

Daily Rozgaar: A Web-Based Platform for Localized Job Matching of Blue-Collar Workers

Dipansu^{1,*}, Charu Porush¹, Rajeev Singh¹

Abstract

In India, a large number of people are employed in the informal labor market, particularly blue-collar jobs such as electricians, plumbers, carpenters, masons, painters and other laborers. Despite their essential contribution in domestic and small-scale service demands, particularly in semi-urban and rural areas, these workers have a high reliance on word-of-mouth networks and localized contacts for employment opportunities. Such dependence often leads to limited job visibility, unstable patterns of income, and constant trust-related issues for customers. Although a number of digital service platforms have emerged in recent years, most are still concentrated in metropolitan environments. Their centralized models of operations, complex user interfaces, and relatively high overhead costs often make them unsuitable for semi-urban and rural contexts characterized by infrastructural constraints as well as lower levels of digital literacy. Identity verification and credibility assessment mechanisms for blue-collar workers are still not sufficiently addressed in many existing systems. Daily Rozgaar is a web-based prototype platform presented in this paper that serves to facilitate localized job matching between customers and qualified blue-collar workers. The system enables customers to search for service providers in the vicinity through PIN-code-based location filtering combined with service category selection. Worker authenticity is ensured by Aadhaar-based identity submission followed by manual administrative verification, thus including a structured trust mechanism within the platform. The prototype was implemented using a lightweight three-tier architecture, a responsive web interface, an application server and a relational database. The objective was to maintain architectural simplicity, accessibility, and trust, particularly for users with limited digital literacy. The prototype was evaluated through functional testing in a controlled environment for the confirmation of basic modules such as user registration, verification of worker, service discovery, and handling of service requests. The results indicate that a localized trust-oriented digital employment framework may increase accessibility and formalization for the informal labor economy in India.

Keywords: Informal labor sector, blue-collar employment, localized job matching, trust-based digital platforms, web-based employment system

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INTRODUCTION

In India, the informal labor sector constitutes a significant proportion of the national workforce and includes a wide range of occupations. These occupations include electricians, plumbers, carpenters, masons, painters, and general laborers. In recent years, platform-based employment has expanded significantly, particularly in developing economies, where digital platforms are increasingly used to improve access to the labor market. Therefore, researchers are examining what happens when informal workers use these platforms.

In practice, blue-collar workers often obtain employment opportunities through informal social networks and word-of-mouth communication. Although such networks may offer flexibility, they often result in job insecurity and limited employment opportunities. This uncertainty frequently leads to irregular income patterns among workers. Customers also face difficulties in identifying reliable and verifiable service providers.

Although numerous digital service platforms have emerged in recent years, they are usually targeted at big city markets, which raises some doubts as to how well they work in other areas. Most of these platforms follow centralized operational models, complex user interfaces, and fees that unintentionally exclude users with low bandwidth or limited digital literacy. Consequently, the reach of such platforms remains limited in semi-urban and rural areas.

Another key aspect is trust. Most blue-collar workers do not have official employment records, which makes it difficult to verify their identity and professional credibility. Customers often hesitate to hire someone whose background is unclear. This highlights the need for simple digital solutions that are easy to use and can help build trust between workers and customers.

This indicates that we need lightweight local digital platforms that assist people in finding jobs depending on their location and additional safeguards to verify workers. Such platforms should be culturally appropriate, accessible to users with limited digital literacy, and economically sustainable in the long run.

This study presents a prototype web-based platform called Daily Rozgaar, a digital platform designed to connect local customers with nearby blue-collar workers. It allows users to filter jobs based on the PIN code and category of services, making job listings relevant. Workers can submit their Aadhaar cards to prove their identity, and manual admin review keeps the system organized but still open access.

The system was architecturally implemented using a three-tier model comprising a web interface, web server, and relational database. This design prioritizes minimal deployment, which can fit within low-bandwidth and resource-constrained environments.

The remainder of this paper is structured as follows. Section II examines the literature on digital job platforms and informal labor systems. The system architecture and development methodology are described in Section III. Section IV discusses implementation and test pilots. Finally, Section V concludes the paper and provides future research directions.

Research Contributions

The primary contributions to this work are the following:

- A lightweight localization model based on PIN-code filtering tailored to semi-urban and rural labor ecosystems.
- An identity verification process based on trust, including Aadhaar-based submissions with manual administrative validation.
- A three-tier architectural system optimized for low-bandwidth conditions and users with low digital literacy.
- An actual prototype implementation with a planned assessment to determine viability in resource-constrained environments.

LITERATURE REVIEW

Digital Job Platforms for Informal Workers

Recent studies have explored the potential of digital platforms to improve job access for informal and blue-collar workers in low- and middle-income economies. A great part of This study aims to

reduce reliance on informal hiring networks through structured digital platforms that improve transparency and accessibility in hiring processes.

Aligbe and Olajube proposed a mobile, location-based job platform to improve employment access for blue-collar workers in Nigeria's informal labor markets [1]. The platform uses geolocation and mobile technologies to connect workers with nearby job opportunities, which is useful in areas where formal hiring mechanisms are limited. Their study shows that digital platforms can improve job visibility in such contexts. However, the solution does not explicitly discuss the mechanisms of identity verification or those for establishing trust. The issue of usability for users with low digital literacy is also not explicitly addressed.

Pyae et al. adapted a design-thinking approach to develop a mobile-based employment platform for blue-collar and migrant workers in Thailand [2]. The authors addressed usability, language accessibility, and interface simplicity to overcome communication and technical barriers to using the app. The design thinking approach is beneficial for enhancing usability in such contexts. However, the authors did not explicitly establish the mechanisms for identity verification, localized trust, and system verification by administrative authorities, which are crucial for establishing reliability in such systems.

Overall, existing studies show that digital platforms can improve informal workers' job access. However, important aspects such as trust, identity verification, and localized system design have not yet been fully addressed. This creates a need for a solution that combines local job matching with simple and reliable verification. In this study, we propose a localized and trust-based digital platform designed for semi-urban and rural environments.

Location-Based and On-Demand Employment Systems

On-demand and location-based employment systems are increasingly being used in digital labor markets to improve job matching. Such systems primarily rely on geographical information and certain real-time availability to match workers with local jobs. This makes it easier for employers to find workers and helps workers discover jobs in their local areas without relying too much on personal contacts. Conceptually, matching based on location makes the process more practical and relevant, especially in areas where formal hiring systems are weak.

In the Nigerian context, Aligbe et al. developed a mobile job portal that uses geolocation to connect blue-collar workers with jobs in nearby areas [1]. Their work shows that location-based matching can reduce dependence on informal sources, such as referrals, and make job discovery more transparent. It also helps organize job information in a more structured manner. Simultaneously, the platform mainly focuses on job listings based on location and does not include features such as real-time availability or more detailed coordination between workers and employers.

Another example is the SkillLink system presented at an IEEE conference [3]. It extends location-based matching by adding features such as real-time communication, skill-based suggestions and AI-based matching. It also includes options such as worker reviews, availability tracking, and online transactions, which make the platform more feature rich. These characteristics make the system more sophisticated and scalable; however, they also complicate and demand more resources.

Therefore, such systems might not be effective in semi-urban or rural locations, where Internet connectivity and digital literacy rates are still low. In many cases, users may find these platforms difficult to understand and use effectively. In addition, when too much dependence is placed on AI-based matching, it becomes harder for users to understand how the system makes decisions. This can create confusion, especially for first-time users who prefer simple and predictable systems.

Therefore, there is a need for simpler and more localized solutions that still use location-based matching but avoid unnecessary complexity. Based on this idea, Daily Rozgaar uses PIN-code-based filtering and simple rule-based logic. The focus is on keeping the system easy to use, accessible to a wider range of users, and suitable for environments in which resources and infrastructure are limited.

Online Identity and Confidence in Job Market

The issue of identity authentication and trust is high in digital labor markets, especially in informal working environments where employment is often based on friendship networks. Many employees are offered opportunities through references or local networks rather than through formal systems. Most people do not have enough information about a service provider to determine their reliability and background and are therefore hesitant to use these platforms to book services. This hesitation can negatively impact the utilization and growth of digital employment systems in these spaces.

Krishna et al. identified the role of digital identity systems, especially Aadhaar, in increasing the inclusion and trust of informal workers in India [4]. This analysis shows that the Aadhaar system helps individuals build a structured digital identity that can be used to access various digital services and employment opportunities. This helps workers become more visible and participate in more organized systems. At the same time, the study also reveals that there are problems such as potential abuses, the exclusion of some groups, and excessive reliance on centralized identity systems, especially when proper safeguards or accountability measures are not clearly defined.

According to official sources from UIDAI, Aadhaar was designed as a foundational identity system to support inclusion across both public and private services [5]. It offers a standardized system through which one can check their identity and help streamline many processes that require authentication. However, it does not entirely address the larger issues of centralized identity infrastructure. If these systems are integrated directly into third-party systems, there may be legal compliance issues, technical implementation problems, and regulatory constraints. These challenges become even more relevant in prototype-level or academic systems, where full-scale integration is not always possible.

Overall, these studies suggest that digital identity systems can help build trust, but they need to be implemented carefully and in a balanced manner. Accessibility is one factor that should be considered, but transparency and user privacy should also be considered when designing such systems. A more practical solution is to use a mixture of identity submission and administrative verification rather than fully depending on automated verification. This kind of approach enables the system to remain simple and at the same time offer a minimum level of trust. The identity verification model used in Daily Rozgaar follows this idea by including an administrative approval step, which helps ensure that worker profiles are verified without making the system overly complex or difficult to manage.

Gaps in Existing Systems

Existing studies suggest that digital platforms can increase job visibility for informal and blue-collar workers. The research community has investigated various approaches, such as organized job portals [1], user-friendly interface design [2], location-based job matching [1], and more advanced on-demand systems [3]. Furthermore, studies on digital identity systems such as Aadhaar suggest that such systems can help build trust and help workers participate easily in online labor platforms [4, 5]. These approaches indicate that digital solutions can make employment systems more accessible and organized.

However, some gaps remain. Certain platforms are more focused on job discovery with no organized identity verification system. This can lead to a lack of trust between workers and customers. However, more advanced platforms rely on AI-based matching and highly accurate geolocation, which can influence system decisions. However, such features can add unnecessary complexity to the system and reduce its flexibility in low-resource environments.

In addition, most current systems are based on elaborate architectures and permanent connectivity needs that may discriminate against users working in low-resource environments. Lightweight localization strategies based on rule-based logic, such as PIN-code-based matching aligned with local hiring practices, remain relatively understudied in the scholarly discourse.

These restrictions encourage the creation of a localized, simple, and trust-based work platform. Daily Rozgaar aims to fill these gaps through PIN-code-based job matching, manual identity verification, and accessibility-based web design frameworks.

A comparative perspective of the proposed system with existing platforms highlights its focus on localized accessibility and trust. Unlike many existing solutions that rely on centralized models and complex interfaces, the proposed system emphasizes PIN-code-based filtering and manual identity verification, making it more suitable for semi-urban and rural users with limited digital literacy levels. A comparative study of representative existing platforms and the proposed system is presented in Table 1.

The comparison shows that dominant platforms either lack formalized identity verification or introduce substantial architectural complexity. This supports the rationale for a lightweight and trust-based design approach in suburban and rural work environments.

PROBLEM DEFINITION

India has a substantial population of blue-collar and informal workers. Workers such as electricians, plumbers, carpenters, masons, artisans, and general laborers still depend on informal and unstructured employment. In most cases, job discovery is mediated through personal networks, local contractors, or verbal communication.

Although these networks provide familiarity and convenience, they often lead to low job visibility, unpredictable sources of income, and uncertainty for workers and customers. Customers typically face challenges in finding reputable service providers without verifiable credentials.

National policy discussions and workforce studies have gradually recognized the increasing relevance of informal and gig-based work in India, while focusing on the possible contribution of online platforms to enhancing labor market access and visibility [6, 7].

Nevertheless, many existing digital employment platforms are mostly urban in nature and integrate automated or algorithm-driven matching mechanisms or centralized service design.

Although such architecture can increase scalability in metropolitan contexts, their appropriateness for semi-urban and rural areas is uncertain. In many cases, intermittent connectivity, limited infrastructure, and low levels of digital literacy make it difficult for users to adopt such platforms. Moreover, trust remains one of the main issues, especially when customers are reluctant to interact with service providers without fundamental identity assurance mechanisms. These aspects reveal the need for a localized, simple, and trust-based digital platform that helps informal workers discover employment with accessibility and transparency.

- To design a web-based system that will allow the localization of matching jobs between customers and blue-collar workers.
- To provide a PIN-code-based service search for adjacent recruiting employees in line with local staffing procedures.
- To increase trust in Aadhaar-based identity submission, manual verification of administrative activities is required.
- An interface that is simple and easy to use, especially for users with limited digital literacy, was designed.
- To develop a lightweight prototype suitable for semi-urban and rural areas.

Table 1. Comparison of selected digital employment platforms.

Feature	Aligbe et al. [1]	Skill link [4]	Daily rozgaar (proposed)
Location-based search	Yes	Yes	PIN-code
Identity check	Limited	Reviews	Aadhaar + admin
Matching approach	Location filter	AI-based	Rule-based
Target users	General workers	Skilled workers	Rural workers
Complexity	Moderate	High	Low-Moderate
Design goal	Job discovery	Smart matching	Simplicity & trust

OBJECTIVES

System Architecture

The Daily Rozgaar platform uses a modular three-tier architecture based on the principle of separation of concerns [8]. This design helps maintain a clear structure and improves the overall organization of the system.

1. *Client layer*: The client layer comprises a responsive web-based interface that is accessible on both mobile and desktop browsers. Through this layer, users can perform basic operations such as registration, login, service search, and service-request management. Particular attention to the simplicity of the interface has been considered to serve users with different degrees of digital familiarity.
2. *Application layer*: The application layer was implemented using a Node.js backend framework. It manages routing, user authentication, PIN-code-based job matching, service request processing, and identity verification. The Aadhaar reference details provided by the workers are sent for manual administrative verification. By separating the business logic and presentation, the application layer supports modularity and maintainability.
3. *Data layer*: MySQL relational database is used as the data layer to maintain long-term data pertaining to workers, customers, service categories, and service requests. The relational structure supports efficient querying, data consistency, and referential integrity through defined relational constraints (Figure 1).

The user flow of the proposed system is shown in Figure 2. The process begins with the user entering the PIN code and selecting a service category, after which the system filters the available workers based on location and verifies their identity through Aadhaar-based validation. Only verified workers are displayed to ensure trustworthiness and reliability. The user can then send a service request, which is received by the selected worker, thereby completing the localized job-matching process.

Data Flow Diagram (DFD)

System data movement is described through a Level-0 Data Flow Diagram, denoting the interactions between customers, workers, and the platform during registration, service discovery, and service request handling. The diagram represents the platform as a central processing unit that arbitrates formal interactions among external agents (Figure 3).

Major System Modules

The platform consists of the following major modules:

1. *Registration module*: Workers and customers register by submitting their vital personal data. Workers also provide their occupational category, experience, PIN code, and identity-supporting Aadhaar reference details.
2. *Identity check-in module*: Worker identity verification is conducted manually through administrative processing of the data. Hashed representations of raw Aadhaar details were maintained. Worker profiles are activated only after administrative authorization, which functions as an oversight mechanism.

3. *Search and matching module*: Customers search for workers using service category and PIN code filters. The system uses rule-based filtering to offer verified workers who meet the given requirements.
4. *Service request module*: Once an appropriate worker has been found, a service request may be initiated by the customer. Requests are stored in the database, and workers are informed via email-based communication using SMTP services.

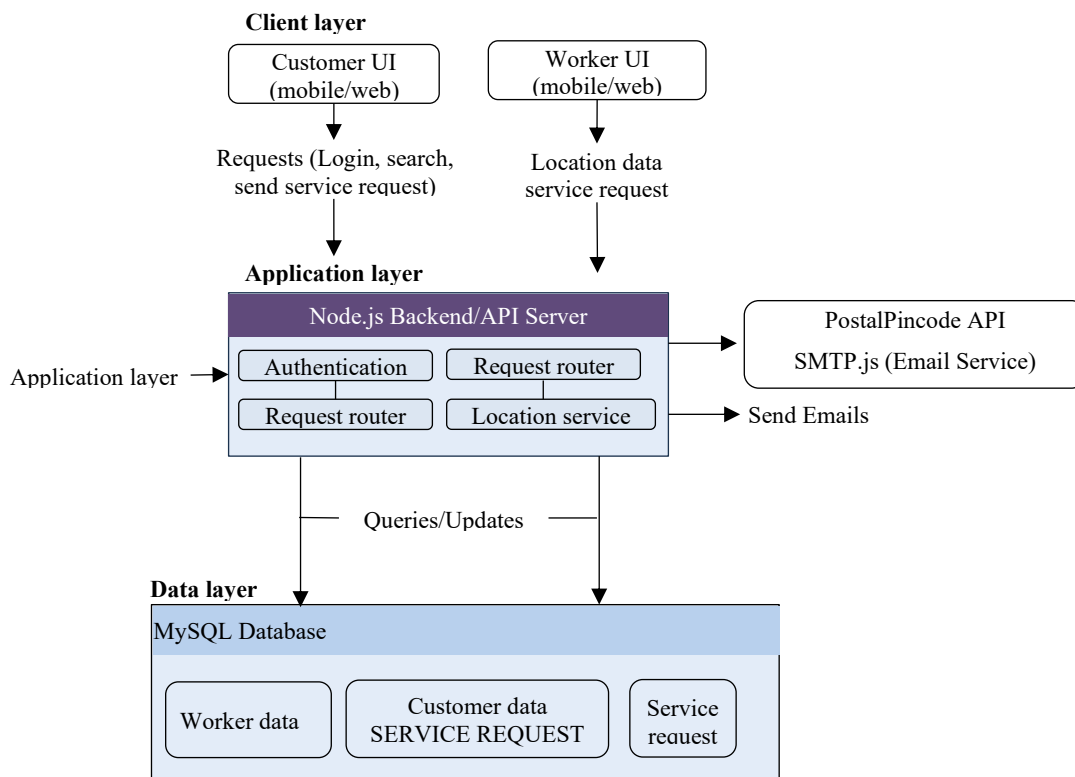


Figure 1. Three-tier architecture of the Daily Rozgaar platform illustrating interactions between the client, application, and data layers.

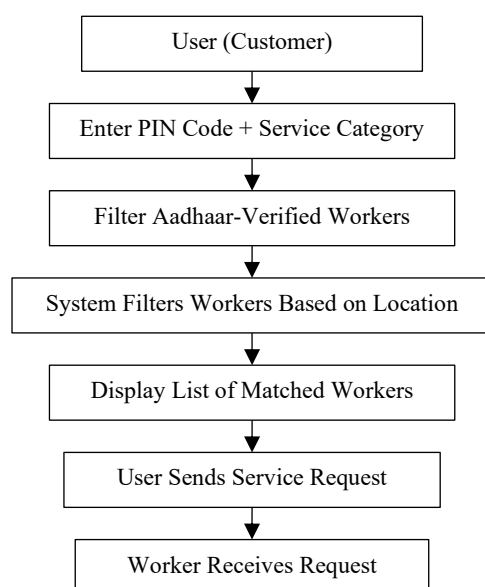


Figure 2. User flow diagram illustrating the localized job-matching process using PIN-code-based filtering and service selection.

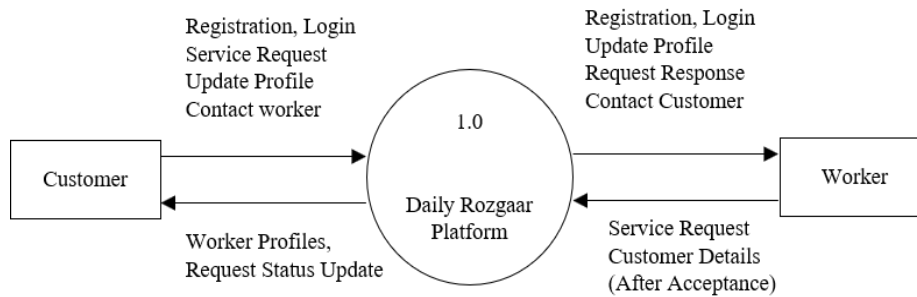


Figure 3. Level-0 data flow diagram (context diagram) of the Daily Rozgaar platform showing interactions between customers, workers, and the system.

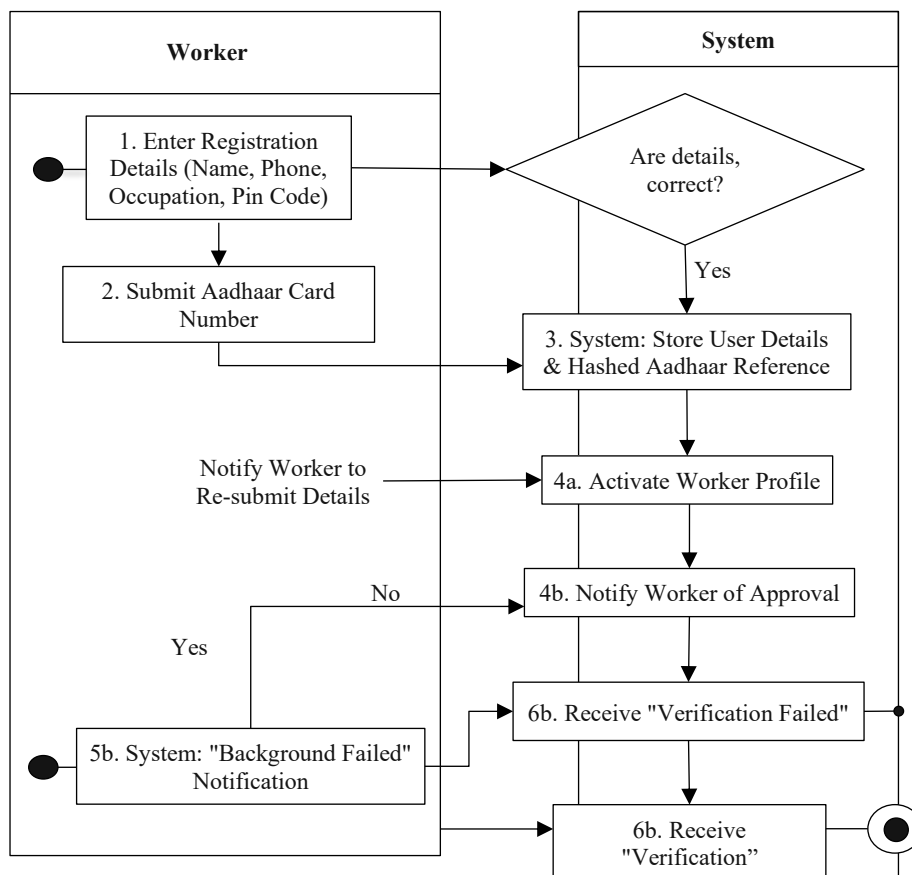


Figure 4. Activity diagram depicting the Aadhaar Based Identity submission and manually administered verification workflow.

Aadhaar Verification Workflow

The workflow for Aadhaar-based identity submission and administrative verification is shown in Figure 4.

DATABASE DESIGN

The Daily Rozgaar platform follows a relational database architecture and is designed to achieve modularity, data consistency, and query performance. Core tables include:

1. *Workers table*: Occupational information, experience, PIN code, and hashed Aadhaar reference identifier.
2. *Customers table*: Maintains customer profile and location information.
3. *ServiceRequests table*: Maintains the requests made by customers and their status.

The relational integrity between these tables is maintained using foreign keys. The database design follows normal forms to maintain data consistency and improve query performance [9].

METHODOLOGY

The system was developed using a modular and iterative approach, which is suitable for prototype-level web applications. This approach allows for the gradual development of features, continuous testing, and improvements based on usability. The focus is on keeping the system simple, structured, and manageable.

Technology Stack

- *Frontend*: HTML5, CSS3, JavaScript.
- *Backend*: Node.js with Express.js.
- *Database*: MySQL relational database.
- *External APIs*: PostalPincode API, SMTP.js.

The chosen technology stack is lightweight for semi-urban and rural settings, as shown in Table 2. Node.js was used for the backend because of its non-blocking and event-driven nature, which ensures scalable applications while maintaining an efficient development process [10].

Security Considerations

Since identity-related information is sensitive, the platform contains technical protection measures to ensure data security. Raw Aadhaar numbers are never saved in the database; instead, SHA-256 hashing representations are stored for verification. Client-server communications are conducted over HTTPS-encrypted channels to prevent the risk of interception and data manipulation [11].

The activation of worker profiles must be approved by the administration, decreasing the possibility of fake registrations. In addition, role-based access control mechanisms are implemented within the administrative panel to limit illegal entry and reduce employee abuse. These measures are aimed at maintaining confidentiality, integrity, and access control in system architecture.

Ethical Considerations

The proposed system is based on privacy awareness and responsible data-handling values. Identity information is accumulated for verification and corresponding purposes, and users are informed of the purpose of using their details during registration. The platform follows a data minimization plan by not storing confidential personal data in unwarranted cases [7].

In addition, the employee matching mechanism relies on deterministic-based filtering of occupation and PIN codes rather than opaque predictive models, thereby reducing the risk of algorithmic discrimination or prejudice outcomes. User information is not shared with third parties, and sensitive identity data are not stored in their raw form, following data minimization principles.

The definition of system components with respect to risks that may occur and mitigation strategies are given in Table 3.

Table 2. Technology stack used in the Daily Rozgaar prototype.

Category	Technology/Tool
Frontend	HTML5, CSS3, JavaScript (Vanilla)
Backend Framework	Node.js with Express.js
Database	MySQL (Relational DBMS)
APIs Used	PostalPincode API, SMTP.js
Security Measures	SHA-256 hashing, HTTPS encryption
Development Methodology	Iterative development
Version Control	Git and GitHub

Table 3. Mapping of system components to security measures.

Component	Potential risk	Mitigation strategy
Aadhaar reference data	Identity misuse	SHA-256 hashing of Aadhaar reference
User authentication credentials	Unauthorized access	Secure password hashing
Client-server communication	Data interception	HTTPS-based encrypted communication
Administrative verification panel	Insider misuse	Role-based access control
Database storage	Data leakage	Access control and schema normalization

Worker Matching Algorithm

Worker matching filtering is a deterministic, geographical nearness, and profession-based mechanism.

Input: PIN code P, Occupation O

Output

List W of matched workers W

1. Receive customer input (P, O).
2. Query database:

```
SELECT * FROM Workers
WHERE worker_pin = P
AND worker_occupation = O
ORDER BY experience DESC;
```

3. Filter workers based on matching PIN code and occupation.
4. Return the ordered list to the customer interface.

The computational complexity is estimated to be $O(n)$ when scanning the database and $O(n \log n)$ when sorting by experience.

Limitations of Methodology

The approach taken has weak points because the system is prototype in nature. The platform has not been implemented in a live system, and testing is limited to controlled functional testing. Beta testing with large-scale users, benchmarking, and formal security audits were not performed. Moreover, Aadhaar-based verification was introduced as an administrative manual process and not an automated authentication process. These limitations have been identified and are solvable in future extensions of the system.

RESULTS AND EVALUATION

The Daily Rozgaar platform was tested using functional testing that deals with the work-appropriateness of core system processes and inter-module interactions. Because the system was developed as a prototype, the testing was concerned with the validation of functionality instead of large-scale performance or deployment metrics. Testing was conducted using sample datasets that represented typical customer and worker profiles.

Functional Testing

Functional testing was conducted to ensure that all major modules achieved functionality under controlled circumstances. Valid and invalid input tests were conducted on each module to verify correct behavior and information processing. The following essential functionalities were verified:

- Registration of users and authentication of both customers and workers.
- Identity submission and administrative approval through Aadhaar.
- PIN-code-based service discovery and occupation-based filtering.
- Formulation of service requests, storage, and status tracking.

Table 4. Summary of functional test cases.

Module	Expected outcome	Status
User registration	Successful account creation with valid inputs	Pass
Worker verification	Profile activation after admin approval	Pass
Search and matching	Display of verified workers by PIN code	Pass
Service request handling	Request logged and visible to worker	Pass
Data storage	Correct persistence of user and request data	Pass

Table 5. Current limitations and planned enhancements.

Current limitation	Planned enhancement
Manual Aadhaar verification	Secure API-based identity verification
Absence of digital payment support	Integration of UPI-based payment systems
Web-only platform access	Development of a native mobile application
Limited evaluation environment	Large-scale field deployment and user studies

Functional Test Summary

Table 4 presents the functional test cases used to validate the major system modules, including user registration, worker verification, search and matching, service request handling, and data storage. All the tested functions achieved the expected outcomes and were successfully marked as “Pass.”

Observations

According to the assessment, the prototype can support localized job matching and establish basic trust through identity submission. Each module is interconnected and functions. They worked together as anticipated, and there was consistency in the system behavior during functional testing. The results demonstrate the feasibility of the proposed plan for organizing informal employment processes at the prototype level.

FUTURE SCOPE

The Daily Rozgaar platform can be created beyond the present prototype with several enhancements. Digital payment methods using UPI and wallet-based systems can be introduced to facilitate transactions between customers and workers. A certified rating and review system can be proposed to improve service quality and accountability. The development of a native mobile application may enhance availability, particularly for rural users. Other characteristics, such as multilingual interfaces and intelligent recommender systems, can be investigated in future models with regard to scale, privacy, and regulatory issues. The present system limitations and possible future improvements are summarized in Table 5.

CONCLUSION

This study introduces Daily Rozgaar, a lightweight web-based job search site for semi-urban and rural communities. The proposed solution emphasizes the localization of geography, trust-oriented identity verification, and simplicity of architecture instead of heavy AI usage in employment systems. The prototype implementation of deterministic PIN-code filtering and manual identity validation can offer a scalable and accessible employment model when resources are limited.

Mobile-first interfaces, automated verification processes, and large-scale field appraisals can be incorporated in future studies. The proposed architecture provides a practical foundation for localized digital employment platforms in developing economies.

Although the current evaluation is limited to a controlled environment, future work will focus on large-scale deployment and real-world testing to further validate the system’s performance, scalability, and usability across diverse user groups.

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Disclosure of Interests

The authors declare no competing interests relevant to the content of this study.

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