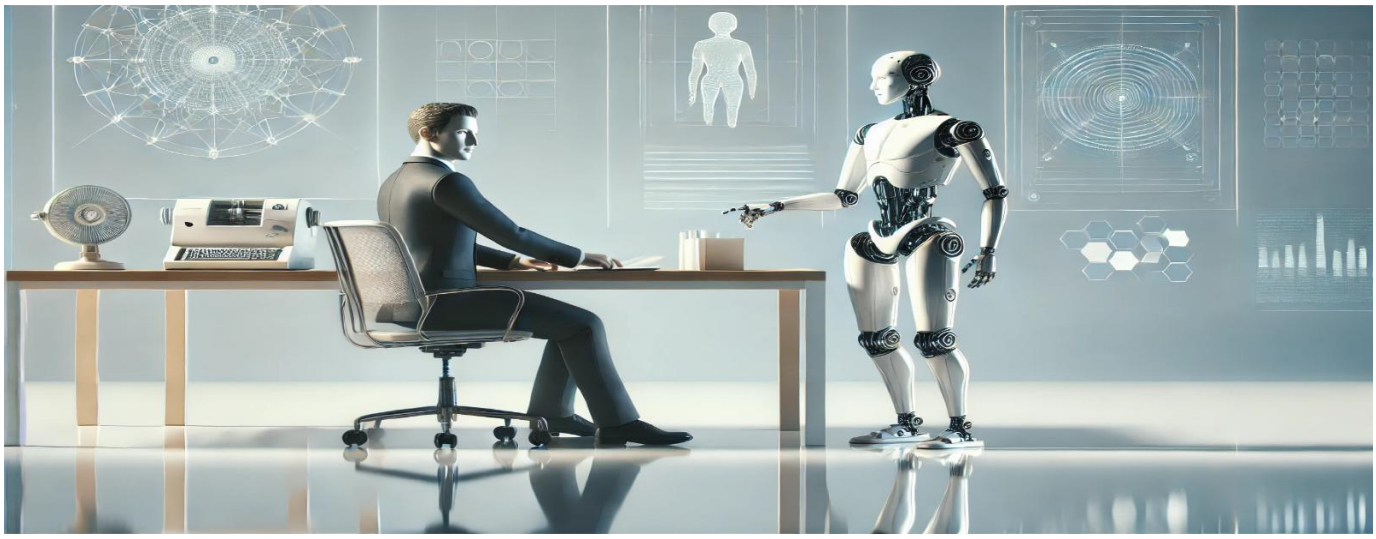

The Rise of Hybrid Workforces: AI and Robotics Redefining HR Beyond 2025

Introduction

Artificial Intelligence (AI) and robotics are revolutionizing the global workforce, with human resources (HR) leading this groundbreaking transformation. These technologies are creating a hybrid workforce that balances human and machine capabilities by automating repetitive tasks, improving decision-making processes, and driving workplace innovation. McKinsey & Company's (2024) report indicates that about 65% of global companies have employed AI-driven tools in at least one HR function, with notable use cases including talent acquisition, employee engagement, and performance management. Similarly, robotics, initially prominent in manufacturing, is now surfacing in office settings, handling tasks such as employee onboarding, documentation management, and safety monitoring.

Mercer (2024) emphasizes that generative AI is poised to transform key HR roles by automating routine tasks, enabling HR professionals to focus on strategic initiatives while fostering meaningful interactions between employees and technology. Alkudah et al. (2024) further notes that the integration of AI and robotics in HR practice transcends a mere technological trend but a strategic requirement in an increasingly competitive business landscape. These tools are redefining recruitment by providing real-time analytics for employee engagement, despite challenges like data privacy, job displacement, and ethical concerns.

This World Series Paper 6 explores developments in AI and robotics within HR practices, analyzing global data trends, showcasing pioneering companies, and uncovering how these advancements are reshaping talent management strategies worldwide. From AI-driven recruitment systems capable of processing resumes with unmatched efficiency to collaborative robots (cobots) transforming workforce dynamics, this

paper sheds light on the innovative strategies organizations are using to stay ahead in today's evolving business landscape.

Revolutionizing HR: Global Survey of AI and Robotics in Practice

Available data indicates that global companies adopt AI and robotics to perform different HR functions. For instance, Deloitte (2023), indicates that AI and robotics are engaged in recruitment and talent acquisition, where these technologies are used to screen resumes and identify top candidates for employment. Similarly, companies are increasingly leveraging AI to understand workforce dynamics and employee experiences (PwC, 2024). Furthermore, Gartner (2024) reports that companies are increasingly integrating AI into HR practices, with a particular focus on areas such as employee training and development. Although the adoption of AI and robotics in HR is on the rise, the integration process continues to face challenges and varies significantly across organizations. Nevertheless, the outlook for AI adoption in HR beyond 2025 remains highly promising. In Figure 1 below, the chart illustrates the varying stages of generative AI adoption across key corporate functions, highlighting the extent to which functions like IT, HR, and Finance are integrating AI into their processes.

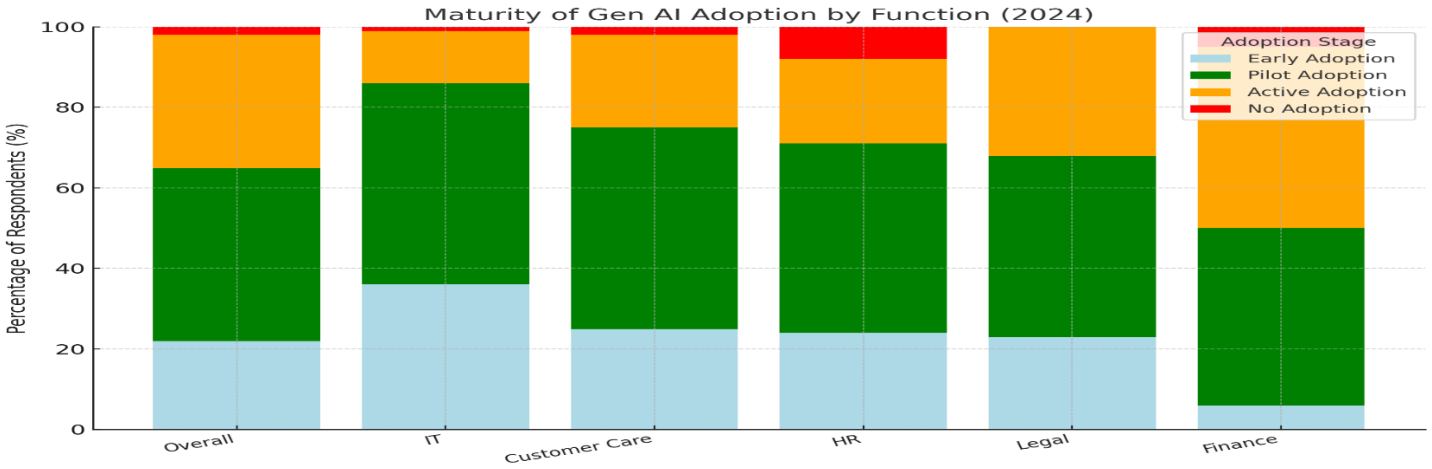

Figure 1: Maturity of Generative AI Adoption by Function in 2024

Source: McKinsey & Company (2024), Corporate Functions CXO Survey.

Despite companies integrating AI and robotics into their HR practices, there is a disproportionate rate at which companies in regions of the world adopt these technologies for different HR management. For instance, companies in North America largely adopt AI for recruitment and performance management

purposes. On the other hand, European companies that use AI in HR are basically for employee engagement and compliance. In Asia-Pacific, AI technology is incorporated into HR practice for employee learning and development, and recruitment. While Latin American companies use AI in payroll and workforce benefits management, companies in Africa use AI for talent acquisition and analytics. Notwithstanding these varying uses of AI in HR management across regions of the world, the percentage of companies using AI in these regions is disproportionately high with global south companies rocking the bottom of the league table of AI use. Table 1 below presents use of AI by companies for HR purposes by region.

Table 1: A Global Distribution of AI Adoption in HR

Region	Primary Use Cases
North America	Recruitment, performance management
Europe	Employee engagement, compliance
Asia-Pacific	Learning & development, recruitment
Latin America	Payroll, benefits management
Africa	Talent acquisition, workforce analytics

Source: (Deloitte, 2023; Gartner, 2023; PwC, 2023)

How Global Companies Leverage AI and Robotics in HR

Several global companies have already embraced AI and robotics to revolutionize their HR practices. For instance, SoftBank Robotics in Japan has developed Pepper, a semi-humanoid robot designed to recognize and respond to human emotions. Introduced in Japan in June 2014, Pepper stands about 4 feet tall and is equipped with cameras, microphones, and sensors that analyze facial expressions and voice tones. In 2018, SoftBank Robotics enhanced Pepper's capabilities by integrating Affectiva's emotion recognition AI, enabling it to interpret nuanced emotional states, such as distinguishing between a smile and a smirk, for more meaningful interactions with humans.

Pepper has been employed in various customer-facing roles, including in banks, hotels, and restaurants. While there is no confirmed evidence of Pepper being used for candidate screenings, its emotional AI capabilities have the potential to enhance human-robot interactions in a variety of contexts. As of 2024, Pepper continues to be utilized in diverse environments, such as airports, where it assists passengers with travel queries, navigation, and entertainment, and in educational settings, where it engages students in interactive learning experiences like language learning and reenacting historical events.

Similarly, BMW in Germany has been integrating collaborative robots (cobots) into its production lines to enhance workplace safety and efficiency. In 2013, BMW implemented robots from Denmark's Universal Robots at its Spartanburg, South Carolina plant. These robots were designed to assist human workers with tasks like applying sound and moisture insulation inside car doors, enhancing efficiency and precision while maintaining worker safety. These cobots help reduce physical strain on workers and improve precision in repetitive tasks. More recently, in August 2024, BMW tested a humanoid robot named Figure 02, developed by California-based company Figure, at its Spartanburg assembly plant. During the trial, Figure 02 successfully inserted sheet metal parts into specific fixtures for chassis assembly, demonstrating its ability to perform precise and delicate work.

BMW's exploration of humanoid robots aligns with its iFactory vision for the future of manufacturing. The company aims to use these robots for ergonomically challenging tasks, potentially reducing physical strain on human workers. However, the technology remains in its early stages, with BMW currently evaluating possible applications for humanoid robots in production. The company’s ongoing innovations in robotics highlight its commitment to workforce transformation and AI adoption across industries. By continuously testing and refining advanced robotic technologies, the company aims to improve production efficiency and worker safety.

Furthermore, Infosys in India, leverages AI-driven platforms to enhance its human resource practices, focusing on personalized employee development and engagement. At the core of this strategy is Infosys Wingspan (also known as LEX), a next-generation AI-powered talent transformation platform that provides personalized and adaptive learning experiences. Wingspan uses predictive analytics to identify skill gaps, recommend targeted training programs, and align learning paths with employees' roles and career aspirations.

Infosys has integrated generative AI capabilities into Wingspan to deliver a seamless AI-first learning experience. The platform features a virtual assistant and personalized recommendations tailored to employees' skills, roles, and interests. It also offers AI-powered tools such as real-time feedback, microlearning, and just-in-time learning modules, empowering employees to access relevant knowledge at the point of need.

To promote AI literacy across the organization, Infosys provides foundational training in over 50 technology streams, starting from an employee's first day. This ensures that all employees, regardless of their roles, are equipped to leverage AI technologies effectively in their work. Infosys has adopted a three-tiered approach to AI transformation: AI-Aware (consumers of AI), AI Builder (creators of AI), and AI Master (designers,

implementers, and managers of sophisticated AI systems). As of December 2024, 84% of Infosys employees (approximately 252,000 out of 300,000 plus) are now AI-aware, reflecting the success of this structured approach. Infosys positions itself as a leader in workforce transformation by integrating cutting-edge AI tools like Wingspan with a commitment to continuous learning and human-centric practices. This strategy empowers employees to stay adaptable and future-ready in an ever-changing work environment.

Exploring AI and Robotics in Global HR Practices

The integration of AI and robotics in HR goes beyond recruitment, transforming various aspects of workforce management that were traditionally challenging for human-driven HR practices. For example, Siemens in Germany is harnessing AI to address workforce challenges and foster innovation across its global operations. The company has invested over €100 million in its largest global research hub, the Siemens Technology Centre (STC) near Munich, where 450 researchers, in collaboration with the Technical University of Munich, focus on advancing future technologies such as AI and data analytics. Siemens has also partnered with Microsoft to develop the Siemens Industrial Copilot, powered by Microsoft Azure OpenAI Service. This tool enhances productivity by assisting engineers in programming and operating complex machinery, addressing skills gaps in manufacturing. Siemens' ongoing innovations highlight Germany’s leadership in workforce transformation and AI adoption across industries.

Similarly, Tata Consultancy Services (TCS) in India, is harnessing AI to enhance workforce productivity and engagement. In fiscal year 2024, TCS employees dedicated an average of 87.1 learning hours to AI-related skills, an increase from 82.4 hours in FY23. The company has been involved in over 200 Generative AI (GenAI) projects, with its GenAI project pipeline doubling to $900 million. TCS's upskilling initiatives extend across all employee levels, with junior employees averaging 126 hours (male) and 115 hours (female) of learning annually. A TCS study found that 90% of respondents are optimistic about GenAI's potential to reshape work dynamics, with 70% believing AI will support hybrid and remote work. CEO K. Krithivasan has emphasized that while GenAI will boost productivity, it will not reduce hiring but rather shift the focus toward skills like critical thinking and creativity.

TCS’s AI-driven transformation aligns with broader trends in Indian workplaces, where 48% of C-suite executives are allocating budgets for employee upskilling and reskilling, and 47% are planning to adopt hybrid work policies. This shift reflects India’s increasing emphasis on digital skills and flexible work arrangements in response to technological advancements and evolving workforce expectations.

The Hidden Challenges of AI-Powered HR

Despite the immense potential benefits offered by AI, its integration into HR is not without risks. Ethical challenges, including bias, data privacy, and transparency, are universal concerns. In the United States, for example, the famous *Amazon's gender bias scandal* comes to mind when discussing the challenges of AI-driven HR. Amazon's AI recruitment tool, developed in 2014, revealed the dangers of algorithmic bias, as it disproportionately favored male candidates for technical roles. By 2015, the company recognized the system's gender bias against women, as it systematically downgraded résumés that included terms like "women's" or references to women's colleges. This bias stemmed from training the algorithm on male-dominated hiring data, which reinforced existing gender disparities. Despite efforts to address the issue, Amazon was unable to fully mitigate the bias and ultimately discontinued the tool in early 2017.

Again, AI-driven HR practice has been tagged with privacy challenges which sparks ongoing debates over its appropriateness. For example, Chinese companies are leveraging AI for employee monitoring, raising significant debates about privacy and workplace ethics. Sangfor Technologies, a Shenzhen-based company, has developed an AI-powered "behavioral perception system" that tracks employees' online activities, such as job searches and résumé submissions, to predict the likelihood of resignation. This technology, used by companies like Zhihu, has sparked widespread outrage over privacy violations. Beyond monitoring resignations, AI is extensively employed for workplace surveillance in China, including ensuring safety on construction sites and analyzing worker emotions in factories.

Conclusion

The incorporation of AI and robotics in HR offers transformative benefits but also poses significant challenges. On the positive side, these technologies enhance efficiency, reduce costs, and improve decision-making, enabling HR teams to focus on strategic initiatives rather than routine tasks. Moreover, personalized training programs and advanced analytics drive employee satisfaction and productivity. However, these advancements bring challenges that cannot be overlooked. Robots, such as Pepper, represent a significant advancement in human-robot interaction, but their potential to replace human jobs raises concerns about displacement and societal disruptions. Additionally, ethical considerations, such as emotional manipulation, data privacy, and algorithmic bias, remain critical barriers to widespread adoption.

The shift toward AI and robotics in HR underscores the urgent need for reskilling and technical support. Organizations must invest in upskilling their workforce to ensure employees can effectively collaborate with

machines and adapt to evolving job roles. Furthermore, companies should prioritize implementing ethical AI frameworks to address fairness and privacy concerns, while maintaining transparency in decision-making processes.

Looking ahead, by 2035, AI and robotics are poised to dominate tasks like recruitment, training, and performance management, allowing HR professionals to focus on fostering organizational culture and innovation. Globally, this shift has the potential to drive productivity and inclusivity but also risks deepening inequalities and cultural divides if not managed responsibly. To prepare for uncertainty, organizations must balance automation with human oversight, ensuring that AI and robotics augment rather than replace human potential. By addressing these challenges thoughtfully, companies can harness the full potential of AI and robotics while creating a future where humans and machines collaborate seamlessly for the betterment of the workforce and society at large.

References

Alkudah, Noor & Almomani, Tareq & Sarairah, Safa. (2024). Incorporating Artificial Intelligence in Human Resources Management in Small and Medium Companies: Descriptive Study. International Journal of Academic Research in Business and Social Sciences. 14. 146-169.

Chang, Xinyu. (2023). Gender Bias in Hiring: An Analysis of the Impact of Amazon's Recruiting Algorithm. Advances in Economics, Management and Political Sciences. 23. 134-140. 10.54254/2754-1169/23/20230367.

Deloitte Insights. (2023). *Global Workforce Trends*. Retrieved from https://deloitte.com

European Commission. (2023). *AI Regulation and GDPR Compliance*. Retrieved from https://europa.eu

Gartner. (2023). *The Future of HR: AI and Robotics*. Gartner Reports.

International Federation of Robotics. (2023). *World Robotics Report 2023*. Retrieved from https://ifr.org

McKinsey & Company. (2024, May 30). *The state of AI in early 2024: Gen AI adoption spikes and starts to generate value*. McKinsey & Company. https://www.mckinsey.com/capabilities/quantumblack/our-insights/the-state-of-ai

McKinsey & Company. (2024). *Corporate Functions CXO Survey*. Retrieved from mckinsey.com.

Mercer. (2024). *Generative AI Will Transform Three Key HR Roles.* Retrieved from https://www.mercer.com/insights/people-strategy/future-of-work/generative-ai-will-transform-three-key-hr-roles

PwC. (2023). *AI Ethics and Bias Survey*. Retrieved from https://pwc.com

World Economic Forum. (2023). *Future of Jobs Report 2023*. Retrieved from https://weforum.org