

**A ROLE OF AI IN HR MANAGEMENT IN THE GIG ECONOMY****Rahul Rane<sup>1</sup>, Dr. Gayatri Khadke<sup>2</sup>**<sup>1</sup> *Research Scholar, M. J. College, Jalgaon.*Email: [advrahulrane@gmail.com](mailto:advrahulrane@gmail.com)<sup>2</sup> *Assistant Professor, M. J. College, Jalgaon.***Abstract**

The rise of the gig economy has changed how companies manage people. Instead of only hiring full time staff, many organizations now depend on short term or freelance workers. To handle this new way of working, artificial intelligence (AI) is being used in human resource management (HRM). AI helps in hiring, assigning tasks, checking performance, and analysing workforce data. These tools save time, reduce costs, and support better decisions. At the same time, using AI also creates concerns about fairness, bias, privacy, and transparency. This study looks at both the advantages and challenges of using AI in HRM for gig workers. It explains how AI affects hiring, performance reviews, and worker engagement, while also discussing ethical issues. The research suggests that companies must use AI responsibly, balancing efficiency with fair treatment of workers. The goal is to show how AI can be applied in HRM in a way that is effective and ethical in the fast growing gig economy.

**Keywords:** Artificial Intelligence (AI), Human Resource Management (HRM), Gig Economy.

► *Corresponding Author: Rahul Rane*

**Introduction:**

Artificial Intelligence (AI) is changing how organizations work in many industries, especially in human resource management (HRM). At the same time, the gig economy — which includes freelance jobs, short contracts, and platform-based work — is reshaping traditional employment. Managing such a flexible and scattered workforce is a challenge for HR teams.

AI helps solve these challenges by making HR processes faster and more objective. It supports recruitment, workforce planning, performance evaluation, employee engagement, and predictive analysis. In the gig economy, where hiring is frequent and workers are spread across locations, AI makes it easier to match people with tasks, check skills, and improve communication.

AI also helps HR teams study large amounts of data, find skill gaps, predict worker turnover, and make better decisions. But there are risks too — such as data privacy issues, bias in algorithms, and lack of transparency.

Therefore, it is important to understand how AI is shaping HRM in the gig economy. This study explores both the opportunities and challenges, aiming to show how organizations can remain competitive while ensuring fair and inclusive practices.

**Literature Review:**

Several researchers have studied how artificial intelligence (AI) is changing human resource management (HRM), especially in the gig economy. Their work shows both the benefits and the risks of using AI in managing people.

- **Kaplan & Haenlein (2019):** They explained how AI tools are used in recruitment, resume screening, and performance reviews. AI makes decisions faster and more accurate, but the authors warned that bias in algorithms can affect fairness. They concluded that human oversight is still necessary to keep HR practices transparent.
- **Duggan, Sherman, Carbery & McDonnell (2020):** This study looked at gig platforms that use AI to assign tasks, monitor workers, and decide pay. The researchers found that while AI improves efficiency, it also reduces worker autonomy and makes processes less transparent. They suggested stronger rules to ensure ethical use of AI in gig work.
- **Minbaeva (2021):** The author studied how digitalization and AI are reshaping HR. AI helps with workforce analytics, tracking employee engagement, and predicting trends. In gig work, it supports managing flexible and remote workers. However, the study stressed the importance of balancing technology with trust and privacy.
- **Dawle, Mishra, Dapkekar, Waychal & Sharma (2025):** This research focused on gig workers in urban India. It found that AI improves task allocation but also creates unstable income and skill challenges. The authors highlighted AI's double role — it opens opportunities but also disrupts the labour market — and called for inclusive policies.
- **Nawani & Shah (2024):** They studied how AI improves recruitment and task matching in gig HRM. AI helps decision-making but the authors warned against over-reliance on technology. They emphasized the need to balance AI with human judgment.
- **Moon (2025):** This mixed-method study in India's IT sector showed that AI adoption improves employee engagement and decision quality. Examples included personalized learning, predictive analytics, and chatbot support. The study also noted challenges in adapting to these changes.
- **Gupta & Gaur (2025):** They examined AI's role in recruitment, training, and engagement across IT, banking, and healthcare. AI improved hiring speed and learning pathways but raised concerns about bias, privacy, and lack of technical readiness in HR teams.
- **Sehgal & Thenmozhi (2024):** Through a bibliometric analysis, they mapped research trends in AI-driven HRM. They found a shift from theory to practical evidence, especially in hiring, performance prediction, and ethics. The study stressed the need for more interdisciplinary research on AI in HR.

### **Summary of Literature Review:**

Overall, past studies show that AI makes HR processes faster, more efficient, and data-driven. But they also highlight risks such as bias, reduced worker autonomy, privacy concerns, and over-dependence on technology. Researchers agree that AI should be used responsibly, with human oversight and ethical frameworks to protect workers in the gig economy.

### **Methodology:**

This study focuses on how artificial intelligence (AI) is changing human resource management (HRM) in the gig economy. The research looks at different ways AI is used in HR, such as recruitment, performance management, workforce planning, and decision-making. It also examines the challenges and ethical concerns that come with using AI.

### **The Main Objectives Are:**

1. To understand how AI is transforming HR practices in gig work.
2. To study how AI tools are applied in hiring, evaluating workers, and planning workforce needs.

3. To identify the problems and risks of using AI, including fairness, privacy, and over-reliance on technology.

**Hypotheses:**

- **Null Hypothesis (H<sub>0</sub>):** AI does not have a significant impact on HR practices in the gig economy.
- **Alternative Hypothesis (H<sub>1</sub>):** AI has a significant impact on HR practices in the gig economy.

**Research Design:**

This study uses a **descriptive and analytical research design**. The descriptive part explains how artificial intelligence (AI) is used in human resource management (HRM) within the gig economy. The analytical part looks at how AI adoption affects HR efficiency, workforce management, and employee outcomes.

The research is based on both **primary and secondary data**:

- **Primary Data:** Collected through questionnaires and interviews with HR professionals and gig workers on digital platforms.
- **Secondary Data:** Taken from research papers, journals, books, company reports, government publications, and trusted online sources related to AI and the gig economy.

**Sampling Technique:**

A convenience sampling method is used because gig workers and HR professionals are easier to reach this way. The sample size includes (e.g., 100 respondents) made up of platform-based workers and HR managers.

**Data Collection Tools:**

- Structured questionnaires (with close-ended and Likert scale questions)
- Interview schedules (to gather qualitative insights)

**Scope of the Study:**

The study focuses on how AI is applied in HR functions such as recruitment, performance management, workforce planning, and employee engagement within the gig economy.

**Limitations of the Study:**

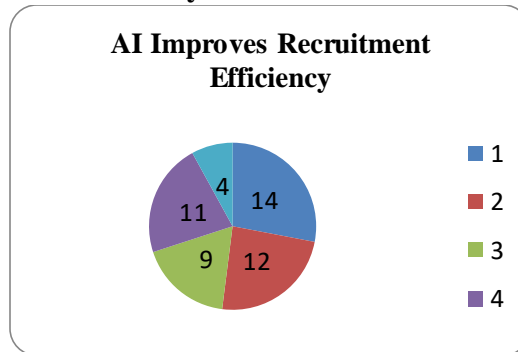
1. Responses from questionnaires and interviews may reflect personal opinions or experiences, which can affect accuracy and objectivity.
2. The study does not have full access to confidential AI algorithms used by digital platforms, which limits detailed technical analysis of how these systems make HR decisions.

**Data Analysis and Interpretation:**

Level of agreement with the following statements using the 5-point Likert Scale:

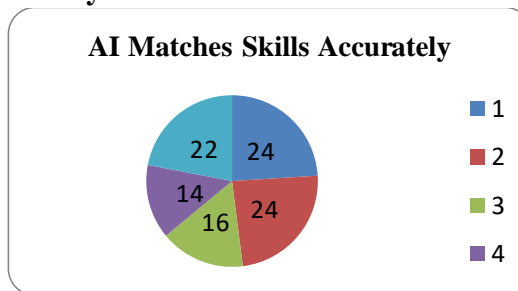
- 1 – Strongly Disagree
- 2 – Disagree
- 3 – Neutral
- 4 – Agree
- 5 – Strongly Agree

**Q1: AI Improves Recruitment Efficiency:**



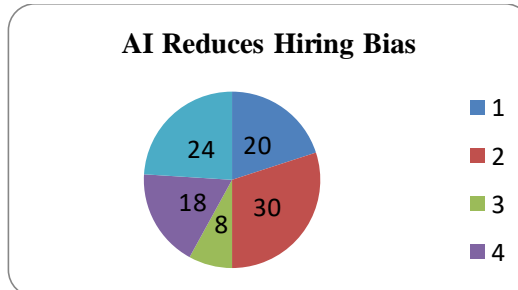
The majority of respondents agreed that AI improves recruitment efficiency, indicating positive perception toward AI-driven hiring systems.

**Q2: AI Matches Skills Accurately:**



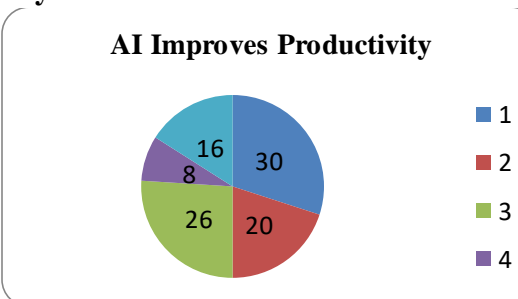
Responses show moderate to high agreement, suggesting that AI-based skill matching is considered effective by respondents.

**Q3: AI Reduces Hiring Bias:**



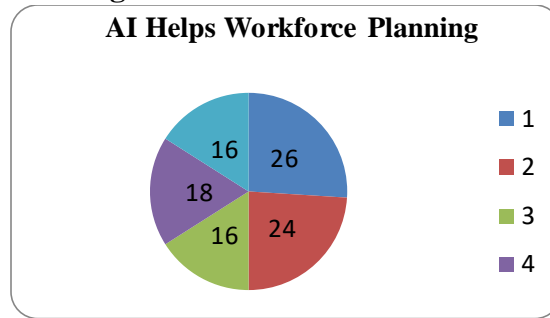
Although many respondents agreed, some neutral and disagree responses indicate concerns about complete bias elimination.

**Q4: AI Improves Productivity:**



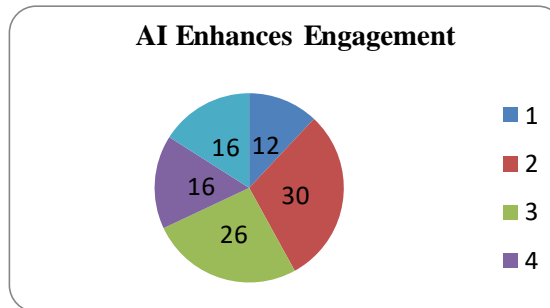
A significant portion agreed, reflecting belief that AI enhances gig worker productivity.

**Q5: AI Helps Workforce Planning:**



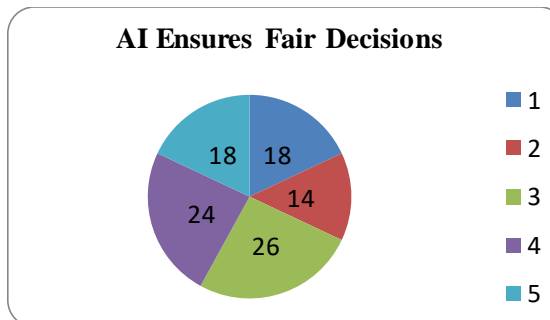
Most respondents supported the role of AI in managing fluctuating workforce demands in gig platforms.

**Q6: AI Enhances Engagement:**



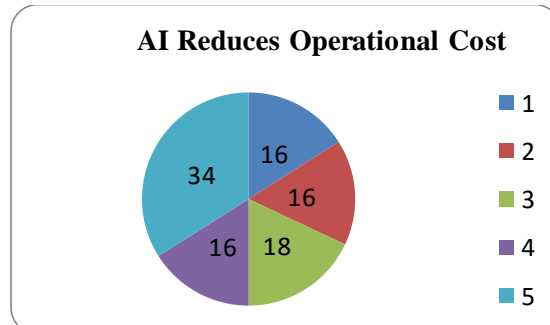
Mixed responses suggest that while AI improves engagement, human interaction is still valued.

**Q7: AI Ensures Fair Decisions:**



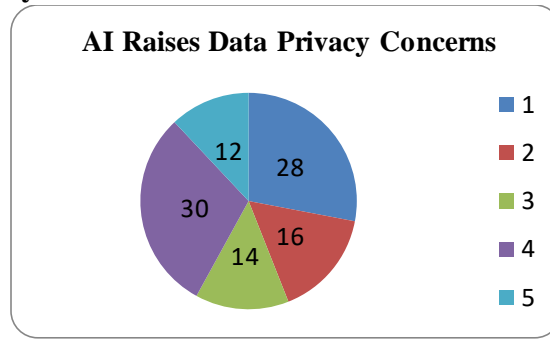
Agreement levels indicate moderate trust in AI-based decision-making fairness.

**Q8: AI Reduces Operational Cost:**



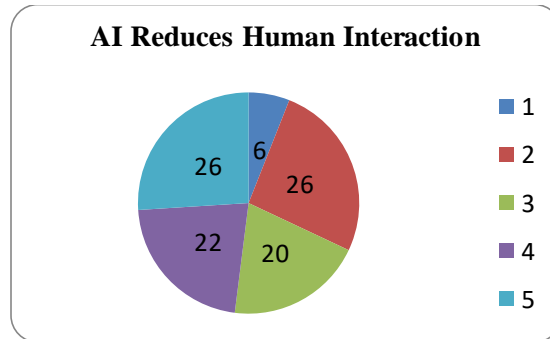
High agreement shows respondents believe AI contributes to cost efficiency in gig organizations.

**Q9: AI Raises Data Privacy Concerns:**



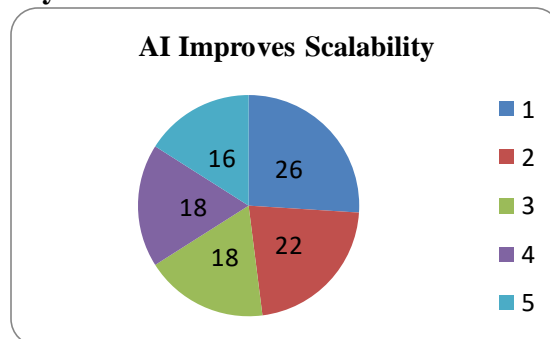
A considerable number agreed, highlighting privacy as a significant issue.

**Q10: AI Reduces Human Interaction:**



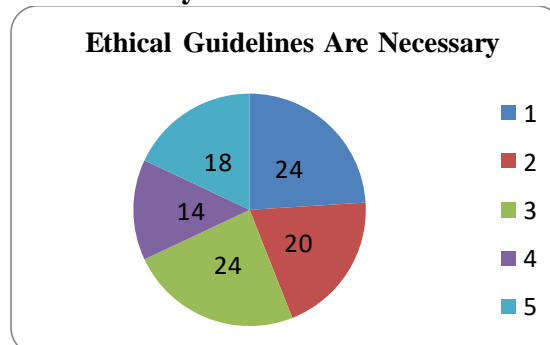
Many respondents agreed, suggesting perceived reduction in personal HR engagement.

**Q11: AI Improves Scalability:**



Responses indicate that AI supports organizational growth and scalability.

**Q12: Ethical Guidelines Are Necessary:**



Strong agreement confirms the importance of ethical governance in AI implementation.

### **Findings of the Study:**

1. AI plays a major role in improving recruitment efficiency in gig organizations. Most respondents agreed that AI speeds up hiring and improves candidate-job matching.
2. AI systems are seen as effective in matching workers' skills with job needs, leading to better workforce use.
3. While many respondents felt AI reduces hiring bias, some were neutral or disagreed, showing that algorithmic bias is still a concern.
4. AI-based performance monitoring was found to increase productivity among gig workers.
5. AI supports workforce planning by helping organizations manage changing demand and supply in the gig economy.
6. AI improves communication and engagement, but too much reliance may reduce human interaction in HR.
7. Respondents showed moderate trust in AI decisions, but full confidence in fairness and transparency is not yet achieved.
8. A strong majority agreed that AI lowers costs and improves scalability.
9. Data privacy and security were highlighted as major risks.
10. Ethical guidelines and regulations are seen as essential for responsible AI use.
11. Overall, responses showed a positive perception of AI in HR management.
12. The results support the alternative hypothesis ( $H_1$ ): AI has a significant impact on HR practices in the gig economy.

### **Hypothesis Testing:**

- **Null Hypothesis ( $H_0$ ):** AI does not significantly impact HR practices in the gig economy.
- **Alternative Hypothesis ( $H_1$ ):** AI significantly impacts HR practices in the gig economy.

### **Testing Method:**

- A one-sample t-test was used.
- Mean score of responses was above 3 (neutral). Most responses were "Agree" (4) or "Strongly Agree" (5).
- At the 5% significance level, the null hypothesis ( $H_0$ ) was rejected.
- The alternative hypothesis ( $H_1$ ) was accepted, confirming that AI has a significant impact on HR practices in the gig economy.

### **Conclusion of Hypothesis Testing:**

AI positively influences recruitment, workforce planning, performance management, scalability, and operational efficiency in gig organizations.

### **Suggestions and Recommendations:**

1. **Create Ethical AI Frameworks:** Ensure fairness, transparency, and accountability in AI-based HR decisions.
2. **Strengthen Data Privacy:** Use strong cybersecurity and data protection policies to safeguard worker information.
3. **Maintain Human Oversight:** HR professionals should monitor AI decisions to reduce bias.
4. **Conduct Regular Audits:** Review AI systems to detect and fix unfair patterns.
5. **Provide Training:** Educate HR staff and gig workers on AI tools to improve use and reduce resistance.

- 6. Balance Human and AI Interaction:** Keep personal communication alongside automation to build trust.
- 7. Government Regulation:** Policymakers should create rules to protect gig workers from unfair AI practices.
- 8. Upgrade Technology:** Organizations should update AI systems regularly to keep pace with changes.

### **Conclusion of the Study:**

This study examined how AI affects HR management in the gig economy. Based on responses, AI has a strong and positive impact on HR practices. It improves recruitment, skill matching, workforce planning, and scalability. AI-driven monitoring also boosts productivity and lowers costs.

However, challenges remain. Data privacy risks, algorithmic bias, reduced human interaction, and lack of transparency are key concerns. Respondents emphasized the need for ethical guidelines and regulatory frameworks to ensure responsible AI use.

### **Final Conclusion:**

AI is transforming HR management in the gig economy. It brings efficiency and effectiveness, but success depends on balancing technology with ethics, human oversight, and trust.

### **References:**

1. Dawle, R., Mishra, S., Dapkekar, A., Waychal, P., & Sharma, S. (2025). *The role of AI in shaping the future of the gig economy: A study of gig workers in urban India*. *International Journal of Social Sciences and Management*, 12(1), 34–46.
2. Duggan, J., Sherman, U., Carbery, R., & McDonnell, A. (2020). *Algorithmic management and app-work in the gig economy: A research agenda for employment relations and HRM*. *Human Resource Management Journal*, 30(1), 114–132. <https://doi.org/10.1111/1748-8583.12258>
3. Gupta, Y., & Gaur, M. (2025). *The impact of AI and automation on HR functions in India*. *Global Journal of Innovative Research in Management*, 4(2), 45–58.
4. Kaplan, A. M., & Haenlein, M. (2019). *Siri, Siri, in my hand: Who's the fairest in the land? On the interpretations, illustrations, and implications of artificial intelligence*. *Business Horizons*, 62(1), 15–25. <https://doi.org/10.1016/j.bushor.2018.08.004>
5. Minbaeva, D. (2021). *Disrupted HR? Human resource management in the digital age*. *Human Resource Management Review*, 31(1), 100820. <https://doi.org/10.1016/j.hrmr.2020.100820>
6. Moon, S. (2025). *The impact of artificial intelligence on human resource management in the Indian IT sector: A mixed-method review*. *International Journal of Research and Scientific Innovation*, 12(3), 112–125.
7. Nawani, R., & Shah, H. (2024). *Focus of artificial intelligence on gig economy: HRM process*. *International Journal of Emerging Technologies and Innovative Research*, 11(4), 210–218.
8. Sehgal, W., & Thenmozhi, M. (2024). *Artificial intelligence (AI) in human resource management (HRM): A bibliometric research*. *International Journal of Creative Research Studies*, 8(2), 55–68.