Re-engineering Public Employment Services in Kerala through Integrated Digital Job-Fair Platforms

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***Abstract*—Kerala exhibits a development paradox. This is manifested by very high literacy (96.2%) alongside the highest unemployment rate among Indian states. This is particularly affecting educated youth and women. Public employment services relied on venue-bound job fairs with overcrowding, fragmented paper processes and weak training-placement linkage. This paper documents the digital transformation through Vijnana Keralam, integrating three platforms Digital Workforce Management System (DWMS), Skill Development Platform Kerala (SDPK), and Recruit-Train-Deploy (RTD). Between November 2022 and March 2026, 626 job fairs processed 11.22 lakh applications. These included 458 pre-Vijnana Keralam fairs (5.59 lakh applications) through infrastructure-intensive processes. There were 168 post-Vijnana Keralam fairs (5.63 lakh applications, including 50 virtual events with 1.90 lakh applications) through digital workflows. Process re-engineering eliminated 87% of manual activities. This reduced candidate processing time from four hours to one hour (estimated 450 person-years saved annually). Infrastructure costs came down by ₹3-4 lakh per fair (projected ₹35 crore annual savings). The integrated platform architecture demonstrates that combining process design, digital infrastructure and multi-stakeholder governance can transform ad hoc job fairs. The outcome is continuous, data-rich seamless public employment services.**

***Index Terms*—Digital Workforce Management System, employment facilitation, job fairs, Kerala, process re-engineering, Recruit-Train-Deploy, Skill Development Platform Kerala, virtual job fairs, Vijnana Keralam**

I. INTRODUCTION

A. Development Context

Kerala's labour market presents a distinctive paradox. The state has achieved near-universal literacy (96.2%) and minimal gender gaps in education (high gender parity index). The state also has a strong public education infrastructure, and impressive college density[1]. An estimated one-third of India's ICT workforce speaks Malayalam, with over 50% being women. Kerala's diaspora includes significant presence of nurses, engineers, IT professionals and doctors in global organizations. India's Skill Report 2025 ranks Kerala as the second-best state for women to work[2].

Yet Kerala reports the highest unemployment rate among Indian states according to the latest Periodic Labour Force Survey. Unemployment rates for educated youth substantially exceed national averages. A significant portion of educated unemployed individuals and the youth unemployed are women[3].

B. Problem Statement

Before digital transformation, public employment facilitation through job fairs faced significant challenges. Large crowds at physical venues caused operational disruptions. There were long queues and attendees had to often wait for 3-4 hours . With the entire population using mobile applications network congestions were created. For example, the Alappuzha fair attracted 5,088 people resulting in severe overcrowding. Additionally, data quality issues were prevalent with 3,749 attendees (74%) having incomplete or inaccurate information requiring 20 person-months of cleanup[4].

Inefficiencies were exacerbated by manual, fragmented processes. Paper-based systems relied on volunteers . This naturally led to data inconsistencies. Training and placement activities operated in isolation. Skilling programs often lacked alignment with employer demand, All these resulted in low conversion rates. Specifically, job fairs involving 4.81

lakh candidates across 136 events achieved a conversion rate of only 12.5% [4]. In this study, this 12.5% figure is treated as a baseline indicator of legacy performance and is not recalculated for the re-engineered system.

C. Institutional Response

The Government of Kerala established Kerala Development and Innovation Strategic Council (K-DISC) in 2022 to address employability challenges through two mechanisms: training to address skill gaps, and placement facilitation connecting skilled jobseekers with private sector opportunities through job fairs. K-DISC launched Vijnana Keralam (Knowledge Kerala) as flagship initiative integrating relevant departments and agencies. The Digital Workforce Management System (DWMS) was developed as one-stop platform linking employers, jobseekers and skill providers for mobilization and job fair organization[5].

II. SYSTEM ARCHITECTURE AND PROCESS RE-ENGINEERING

A. AS-IS Process Characterization

Between November 2022 and August 2024, 458 job fairs operated through venue-dependent, paper-based processes generating 5.59 lakh applications. Table I characterizes AS-IS process flows across three phases.

Table 1: AS-IS Process Flow (Pre-Vijnana Keralam)

Phase	Process Description
Pre-fair	Manual employer contact via phone/email; paper job description sheets; volunteer assignment for registration desks; physical route mapping; printed candidate lists; building-wise room duty allocation
During fair	On-site paper registration creating queues; manual identity verification; hand-written employer sheets; physical interview rooms; volunteer-managed candidate routing; paper-based result compilation; post-event data entry from physical sheets
Post-fair	Manual data cleanup (averaging 20 person-months for large fairs); spreadsheet consolidation; delayed result communication; no structured grievance mechanism; limited analytics capability

B. Integrated Platform Architecture

The TO-BE architecture integrates three platforms operational from August 2024. DWMS serves as core talent marketplace connecting jobseekers, employers, skill providers and facilitating agencies. It handles registration, job profiling, posting, application management and jobseeker-to-job matching. Complete integration with Web-RTC SIP protocol-based communication platform was achieved[6].

SDPK provides physical infrastructure with 103 locations equipped with high-speed internet, enabling virtual job fair capabilities and distributed access with real-time collaboration. Initial deployment covered 14 locations[7].

RTD module synchronizes employer demand with targeted skill training and seamless placement, primarily through campus skilling programmes. First-level trials with pilot campus and community skilling initiatives are being scaled[8][9].

C. TO-BE Process Architecture

Table II presents re-engineered digital workflows implemented across post-Vijnana Keralam period (168 fairs, August 2024-March 2026, 5.63 lakh applications).

Table 2: TO-BE Digital Process Flow (Post-Vijnana Keralam)

Phase	Process Description
Pre-fair	Employer contacts and job descriptions via secure online portal; digital curation sheets validate candidates by job requirements; AI-driven clustering of job titles by skills and employer preferences; training data integrated with DWMS showing skill gaps and completion status; automated invitations to pre-screened candidate pools
During fair	Candidates attend nearest SDPK centre; digital check-in through QR codes; virtual interview rooms with jobseeker physically present and employer participating virtually; automated queue management; real-time command center monitoring at K-DISC headquarters; digital result compilation with employer

	sign-off; automatic communication channel creation (WhatsApp, SMS, email); instant grievance submission and tracking; RTD integrated with job fairs
Post-fair	Instant result availability to all stakeholders; automated certificate generation and digital printing; digital notifications through multiple channels; real-time analytics and dashboard updates; placement tracking integrated into DWMS; employer feedback collection; continuous metrics-based improvement

D. Extent of Process Re-Engineering

The present analysis focuses on process changes, time and cost efficiency, and deployment scale, rather than on updated placement conversion ratios. Table III quantifies transformation scope. Of total AS-IS activities, 87% underwent elimination, modification or new introduction[10].

Table 3: Process Re-Engineering Scope

Type	Activities
Eliminated	Physical crowd management and venue logistics; paper-based registration; volunteer assignments; manual route mapping; printed employer sheets; hand-written results; physical identity checks; on-site data capture; in-person employer confirmations; post-fair cleanup operations
New	Automated job description curation and posting; online employer engagement with targeted pools; digital training integration synchronized with demands; virtual interview scheduling and queue management; real-time dashboard monitoring; automated identity verification and shortlisting; digital grievance submission and tracking; instant result notifications; comprehensive analytics
Modified	Registration (on-site paper to online pre-registration); employer engagement (physical interviews to digital portal with self-service); interviews (physical rooms to virtual spaces with digital queuing); data management (isolated spreadsheets to integrated real-time databases); feedback (manual to integrated digital mechanisms)

III. RESULTS

A. Scale and Coverage

Between November 2022 and March 2026 ,626 job fairs were processed with 11.22 lakh applications across Kerala's 14 districts. During Pre-Vijnana Keralam period (458 fairs, November 2022-August 2024) generated 5.59 lakh applications through traditional infrastructure-dependent processes. Post-Vijnana Keralam transformation (168 fairs, August 2024-March 2025) achieved comparable volume with 5.63 lakh applications . This was organised with substantively reduced infrastructure requirements[11].

B. Virtual vs Physical Deployment

Within post-VK operations, deployment split between 118 physical/hybrid events (3.73 lakh applications) and 50 virtual events (1.90 lakh applications). Virtual format expanded geographic access and eliminated venue constraints. It also enabled simultaneous multi-district participation and maintaining quality through SDPK infrastructure[12].

C. Time Efficiency Gains

Candidate processing time dropped from average four hours (AS-IS) to one hour (TO-BE). The projected annual deployment of 1,000 events with average 300 candidates per event led to time gains as shown below.

- Total time saved per candidate: 3 hours
- Total annual person-hours saved: 900,000
- Person-years saved: 450 (assuming 8-hour workday, 250 working days)

D. Cost Efficiency Gains

Costs of additional infrastructure per physical job fair decreased by ₹3-4 lakh through elimination of avoided process costs. These included venue rental, printing, volunteer payments and manual data processing. Estimated annual savings when fully implemented was as follows.

Cost saving per fair: ₹3.5 lakh (midpoint)

- Annual fairs projected: 1,000
- Annual infrastructure savings: ₹350 lakh = ₹35 crore

The infrastructure costs associated with virtual job fairs are negligible. They leveraged existing SDPK network for their operations [13].

E. RTD Integration Impact

In RTD-integrated batches very good placement effectiveness was achieved. The issue of training-employment disconnect was thus addressed through integration of RTD model with employer-aligned skilling. Further, linking of Campus skilling programmes with job fairs, was also productive. They resulted in substantially higher conversion compared to standalone training initiatives[14].

F. Inclusion Mechanisms

The digital system facilitated targeted outreach to vulnerable populations. This included women, SC/ST communities, fisherfolk, individuals with disabilities, transgender individuals, and returning NRIs. Real-time data analytics enabled automated resolution of grievances and monitoring of efforts in inclusion [15].

IV. DISCUSSION

A. Process Design emerging as critical Intervention

The transformation highlights that effective employment facilitation relies more on process architecture than technology alone. The 87% re-engineering scope indicates a fundamental overhaul of service delivery, rather than mere automation of existing processes. Key design decisions included replacing on-site registration with pre-fair digital curation, eliminating venue dependency through virtual interview infrastructure, and integrating real-time data to replace post-event cleanup.

B. Platform Integration Strategy

A single-platform approach poses scalability limitations. In contrast, a three-platform architecture comprising DWMS for talent marketplace, SDPK for physical infrastructure, and RTD for training-placement integration, facilitated modular deployment while maintaining system coherence. The use of Web-RTC integration provided a communication backbone. avoiding vendor lock-in.

C. Hybrid Deployment Model

A purely virtual approach risks excluding populations with limited digital access. The Post-VK period saw a hybrid strategy, combining 118 physical and 50 virtual events, leveraging virtual formats for broader reach, SDPK centres for digital inclusion, and district-level anchoring for community engagement.

D. Multi-Stakeholder Governance

The platform's effectiveness depended on coordination among various stakeholders, including employers, jobseekers, skill providers, academic institutions, local governments, and state agencies. The institutional structure of Vijnana Keralam under K-DISC provided the necessary authority to convene stakeholders and mobilize resources.

E. Limitations and Future Work

The current deployment lacks tracking of long-term placement outcomes beyond initial hiring. Future research should examine job retention rates, wage progression, and employer satisfaction among digitally engaged versus traditionally-placed cohorts. Cost-benefit analysis requires validation over multiple annual cycles. The RTD model's effectiveness necessitates systematic evaluation using control groups.

V. CONCLUSION

This study examines the digital transformation of public employment services in Kerala through the Vijnana Keralam initiative. Re-engineering 87% of processes and implementing a three-platform architecture, the programme facilitated 626 job fairs, processing 11.22 lakh applications between November 2022 and March 2026. Notably, the post-Vijnana Keralam period (168 fairs, August 2024-March 2026) achieved comparable application volumes (5.63 lakh) to the pre-VK period (458 fairs, 5.59 lakh applications). The digital transformation reduced candidate processing time from four hours to one hour (estimated annual savings of 450 person-years) . It also reduced and infrastructure costs by ₹3-4 lakh per fair (projected annual savings of ₹35 crore).

The Kerala experience shows that integrating process design, digital platform architecture, and multi-stakeholder governance can transform job fairs. Job fairs could emerge into continuous, data-driven public employment services with digital transformation. Virtual events (50, with 1.90 lakh applications) broadened geographic access. A hybrid strategy-maintained inclusion via SDPK physical infrastructure. RTD integration bridged the training-employment gap through employer-aligned skilling.

The Vijnana Keralam model serves as a reference for regions aiming to balance efficiency, scale, and social justice in employment facilitation. Digital

transformation based on systematic process re-engineering emerges as a significant opportunity for them.

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