

REVOLUTIONISING HUMAN RESOURCES: AN ANALYSIS OF ARTIFICIAL INTELLIGENCE APPLICATIONS IN HR PRACTICES

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Abstract:

Purpose: Artificial Intelligence technologies have become a necessary part of the management system in the current situation. This paper explores the transformative influence of Artificial Intelligence (AI) on Human Resources (HR) practices in service sector.

Method: This study's methodology, which is mostly dependent on secondary data, is a descriptive review study. The study investigated a wide range of scholarly works pertaining to HRM and artificial intelligence (AI).

Finding & Conclusion: AI has radically transformed HR sector through innovative methods to carry out important HR functions. As AI technologies continue to evolve, they are reshaping various functions of HR such as recruitment and talent management, training & development, benefit administration, employee engagement and decision-making.

This research aims to explore the changes brought due to the application of artificial intelligence in many aspects of HRM as well as the factors influencing the efficacy of artificial intelligence. This paper examines the positive and challenging aspects of integrating AI into HR practices and discusses the implications for the future of work.

Keywords: Artificial Intelligence, Human Resources Practices.

1. Introduction

Artificial Intelligence (AI) technologies are bringing about a significant revolution in the field of human resources (HR) management. The strategic application of artificial intelligence (AI) in HR has become a driver for change as organisations work to adapt to the demands of the contemporary corporate environment. The objective of this research is to investigate and analyze the complex effects of AI on several facets of HR procedures.

Artificial Intelligence, encompassing machine learning, natural language processing, and advanced analytics, has become an integral part of organizational strategies. In the context of HR, AI holds the potential to revolutionize the traditional processes and enhance decision-making, to improve the overall employee experience. The significance of this transformation is

underscored by its ability to address longstanding challenges in HR management and contribute to the strategic goals of organizations.

As we continue our investigation, it becomes clear that artificial intelligence (AI) is changing HR processes including hiring, onboarding, performance reviews, employee engagement, training, and predictive analytics. But there are certain complications to this change. A lot of thought needs to be given to issues like algorithmic bias, data protection, and the requirement that HR professionals upgrade their AI skills.

Ultimately, this research endeavors to provide insights into the current state of AI in HR, its practical applications, and the implications for the future of HR management. By doing so, we aim to equip organizations, HR practitioners, and scholars with a comprehensive understanding of the role AI plays in shaping the modern HR landscape and the strategic imperatives for harnessing its potential.

1.1 Theoretical Framework

John McCarthy initially presented artificial intelligence (AI) at MIT in 1950. Computer science's artificial intelligence (AI) field gives machines human-like thought and behavior. It is now used in many industry verticals and has grown in significance within HR. Jobs and organisations are changing as a result of AI and block chain, especially in the human resource management sector. AI shortens the time needed to find talent and makes it simpler to spot data patterns. Additionally, it helps HR managers anticipate employee behaviour, make work-related decisions, and cut down on administrative duties. (Kaur & Kaur, 2022) The 21st century witnessed significant progress in machine learning, with a shift towards data-driven approaches. Support vector machines, decision trees, and neural networks gained prominence. AI continues to evolve rapidly, with ongoing developments in natural language processing, computer vision, reinforcement learning, and other subfields. The study examines the adoption of AI in HR recruitment and selection, focusing on the attitudes of HR leaders towards AI adoption.(Hmoud, 2021)

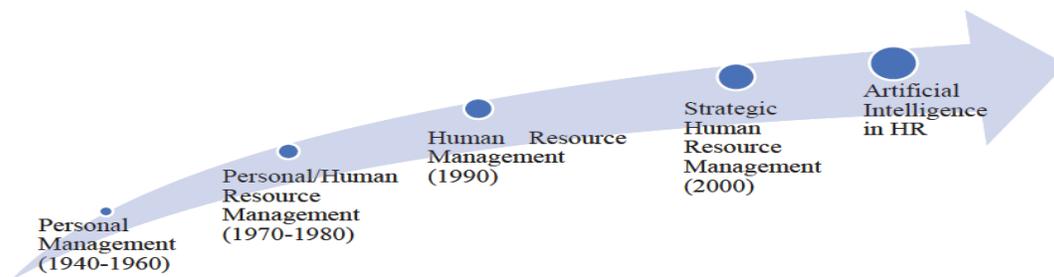


Fig 1: Evolution of HR over a period of time (Source: (Kaur & Kaur, 2022))

1.2 Research Objectives

1. To review the work related to transformation of traditional HR to modern HR.
2. To explore the role of artificial intelligence in human resource practices.
3. To study the advantages and challenges of artificial intelligence in human resource practices.

1.3 Research Methodology

This study is using descriptive research as its research design. Secondary data were employed by the researcher in this analysis. The study looks at the literature that has been published in the last

ten years to determine the changes that have been brought about by the application of artificial intelligence in different areas of HRM.. The secondary data came from survey reports released by different research organisations, online portals, blogs on AI & HR, research papers, and published materials.

2. Literature Review

Origin of HRM

Human Resource Management (HRM) has its roots in various theories and practices, with Peter F. Drucker first using the term in 1954. Managing human resources is a complex and painful process, with a thorough understanding of its evolution from personnel management.

The Glided Era:

Elton Mayo's work at Western Electric's Hawthorne plant influenced HRM, with Chester Barnard's "The Functions of the Executive" and Dale Yoder's "Personnel Management" promoting cooperation and communication. Douglas McGregor's "The Human Side of Enterprise" and Jack J. Phillips' "Human Resource Management: A General Manager's Perspective" emphasized HR's strategic role.

Post World War II (1945-1960):

Post-World War II, industrial relations became a priority due to labor shortages and unrest. The Human Relations Movement emphasized understanding employee needs for workplace satisfaction. Personnel management emerged, focusing on recruitment, training, and compliance with labor laws. The postwar economic boom increased competition for talent, emphasizing the strategic importance of effective human resource practices.

Social Issues Era (1963–1980):

The Civil Rights Movement in the 1960s influenced HRM, leading to increased efforts to address discrimination and promote diversity. The late 1970s saw a shift towards strategic HRM, with HR professionals expanding to strategic planning, talent management, and organizational development. Organizations recognized the strategic importance of HR in achieving business goals, managing economic pressures, and focusing on employee productivity, outsourcing HR functions, and promoting continuous improvement through TQM.

ERP and Strategic HRM (1990- 2010):

Strategic HRM is crucial in modern organizations due to the growing importance of people management. It emphasizes the "best-fit" approach to HR resource deployment, focusing on forecasting future employee needs and availability. HR metrics are also essential, with software vendors like PeopleSoft, SAP, and Oracle developing integrated enterprise resource planning systems. Other vendors focus on specific HR functions.

“The Cloud” and Mobile Technologies (2010-Present)

Human Resource Information System (HRIS) has evolved from automating HR transactions to becoming a strategic partner. Big, integrated mobile systems with social networking features have replaced the more basic mainframe systems.

As HR technology evolves, organizations are adopting cloud-based HR systems, leveraging social networking and Web 2.0 tools. This presents challenges for HR professionals in managing data distribution across various devices and systems. Effective decision-making is crucial for organizational strategy implementation.(Binti Nurdin, 2019)

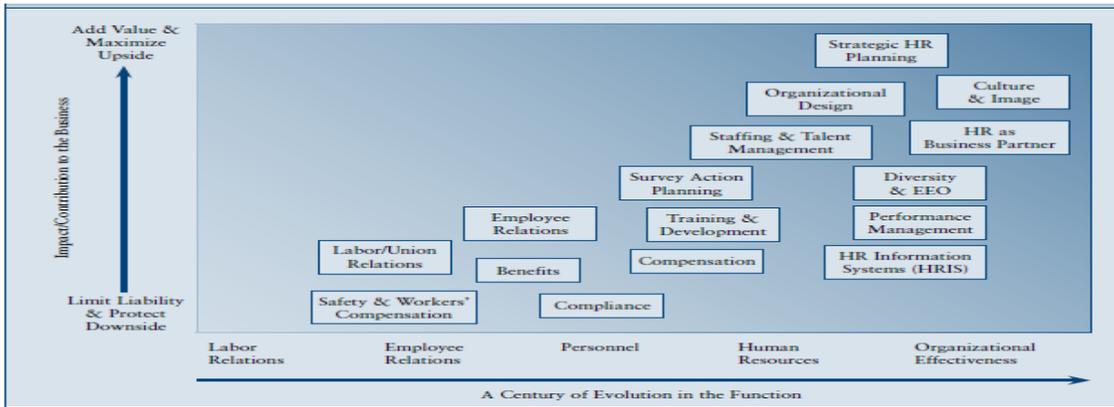


Fig 2: Evolution of HR Function (Sources : (Vosburgh, n.d.))

Over the past 100 years, the function of HR has evolved to include both transactional and value-added aspects. Lower-left accountabilities are hygiene factors that are not noticed but can be messed up, while upper-right accountabilities provide strategic advantages. The disparate ways in which organisations implement HR practices can result in missed opportunities to influence business outcomes. Staff on the upper right demands personal credibility and internal consulting skills, whereas staff on the lower left requires technical ability. This emphasizes the significance of building confidence and trust in HR.(Vosburgh, n.d.)

2.1 Artificial Intelligence (AI) and HR Practices (HRP).

. Artificial Intelligence aids in making informed decisions and achieving ongoing advancements. HRM strategy, which includes recruitment, selection, evaluation, development, and retention, is crucial for HRM. The study concluded that integrating AI into HRM functions can enhance functionality and reduce time spent on complex tasks, leading to increased efficiency and quality in HRM functions(Al-Jawder et al., 2023)

This study uses a mixed-method design to look into how Artificial Intelligence (AI) is affecting HR practices in UAE companies. The research identified beneficial effects of structured training and development processes, tactical performance appraisal, and AI integration. Training and development initiatives are required for a variety of enterprises as AI plays a critical role in

bringing HR services into the digital age.(Singh & Shaurya, 2021)

HR Policy	Before Artificial Intelligence	After Artificial Intelligence
Recruitment	<ul style="list-style-type: none"> • Time consuming • Biased decisions sometime(s) • Manual and Lengthy 	<ul style="list-style-type: none"> • Quality of hiring improves. • Automation leads in time savings. • Unbiased Decisions.
Training & Development	<ul style="list-style-type: none"> • Manual learning through experienced trainers. • Lengthy and time consuming programs. • Slow feedback. • Training cost was high. 	<ul style="list-style-type: none"> • Machine learning through AI customized learning programs. • Short and fast learning programs. • Real time feedback available. • Training cost is low now.
Performance Management	<ul style="list-style-type: none"> • Amount of information collected was less. • Time delay in measuring performances. • Chance of biasness. • Gender inequality. 	<ul style="list-style-type: none"> • Data collection from multiple sources. • Real time measurement available. • Elimination of all psychological biases. • Reduce gender parity.

Compensation & Benefits	<ul style="list-style-type: none"> • Unfair payment of wages. • Group rewarding • Delay in rewarding(s)/ yearly rewarding. • Large operational cost 	<ul style="list-style-type: none"> • Fair payment • Customized rewarding • Quick and flexible rewarding. • Cost reduction by using AI technology.
Retention	<ul style="list-style-type: none"> • Inability in addressing employee's needs. • Pay gaps. • Slow reaction time to retain and engage employees. 	<ul style="list-style-type: none"> • Machine based AI uses compensation analytics in addressing employee's needs. • Reduction in pay gaps by use of rules on education, experience, certifications and many more. • Quick and fast response to retain and engage employees.

Fig 3 – Comparison of AI's effects on different HR functions (Source- (Singh & Shaurya, 2021))

2.2 Artificial Intelligence and Recruitment and Hiring

HR machine learning on audio and video data, focusing on its applications in video-interview software, candidate sourcing, employee attrition, speech analysis in HR calls, and corporate conversational agents. The study discusses the recognition of features and emotions, traditional artificial vision problems, ethical issues, current research initiatives, future directions, and emerging trends in the field.(Fernandez-Martinez & Fernández, 2022). Research focuses on improving recruitment processes through innovation, with a focus on scientific advancements in selection representatives. Human touch in mobilization is diminishing.(Galanaki et al., 2019).Baxter (2018) predicts recruitment patterns and recommends analytical results to reduce speculating. AI is also suggested as a tool for competitiveness. This proposal investigates AI's role in recruitment.(Ihil S. Baron et al., 2018) The HR department provides crucial data for

organizational decisions, but human analysis is time-consuming. AI can help manage databases, streamline competency management, and monitor individual competencies, enabling smarter decision-making and improved efficiency. (Rana, 2019)

2.3 Artificial Intelligence and Training and Development

AI can enhance career development and training by creating specific employee plans and enhancing HR's training and tutoring capabilities. It can also be used as a tool for HR to understand employees' needs and tailor training programs. AI can also be used as a professional in business training, analyzing data and adjusting employee training conditions. (Peter. Cappelli, 2018) (Placeholder1)) This not only improves training effectiveness but also saves costs and enhances organizational effectiveness. Overall, AI can play a crucial role in HR and employee training. (Jerry Kaplan, 2016)

2.4 Artificial Intelligence and Employees Benefits

AI is being utilized in HR to reduce workload, improve efficiency, and reduce favoritism. It can help organizations select resumes and analyze job descriptions. AI also helps reduce employee redundancy by performing robotic tasks like data collection and reporting. Microsoft 365 is used to save time, while AI tools like Engazify, Obie and Niles, Wade&Wendy, and Duolingo are used for feedback, knowledge sharing, career advancement, and learning. (Yawalkar, 2019)

2.5 Artificial Intelligence and Employee Engagement

Organizations aim to maintain employee engagement by focusing on various aspects from role clarity to employee health and wellness programs. AI can help achieve these goals by providing customized learning, real-time queries about benefits, and virtual assistants. AI also facilitates unbiased feedback systems, enabling HR to set measurable objectives for each employee. It also helps manage open feedback and concerns through online surveys, analyzing millions of data points to predict engagement levels and performance levels.(George & Thomas, 2019)

2.6 AI tool for HR:

In 2016, HR tech startups secured 402 deals and \$2.2 billion in funding, primarily targeting recruitment and talent acquisition. AI solutions are increasingly used in job sourcing, interviewing, on-boarding, coaching, training, and employee service centers.(Panda, 2020)



Fig 4 : AI based solution for HR

EdApp is an AI HR tool that revolutionizes learning through a centralized training system. It focuses on performance management, employee compliance, and onboarding experiences. EdApp's course creator creates interactive micro learning courses, improving knowledge retention and employee engagement.



Fig 5: EdApp.

ChatGPT is an AI tool for HR, generating high-level content for various uses and simplifying HR tasks, making it a top choice for training.



Fig 6: ChatGPT

Kajabi's AI Creator Hub offers a suite of AI tools for creating course outlines, content, and social media content, powered by Open AI's GPT-3 model, ideal for HR training content delivery.

Google's Bard, a conversational AI tool, streamlines work and brainstorms with its PaLM 2 model, focusing on reasoning, language proficiency, and classification for HR collaboration. An AI learning app called Axonify is designed to help frontline employees with communications, operations, and learning.

IntelliHR is a comprehensive people management tool that streamlines employee data, automates processes, and provides goal management, talent retention, review, and performance trackers for a data-driven company culture.

AI-based software like Degreed, Memory.ai's Timely, Coassemble's People Management, and Cegid's AI-powered data analysis and assessment tools are useful for HR needs. Degreed improves employee learning experiences by suggesting personalized pathways and content. Memory.ai's workforce management system simplifies task management. Coassemble focuses on training materials, while Cegid aids in talent acquisition and skills development through seamless recruitment systems and performance management tools. *(10 Best AI Tools for Modern HR Needs in 2023 | EdApp, 2023)*

Application of tools in HR							
Traditional HR Tools	Function	Pros	Cons	Modern HR tools	Function	Pros	Examples
Paper-Based Records	Used for maintaining employee records, attendance, and performance reviews.	Simple to implement, no technology needed.	Time-consuming, prone to errors, difficult to organize, and insecure.	Human Resource Management Systems (HRMS)	Integrated software for managing HR activities, including payroll, benefits, recruiting, training, and performance evaluation.	Efficient, accurate, real-time data, easy to use, scalable, and secure.	SAP SuccessFactors, Workday, ADP.
Manual Payroll Systems	Calculating and distributing employee salaries.	Control over the process, no need for complex software.	Error-prone, inefficient, and time-consuming.	Applicant Tracking Systems (ATS)	Automating the recruitment process, from job postings to tracking applicants.	Streamlines hiring, reduces time-to-hire, improves candidate experience,	Greenhouse, Lever, Taleo.

						enhances tracking and reporting .	
Face-to-Face Interviews	Conducting interviews and hiring processes.	Personal interaction , better assessment of candidates ' soft skills.	Time-consuming, limited geographical reach, logistical challenges .	Employee Self-Service Portals	Allowing employees to manage their own HR-related tasks such as updating personal information, accessing pay stubs, and applying for leave.	Empowers employees, reduces administrative workload , and improves data accuracy .	BambooHR, Zenefits.
Physical Notice Boards	Disseminating information and updates.	Simple, no technology required.	Limited reach, not instantaneous, information can be outdated quickly.	Performance Management Software	Managing employee performance, setting goals, providing feedback, and conducting appraisals.	Continuous performance tracking, better alignment with organizational goals, enhanced feedback mechanisms.	15Five, Lattice, Betterworks.

Telephone and Fax	Communication with employees and other stakeholders.	Direct communication.	Inefficient for mass communication, limited to working hours, less reliable.	Learning Management Systems (LMS)	Delivering and managing training programs and educational content.	Accessible anytime, scalable, customizable, tracks progress and completion.	Coursera for Business, LinkedIn Learning, Moodle.
				Communication and Collaboration Tools	Facilitating internal communication, project management, and collaboration.	Enhances productivity, supports remote work, and improves team coordination.	Slack, Microsoft Teams, Zoom.
				Artificial Intelligence (AI) and Analytics Tools	Leveraging AI for talent acquisition, performance predictions, and employee engagement analytics.	Data-driven insights, predictive analytics, improved decision-making, and efficiency.	IBM Watson Talent, Pymetrics, Visier.

Fig 7: Comparison between Traditional and Modern HR tools

2.7 Expected benefits and outcomes of AI applications in HR

AI is increasingly being used in HR functions such as talent management, learning and development, performance management, and employee retention. It also reduces HR costs, improves skills management, and enhances efficiency. AI also aids in career development, removing bias and discrimination, and providing personalized experiences. It also helps in fraud and compliance management, employee performance, and overall work life. A survey of AI in HR shows that 70% of major corporations use AI technology to identify relevant data and correct

information on individuals. AI also aids in HR planning and competency mapping, making it a valuable tool in various industries. (Kaur & Kaur, 2022). For every AI application that is covered, fig shows instances of anticipated advantages and outcome measurements.

Application of AI in HR	Examples of expected benefits	Examples of outcome measures
Enhanced candidate experience	<ul style="list-style-type: none"> • More informative pre-hire communication • Better match of job seekers to roles 	<ul style="list-style-type: none"> • Candidate conversion rate • New hire productivity
Efficient and effective recruitment	<ul style="list-style-type: none"> • Better prioritization of job requisitions • Accelerated time-to-hire • Accurate assessment of diverse candidates • Identification of the most qualified candidates 	<ul style="list-style-type: none"> • Skill shortages or unfilled vacancies • Average time to fill open positions • Selection ratios of minority and majority candidates • New hire productivity
Enhanced motivation	<ul style="list-style-type: none"> • Better manager support for their employees • Improved employee experience 	<ul style="list-style-type: none"> • Employee retention • Engagement or experience survey scores
Smarter compensation planning	<ul style="list-style-type: none"> • Increased pay transparency for employees • Optimized compensation budgets aligned with business strategy 	<ul style="list-style-type: none"> • Compensation satisfaction survey scores • Overpaid or underpaid worker count
Personalized learning	<ul style="list-style-type: none"> • Accelerated employee skill acquisition • Better alignment of employee skills with business strategy • Enhanced learning experience 	<ul style="list-style-type: none"> • Match between current and required skills mix, skill gap closure • Employee productivity • Course enrollments and completion rates
Career development for all	<ul style="list-style-type: none"> • Employee driven career management • Employee clarity on opportunities 	<ul style="list-style-type: none"> • Career satisfaction survey scores • Number of internal job applications and moves
24/7/365 Employee support	<ul style="list-style-type: none"> • Better informed and more productive employees via faster, more accurate answers to questions • Reduced number of support center staff 	<ul style="list-style-type: none"> • Number of process violations or exceptions • Labor costs

Fig 8: Expected Advantages and outcomes of AI applications in HR([Source:(Guenole, n.d.)]

2.8 Challenges of AI in HR

Implementing artificial intelligence in the human resources department is difficult because of the requirement for qualified staff, budgetary constraints, and privacy issues over data. Large-scale companies require significant funds for AI implementation, while small businesses may struggle due to lack of finance. HR professionals must maintain data secrecy to avoid potential damages. Legal restrictions and ethical considerations also play a role in the adoption process. (Ranjitha S, 2021)



Fig9: Challenges of AI in HR.

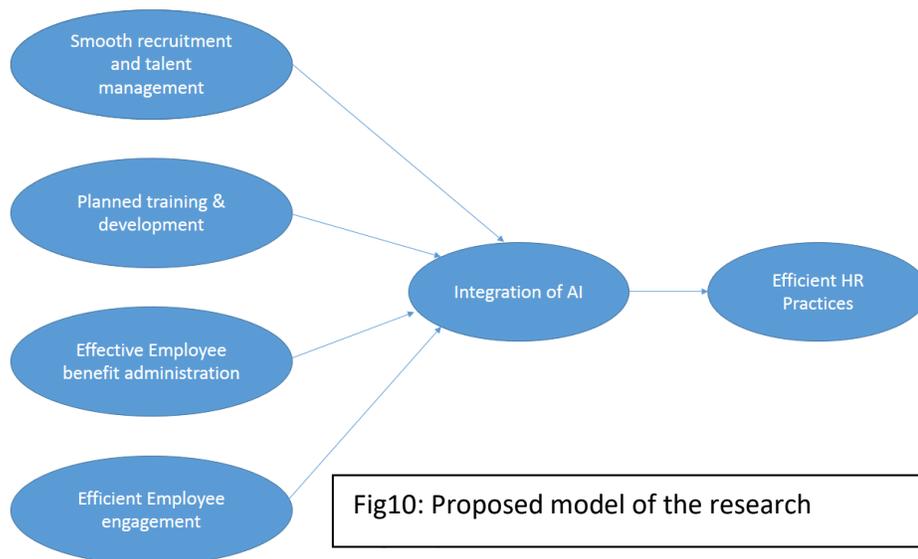
3. Limitation

The study on Artificial Intelligence and Human Resource Practices has limitations, as it relies on a systematic literature review and lacks primary data. Future research should explore other possible outcomes and mediating roles. AI has raised concerns, but its effects need further

investigation. There is a lack of agreement on AI's effects, and some studies use AI as a predictor or outcome. There is room for further exploration of influencing variables on AI and HRP.

4. Conclusion

This study investigates the connection between artificial intelligence (AI) and human resource practices in the modern world. It reveals that AI in HRP is relatively new, with few organizations using it effectively. Key areas for AI implementation include traditional recruitment, training, and employee engagement. AI offers advantages like speeded quality and accuracy, but also challenges like lack of training and technological readiness. A model that illustrates the relationship between AI and HRP might be suggested and conceptualized from the review of literature. This suggested model demonstrates how AI could facilitate a seamless hiring process and be capable of providing a well-thought-out Programme for training and development. AI would also facilitate efficient employee involvement and the management of employee benefits.



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