



# Enhancing Oversight and Support: A Web-Based Management System for Migrant Workers

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## How to Cite this Article:

K, A. (2026). Enhancing Oversight and Support: A Web-Based Management System for Migrant Workers. International Journal of Creative and Open Research in Engineering and Management, 2(6).

<https://doi.org/10.55041/ijcope.v2i6.223>

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## ABSTRACT

The migrant workforce serves as the primary backbone of Kerala's informal economy; however, these workers face critical administrative and social challenges. Currently, data and documentation remain scattered across disconnected databases, lacking a centralized system to ensure regulatory oversight or welfare delivery. Furthermore, the absence of a multilingual platform limits workers' ability to navigate registration processes or access essential state-provided benefits. This paper presents the development of an integrated, web-based management system specifically designed for the Kerala context. The platform acts as a unified digital ecosystem, consolidating core functionalities including migrant registration, enrollment in the Aawaz health insurance scheme, skill-based job searching, and a formal grievance redressal mechanism. By centralizing these services under a single platform, the system allows the Kerala government to easily list, oversee, and track migrant workers, ensuring greater transparency, accountability, and the efficient delivery of social welfare.

The proposed platform introduces a robust registration framework that assigns each migrant worker a unique identification number paired with a secure, QR-coded digital profile. This system serves a dual purpose: it provides government authorities with a centralized, verifiable database of worker demographics and documentation, and it enables workers to search for employment opportunities filtered by skill set and geographic location. Furthermore, the platform integrates a welfare module, allowing registered workers to apply for government and private insurance or support schemes directly through their profiles, especially the Aawaz insurance scheme of the Kerala government. To address communication barriers inherent in a migrant workforce, the system incorporates multilingual support. By digitizing these

administrative processes, the platform improves the transparency and efficiency of labor management while ensuring that migrant workers can more easily connect with formal employment and essential social services.

**Keywords:** Migrant Worker Management, Web-Based Information Systems, Digital Identification, Labor Welfare, Employment Platforms, E-Government.



## INTRODUCTION

Migrant workers are the backbone of Kerala's informal and unorganized economy, sustaining key sectors such as construction, manufacturing, and services where local labor is in short supply. Despite their significant contributions, they often face critical challenges, including poor living conditions, social and linguistic isolation, difficulty in securing fair employment, and limited access to essential healthcare and safety benefits.

While previous studies have developed generalized labor support platforms for regions like Tamil Nadu (Hajira & Lachara, 2025; Praveen et al., 2025), this study addresses the specific welfare and administrative framework unique to the Kerala labor landscape. The Government of Kerala has initiated localized welfare programs, most notably the Aawaz Health Insurance scheme, which provides essential healthcare coverage to interstate laborers. However, the delivery of these benefits is severely hindered because there is currently no integrated or centralized database in Kerala to effectively regulate or support the workforce. Data remains scattered across disconnected systems, making administration, verification, and oversight difficult.

To address these gaps, this study introduces a web-based platform tailored specifically to the administrative ecosystem of Kerala. Unlike existing generalized models, this system places particular emphasis on integrating direct enrollment into state-specific welfare initiatives like the Aawaz scheme alongside active regulatory monitoring.

To achieve this, the platform relies on a specific web architecture consisting of Next.js for the user interface, Python for logic execution, and MySQL for centralized storage. This distinct tech stack enables real-time functionalities that set it apart from standalone data trackers. The system supports secure document uploading, QR code-based worker verification, and a localized job-matching module that pairs workers with opportunities based on their skill sets and exact geographic location within the state.

While recent research has explored digital platforms for labor management in other territories, there remains a significant gap in an integrated, localized system specifically designed for the regulatory and welfare-oriented needs of Kerala's migrant workforce. This project bridges that gap, providing a cohesive tool to ensure transparency, accountability, and the direct delivery of state-sponsored social security.

## NEED AND SIGNIFICANCE OF THE STUDY

**Need for the Study** Managing the migrant workforce is essential for maintaining economic stability in Kerala. Currently, many migrant workers face significant barriers, including language difficulties during registration processes and a lack of awareness regarding government welfare schemes designed to support their financial and healthcare needs. Given that a large portion of the migrant population is employed in the construction sector—a high-risk industry—the absence of accident coverage, life insurance, or health support is a critical concern. As these workers contribute significantly to the state's economic growth, it is the state's responsibility to ensure they have access to essential social security and protective facilities.

Furthermore, the current lack of a centralized management system hinders the ability to monitor this mobile population effectively. Data remains scattered across disconnected systems, contributing to the prevalence of undocumented labor and increasing security risks for both the workers and the local community. Without a unified system, it is difficult for authorities to provide timely support or ensure regulatory compliance.



**Significance of the Study:** This study is significant because it proposes a digital infrastructure that addresses the current gaps in migrant labor management. Its importance lies in the following areas:

- **Social and Economic Inclusion:** By providing a platform that supports multiple languages and connects workers to welfare schemes, the study helps bridge the gap between migrant workers and the social services they are entitled to.
- **Enhanced Regulatory Oversight:** The implementation of a centralized, secure database allows government authorities to verify identities, manage documentation, and track workers, which is vital for policy-making and regional security.
- **Improved Labor Efficiency:** The real-time job-matching module provides a functional mechanism for workers to secure employment based on their specific skills and location, thereby reducing unemployment and underutilization of labor.
- **Data-Driven Governance:** By consolidating administrative, security, and welfare functions into one platform, the study provides a scalable model for digital transformation in the public sector, making labor management more transparent and efficient.

**Objectives of the Study :** The primary objectives of this study are as follows:

- To develop a centralized, web-based platform to manage migrant workers, from registration to employment tracking, including Aawaz insurance registration.
- To enhance accessibility and inclusivity by providing multi-language support, ensuring that workers can navigate registration and government services despite linguistic barriers.
- To improve worker welfare by creating a digital bridge between migrant workers and available government or private insurance and healthcare schemes.
- To facilitate secure identity management by implementing a unique identification system linked to a QR-coded digital profile, which aids in data verification and document management.
- To promote economic integration through a real-time job-matching module that allows workers to find employment based on their specific skills and geographic location.
- To assist government authorities in maintaining an accurate, transparent, and real-time database to improve administrative oversight and policy decision-making.

## REVIEW OF LITERATURE

The management of migrant labor has increasingly become a focus of technological and policy-driven initiatives. Recent research has explored various digital platforms designed to address recruitment, documentation, and the social integration of migrant workers.

Hajira and Lachara (2025) proposed 'Migrant Connect,' a comprehensive digital platform designed to streamline labor management in Tamil Nadu. Their study introduced a foundational framework utilizing multilingual registration, unique identification numbers (MID), and QR-code-based verification to track workforce distribution. Their work highlights the critical need for centralizing fragmented data to improve transparency and safeguard worker rights. Building upon this conceptual framework, the current study focuses on the specific regulatory and social welfare requirements within the Kerala migrant labor landscape. Unlike generalized models that prioritize workforce tracking, this study introduces specialized modules tailored to Kerala's administrative ecosystem, particularly the integration of real-time enrollment in state-specific welfare initiatives such as the *Aawaz* Health Insurance scheme.



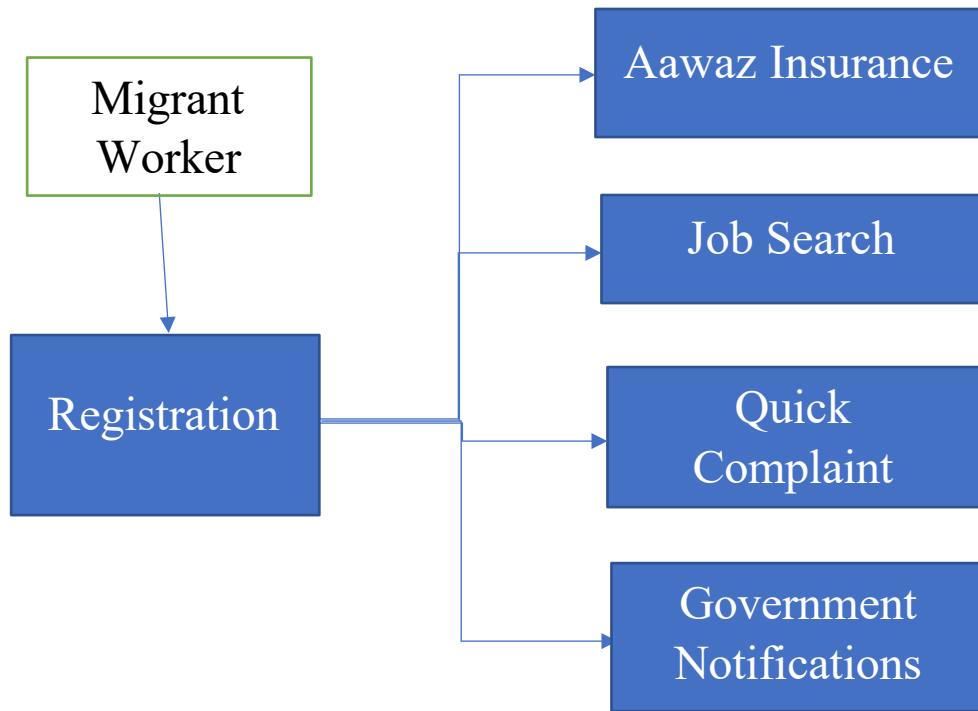
Furthermore, Praveen et al. (2025) demonstrated the potential of role-based web platforms for migrant labor support, emphasizing the shift from manual, paper-based records to digital ecosystems. While these studies underscore the efficiency of automated verification and document management, a significant gap remains in an integrated system specifically designed for the regulatory needs of Kerala's migrant construction workforce.

Existing government-run exchanges and state portals often lack the necessary integration with essential health services and real-time welfare benefit updates. This study addresses these gaps by consolidating administrative, security, and welfare functions into a single, cohesive platform. By incorporating localized requirements and direct insurance linkage, this research provides a scalable model for the digital transformation of public sector labor management in Kerala, ensuring greater accountability and more efficient service delivery for the migrant population.

## SYSTEM DESIGN AND DEVELOPMENT

**Key Features of the Proposed System:** The proposed system provides an integrated digital ecosystem for migrant management, including registration, *Aawaz* insurance enrollment, skill-based job searching, and a formal grievance redressal mechanism.

- **Migrant Worker Registration:** Workers can register using their mobile number or email address in their preferred language. Upon successful registration, each worker is assigned a digital profile accessible via a unique, QR-coded identification card.
- **Aawaz Insurance Enrollment:** Registered workers can directly apply for the *Aawaz* health insurance scheme through the platform, significantly streamlining the enrollment process.
- **Skill and Location-Based Job Search:** This module enables workers to search for employment opportunities filtered by their specific skill sets and preferred geographic locations.
- **Grievance Redressal:** The platform includes a dedicated facility for workers to report issues or grievances, ensuring a transparent channel for communication with administrative authorities.
- **Government Notifications:** The platform broadcasts official government announcements and urgent notifications directly to the user's registered email or mobile number in their selected language.





## Existing Systems

1. **State Labor Department Registration (Athidhi Portal):** While the Government of Kerala's "Athidhi" portal facilitates basic registration, it lacks seamless integration with essential support services, such as direct health insurance enrollment. Furthermore, the system relies on passive registration and provides limited capability for real-time tracking of workforce distribution or movement.
2. **Manual/Paper-Based Records (Employer/Contractor Level):** Many construction companies and contractors maintain internal registers for their workforce. These records are non-standardized, lack institutional accountability, and remain inaccessible to the workers themselves, creating significant data silos.
3. **General Employment Exchanges:** Existing government-run exchanges are not optimized for the highly mobile, project-based nature of the informal migrant workforce. They lack the digital accessibility and localized outreach required to effectively engage migrant workers who may face linguistic or technological barriers.

## MAJOR MODULES

The proposed platform acts as a unified digital ecosystem, bringing together essential services for migrant workers under one umbrella. Designed with a simple, user-friendly interface, it caters to users with varying levels of digital literacy, ensuring accessibility for all.

### System Users

- **Migrant Workers:** This module provides an accessible interface for workers to register and maintain a secure digital profile. Through this portal, they can search for employment matching their skills, apply for state-provided schemes like *Aawaz*, submit grievances, and receive real-time updates from government authorities.
- **Admin (Government Authorities):** This module provides an oversight dashboard for administrative and security purposes. It allows officials to verify identities, manage labor data, and track the workforce across regions, ensuring regulatory compliance and efficient crisis response.
- **Insurance Agencies:** Authorized agencies can register on the platform to list health and welfare plans. This provides workers with a transparent view of coverage options, enabling them to select the schemes that best fit their needs.
- **Employers:** Government-verified business owners can post vacancies. This allows employers to source labor based on specific skill sets while ensuring all hiring practices remain transparent and compliant with labor regulations.

### Functional Modules

- **Migrant Registration:** This module collects essential information, including valid identity proof, contact details, and skill sets. This process creates a centralized, verifiable database that allows authorities to effectively oversee the migrant workforce.
- **Job Matching:** Once registered, workers can browse job opportunities based on their current geographic location and specific skill sets, bridging the gap between demand and supply in the informal economy.
- **Document Management:** The platform provides a secure repository for identity cards, work permits, and employment contracts. This allows government authorities to perform real-time verification and maintain accurate digital records.



- **Employer/Agency Verification:** To maintain system integrity, all employers and insurance agencies must undergo a mandatory verification process by government administrators before they are permitted to access or list services on the platform.
- **Grievance Redressal:** Registered workers can submit complaints or report issues directly to the authorities through the platform. This ensures a transparent, traceable channel for resolving labor disputes and workplace grievances.

## RESULT



## CONCLUSION

This migrant worker management platform integrates multiple essential functionalities into a single, unified digital ecosystem. By centralizing core services—including worker registration, the generation of QR-coded digital profiles, direct enrollment in the *Aawaz* health insurance scheme, skill-based job matching, and a streamlined grievance redressal mechanism—the system effectively eliminates the inefficiencies of scattered, disconnected databases. Ultimately, this platform provides the Kerala government with a robust, scalable tool to accurately list, verify, and track the migrant workforce, thereby ensuring greater administrative transparency, enhanced security, and the efficient delivery of essential social welfare services.

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