

AI-Enhanced HR Skills: Empowering HR Professionals with Data-Driven Decision-Making

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Abstract

These studies suggest that Artificial Intelligence (AI) is transforming Human Resource (HR) management by equipping professionals with data-driven decision-making capabilities, optimizing talent management, and automating repetitive tasks. AI enhances HR analytics by enabling efficient data collection, storage, and predictive insights, allowing HR professionals to anticipate workforce trends and improve strategic planning. Its impact is evident in recruitment, performance management, and employee engagement, where AI-driven tools provide personalized insights and streamline processes. Moreover, AI facilitates personalized learning and development programs, bridging skill gaps and aligning employee growth with organizational objectives. Despite its advantages, AI adoption in HR raises ethical and data privacy concerns, necessitating responsible AI governance, transparency, and regulatory compliance. As AI continues to reshape the HR landscape, professionals must develop AI literacy, data analysis expertise, and strategic thinking to effectively collaborate with AI systems and drive sustainable organizational success.

Keywords: AI-Enhanced HR, Data-Driven Decision-Making, Human Resource Management (HRM), Strategic HR Planning, AI-Driven Talent Management, Ethical AI in HR

Introduction

The integration of artificial intelligence (AI) into human resource (HR) management is revolutionizing the field by empowering HR professionals with data-driven decision-making capabilities. AI technologies are transforming traditional HR practices by enhancing efficiency, accuracy, and strategic planning.

Through AI-driven analytics, HR departments can optimize workforce management, streamline recruitment processes, and improve performance management, ultimately fostering a more agile and competitive workforce.

AI's ability to manage and analyze vast volumes of employee data facilitates more informed decision-making, through which HR professionals can tailor programs and policies to meet the unique requirements of employees. AI facilitates this shift from administrative to strategic functions through automation, predictive insights, and personalization of employee experience.

However, But AI adoption in HR also has its drawbacks, including ethical issues and HR professionals' upskilling to utilize these technologies effectively. As more organizations adopt AI-based HR systems, responsible usage of data and ethical AI governance take center stage in defining the future of HR practices.

Review of Literature

Surendar Vaddepalli, October 2023 – The Future of Work: Implications of Artificial Intelligence on HR Practices AI is transforming HR by enhancing recruitment, talent management, and decision making. This study highlights AI's potential to improve efficiency and reduce bias while addressing ethical concerns like data privacy. It emphasizes the need for HR professionals to adopt AI responsibly, using data-driven insights for better workforce management.

Aydin, O., et al., 2024 – Artificial Intelligence, VR, AR and Metaverse Technologies for Human Resources Management This research evaluates the utilization of emerging technologies, including AI, Virtual Reality (VR), and Augmented Reality (AR), within HR management. The study highlights how these technologies can automate HR processes, enhance data analysis, and support strategic decision-making, thereby empowering HR professionals in a technologically evolving landscape.

Raghda Abulsaoud Ahmed Younis & Heba Mohamed Adel, 2020 – Artificial Intelligence Strategy, Creativity-Oriented HRM, and Knowledge-Sharing Quality This study explores the relationship between AI strategy, creativity-oriented HRM, and knowledge-sharing quality in AI-powered businesses. Findings suggest that AI strategy enhances knowledge sharing and HRM practices, which in turn drive innovation and organizational performance. The research highlights the need for integrating AI with HR strategies to foster creativity and improve business outcomes.

Sarah Bankins et al., 2022 – AI Decision Making with Dignity? Contrasting Workers' Justice Perceptions of Human and AI Decision Making in HRM This study looks at how workers see fairness in HR choices made by AI versus those made by humans. Results show that while people think AI decisions are based on data and free from bias, they also feel these choices lack emotional smarts and a personal touch. Workers are more okay with good news from AI, but bad news from AI makes them feel less human and less trusting. The study points out we need to put AI to use in an ethical way to keep things fair and keep workers' trust.

Noor M. Alkudah et al., March 2024 – Incorporating Artificial Intelligence in Human Resources Management in Small and Medium Companies This research looks at how small and medium-sized businesses (SMEs) in Jordan are using AI in their HR departments. The team sent out surveys to gather information. They found that not many companies are using AI yet. Most people who answered said they don't use AI for hiring new employees. AI could make things work better, but there are some problems. Companies might not have the right tech or support to use AI. The researchers say we need to study this more and work with other countries to get the most out of AI in HR.

Alabi, K.O., 2024 – Predictive Analytics in HR: Leveraging AI for Data-Driven Decision-Making This study looks into how AI and predictive analytics blend with HR processes, showing how companies can use data to make choices that result in better hiring more engaged employees, and improved work output. The research stresses how crucial it is to analyze data in real-time and predict future workforce needs.

Nosratabadi, S., et al., 2022 – Artificial Intelligence Models and Employee Lifecycle Management: A Systematic Literature Review This systematic review examines the use of AI models at various phases of employee lifecycle management, such as recruitment, onboarding, retention, and offboarding. The results show that AI algorithms such as Random Forest and Support

Vector Machines are common in optimizing HR decision-making, though the research shows that the area is in its nascent stages and needs more investigation.

Mohiuddin, K., et al., 2023 Retention Is All You Need This study introduces the HR Decision Support System (HR DSS), which employees explainable AI to address employee attrition. By analyzing factors contributing to turnover, the system provides HR professionals with actionable insights to improve retention strategies, demonstrating the potential of AI in enhancing data-driven HR decision-making.

Research Methodology

This study adopts an empirical research approach, utilizing a structured questionnaire to gather insights from HR professionals across various industries. The questionnaire is designed to assess perceptions, experiences, and challenges associated with AI adoption in HR decision-making. A total of 124 responses were collected, ensuring a diverse representation of HR professionals. The data is analyzed using statistical techniques, including ANOVA, regression analysis and t-test, to evaluate the impact of AI on HR decision-making effectiveness. These methods help identify patterns, relationships and potential differences in AI perception across various demographic and organizational factors.

Type of Research

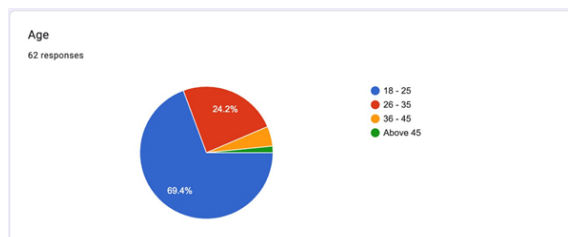
This study is empirical in nature, relying on primary data collected directly from HR professionals. It follows a quantitative research design, enabling a systematic and objective analysis of AI's role in HR. The study aims to measure AI's effectiveness in decision-making by using numerical data and statistical tools, ensuring reliable and generalizable results.

Type of Sampling

To ensure a fair representation of HR professionals across different industries, this study employs Simple Random Sampling. This approach eliminates selection bias and enhances the credibility of findings by allowing every HR professional an equal chance of participation. A total of 124 responses were gathered, providing diverse perspectives on AI adoption, its perceived benefits and challenges in HR practices. This representative sample ensures that the findings can be applied to a broader HR community, offering meaningful insights into AI's impact on the industry.

Data Analysis and Interpretation

Age Distribution

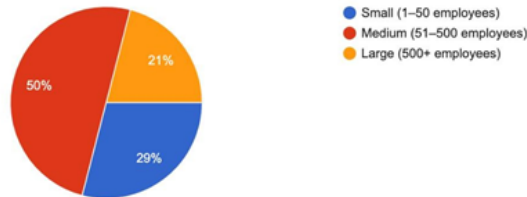


The majority of respondents (69.4%) are between 18-25 years old, followed by 26-35 years old (24.2%). A smaller portion belongs to the 36-45 (orange) and above 45 (green) age groups, making up a minimal share of the sample.

Organization Size Distribution

What is the size of your organization?

52 responses

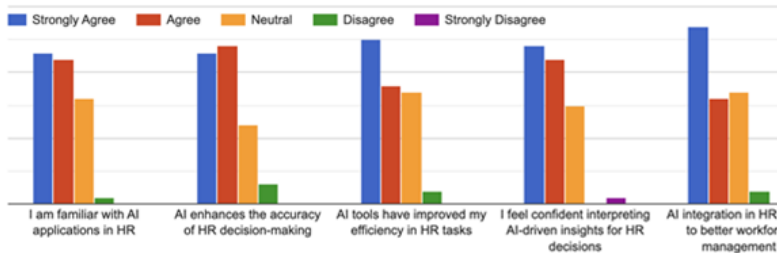


- 50% of respondents belong to medium-sized organizations (51–500 employees).
- 29% are from small organizations (1–50 employees).
- 21% work in large organizations (500+ employees).

This indicates that a majority of respondents come from mid-sized companies, with a fairly even distribution between small and large organizations.

Perception of AI in HR Decision-Making

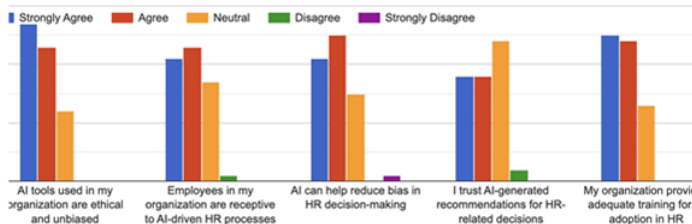
Perception of AI in HR Decision-Making



Most respondents have a positive perception of AI in HR. Many strongly agree or agree that they are familiar with AI, that it enhances accuracy, and that it improves efficiency. Confidence in interpreting AI-driven insights is slightly lower, indicating a potential need for training. AI integration is widely seen as beneficial for workforce management.

Ethical Considerations and Acceptance of AI in HR

Ethical Considerations and Acceptance of AI in HR



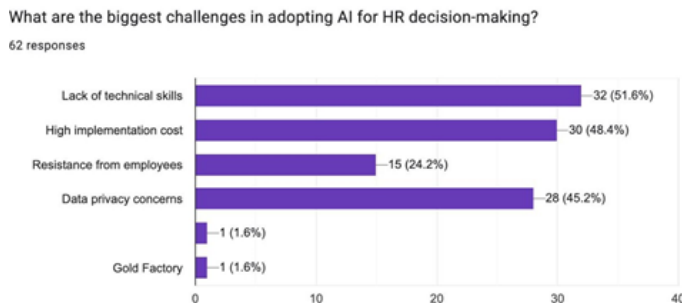
While AI is largely accepted in HR, concerns remain about ethics and bias. Many respondents believe AI can reduce bias and that employees are receptive to AI-driven processes. However, trust in AI-generated recommendations and the adequacy of training for AI adoption remain areas for improvement.

AI-Driven HR Functions



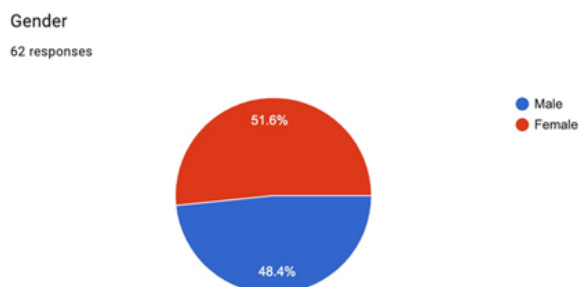
Recruitment & Hiring is the most AI-driven HR function (56.5%), followed by Performance Management (43.5%) and Workforce Analytics (38.7%). Employee Engagement and Learning & Development also see moderate AI adoption, while 11.3% report no AI implementation in HR at all.

Challenges in AI Adoption for HR



The biggest challenge is a lack of technical skills (51.6%), followed by high implementation costs (48.4%) and data privacy concerns (45.2%). Employee resistance (24.2%) is also a factor, though less significant. Two respondents provided unrelated or unclear answers (“Gold Factory”).

Interpretations of the Three Statistical Tests: ANOVA (Gender & AI Perception of Accuracy)

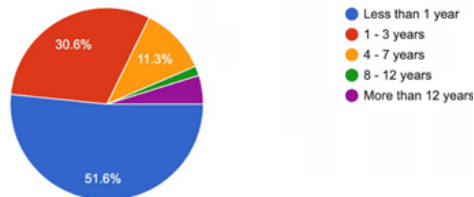


- F-statistic: 5.19
- p-value: 0.026 (Significant, $p < 0.05$)
- Interpretation: Since the p-value is below 0.05, we conclude that gender has a statistically significant impact on the perception of AI’s accuracy in HR decision-making. This means that male and female HR professionals perceive AI’s accuracy differently.

Regression (HR Experience & AI Implementation)

Years of Experience in HR

62 responses

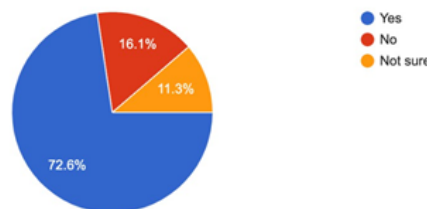


- Coefficient for Experience: 0.0122 (Very small impact)
- p-value: 0.965 (Not Significant, $p > 0.05$)
- Interpretation: The high p-value (0.965) indicates that years of experience in HR does not significantly predict whether an organization adopts AI. This suggests that AI implementation is influenced more by organizational factors rather than individual HR experience levels.

T-Test (AI Efficiency Perception: AI-using vs Non-AI-using Organizations)

Has your organization implemented AI tools in HR processes

62 responses



- t-statistic: 1.42
- p-value: 0.169 (Not Significant, $p > 0.05$)
- Interpretation: Since the p-value is greater than 0.05, we conclude that there is no statistically significant difference in efficiency perception between AI-adopting and non-AI-adopting organizations. This means that employees in both types of organizations report similar views on whether AI has improved their efficiency.

Conclusion

The survey results indicate that AI is increasingly being used in HR functions, with recruitment and hiring (56.5%) being the most AI-driven process. Other areas such as performance management (43.5%) and workforce analytics (38.7%) also show significant AI adoption. However, 11.3% of organizations do not use AI in HR at all, suggesting that some companies are still hesitant or face barriers in AI adoption.

The major challenges in adopting AI for HR decision-making include lack of technical skills (51.6%), high implementation costs (48.4%), and data privacy concerns (45.2%). Resistance from employees (24.2%) also presents a notable barrier, indicating that AI adoption is not just a technical issue but also a cultural one.

Demographically, 69.4% of the respondents are aged 18-25, showing that younger professionals are more engaged in discussions around AI in HR. Additionally, 50% of the organizations are medium-sized (51-500 employees), which may indicate that mid-sized businesses are more proactive in adopting AI compared to smaller and larger firms.

Limitations

- The survey had only 124 responses, which may not be a sufficiently large or diverse sample to generalize findings across all industries.
- The results do not distinguish between different industries, where AI adoption and challenges might vary significantly.
- The majority of respondents belong to the 18-25 age group, which may not fully represent the perspectives of more senior HR professionals or decision-makers.
- While the survey highlights where AI is being used, it does not assess the effectiveness or satisfaction levels of AI implementation.

Suggestions

- Organizations should provide AI-related training programs for HR professionals, as lack of technical skills (51.6%) is the top challenge.
- To reduce fear and resistance to AI adoption, companies should focus on transparency, employee involvement and communication.
- Since high implementation costs (48.4%) are a concern, organizations can explore scalable, cloud-based or AI-as-a-service models to reduce upfront investment.
- Companies need to ensure compliance with data protection regulations and implement strong security frameworks to tackle data privacy concerns (45.2%).
- Future surveys should include a larger and more diverse sample, segment responses by industry, and assess AI effectiveness in HR decision-making.

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