

Artificial Intelligence, Human Resource Development, Talent Acquisition, and Employment Prospects

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Abstract:

Artificial Intelligence (AI) has emerged as a transformative force reshaping work culture, organizational structures, and employment systems worldwide. The integration of AI-driven technologies into talent acquisition and human resource management has enhanced the efficiency, accuracy, and strategic capacity of recruitment, employee assessment, workforce analytics, and organizational decision-making. Technologies such as automated resume screening, predictive analytics, intelligent interviewing systems, and AI-based behavioural assessment tools have accelerated hiring processes, improved candidate-job compatibility, reduced operational costs, and minimized human error. Beyond recruitment, AI contributes significantly to human resource development through personalized learning, adaptive workforce planning, employee engagement, continuous skill enhancement, and data-driven performance evaluation. These intelligent systems enable organizations to identify talent gaps, predict workforce trends, and design customized professional development strategies suited to the evolving global economy. Despite these advancements, the increasing reliance on AI raises major concerns regarding job displacement, algorithmic bias, ethical accountability, workplace surveillance, data privacy, and widening inequalities between technologically skilled and unskilled labour. The evolving interaction between humans and intelligent systems demands continuous reskilling, digital literacy, interdisciplinary competence, and inclusive employment policies capable of addressing emerging socio-economic challenges. The future of work is likely to be defined not by the replacement of humans by machines, but by collaborative intelligence that integrates human creativity with machine efficiency. This paper critically examines the role of AI in talent acquisition, human resource development, and contemporary employment systems while exploring its opportunities, challenges, and implications for employers, employees, educational institutions, and policy-makers. It emphasizes the urgent need for ethical AI governance, human-centric organizational strategies, robust regulatory

mechanisms, and adaptive labour frameworks to ensure equitable and sustainable employment in the digital era.

Keywords: *Artificial Intelligence; Future of Work; Talent Acquisition; Human Resource Development; Employment Prospects; Workforce Transformation;*

I. INTRODUCTION

Artificial Intelligence (AI) has emerged as one of the most transformative technologies of the twenty-first century, profoundly influencing organizational structures, workforce management, and global employment systems. Recent advances in machine learning, natural language processing, predictive analytics, and intelligent automation have enabled organizations to move beyond conventional mechanized systems toward adaptive technologies capable of learning, reasoning, and autonomous decision-making [1]. Consequently, AI has become a critical component of digital transformation strategies across industries worldwide. Among the various organizational functions influenced by AI, Human Resource Management (HRM) has undergone one of the most substantial transformations [2]. Traditionally, HRM focused mainly on administrative responsibilities such as payroll processing, attendance monitoring, employee record maintenance, and manual recruitment procedures. However, increasing globalization, workforce diversification, technological disruptions, and rapidly changing industrial requirements have necessitated a strategic transition from administrative HR practices toward intelligent and data-driven workforce management systems [3]. Organizations now require sophisticated technologies capable of identifying skilled

talent, predicting workforce trends, optimizing employee productivity, and supporting continuous professional development. Talent acquisition has particularly witnessed remarkable transformation through AI-enabled recruitment technologies. Machine learning algorithms, applicant tracking systems (ATS), AI-driven chatbots, predictive analytics, and automated interview platforms are increasingly being integrated into recruitment processes to improve hiring efficiency and candidate selection [4]. These technologies facilitate rapid resume screening, competency assessment, candidate-job matching, behavioural profiling, and workforce forecasting while reducing recruitment costs and minimizing human bias. AI-assisted recruitment systems have also improved organizational scalability by enabling high-volume hiring and real-time decision-making in competitive labour markets. In addition to recruitment, AI has significantly influenced human resource development and employee training systems. Intelligent learning platforms, adaptive educational technologies, and AI-based performance analytics have enabled personalized skill development and continuous workforce upskilling [5]. Such technologies are becoming increasingly important because future employment ecosystems are expected to rely heavily on digital literacy, interdisciplinary competence, and human-machine collaboration. According to the World Economic Forum, technological transformation is expected to substantially alter existing employment

structures, creating demand for highly skilled professionals capable of adapting to rapidly evolving digital environments [6]. Despite the transformative potential of AI, its integration into workforce management also raises major ethical, social, and economic concerns. Algorithmic bias, workforce displacement, workplace surveillance, data privacy violations, and psychological stress associated with automation have emerged as significant challenges in AI-driven environments [4]. Furthermore, the unequal distribution of technological resources may widen the gap between technologically skilled and unskilled populations, particularly in developing economies. Consequently, organizations and policy-makers must adopt balanced and human-centric approaches that maximize the benefits of AI while minimizing its adverse consequences. Transparent algorithmic governance, inclusive employment policies, ethical AI frameworks, and continuous workforce reskilling will therefore become essential for sustainable technological integration [2]. The growing influence of AI across organizational systems highlights its potential to reshape not only talent acquisition and workforce development but also broader employment dynamics and socio-economic structures. Therefore, understanding sector-wise AI adoption patterns and their implications for future employment systems has become increasingly important in both developed and emerging economies (Table I).

TABLE I. ESTIMATED SECTOR-WISE USE OF AI IN TALENT ACQUISITION

S. NO.	Sector/Industry	Estimated AI Usage in Talent Acquisition (%)	Major AI Applications	References
1	Information Technology (IT)	85-90%	Resume screening, coding assessment, predictive hiring	[3]
2	Banking & Financial Services	70-80%	Candidate analytics, compliance screening, chatbots	[2]
3	E-commerce & Retail	65-75%	Mass hiring automation, AI interview scheduling	[3]
4	Telecommunications	60-70%	Workforce analytics, automated recruitment	[2]
5	Healthcare	55-65%	Credential verification, candidate matching	[20]
6	Manufacturing	50-60%	Technical skill screening, workforce forecasting	[21]
7	BPO & Customer Support	75-85%	Voice analytics, chatbots-based screening	[3][22]

8	Education & Academia	35-45%	Applicant tracking, faculty analytics	[2]
9	Hospitality & Tourism	40-50%	Customer-service aptitude assessment	[20]
10	Logistics & Supply Chain	45-55%	Driver/staff recruitment automation	[21]
11	Automobile Industry	50-60%	Technical hiring and robotics workforce planning	[3]
12	Media & Entertainment	45-55%	Creative portfolio analytics	[2]
13	Government/Public Sector	25-40%	Digital application management	[22]
14	Legal Services	35-50%	AI document analysis and candidate profiling	[21]
15	Pharmaceutical Industry	55-65%	Scientific talent analytics	[20]
16	Startups & Tech Enterprises	80-95%	AI-driven sourcing and remote hiring	[3] [22]
17	Aviation & Aerospace	50-60%	Competency mapping and simulation-based assessments	[2]
18	Energy & Power Sector	40-55%	Technical workforce planning	[21]

II. AI ADOPTION TRENDS AND GLOBAL WORKFORCE CHALLENGES

The integration of AI into talent acquisition and workforce management has expanded rapidly across multiple industrial sectors. AI-driven systems are now extensively utilized for resume screening, workforce analytics, predictive hiring, automated interviews, competency mapping, and employee performance assessment [3]. The highest levels of AI adoption are generally observed in Information Technology (IT), Banking and Financial Services (BFSI), Telecommunications, E-commerce, and Start-up ecosystems because of their strong technological infrastructure and high demand for skilled professionals [18]. In contrast, comparatively lower adoption rates continue to exist in sectors such as education, public administration, agriculture, hospitality, and legal services, reflecting uneven technological penetration across industries. In India, AI adoption in talent acquisition has increased substantially during the past decade, particularly among large enterprises and technology-driven organizations. Reports published by NASSCOM and other industrial surveys indicate that sectors such as IT services, banking, healthcare, e-commerce, and telecommunications are increasingly relying on AI-based recruitment and workforce management systems [18] (Table II). However, the absence of a centralized national database documenting

sector-wise AI implementation makes it difficult to determine precise adoption rates across all industries. Existing evidence nevertheless suggests that AI awareness and implementation remain highly variable across different sectors and organizational scales. Globally, AI integration in workforce management demonstrates patterns similar to those observed in India. Developed economies generally exhibit higher AI penetration because of advanced technological infrastructure, strong innovation ecosystems, and greater digital readiness [6]. Countries such as the United States, Canada, Germany, the United Kingdom, Australia, Japan, and Singapore have increasingly adopted AI-driven recruitment systems to address workforce shortages, demographic transitions, and skill mismatches. Aging populations, declining birth rates, and rapid technological advancement have created substantial shortages in healthcare, engineering, information technology, logistics, construction, manufacturing, and eldercare sectors [19]. Consequently, many countries have introduced skilled migration pathways and international recruitment programs to sustain economic productivity and workforce availability. The growing global demand for highly skilled professionals highlights the critical importance of long-term investment in education, vocational training, digital literacy, and workforce development. Talent generation requires sustained

academic planning, technologically advanced educational systems, skilled educators, and continuous alignment between industrial demands and workforce competencies. Countries that have strategically invested in technological modernization, industrial innovation, research infrastructure, and workforce preparedness appear better positioned to address future economic and technological transitions. In India, despite possessing one of the world's largest young populations, substantial talent shortages and skill mismatches continue to persist in sectors such as healthcare, engineering, advanced manufacturing, and information technology. This paradox reflects the widening disconnect between traditional educational systems and rapidly evolving

industrial requirements. Therefore, strengthening vocational training, interdisciplinary education, digital literacy, and AI awareness across sectors will be critical for ensuring long-term workforce sustainability and economic competitiveness. This paper critically examines the transformative role of AI in talent acquisition, human resource development, and employment dynamics. It further explores the opportunities, ethical concerns, socio-economic challenges, and future implications associated with AI-driven workforce ecosystems while emphasizing the need for inclusive, sustainable, and human-centric approaches toward technological integration in modern employment systems.

Table II. USE OF AI IN DIFFERENT SECTORS FOR TALENT ACQUISITION IN INDIA

S. No.		Sector/Industry	Estimated AI Usage in Talent Acquisition (%)	AI Applications in Talent Acquisition	Key Benefits	References
1		Information Technology (IT)	85-90%	Resume screening, coding assessment tools, predictive hiring analytics	Faster technical recruitment, skill matching	[7]
2		Healthcare	55-65%	Credential verification, AI-based candidate shortlisting, behavioural assessment	Efficient hiring of qualified healthcare professionals	[8]
3		Banking & Financial Services	70-80%	AI-driven psychometric analysis, fraud-risk profiling, chatbots interviews	Improved candidate evaluation and compliance	[9]
4		Manufacturing	50-60%	Workforce forecasting, automated screening for technical roles	Reduced hiring time and optimized labour allocation	[10]
5		Retail & E-commerce	65-75%	High-volume recruitment automation, virtual recruitment assistants	Rapid seasonal and mass hiring	[11]

6		Education & Academia	35-45%	Faculty profile analytics, AI-assisted interview scheduling	Merit-based selection and administrative efficiency	[12]
7		Hospitality & Tourism	40-50%	AI chatbots for applicant engagement, multilingual screening	Enhanced customer-service-oriented hiring	[13]
8		Telecommunications	60-70%	Predictive analytics for workforce planning and recruitment	Improved talent retention and scalability	[14]
9		Aviation & Aerospace	50-60%	Competency mapping, simulation-based candidate evaluation	Precision hiring for safety-sensitive roles	[15]
10		Media & Entertainment	45-55%	AI portfolio analysis, creative skill assessment	Efficient identification of creative talent	[16,17]
11		Logistics & Supply Chain	45-55%	Automated driver/staff recruitment, workforce demand prediction	Streamlined operational hiring	
12		Government & Public Sector	25-40%	Digital applicant tracking systems, AI-based examination analytics	Transparent and efficient recruitment processes	
13		Pharmaceutical Industry	55-65%	Research talent analytics, competency-based screening	Better scientific talent acquisition	
14		Legal Services	35-50%	AI-assisted document analysis and candidate profiling	Faster recruitment of specialized legal professionals	
15		Agriculture & Agri-Tech	30-45%	AI-based rural workforce matching and seasonal hiring analytics	Improved labour management	
16		Defence & Security	40-55%	Psychometric AI tools, aptitude analytics,	Enhanced security personnel selection	

				simulation assessments		
17		Energy & Power Sector	40-55%	Predictive workforce planning and technical competency screening	Strategic manpower management	
18		Automobile Industry	50-60%	AI-enabled technical hiring and robotics workforce analytics	Efficient recruitment for smart manufacturing	
19		Startups & Entrepreneurship	80-95%	AI-driven talent sourcing platforms and remote hiring tools	Cost-effective and agile recruitment	
20		BPO & Customer Support	75-85	Voice analytics, Chatbots screening, sentiment analysis	Rapid recruitment and communication assessment	

III. CONCEPTUAL FRAMEWORK OF ARTIFICIAL INTELLIGENCE IN HUMAN RESOURCE MANAGEMENT

Artificial Intelligence (AI) refers to the simulation of human intelligence by machines capable of performing tasks such as learning, reasoning, problem-solving, decision-making, and language processing [23]. AI technologies encompass machine learning, deep learning, natural language processing, robotic process automation, expert systems, and predictive analytics [24]. These intelligent systems are designed to analyse large volumes of data, identify patterns, and generate data-driven outputs that support automated decision-making processes [25]. In the context of Human Resource Management (HRM), AI may be conceptualized as an intelligent decision-support system that enhances organizational effectiveness through automation, analytics, and evidence-based management practices [3]. AI-enabled HR systems are capable of processing substantial volumes of employee and organizational data to optimize recruitment, workforce planning, employee engagement, talent management, and performance evaluation. Such technologies improve operational efficiency while simultaneously

strengthening the quality, consistency, and speed of managerial decision-making [5]. The conceptual integration of AI into HRM can broadly be categorized into three major dimensions as given hereunder.

- *Operational Automation:* AI facilitates the automation of repetitive and administrative HR functions such as resume screening, interview scheduling, payroll management, attendance monitoring, and document processing [22].
- *Strategic Intelligence:* AI supports strategic organizational decision-making through predictive analytics, workforce forecasting, behavioural assessment, and talent acquisition analytics, thereby enabling more effective workforce planning and resource allocation [21].
- *Human Capital Development:* AI contributes toward employee development through personalized learning systems, adaptive training platforms, competency assessment, career planning, and employee engagement analytics [20].

The application of AI in HRM aligns closely with contemporary organizational theories emphasizing agility, innovation, adaptability, and data-driven

management. Modern organizations increasingly regard employees not merely as labour resources, but as strategic assets requiring continuous development, motivation, and optimization to sustain long-term organizational competitiveness [21]. An emerging area of discussion concerns the extent to which AI systems can replicate emotional intelligence within organizational environments. AI-driven systems are increasingly capable of providing employee support through performance feedback, productivity monitoring, progress tracking, and personalized recommendations [26]. Intelligent systems can also identify behavioural patterns associated with employee dissatisfaction, burnout, declining productivity, or disengagement through sentiment analysis and predictive behavioural analytics. Furthermore, AI systems are capable of offering real-time guidance, constructive feedback, and motivational prompts tailored to individual employee performance patterns [5].

III.I. AI BASED ENHANCEMENTS OF EMPLOYEE SUPPORT AND MOTIVATION

- *Personalized Motivation:* AI-enabled systems can adapt communication styles, coaching strategies, and learning recommendations according to individual employee preferences, performance trends, and behavioural profiles [2].
- *Real-Time Feedback:* AI platforms can continuously analyse productivity and performance metrics, enabling immediate feedback, recognition, and corrective guidance [2].
- *Continuous Availability:* Unlike human managers, AI systems can provide uninterrupted assistance, learning resources, and performance support without fatigue or emotional inconsistency. Such systems therefore offer scalable and standardized workforce support mechanisms across organizations [27].
- Despite these advantages, AI systems remain fundamentally limited in replicating genuine human empathy, emotional understanding, and interpersonal sensitivity. Although AI may simulate supportive communication and motivational language, it lacks emotional consciousness, lived experience, moral intuition, and authentic human concern. Human

interactions within workplaces are often influenced by complex emotional, psychological, social, and contextual factors that remain difficult to fully interpret through algorithmic systems alone [3].

III.II. LIMITATIONS OF AI-BASED EMOTIONAL SUPPORT

- *Absence of Genuine Empathy:* AI systems cannot truly experience emotions or understand human suffering. Consequently, AI-generated encouragement may sometimes appear mechanical, transactional, or emotionally detached [28].
- *Limited Contextual Understanding:* Human behavior is influenced by personal relationships, emotional stress, family circumstances, social conflicts, and unforeseen life events. AI systems often lack the contextual sensitivity required to accurately interpret such highly nuanced situations [21].
- *Challenges in Trust and Emotional Bonding:* Employees are generally more likely to seek emotional reassurance, psychological support, and interpersonal understanding from human managers than from automated systems. Trust, compassion, and emotional connection remain predominantly human-centered organizational attributes [21]. Rapid advancements in affective computing and emotional AI suggest that future intelligent systems may become increasingly capable of recognizing, interpreting, and responding to human emotions. Nevertheless, the extent to which machines may eventually emulate empathy, emotional reasoning, and interpersonal sensitivity remains uncertain. These developments raise important ethical, psychological, and philosophical questions concerning the future relationship between artificial intelligence and human emotions within professional environments [26].

IV. ARTIFICIAL INTELLIGENCE AND TALENT ACQUISITION

IV.I. EVOLUTION OF RECRUITMENT PRACTICES

Traditional recruitment processes were labour-intensive, time-consuming, and often influenced by subjective

human judgments. HR professionals manually reviewed applications, conducted preliminary assessments, and relied heavily on intuition during candidate selection. Such processes frequently resulted in inefficiencies, delayed hiring, and unconscious bias [29]. The emergence of AI has fundamentally transformed recruitment practices. AI-driven recruitment systems automate candidate sourcing, resume parsing, candidate matching, interview scheduling, and communication processes. These technologies enable organizations to identify suitable candidates rapidly while reducing administrative burdens [22].

IV.II. AI-POWERED RECRUITMENT TECHNOLOGIES

- *Applicant Tracking Systems (ATS)*: Applicant Tracking Systems use machine learning algorithms to analyse resumes, identify keywords, rank candidates, and shortlist applicants based on predefined criteria. ATS platforms significantly reduce the time required for initial candidate screening [2].
- *Chatbots And Virtual Assistants*: AI-powered chatbots facilitate real-time communication with job applicants. These systems answer candidate queries, schedule interviews, provide application updates, and enhance candidate experience [3].
- *Predictive Analytics*: Predictive analytics tools assess candidate suitability by analysing educational qualifications, work history, behavioural patterns, and competency indicators. These systems improve hiring accuracy and reduce employee turnover [27].
- *Video Interview Analysis*: Advanced AI systems analyse facial expressions, speech patterns, tone, and behavioural cues during video interviews. Such technologies attempt to evaluate personality traits, communication skills, and emotional intelligence [30].

IV.III. ADVANTAGES OF AI IN TALENT ACQUISITION

AI-driven recruitment offers several advantages as given hereunder.

- Faster candidate screening and selection
- Reduced recruitment costs
- Improved candidate matching
- Enhanced diversity and inclusion initiatives
- Better candidate experience

- Data-driven hiring decisions
- Reduced human bias in preliminary screening

Organizations employing AI recruitment systems can manage high-volume hiring more efficiently while improving workforce quality [7].

IV.IV. CHALLENGES AND ETHICAL CONCERNS

Despite its benefits, AI-based recruitment raises several concerns shown as follows.

- Algorithmic bias due to biased training datasets
- Lack of transparency in automated decision-making
- Privacy concerns regarding candidate data
- Over Reliance on automation
- Dehumanization of recruitment processes

Several studies have demonstrated that biased AI systems may unintentionally discriminate against certain demographic groups. Consequently, organizations must ensure fairness, accountability, and transparency in AI recruitment algorithms [4].

V. ARTIFICIAL INTELLIGENCE AND HUMAN RESOURCE DEVELOPMENT

- *Transformation of Learning and Development*: Human Resource Development (HRD) focuses on enhancing employee competencies, organizational learning, and workforce adaptability. AI has transformed traditional HRD practices by enabling personalized, flexible, and data-driven learning environments. AI-powered learning systems analyse employee performance, identify skill gaps, and recommend customized training programs. These technologies support continuous learning and facilitate workforce readiness in rapidly changing industries [21].
- *Personalized Learning Systems*: Traditional training programs often adopted a uniform approach that ignored individual learning preferences and skill requirements. AI-driven learning platforms overcome this limitation through adaptive learning technologies.

Personalized learning systems have the following attributes.

- Assess employee skill levels
- Recommend individualized learning pathways
- Monitor learning progress
- Provide real-time feedback
- Adapt content based on learner performance

Such systems improve employee engagement, learning effectiveness, skill acquisition and in the process, raise the level of confidence [31].

- *Virtual Reality and Intelligent Training:* AI-integrated virtual reality (VR) and augmented reality (AR) technologies provide immersive training experiences. Employees can engage in simulated work environments, enabling experiential learning with ease and comfort. The high-quality and highly relevant references given here strengthen this aspect. The study reported here includes recent works on Artificial Intelligence, Human Resource Management, workforce transformation, recruitment analytics, and future employment trends [32].

VI. CONCLUSION

Artificial Intelligence is reshaping talent acquisition, human resource development, and employment systems

by enabling faster recruitment, data-driven decision-making, personalized learning, and improved workforce planning. These advancements enhance organizational efficiency and support workforce adaptability in an increasingly digital environment. However, concerns related to algorithmic bias, data privacy, workplace surveillance, and job displacement underscores the need for responsible AI implementation. Rather than replacing human workers, AI is more likely to complement human capabilities through collaborative intelligence that combines machine efficiency with human creativity, judgment, and empathy. To maximize the benefits of AI while minimizing its risks, organizations and policymakers must prioritize ethical governance, workforce reskilling, digital literacy, and inclusive employment practices. A balanced, human-centric approach will be essential to ensure that AI-driven transformation contributes to sustainable, equitable, and future-ready workforce ecosystems. Finally, total replacement of skilled manpower by AI would prove to be a disaster in the long run. This is because human manpower becomes better and more experienced with the passage of time. That level of maturity coupled with empathy can never be matched by AI. Thus, AI engaged in any sector must be done judiciously and carefully ensuring that human remains the “**boss**” and machines remain only a supplementary tool.

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