fraudulent reviews is recognized, and future versions of the system may incorporate anomaly detection techniques to address this issue.

**7. Limitations**

The present study acknowledges several limitations. First, the system evaluation was conducted using simulated data



**Fig. 5 Overall Performance Comparison across Key Metrics**

**6.1. Comparison with Existing Platforms**

In comparison with platforms such as Urban Company, which primarily target urban and semi-formal service markets, Rozgar Setu focuses specifically on informal sector inclusion by reducing entry barriers and supporting location-based discovery. Unlike platforms such as Naukri.com or LinkedIn,

comprising 500 worker profiles and 300 service requests. While this approach enabled controlled performance analysis, it does not fully represent the complexity, diversity, and dynamic nature of real-world informal labour markets. Therefore, large-scale empirical validation involving real users and service providers is required to confirm the generalizability of the results.

Second, the current matching approach is based on predefined weighting of factors such as skill relevance, location proximity, and user ratings. Although this method provides satisfactory results, it lacks adaptability to changing user preferences and dynamic conditions. Future enhancements may incorporate machine learning techniques to enable more adaptive and data-driven recommendation capabilities.

Third, the usability of the platform depends on access to internet-enabled smartphones, which may limit adoption among workers in rural or economically constrained regions. Challenges such as limited digital literacy, inadequate network infrastructure, and device affordability may affect the platform's accessibility and widespread implementation.

Finally, the feedback and rating mechanism is based on user-generated evaluations, which may introduce subjective bias. Addressing this issue would require the development of mechanisms for detecting and minimizing biased or inconsistent ratings in future system iterations.

## 8. Conclusion

This paper presented *Rozgar Setu*, a digital employment platform designed to address key challenges associated with informal sector service discovery in India. The study identified a significant gap in the availability of inclusive, verifiable, and location-aware digital solutions for informal workers and proposed a system that integrates skill-based filtering, proximity-based matching, authenticated worker profiles, and a structured feedback mechanism.

The evaluation results indicate that the proposed approach achieves notable improvements over traditional referral-based methods, with matching accuracy increasing by approximately 30 percentage points and worker discovery time reduced by 80–90%. These findings support the hypothesis that a structured, location-aware digital platform can significantly enhance efficiency and transparency in informal employment matching.

The primary contribution of this work lies in the design and evaluation of a platform specifically tailored to the needs of India's informal labour market—an area that remains largely underserved by existing digital solutions. The results highlight both the technical feasibility and the potential societal impact of such systems in improving accessibility,

reducing inefficiencies, and strengthening trust between users and workers.

While the findings are based on simulated data, they demonstrate the practical potential of deploying such platforms in real-world scenarios. Future work will focus on large-scale validation, integration of adaptive recommendation techniques, support for multilingual interaction, and incorporation of external verification systems to further enhance platform reliability and usability.

## Future Scope

Several directions for future enhancement of the *Rozgar Setu* platform can be identified. The integration of advanced machine learning techniques, such as collaborative filtering and reinforcement learning-based recommendation models, could enable the system to improve matching accuracy over time by leveraging historical interaction data and user preferences.

In addition, the development of a fraud detection mechanism using anomaly detection techniques would help identify and mitigate risks associated with fake profiles, manipulated ratings, and fraudulent service requests. Incorporating multilingual natural language processing (NLP) capabilities would further enhance accessibility by enabling search and communication in regional Indian languages such as Hindi, Tamil, Telugu, and Bengali.

Further improvements may include integration with digital payment systems, such as Unified Payments Interface (UPI), and government-supported identity verification frameworks to strengthen user authentication and ensure transaction transparency. Additionally, the introduction of offline-compatible features and SMS-based interaction models could expand platform accessibility to users in regions with limited internet connectivity.

## Conflicts of Interest

The authors declare that there are no conflicts of interest regarding the publication of this paper.

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