J Euro Eco His.
ISSN : 0391-5115
Volume 7, Issue 2 (2026)
THE JOURNAL OF EUROPEAN ECONOMIC HISTORY

Leveraging E-HR technologies for recruitment optimization in India

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Abstract
The process of recruiting is key to the achievement of an organization in its current competitive environment. As more organizations adopt a digital framework in conducting their human resource functions, the utilization of Electronic Human Resources (E-HR) systems becomes a more efficient way to enhance the recruitment process. This research evaluates the impact of the implementation of the electronic human resources system on the efficiency and effectiveness of the hiring process within firms. The research analyses how the use of the E-HR system can lead to the improvement of candidate sourcing, time efficiency, cost optimization, and talent acquisition decision making through theory and empirical evaluation. It also evaluates the main challenges that accompany the adoption of the E-HR system including system integration, data confidentiality and users' resistance. From the findings, it is evident that organizations that adopt the E-HR system can be highly efficient and flexible when recruiting employees. With the intention of achieving recruitment success, the research finally provides guidelines for adopting the E-HR system.

Key Words: Digital HR, E-HR Systems, Hiring Process Optimization, Recruitment Efficiency, Talent Acquisition

Introduction

Companies are now modifying their HR processes in response to advancements in technology in the digital era. One such area of HR operations that has seen massive modifications due to new innovations in the field is the recruitment process. Traditional methods of recruiting employees that are often manual, slow, and lack coverage are being replaced with electronic human resources (e-HR) which provide efficient automated operations and strategic alignment (Stone et al. 2015). According to Ruël et al. (2004), e-HR involves utilizing web-based technology to offer human resources services including recruitment processes through platforms that ensure greater efficiency and faster processing. As the main way of sourcing talent for organizations, recruitment plays a significant role in establishing the level of performance of a business firm. With the growing need for competent labour force in various industries, more and more companies are employing the use of E-HR tools, such as applicant tracking system, online job postings, artificial intelligence screening, and virtual on boarding software. Through data-driven decision making, these modern methods not only reduce time-to-hire and costs but ensure high-quality recruitments. Some of the most popular E-HR tools in various sectors, particularly talent management and recruitment, include, but not limited to,

NIC HRMS, SAP Success Factors and in-house custom HR solutions. Increased efficiency in the overall HR process results from using these solutions due to their capability to provide automated hiring process, personnel information management, performance monitoring, as well as the integration of the process into other corporate systems (SAP, 2023; NIC, 2022). Such HR tools as NIC HRMS, which provide centralized management of personnel data, tracking of leaves and attendance, recruitment, have been designed for use within the public sector to cater to the requirements of the government. In-house custom HR solutions allow customization, giving organizations the opportunity to tailor the system according to the organization's specific needs (Xiaoyu et al., 2023). One of the most prominent cloud-based HR solutions that can be used in large firms to hire employees is SAP Success Factors (SAP, 2023). Despite the apparent benefits, organizational culture, readiness of users to adapt, and technological readiness can have a significant effect on how well e-HR systems are implemented (Marler & Fisher, 2013; Khatoon et al. 2025). In this review, the features, advantages, and problems associated with the implementation of e-HR systems in hiring, as well as in other activities related to HRM will be analyzed.

E-HR systems in enhancing the efficiency of recruitment processes

The automation of important aspects such as job postings, resumes screening, interviews scheduling, and candidate communication makes the use of E-HR technology significantly transform the recruitment process by making it more efficient, accurate, and effective in terms of the quality of hired individuals (Parry & Tyson, 2011; Chapman & Gödöllei, 2017; Piotr Horodyski, 2023). The use of technologies for this purpose expands the organisational reach and helps tap into a bigger pool of candidates while eliminating the need for manual operations, minimising mistakes, and improving the speed of recruitment (Paramita et al., 2024). Moreover, in terms of candidate engagement and corporate image building, E-HR platforms offer a convenient interface and updates in a timely manner (Madanchian, 2024). The advanced analytics, as well as data analysis, enables better decision-making when using such measures as time to fill and cost-per-hire (Marler & Boudreau, 2017). Besides, e-HR solutions ensure compliance, uniformity of recruiting practices in various locations, seamless integration with other HR services such as performance appraisal, training, and on boarding (Ruël et al., 2004; Strohmeier, 2007; Yulianto & Madiistriyatno, 2023).

Table 1 highlights how E-HR technologies enhance each stage of the recruiting process to ensure optimal hiring outcomes in terms of time saving, precision, budgeting, and overall quality. There is substantial improvement in efficiency during different stages of the recruitment process between E-HR technologies and conventional recruitment processes. E-HR technology supports AI-based resume screening, streamlines application processes using ATS, and automatically publishes jobs on various websites, thus making the hiring process faster, broader, and more organized. Automated technology simplifies contacting candidates and scheduling interviews. Centralized data management reduces duplicate entries and enhances access, and standardized online assessments ensure unbiased evaluation of candidates. Improved decision-making and strategic planning are achieved with real-time analytics and dashboard reporting. In addition, when compared with manual processes, automated on boarding systems save significant amounts of time and money spent per hire. The measurable impact of e-HR on relevant recruitment efficiency factors is illustrated in Table 2 below. As can be seen, the use of automation and digital recruitment techniques has practically reduced the time-to-hire period, as well as dramatically lowered costs-per-hire. The employment of AI technologies and a centralized approach improves the accuracy of

applications, thereby improving job-candidate match. The ability to make more hires per recruiter as a result of simplified processes makes recruiters much more productive.

The results of the survey conducted to determine the benefits of E-HR systems as seen by the hiring managers are presented in Table 3 below. Almost all individuals agree or strongly agree with the statement that utilizing EHR will speed up the process of hiring new employees (80%), bring more qualified candidates (80%), lead to making more data-driven decisions (75%), reduce the cost of recruiting process (80%), and make the process better for

Table 1. Key benefits of E-HR in the recruitment process as compared with traditional recruitment

Aspect of Recruitment	Traditional Method	E-HR System Approach	Efficiency Gained	References
Job Posting	Manual posting on limited platforms	Automated posting on multiple job portals and social media	Wider reach, faster posting	Chen (2023)
Application Collection	Paper-based or email collection	Centralized digital application database via ATS	Organized, quick access to candidate data	Chavan et al. 2024
Resume Screening	Manual shortlisting, time-consuming	AI-powered or keyword-based filtering	Reduces screening time significantly	Chapman & Gödöllei (2017)
Interview Scheduling	Phone calls and back-and-forth emails	Automated scheduling with calendar integration	Saves coordination time	David & Felix, (2025)
Communication	Manual updates and follow-ups with candidates	Automated emails and status updates	Timely and consistent communication	Zayas-Cabán et al. 2021
Candidate Evaluation	Unstructured or paper-based assessment methods	Standardized digital assessments and scoring	Fairer and more objective evaluation	Bulut & Yildirim-Erbasli (2026)
Data Management	Spreadsheets or paper records	Centralized, cloud-based HR databases	Easy tracking, less duplication	Bruno et al. (2024)
Analytics & Reporting	Limited data and manual reporting	Real-time dashboards and recruitment metrics	Better decision-making and process improvement	Marler & Boudreau (2017)
Onboarding	Physical paperwork and in-person formalities	Digital document submission, e-forms, and orientation modules	Faster and more seamless on boarding	Fagbore et al. (2022)
Time-to-Hire	30–60 days	Reduced to 10–30	Accelerated	Pooja &

	(average)	days with automation	hiring process	Sanjivkumar (2025)
Cost-per-Hire	Higher due to manual tasks and third-party involvement	Lower through internal digital processing	Significant cost reduction	Hosain et al. 2025

The applicants (80%). The very low number of neutral answers and those that disagree with the above statements clearly indicate that people have a fairly positive attitude towards the impact of E-HR systems on efficiency and effectiveness of the hiring process. It means that there is a lot of trust in the capability of E-HR systems to optimize the process and improve its outcomes. The lack of technical expertise among more than half of the respondents (48%) was pointed out as a major barrier, thus highlighting issues associated with the adoption and management of new technology. 42% of the respondents mentioned that there would be very high costs involved at the beginning stage, which means that there may be budget constraints. The reluctance shown by HR staff members (36%) is an indication of behavioural and cultural hindrances. The issues pertaining to data security and privacy (28%), as well as those related to the integration with existing software systems (30%), indicate security concerns.

Table 2: Quantifiable benefits of E-HR systems in recruitment processes

Metric	Before E-HR	After E-HR	Improvement	References
Time-to-Hire	45–60 days	15–30 days	Reduced by ~50%	Chapman & Gödöllei (2017); Parry & Tyson (2011)
Cost-per-Hire	High (manual ads, staffing)	Lower (automated sourcing)	Cost savings of 30–40%	Strohmeier (2007); Stone et al. (2015)
Application Accuracy	Low	High	Fewer errors, better fit	Bondarouk & Ruël (2009)
Recruiter Productivity	Medium	High	More hires per recruiter	Ruël et al. (2004); Marler & Boudreau (2017)
Candidate Satisfaction	Average	High	Improved communication and experience	Stone et al. (2015); Bondarouk & Ruël (2009)

Key components and tools of E-HR used in recruitment activities

E-HR systems comprise a number of necessary components and internet-based sources that contribute significantly to improving the recruitment process (Table 4). Applicant Tracking System (ATS) is one such component since it automates the entire process of hiring from applicant tracking to candidate selection, saving labour and increasing efficiency (Amer et al. 2023). Job postings and sourcing are done through several websites, such as Indeed and LinkedIn, making use of technology, which helps spread the vacancy announcement far and wide, thereby attracting diverse talent (Türker et al. 2025). Video interview platform services like Talview allow recruiters to carry out hiring activities online, saving both time and effort (Upadhyay & Khandelwal, 2018). On the other hand, AI-based resume screeners improve the accuracy of shortlisting by considering skills and experiences of candidates, rather than just

keywords (Huang & Rust, 2021). Candidate relationship management (CRM) tools contribute to developing talent pipelines (Priyadarsini & Sreejith, 2025). Additionally, the dashboards provide up-to-date information about hiring that makes the process of strategic staff planning easier and more efficient (Banerjee et al. 2025). Lastly, on boarding systems allow new employees to receive training and documents faster without any difficulties in doing so (Cascio & Montealegre, 2016). All these technologies contribute to creating a comprehensive online workplace that will make the process more effective and quick.

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The usage of different E-HR tools in recruitment activities is highlighted in Table 5. 92% of firms usually advertise their job openings and recruit employees through e-recruitment portals such as Indeed, LinkedIn table, and Naukri, which have become highly popular among Indian firms. Second in popularity after portals is applicant tracking system (ATS), which is used by 76% of respondents as a tool for candidate management and resume screening? The process of shortlisting and evaluating applicants' skills can be conducted effectively using AI-based resume screening services and assessment platforms, which are used 58% and 64% frequently, respectively. Seventy percent of surveyed firms regularly conduct video interviews, which are convenient for interviewing remotely and flexibly. Chat bots are used 40% frequently in order to schedule interviews or conduct initial contacts with applicants; however, there is some potential for development here. Finally, 55% of firms use digital on boarding technology, while 48% of surveyed organizations rely on HR analytics software in order to make hiring decisions more efficient (Figure 1 & Table 5).

Table 3: Perceived benefits of E-HR systems pre E-HR and post E-HR adoption in recruitment

Benefit	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Reduces time to hire	42%	38%	10%	6%	4%
Improves quality of applicants	36%	44%	12%	6%	2%
Enhances data-driven decision making	40%	35%	15%	7%	3%
Lowers recruitment costs	30%	50%	12%	6%	2%
Improves candidate experience	38%	42%	10%	6%	4%

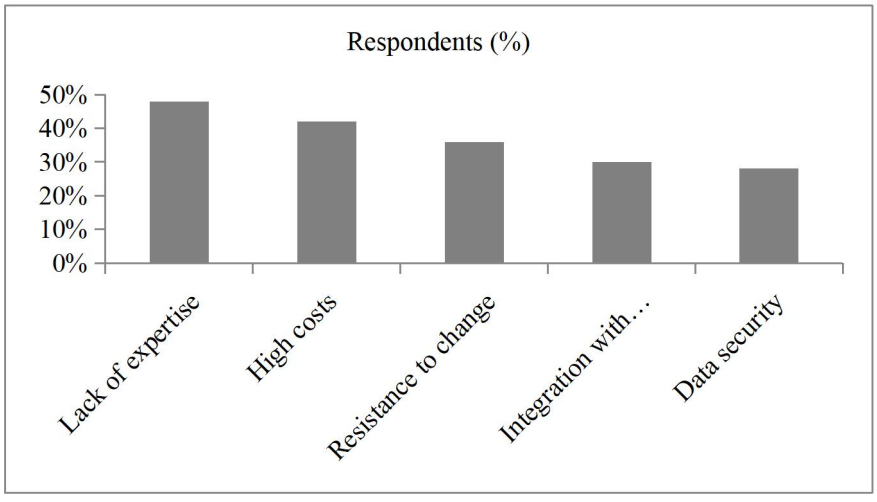

Figure 1: Key barriers to integrating E-HR systems in recruitment

Table 4: E-HR systems play a transformative role in improving the effectiveness and efficiency of recruitment by leveraging digital tools, automation, and analytics

Component	Purpose	Examples of Tools
Applicant Tracking System (ATS)	Track and manage applicants	Zoho Recruit, Oracle Taleo, Workday
Job Posting & Sourcing	Distribute job ads & attract talent	LinkedIn, Naukri, Indeed
AI Resume Screening	Match resumes with job roles	Freshteam, HireVue, TurboHire
Interview Tools	Schedule & conduct online interviews	Microsoft Teams/Zoom integrations, Talview, SparkHire
Candidate Relationship Management (CRM)	Engage and nurture candidates	Avature, Beamery
Analytics & Dashboards	Measure recruitment KPIs	SAP SuccessFactors, Oracle HCM Cloud
Onboarding Integration	Link recruitment with onboarding	Workday, BambooHR, SAP SuccessFactors

E-HRM tools to enhance their recruitment and HR processes

Tata Consultancy Services (TCS): The ultimate platform, an integrated E-HRM application that supports employee services, project delivery, HR talent management, finance, learning, and communication, is used by TCS. This software streamlines HR operations and boosts overall efficiency by boosting performance management, training, and recruitment.

HCL Technologies (HCL): HCL Technologies uses the smart service desk to address HR-related questions and concerns and the MYHCL portal for staff development. By facilitating rapid access to services and assistance, these systems streamline HR procedures and improve the working environment for employees.

Infosys: In addition to Blueshift's recruitment management system, which handles hiring procedures like direct applications, employee recommendations, and campus placements, Infosys also employs Sparsh, an E-HRM platform for employee engagement and development, these technologies maximise staff development and talent acquisition.

Table 5: Usage Frequency of Key E-HR components and tools in recruitment activities

E-HR Component / Tool	Function in Recruitment	Frequently Used (%)	Occasionally Used (%)	Rarely/Never Used (%)
E-Recruitment Portals (e.g., Naukri, LinkedIn, Indeed)	Job posting, applicant sourcing	92%	6%	2%
Applicant Tracking System (ATS)	Resume filtering, candidate tracking	76%	18%	6%
AI-Based Resume Screening Tools	Automated shortlisting based on job match	58%	30%	12%

	criteria			
Online Assessment Platforms	Skill/aptitude testing, coding assessments	64%	28%	8%
Video Interview Platforms	Remote interviewing (live/pre-recorded)	70%	22%	8%
Chatbots for Candidate Interaction	Initial queries, screening, interview scheduling	40%	36%	24%
Digital Onboarding Tools	Document verification, training initiation	55%	30%	15%
HR Analytics Tools	Data-based hiring insights, KPI tracking	48%	32%	20%

Tech Mahindra: Tech Mahindra manages digital hiring, training, pay, and performance management by utilising the TWINGO portal. Through improved digital processes, this integrated platform improves employee engagement and HR efficiency.
Wipro: To improve performance management and HR delivery skills, Wipro has deployed PeopleSoft, which was created in partnership with Oracle and The Hackett Group, this E-HRM software enhances HR service delivery and promotes employee growth.
Factor HR - Payroll processing, performance management, attendance monitoring, and an employee self-service portal are all features of Facto HR's cloud-based HRMS solution. Facto HR's platform simplifies HR processes for businesses, with over 3,500 clients and 2.6 million users.

Keka HR: Keka HR offers payroll automation and cloud-based HR management software that includes hiring, leave administration, attendance tracking, and performance reviews. Keka HR is a major player in the HR technology services market, with more than 5,500 customers.
Ramco Systems: This Company offers cloud-based payroll and HR solutions, such as the newly released Payce payroll platform. Additionally, the organisation strengthens workforce management capabilities by partnering with big firms such as Deloitte India to provide comprehensive payroll and HR services.

Team Lease Services: This Company provides a variety of human resources services, such as hiring, training, and digital HR technologies. It oversees a sizable workforce in India and uses cutting-edge digital tools for hiring and HR assistance.
Avtar Group: Avtar Group runs job portals such as myAvtar.com and specialises in skill development, diversity, equality, and inclusion consultancy, and recruitment services. Through specialised HR services and platforms, the company aims to empower under-represented groups and advance workplace diversity.

Ministry of Electronics & Information Technology
In order to strengthen the internal governance system and ensure that HR activities are carried out in an effective manner, the Ministry of Electronics & Information Technology has

introduced the eHRMS application designed by the NIC. The entire process of maintaining records of employees in relation to appointments, promotion, transfer, leaves, and retirement can be effectively managed using this computer-based system. It is designed keeping in view the broader objective of Digital India initiative of the government, which is expected to increase transparency and empower employees.

Department of Personnel & Training (DoPT)
In an attempt to continue its work in modernizing and digitalizing human resource management in the government, DoPT has developed eHRMS 2.0 with the help of its flagship scheme known as Karmayogi Bharat. The connection between iGOT-Karmayogi and the new version of the previous eHRMS platform has been strategically planned in order to make a seamless transition between human resources management and capacity building. Not only does eHRMS 2.0 provide a comprehensive digital tool for handling all aspects of employees' careers ranging from recruitment, postings, promotions, and deputations to training, appraisals, and retirements but also goes further than just HR activities. With this innovation, DoPT aims at building a government workforce that is not only accountable and adaptive to changes but also ready for the future.

Central Government Health Scheme (CGHS)
The deployment of eHRMS 2.0 was a significant move by CGHS toward digital administration in the healthcare division of the central government. This computerized system was designed by NIC to help speed up the processing of administrative services, such as reimbursement for medical services, application for leaves, LTC advances, among others. It is anticipated that the introduction of this software will enhance productivity and efficiency within CGHS while improving the quality of the services provided to its customers. The information of the employees can be maintained through this easy-to-use computerized system without the need for physical documents. In this regard, it supports the overall strategy by the government to leverage technology and ensure efficiency in the services provided to the citizens.

Over the past few years, various Indian states have been increasingly implementing E-HRMS as an approach towards modernizing the personnel management in the public sectors. This technology represents a major change from the old paper-based approaches to HRM practices towards more efficient and data-driven HRM. Integrating such services as recruitments, payroll systems, leaves management, and record keeping of services has allowed for increased efficiency in government operations, greater transparency, and improved accountability through E-HRMS. The use of E-HRMS in each state has taken into account the particular needs of individual regions, as well as the nationwide objectives of creating a system of e-governance. This approach has not only allowed individuals to receive information concerning the services they receive on time but also provided managers with analytical resources to make decisions effectively. Within the context of increasing the degree of e-governance in India, the implementation of E-HRMS technology remains a critical achievement. Taking into consideration this process, many Indian states have created their own systems of E-HRMS according to their needs (Table 6 & 7).

Table 6. Government Organizations in India Using E-HRM Tools

Organization Name	E-HRM Tool Adopted	Purpose	Remarks
Government of India	NIC HRMS	Employee records,	Centralized system used

(Central Govt)		recruitment, leave management	by multiple ministries and departments
Indian Railways	HRMS by CRIS (NIC-based)	Employee management, recruitment, payroll	Covers over 1.2 million employees across zones
Ministry of Defence (Civil Services)	SPARSH (Pension HRMS)	Pension, retirement, recruitment	Supports defence civilian workforce and veterans
Indian Oil Corporation Ltd (IOCL)	SAP Success Factors	Recruitment, training, performance management	Integrated with SAP ERP for enterprise HR functions
Bharat Heavy Electricals Ltd (BHEL)	Custom In-house HRMS	Recruitment, employee services, attendance	Developed for public sector-specific needs
State Government of Telangana	NIC HRMS	Recruitment, service book, GPF, leave	Deployed state wide for state government employees
State Bank of India (SBI)	Oracle PeopleSoft	Workforce planning, hiring, transfers	Also used for training and promotion tracking
ONGC (Oil and Natural Gas Corporation)	SAP Success Factors	Talent acquisition, HR analytics	Cloud-based system for centralized HR
Life Insurance Corporation of India	In-house E-HR Portal	Recruitment, appraisal, promotion	Custom-built for insurance and financial services operations
National Informatics Centre (NIC)	NIC HRMS	HR automation, centralized records	Developer and user of the HRMS system for other departments

Table 7. All-India e-HRMS adoption

State	e-HRMS Tool	Developer / Manager	Coverage & Key Features
Andhra Pradesh	CFMS (with HRMS module)	APCFSS	Payroll, pensions, leave, Aadhaar-linked; used across state departments
Arunachal Pradesh	Manav Sampada (NIC)	NIC	Basic deployment; used for leave and employee records
Assam	eHRMS Assam	NIC Assam	Service book, leave, GPF; covers most departments
Bihar	HRMIS	NIC Bihar	Payroll, service records, attendance
Chhattisgarh	Manav Sampada	NIC Chhattisgarh	Leave, employee records, service book
Delhi	e-HRMS Delhi	Govt. of Delhi	Digital service book, leave, attendance, Aadhaar & biometric integration
Goa	HRMS Goa	NIC Goa	Limited deployment; employee directory, service records

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ISSN : 0391-5115
Volume 7, Issue 2 (2026)
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Gujarat	e-Governance HRMS	Gujarat State e-Gov Division	Payroll, leave, service book, self-service
Haryana	HRMS	NIC Haryana	Real-time service book, Aadhaar integration, digital leave, transfers
Himachal Pradesh	Manav Sampada	NIC HP	2.34 lakh+ employees; 146 departments; highly integrated
Jammu & Kashmir	JKHRMS	J&K Govt. + NIC	Integrated with CPIS; leave, salary, grievance, transfers
Jharkhand	Manav Sampada (Customized)	NIC	82 departments; digitized employee records
Karnataka	HRMS 2.0	Kellton + State IT	Real-time attendance, digital service books, integrations with Seva Sindhu
Kerala	SPARK	Information Kerala Mission (IKM)	5+ lakh employees; service book, payroll, pensions, loans; Aadhaar & mobile integration
Madhya Pradesh	Manav Sampada + IFMS	NIC MP + Finance Dept	Payroll, leave, education/health; centralized data
Maharashtra	Sevaarth + Arogya HRMS	NIC Maharashtra	10+ lakh employees; payroll, loans, health HRMS, BEAMS integration
Manipur	Manav Sampada	NIC Manipur	Leave, basic HR data
Meghalaya	NIC's e-HRMS	NIC	Personnel data, basic HR functions
Mizoram	HRMS Module under Finance	NIC Mizoram	Limited scope; service books and salary
Nagaland	HRMS	NIC Nagaland	Used across education and planning departments
Odisha	HRMS Odisha	NIC Odisha	Payroll, leave, transfer, service history, real-time access
Punjab	iHRMS	NIC Punjab	Used in departments, PSUs, universities; service lifecycle mgmt
Rajasthan	RajKarmchari + RajKaushal	Dept. of Personnel	Transfers, leave, service book, SSO integration
Sikkim	HRMS	NIC Sikkim	Payroll and service record maintenance
Tamil Nadu	IFHRMS	Wipro + Treasury Dept	13+ lakh users; full employee lifecycle; HR + finance integration
Telangana	CFMS + eOffice	APCFSS	Integrated HR-finance system; leave, payroll, transfers
Tripura	Manav Sampada	NIC Tripura	Basic modules for leave and posting
Uttar Pradesh	Manav Sampada	NIC UP	Statewide HR automation; transparency and data governance
Uttarakhand	Manav Sampada	NIC Uttarakhand	Digital service books, leave, transfer modules
West Bengal	HRMS under IFMS	State Finance Dept	Treasury-integrated payroll, loans, pensions, leave; self-service

Andhra Pradesh - Andhra Pradesh has adopted the CFMS platform, created by APCFSS, which has its own module of HRMS that stores all digital records of government employees in

all departments. All aspects such as payroll, pension, leaves, transfers, and other employee services have been automated. It is accountable and has reduced the manual element by integrating itself with the treasury system, attendance through biometrics, and Aadhar card verification. In Andhra Pradesh, the CFMS system has become an important tool in the context of financial transparency and e-governance.

Bihar - The Bihar government introduced an HRMIS in order to carry out various tasks related to the HR function within its ministries. This includes tasks such as attendance monitoring, salary processing, pension management, and maintenance of personal information. With digital governance of HR data, it aims to ensure compliance with policies and improve efficiencies at state enterprises.

Delhi - In order to make its administrative services digital for its employees, the NCT of Delhi introduced the e-HRMS system. This system is able to handle service records, leaves, attendance, and even personal details of the employees. This technology helps improve accountability as well as reduce delays in HR services.

Gujarat - A systematic approach to handling human resource information in the government can be seen from Gujarat's e-Government HRMS system. Functions performed by the system include maintenance of electronic service records, leave management, payroll, and employee self-service portal, thus making HR processes more efficient.

Haryana - A robust HRMS system has been implemented in Haryana which has been developed by NIC and customized to suit the administrative context of the state. It enables online management of service books, attendance recording, leave management, transfers, and retirement management among government employees. Through its integration with payroll and Aadhaar authentication services, the application supports workforce analysis and decision making. As a step towards a unified solution for managing the entire life cycle of government employees, HRMS is now being linked with other e-governance applications including e-Salary and e-Pension.

Himachal Pradesh - Manav Sampada is an application for the Human Resource Management System (e-HRMS) that was developed by the National Informatics Centre (NIC), Himachal Pradesh. This application is used by the government of Himachal Pradesh to digitize and streamline their HR management process. With the help of the robust system, more than 2.34 lakh employees belonging to 146 departments are managed efficiently. The Manav Sampada system has been instrumental in improving the management process in terms of governance, efficiency, and transparency.

Jammu & Kashmir - JKHRMS is a full-fledged software solution that enables employees to manage their personal information, services rendered, payrolls, leaves, GPF/CPF, and transfer between departments digitally. This system was adopted by the state of Jammu & Kashmir after the restructuring of the Union Territory. It serves as a means of promoting efficient services and digital government. Some of the functionalities offered by this solution include online employee self-services, grievances, and CPIS interface. The digital transformation of the UT has been supported through the use of JKHRMS by offering real-time information, transparency in promotions, and dash boarding/data analytics.

Jharkhand - The Jharkhand state government has adopted a customized variant of the Manav Sampada e-HRMS solution to modernize and consolidate its human resource management process. This customized system allows the handling of personnel files, service files, transfers, promotions, and leave records to be done conveniently due to the unique administrative needs of the state. 82 departments have already integrated the system, ensuring that the right information is immediately available, reducing the paper burden, and increasing the openness of the administration. This is one of the many steps in digitizing the administration of Jharkhand state. Employee self-services allow individuals to change their information, view pay slips, and track career progress easily. The HRMS is integrated with treasury modules and finance modules, making it easy for employees to submit their Annual Performance.

Karnataka - Government of Karnataka has taken important steps towards digitization of its administrative functions through its development of HRMS under the jurisdiction of the finance department. There are two major versions of this software namely HRMS 1.0 and HRMS 2.0 with each offering different functionalities meant for simplifying various aspects of employee management. While HRMS 1.0 offers functionalities like basic employee information, payroll, and service record, HRMS 2.0 is an enhanced version offering functionalities such as leave encashment, festival advances, insurance registration under various schemes such as PMJJBY and PMSBY, managing government quarters, and probation period. Employees can also manage their records and download payslips using the Employee Self Service portal, which has improved service management. Banking services and health schemes have been integrated into HRMS, which has further led to the encouragement of financial inclusion along with Cashless Health Sanjeevini Scheme offered by Karnataka government. HR operations such as new employee hiring, payroll, promotion, transfer, leaves, and retirement process among others have become automated and are conducted electronically within the central control room using HRMS operated in 45 different government ministries.

Kerala - Information Kerala Mission (IKM) developed and established SPARK system which is the complete and comprehensive e-HRMS for Kerala state government. It is responsible for monitoring everything about the lives of more than 5 lakh employees in the state government of Kerala, which includes pensions, disciplinary issues, loans, promotions, leaves, salary disbursements, and maintenance of service books. For making sure that the finance and HR processes are managed effectively, SPARK is integrated with e-Treasury and other e-government services, as well as Aadhaar verification.

Madhya Pradesh - There has been remarkable progress in adopting E-HRMS in Madhya Pradesh to bring about digital transformation in the public administration sector. The state has developed an application that will be utilized to substitute traditional HR processes in the department with a digitized version that covers the maintenance of service books, personal information, familial details, education, transfer, leave, and annual confidential reports. The number of on boarded employees exceeds one lakh, which includes employees working in various departments such as Panchayat & Rural Development, Civil Supplies Corporation, NHM, Health Directorate, and Revenue Department, among other important departments. This powerful software enables centralized management of crucial HR processes such as payroll, transfers, promotions, leaves, and service records for over one lakh individuals. A key development worth mentioning is the implementation of the E-HRMS for the police force, which is scheduled to be launched completely by January 2026. This system caters to more than one lakh police officials and facilitates leave applications, transfer requests, and viewing of service history in a single online platform. The project promises to minimize administrative

inefficiencies and ensure transparency, enabling the police officials to see their awards, punishments, and appointments with a simple click. The project has been developed with the help of the NIC and integrated by the Sarabhai Centre of Excellence, ensuring uniformity, transparency, and instant access to employee information. It instils a sense of accountability in public servants, accelerates decision making, and minimizes manual interventions.

Maharashtra - The Sevaarth platform, an integral system developed by NIC Maharashtra, acts as the core platform adopted by the Maharashtra State government to deliver Payroll and Human Resource Management services to their employees. The Payroll Processing system, loans and advances, GPF (General Provident Fund), and service book module features are provided. Moreover, specific domains, such as the Health department, maintain their respective sector employees through dedicated domain HR management software, such as Arogya HRMS. Fiscal and HR synchronization is ensured by the Sevaarth platform through integration with the BEAMS budgetary management tool. It handles over 10 Lakh employees.

Meghalaya - The Manav Sampada E-HRMS software is used by the state of Meghalaya to make the processes of administration of the public sector workforce easier and efficient. The use of this software allows for recording of electronic service data, handling leave requests, monitoring transfers, and managing the information of the employees at various government departments. Currently, 49 departments have been covered by the software, and there are more than 9,600 users who have enrolled into it, demonstrating the efforts made by Meghalaya toward improving its administrative processes. By using NIC's eHRMS software, Meghalaya is aiming to eliminate the need for paperwork, reduce errors, and respond quickly to any problems faced by the employees. It also enhances the capability of administrative agencies to maintain up-to-date information about their employees and to take data-based decisions. For instance, the deployment of the eHRMS system in Meghalaya is one such case where the government in the state has adopted a digital governance approach to leverage technology in making its public sector employees more responsive and responsible (https://ehrms.nic.in: https://megpns.gov.in). Besides the Manav Sampada website, Meghalaya runs another website called the e-HRMIS Dashboard, which is a technological product from C-DAC and offers secured logins to users for carrying out HR activities digitally.

Odisha - To perform human resource management functions for government employees of Odisha, a special HRMS portal has been introduced by the state of Odisha. It is managed and developed by NIC Odisha. The portal allows users to maintain pay slips, leave applications, transfers, and services digitally. HRMS Odisha makes workforce planning, process efficiency, and transparency possible.

Punjab - The Government of Punjab has achieved success in implementing e-HRM initiatives within its organization through the use of an integrated human resource management system (iHRMS). The system was developed by NIC Punjab. With the adoption of the system, the Government of Punjab has witnessed a remarkable increase in data integrity, effectiveness, and transparency in public administration. The integrated HRMS is currently being used by 56 departments and 228 organizations. The system covers about 431,000 registered employees of Punjab government institutions. It provides services throughout the life cycle of the employees beginning from their recruitment, onboarding, transfers, promotions, leaves, and ultimately their retirement. The system supports financial processes including the calculation of payrolls, GPFs, GISs, and pensions. The system can be accessed using a mobile application. The mobile

app enables the employees to view their service records, academic credentials, and nomination details at any time.

Rajasthan - Human resource management within the government employees in Rajasthan is done by using both the RajKaushal and RajKarmchari Portal approaches. Whereas RajKaushal focuses on workforce planning and skills management, RajKarmchari portal handles personnel database management and also takes care of promotions, transfers, retirements, and leaves. The two approaches make the process of managing digital service books easy for many employees.

Tamil Nadu - IFHRMS is an online system designed and maintained by Wipro for use by the Treasuries & Accounts Department of the state. It is currently being used throughout Tamil Nadu. IFHRMS handles the complete lifecycle of the employee, which involves recruiting, salary payment, leave management, transfers, promotion, retirement, pension payments, and disciplinary processes. Proper financial planning is provided by IFHRMS through its interface between human resources functions and financial/budgeting processes and it caters to more than 13 lakh government officials and pensioners. Good governance of human resources processes, efficient handling of transactions, and transparency are guaranteed by the usability and self-service nature of the portal.

Telangana - The Comprehensive Financial Management System (CFMS), developed by the Andhra Pradesh Centre for Financial Systems and Services (APCFSS), is primarily employed by the Telangana government for the management of its human resources. The eOffice software is employed for all administrative transactions. While CFMS includes features such as employee database, salary management, pensions, GPF, and other aspects of service management for government employees, despite the fact that CFMS does not function as an "e-HRMS" portal on a standalone basis. HRMS modules in eOffice are used by departments for monitoring employee profiles, leaves, and transfers.

Uttar Pradesh - Manav Sampada e-HRMS is the technology that has been deployed in the state government of Uttar Pradesh with which it has digitized all the human resources functions of its various state departments. It is a complete software package which handles more than 1.7 million government employees in 90 state departments in functions including service books, leave applications, transfers, promotions and record keeping of employees. The technology allows real time access of data pertaining to employees and streamlines the process for annual confidential reports, property return and departmental proceedings. With functionalities such as role-based access control, mobile app availability and user friendly login, Manav Sampada has brought down the paper work in the government administration process.

Uttarakhand - The state of Uttarakhand has adopted the Manav Sampada e-HRMS software in an attempt to upgrade digital governance in its personnel management process. The software, managed by NIC, provides for better performance tracking, leave management, transfers, promotions, and digitization of service records. The software is applied in various organizations and educational institutions with the intention of reducing administrative load and making timely decisions based on accurate personnel information.

West Bengal - Service records of employees, their salary slips, leave, transfer details, loan details, and pension are all maintained in electronic form through the Human Resource

Management System module of West Bengal, which comes under the Integrated Financial Management System (IFMS). All regular employees in the state government are included in the system, which has been devised and is being maintained by the state finance department.

Table 8. Leading Recruitment Management Tools

Tool	Type	Key Features (Summary)	Best For
Zoho Recruit	Recruitment Management Tool	Applicant Tracking System (ATS), job portal integration, candidate engagement, interview scheduling, customizable workflows	Small to mid-sized businesses
Oracle Taleo	Talent Management Suite	End-to-end recruitment, onboarding, talent acquisition, analytics, Oracle integration	Large enterprises with complex HR needs
SAP SuccessFactors	Cloud-Based HR Suite	AI-powered recruiting, onboarding, L&D, succession planning, performance management	Global organizations needing full-spectrum HR systems
Freshteam	Recruitment & HR Management Software	ATS, employee database, time-off tracking, document management, integration with apps	Small to mid-sized businesses
Workday	Human Capital Management Software	Full recruiting lifecycle, workforce planning, learning & development, compensation, employee experience	Large global enterprises needing scalability
Custom In-House Systems	Tailored HR/Recruitment Software	Bespoke customization, legacy integration, process automation, analytics, high security	Large enterprises with unique, specific requirements
BambooHR	HR Software for SMBs	Recruiting, employee records, performance tracking, analytics	Growing businesses seeking intuitive HR platforms
Greenhouse	Recruiting Software	Interview coordination, candidate evaluation, collaborative hiring	High-volume hiring organizations
Lever	Recruiting Software	Full recruiting pipeline, candidate CRM, team collaboration and analytics	Recruitment-focused teams needing seamless collaboration

Besides applicant tracking, the solutions for recruitment management have expanded into all-around platforms. Among the popular E-HR solutions often applied in recruiting, besides the others, there are such tools as Zoho Recruit that help small businesses to conduct an easy and efficient recruiting process. The SAP and Oracle Taleo provide big businesses with a whole personnel management solution and connection to other HR functions. While the Fresh team

provides an affordable all-around solution for HR in smaller businesses, Workday stands out in particular due to its capability to perform real-time workforce planning and scalability on a global level. Maximum flexibility comes from the custom in-house systems. Additionally, high volume recruiters as well as growing companies make use of Bamboo HR, Greenhouse, and Lever due to their efficiency and teamwork capabilities (Table 8).

Benefits of E-HR Adoption in Recruitment

The conventional method of recruitment has changed greatly with the application of the E-HRM system, and there are several benefits that can be clearly identified with regard to cost savings, time efficiency, and improved recruitment quality.

Cost-efficiency: The posting of job openings, resume filtering, and candidate interaction are just some of the tedious HR processes that get easier when using e-HR systems. The end effect of which is a substantial decrease in costs due to the reduction in manpower, physical resources, and dependence on third parties. Through automation via e-HRM, the costs of operation have been significantly reduced because tasks done manually are being automated (Marler & Parry, 2016). Recruiting CRMs and ATS systems allow for more efficient use of resources, less advertisement spend, and the elimination of paperwork. As seen in a report from Deloitte in 2019, companies using E-HR solutions were able to reduce recruiting costs by up to 22%.

Time Saving: Automation increases efficiency in every stage of the recruiting process, from advertising vacancies and reviewing applications to scheduling interviews and onboarding new hires. Automated scheduling systems and intelligent resume screening tools are some innovative E-HR tools which drastically minimize bureaucratic hurdles. As per [Parry & Tyson (2011)], in technologically mature enterprises, the employment period was reduced by 30 to 50% owing to E-HRM innovations. For instance, firms employing automated recruitment processes have managed to decrease their time-to-fill rate from an average of 42 days to 28 days, as per SHRM (SHRM, 2022).

Enhanced Hiring Quality: E-HR systems leverage AI and analytical tools to enhance the efficiency and fairness of hiring. The process is made more efficient due to the analysis of historical data, performance data, and behavioural patterns. The use of structured interviews, testing procedures, and candidate evaluation models increases fairness, reduces bias, and improves the compatibility of applicants for positions (Bondarouk et al., 2017). Dashboard analytics further help HR professionals make decisions regarding recruiting practices.

Challenges and Barriers in E-HR Implementation

However, despite all the advantages of EHR systems, many organisations face challenges that might hinder the effective implementation of EHR in situations where resource limitations and cultural rigidity prevail.

Higher cost of initial financial investment - One of the major deterrents that makes it difficult to implement E-HR is the higher cost involved at the outset in acquiring the system. This includes costs such as consulting fees, upgrading of infrastructure, license charges for the software, and training for staff members. It is especially SMEs who have to incur the bulk of these costs.

Resistance to Change – The workers are often seen to view the introduction of technology as a threat to the security of their jobs or job practices. E-HR systems' resistance can arise due to such reluctance to change. According to Stone et al. (2015), resistance to HR technology initiatives often arises out of low participation in the implementation process and perceived job insecurity.

Technical Incompetence - Companies often lack the requisite technical know-how for managing, deploying, or troubleshooting E-HR systems, especially in the public service or rural settings. The results of this situation are delays in deployment or over-dependence on third-party providers (Bondarouk & Ruël, 2009).
Concerns Related to Data Privacy and Cyber Security - The use of E-HR systems involves storing very sensitive information regarding jobs and individuals. This often makes these systems vulnerable to cyber attacks, leading to legal and reputational consequences if the requirements of laws relating to data privacy and protection (for instance, the DPDP Act 2023 in India or GDPR on an international level) are violated.

Integration with Legacy Systems – Many organizations continue to rely on outmoded or fragmented payroll and HR management systems that can be difficult to integrate with modern E-HRM software. Issues arising from data transfer may cause data redundancy, inconsistency, and loss (Strohmeier, 2007).

Lack of Training and User Acceptance - It is possible that end users will not be able to understand how to use E-HR systems properly unless training is provided. Training and support are necessary for encouraging users to adopt E-HR systems, according to Panayotopoulou et al. (2007).

Limited Customisation and Cultural Match - The out-of-the-box E-HR system may fail to fit the unique process flow, native languages, and legal HR requirements of an organization. As a result, implementation may become unsuccessful due to the presence of both a resistant organizational culture and absence of management backing. To combat the lack of progress within the organization, (Ruël et al. 2004) found that HR and business alignment, together with top management involvement, are critical.

Evolution of E-HRM in India
The evolution of Electronic Human Resource Management (E-HRM) in India can be traced from the initial phase of digitization to advanced artificial intelligence-based platforms in both public and private sectors. The pioneering firms among large Information Technology companies such as Infosys and Tata Consultancy Services in digitizing their HR processes started from the beginning of the decade of 2000. As we approach the end of the decade of 2000, foreign platforms including SAP and Oracle PeopleSoft have made their presence in the market and have automated payroll and recruitment in the private sector organizations. It was around 2010 that the public sector came into the picture by adopting the National Informatics Centre's HRMS initiative for maintaining uniformity in the government employees' database and pension management process. The coronavirus outbreak of 2020 hastened the pace of digitization across all sectors, leading to the creation of innovations such as online interviews and virtual on boarding processes. More targeted digital transformations have taken place in government departments since then, including the introduction of HRMS at the state level and

defence pensions. The HR environment in India is moving toward the development of a complex, high-tech HR ecosystem that favours AI-based E-HR systems (Table 9 & Figure 2).

Table 9. Timeline of the evolution of E-HRM in India

Year	Milestone	Sector	Details
2000–2005	Early digitization of HR records and payroll begins in large IT firms	Private Sector	Companies like Infosys and TCS start using custom in-house systems for employee data management
2006–2009	Entry of global E-HR platforms in India (SAP, Oracle PeopleSoft)	Private Sector	Early adopters include Infosys, Wipro, and ICICI Bank; basic recruitment and payroll automation
2010–2012	NIC launches HRMS for Indian government departments	Public Sector	Used for managing employee records, GPF, leave, and pension systems across central/state govts
2013–2015	Adoption of cloud-based E-HR tools begins (Workday, SAP SuccessFactors)	Private Sector	Tools become popular among MNCs and large Indian conglomerates for performance and L&D tracking
2016–2017	Indian Railways begins digitizing HR functions with CRIS-developed HRMS	Public Sector	Covers millions of employees; focuses on service books, promotions, and transfers
2018–2019	Public Sector Units (IOCL, ONGC, BHEL) implement SAP SuccessFactors and custom tools	Mixed	Blend of public-private solutions to meet large workforce demands
2020	COVID-19 pandemic accelerates digital HR adoption (remote onboarding, digital interviews)	All Sectors	Surge in tools like Zoho Recruit, Freshteam, virtual job portals
2021	Ministry of Defence launches SPARSH system for defence pension and HR automation	Public Sector	Digital platform for managing pensions and employee lifecycle
2022–2023	State governments like Telangana adopt HRMS for GPF, leave, and recruitment	State Government	Deployed across departments for end-to-end workforce management
2024–Present	Focus shifts to AI-enabled E-HRM, predictive analytics, and employee experience platforms	All Sectors	Use of AI in candidate screening, attrition prediction, and personalized employee engagement

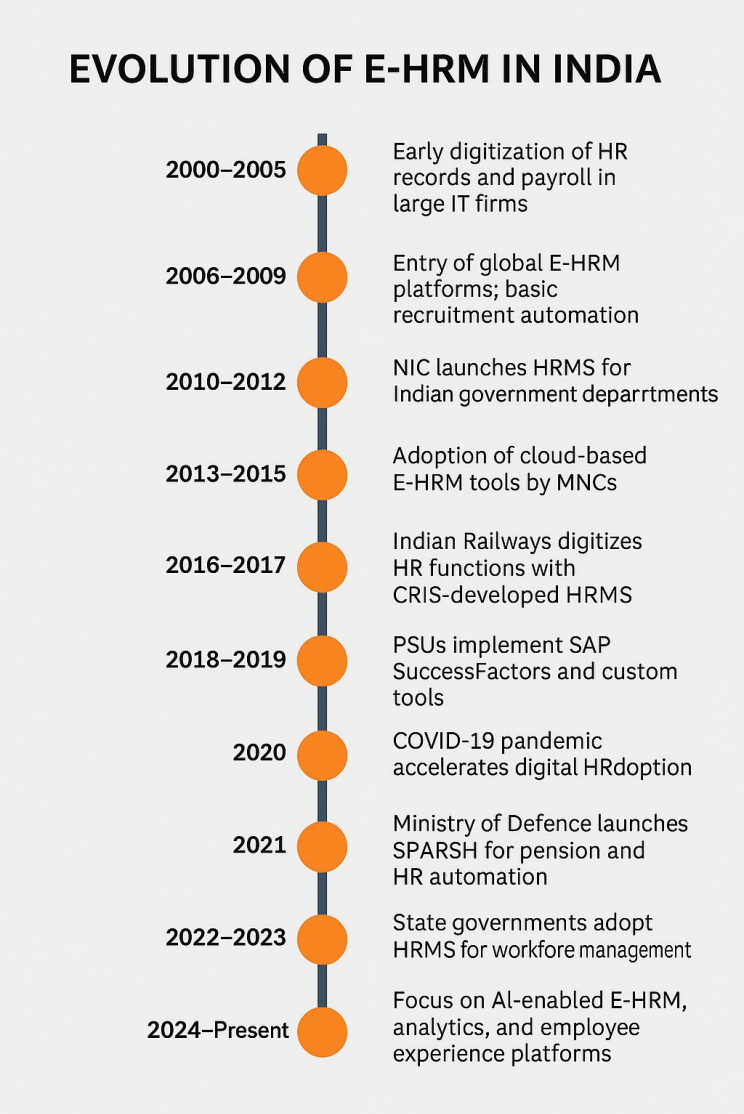

Figure 2: Timeline of the evolution of E-HRM in India

Overview of E-HR Tools and Platforms for Recruitment and HR Management

Various tools have emerged within the digital revolution of human resource management that will enhance recruiting effectiveness, streamline HR processes, and ensure seamless data and process integration. Such tools are critical for both public and private organizations.

Table 10. Overview of E-HR Tools and Platforms

Tool / Platform	Description	Source / Citation
NIC HRMS	Developed by the National Informatics Centre (NIC), NIC HRMS is a government-centric platform enabling centralized management of employee records, recruitment, attendance, payroll, and other	National Informatics Centre. (n.d.). *NIC HRMS*. Retrieved from ehrms.nic.in

	HR functions. It ensures inter-departmental integration and policy compliance.	
Custom In-House Systems	These are tailor-built E-HR platforms developed internally or through enterprise IT vendors to meet specific organizational requirements, such as unique recruitment workflows, integration with legacy systems, and strict security protocols. They enable proprietary analytics and customization.	Based on industry case studies and enterprise deployment reports (e.g., TCS Ultimatix, Infosys Lex, etc.) from HR technology research.
SAP Success Factors	A cloud-based HCM suite offering AI-powered recruitment, on boarding, L&D, succession planning, and performance management. It integrates with global job boards and HR processes, offering scalability for multinational organizations.	SAP SE. (n.d.). *SAP Success Factors Human Experience Management (HXM) Suite*. Retrieved from sap.com
SAP Human Capital Management (SAP HCM)	On-premise, ERP-integrated HR suite providing modules for recruitment, employee administration, payroll, performance management, and career planning. Especially suitable for enterprises using SAP ERP for holistic process integration.	SAP SE. (n.d.). *SAP Human Capital Management*. Retrieved from sap.com

E-HR technologies are now essential for effectively managing the employment lifecycle. Centralised personnel data management across ministries and departments is ensured by NIC HRMS, which is designed specifically for Indian government use. This promotes efficiency and transparency in public HR operations. Custom in-house HR systems, on the other hand, provide great levels of control and integration with legacy technologies, enabling private businesses to design unique platforms that mirror their organisational complexity. Globally reputable enterprise HR suites are represented by SAP Success Factors and SAP HCM. For end-to-end internal operations management, SAP HCM is tightly connected with ERP systems, whereas Success Factors offers a scalable, cloud-based platform ideal for multinational corporations. When taken as a whole, these resources show how E-HR technologies are becoming more specialised and diverse across industries.

Recommendations for effective adoption and integration of E-HR in recruitment

A strategic, well-organised approach is required for the successful adoption and integration of Electronic Human Resource (E-HR) systems in recruitment. This approach should start with a comprehensive needs assessment to identify process gaps and match the system's capabilities with organisational goals like improving candidate quality or cutting down on hiring time (Marler & Parry, 2016; Mishra et al. 2026). To guarantee proper resource allocation and promote organisational buy-in, which are essential for successful implementation, it is imperative to obtain strong top management support (Bondarouk & Brewster, 2016). While providing seamless interaction with legacy HR systems to preserve operational continuity, selecting scalable and customisable E-HR platforms enables organisations to adjust to changing recruitment procedures and adhere to regulatory standards. To reduce disturbance and encourage acceptance, change management techniques are crucial. These include open communication, early HR staff involvement, and overcoming opposition (Al-Hadid et al. 2020).

Comprehensive training and continuous assistance maximise system utilisation by improving user confidence and proficiency (Panayotopoulou et al. 2013). Trust is preserved and sensitive employee data is protected by ensuring strong data security that complies with legal frameworks (Müller & Ulrich, 2020). Organisations can assess impact and streamline procedures by employing key performance indicators, such as applicant experience and time-to-hire, for continuous monitoring). Prior to scaling up, pilot deployments allow for feedback-driven improvements (Parry & Tyson, 2011). Lastly, encouraging a culture that prioritises digital literacy and innovation promotes long-term adoption and continuous development (Bondarouk & Brewster, 2016). Organisations can overcome typical obstacles and fully profit from E-HR recruitment systems by putting these strategic initiatives into practice.

Table 11: Strategic Recommendations Based on Identified Challenges

Identified Challenge	Strategic Recommendation	Expected Outcome
High initial costs	Phase-wise implementation and use of cloud-based E-HR solutions	Cost management and scalability
Lack of technical expertise	Organize hands-on training programs and digital literacy workshops for HR staff	Improved system utilization and confidence
Resistance to change	Implement change management initiatives and employee involvement in E-HR planning	Increased buy-in and smoother adoption
System integration issues	Use modular E-HR solutions with strong API support	Seamless integration with legacy systems
Data privacy and security concerns	Adopt ISO-compliant platforms with robust encryption and access control policies	Higher trust and compliance
Lack of top management support	Align E-HR goals with organizational KPIs and present ROI-focused reports	Greater strategic alignment and executive support
Low user-friendliness	Select platforms based on usability testing and employee feedback	Higher engagement and satisfaction among users

With an emphasis on well-known products like SAP Success Factors, NIC HRMS, and proprietary in-house systems, this article examines the usage of E-HR technologies in hiring and other HR-related tasks. By automating processes, increasing productivity, and improving organisational performance, these technologies are revolutionising HR operations. Using E-HR solutions makes it easier to track employee performance, manage payroll, and recruit new employees, among other tasks. While NIC HRMS specialises on government organisations, tools such as SAP Success Factors offer comprehensive HR management solutions. Tailored HR solutions are provided via custom in-house systems to satisfy the unique requirements of big businesses. By automating recruitment processes, e-HR platforms such as SAP Success Factors decrease manual labour and improve the effectiveness of candidate sourcing, screening, and hiring. Government agencies use NIC HRMS to ensure regulatory compliance and expedite the hiring process. E-HR systems save time and lower administrative expenses by automating repetitive procedures. By cutting down on time-to-hire, these solutions increase operational effectiveness and save recruitment costs. Employee Engagement: By providing self-service

portals for monitoring performance, benefits, and development, E-HR systems also help to increase employee engagement. High upfront expenses, reluctance to change, and problems integrating with old systems are some of the obstacles to adoption. With the right instruction and change management techniques, problems can be resolved. Data-driven decision-making is made possible by e-HR solutions, which enhance workforce planning, talent management, and organisational results.

Conclusion

Organisations looking to modernise and streamline their HR operations, especially in recruitment, must embrace E-HR products like SAP Success Factors, NIC HRMS, and proprietary in-house systems. These instruments have several advantages, such as increased productivity, lower expenses, and happier workers. E-HR solutions save time-to-hire by automating repetitive HR operations, which also frees up HR experts to concentrate on more strategic endeavours like performance management and talent development. E-HR tool adoption is not without difficulties, despite the obvious benefits. Adoption may be hampered by high upfront expenditures, staff aversion to change, and challenges integrating with current systems. However, with proper preparation, change management techniques, and efficient training, these difficulties can be lessened. All things considered, companies can make data-driven decisions, enhance organisational performance, and improve personnel acquisition procedures by strategically utilising E-HR solutions. To remain competitive in a fast changing digital market, organizations especially large corporations and government agencies must invest in E-HR capabilities. A more nimble HR department, better hiring results, and more employee happiness can all result from the effective integration of these technologies, which will eventually help the business succeed as a whole.

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