ARTIFICIAL INTELLIGENCE IN HUMAN RESOURCE MANAGEMENT: BENEFITS, CHALLENGES AND FUTURE IMPLICATIONS

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Abstract

As business areas evolve, human resource management (HRM) faces new obstacles to ensure optimal Organizational growth and development. This study examines the use of AI technologies in HR departments for recruitment, onboarding, retention, remuneration, and overall staff management. The integration of Artificial intelligence and HRM is transforming worker recruitment, management, and engagement methods. Artificial intelligence enables machines to make more accurate decisions based on previous data and behavioural patterns than humans. Machines have replaced physical labour, requiring HR professionals to focus on strategic tasks. The benefits of AI in HRM were explored, as well as the limitations of implementation. This paper will address how AI may improve the efficacy and efficiency of human resource functions.

Keywords— Artificial Intelligence, Human Resource Management, Human Resources, Engagement, Retention, Onboarding

1. INTRODUCTION

Effective integration of labour, procedures, and machinery is crucial for an organization's growth and cost-effectiveness. Human Resources (HR) has improved through technology and employee-provided data to increase its strategic function. One of these technologies is artificial intelligence (AI).

"Artificial Intelligence can be defined as a science that aims to replicate aspects of human intelligence such as learning, reasoning, perceiving, critical thinking, etc., using computer programs that are guided by logic" [1]. Russel and Norvig [2] describe AI as an "intelligent agent" as machines can act intelligently as humans by mimicking human intelligence and this is made possible by feeding the machines with lots of data that are tested and trained through machine learning models. Adaptability refers to a system's ability to perceive, learn from, and apply input to achieve certain objectives and tasks [3]. Artificial intelligence enhances human intellect by automating repetitive work, allowing individuals to focus on developing their skills and knowledge more effectively.

Human resource management (HRM) dates back to the 1890s when industrial welfare work emerged [4]. The change from direct to technical management has resulted in increased professionalism in this area. Organizations can gain a competitive advantage by acquiring, expanding, and integrating people, organizational, and physical resources. This can be achieved through effective HR strategies. AI technology can enhance HR processes and provide novel solutions to employee issues. This review paper explores the use of AI in human resource management, including its benefits and problems.

2. RESEARCH AIM

This paper evaluates the benefits, implications, and obstacles of integrating AI in HR management.

A. Research Objective

• understand AI and how it relates to HRM.

• Evaluate potential AI applications in HRM.

• Evaluate the impact and benefits of AI in the relevant sections.

• Evaluate potential challenges of implementing AI in HR management.

• Develop recommendations and conclusions based on study findings and evaluations.

This study employs a descriptive research approach. This work uses secondary data sourced from academic papers, published materials, websites, and HR blogs.

3. LITERATURE REVIEW

Recent research indicates that artificial intelligence has a positive impact on human resources. (Jia, Guo, Li, and Chen), (Garima, Vikram, and Vinay), (George and Thomas), and (Vivek and Yawalka) studied the benefits of AI in HRM, including human relations management, recruitment and selection, compensation management, training and development, performance management, and HR strategic planning [5-8]. Garima, Vikram, and Vinay found AI to be beneficial for employees, HR professionals, and organizations. They concluded that AI is replacing ordinary HR jobs with less human intervention. However, George and Thomas contended that AI cannot replace people. Vivek and Yawalka reported that AI can reduce workload and improve workplace efficiency [6], [8].

Jia, Guo, Li, and Chen, George, and Thomas, and Vivek and Yawalka employed secondary data in their research publications. George and Thomas conducted interviews with HR workers in corporate settings using standardized questionnaires [5], [7], [8]. Garima, Vikram, and Vinay used Multiple Regression to test a hypothesis among 115 HR experts utilizing primary data from a specific region [6].

The publications (Garima, Vikram, and Vinay) and (George and Thomas) argue that AI is taking over many HR jobs, but fail to address the problems HR departments confront when adopting AI tools [6], [7]. According to Jia, Guo, Li, and Chen, most organizations are not fully prepared to implement AI in their HR functions. Vivek and Yawalka report that it is challenging to find qualified candidates to handle AI tools. Additionally, AI may limit HR departments' decision-making capabilities as technology takes over [5], [8]. There was no comprehensive study on the problems of implementing technology in human resource management within the organization.

All of the authors agreed that AI will be extremely beneficial in a variety of HR management roles. Their reviews rely mostly on secondary data. We will evaluate publications, journals, blogs, and websites, which are similar to our approach. This review article will highlight problems in deploying AI, career trajectories, and future potential discovered through literature study.

4. AI APPLICATIONS FOR HUMAN RESOURCE MANAGEMENT

The influence of AI on HRM is quickly expanding. It can alter HR operations by providing detailed assessments of many roles. Virtual assistants increasingly assist with functions including recruitment, onboarding, performance management, employee engagement, and retention. Human Resource Information Systems (HRIS) paved the way for AI applications. "HRIS is a procedure for collecting, storing, maintaining, retrieving and validating data needed by an organization about its human resources, personnel activities and organization unit characteristics" [9]

4.1. Recruitment and Selection.

HR specialists find and hire qualified individuals for the firm. Finding the ideal individual can be challenging due to the abundance of talent available. Shortlisting and screening resumes to locate the right candidate for a job can be tough for HR executives [6]. To avoid costly operational delays, it's important to quickly reach out to qualified candidates and fill open positions. Providing a positive candidate experience improves their likelihood of accepting the offer. Providing a positive experience from the start is crucial for the future team.

AI can speed up recruitment, even when hiring needs grow [10]. It automates repetitive operations by analyzing massive amounts of data to identify trends. It can also help streamline recruitment processes. Chatbots, an AI tool, can enhance website engagement and raise discussion rates.

Candidates can submit their resumes and basic information through chatbots. Chatbots can inquire candidates about their desired roles and provide basic answers. Chatbots can automate time-consuming tasks in recruiting, including gathering candidate information, prequalifying individuals, scheduling meetings, and answering basic queries. [10], [11]

Machine learning may help organizations evaluate large amounts of data and identify previously unknown patterns. AI technology can evaluate resumes and select suitable individuals for a post. Machine learning-trained algorithms evaluate candidates based on their experience, abilities, education levels, and organizational interests before hiring. This technology can narrow down applicants by identifying individuals with appropriate talents. Proper programming can avoid prejudices by evaluating candidates solely on their qualifications [12]. AI can do background checks, including analyzing candidates' social media profiles, to guarantee they are qualified. This will save the recruiter time, provide a fair recruiting process, and ensure that the best candidate is hired.

Businesses sometimes struggle to engage and re-engage prospects due to the time-consuming process. Many companies do not respond to candidates after applying or conducting an interview. A recent survey indicates that employees expect to receive a response within 10 minutes of completing a job application. Following up after a job application or interview is vital to avoid losing applicants to more responsive competition. AI-enabled software, such as Chabot, ATS, and CRM, provides real-time replies to customer questions. CRM helps applicants get real-time replies to their inquiries and track their progress.

AI in HRM reduces bias and nepotism in candidate recruitment and selection (13). Ethnicity, language, gender, and race can all impact a recruiter's perspective during the hiring process.

Integrating algorithm assessment platforms with automation and AI helps minimize biases. This technology offers the advantage of allowing for changes to reduce or eliminate prejudice detected during audits.

4.2. Onboarding

Onboarding is the swift and smooth integration of new hires into an organization's culture and policies [14]. Onboarding is a crucial part of the HRM process. The company culture is not only demonstrated but also defined and promoted [15]. A successful onboarding process improves recruits' perception of the organization, increases engagement, and encourages them to remain longer. Individually addressing these recruits can be tough due to their need for additional attention. AI can automate the onboarding process, making it self-service for recruits. This allows for easier coordination with the workforce and management team and reduces manual and time-consuming activities.

Early onboarding is crucial since it shapes recruits' perceptions of the organization. Smart chatbots also contribute to this process. AI-based chatbots can assist with data gathering, information organization, form completion, document requests, and online guidance for recruits. Chatbots can help new personnel set up accounts and integrate into the organization's system without requiring IT support. AI-powered onboarding offers recruits the option to integrate at their speed, regardless of time or place [8], [16].

This lowers administrative chores and leads to faster integration processes. Chatbots can collect input from recruits to improve their onboarding experience.

4.3 Training and Development

HR professionals must guarantee that employees have the necessary skills and experience to meet individual and corporate goals through learning and development. Learning and development can aid in adapting to changes, tracking skill application, engaging learners, developing soft skills, developing leaders, teaching conflict resolution, and upskilling.

A robust training facility is essential for organizations to maintain a professional and technically skilled workforce. Employees should stay up-to-date on industry trends and advancements. AI-powered solutions can now be used by HR departments to train and evaluate employees. AI systems can identify skill shortages and tailor training strategies to meet staff demands. [17]

AI can design tailored learning paths for new hires depending on their talents and interests [18]. Large firms can benefit from understanding their employees' basic skills and interests, which can then be aligned with learning courses and project requirements. This tool may monitor employee training stats to identify those who require additional training and tailor it to their specific needs.

Implementing AI tools can improve employee learning, accelerate personal and professional growth, and increase productivity.

AI-based training programs ensure that every employee receives the necessary information at the correct time. AI tools can automate learning and development by making videos [19]. These training videos may be reused and translated into many languages, eliminating the need for reshoots or new voice actors. Video is a more effective way to impart knowledge than text, making it the preferred choice among learners. AI technology can quickly convert boring written documents or learning materials into engaging videos.

4.4. Performance Management.

Establishing a clear performance management system is crucial for organizations. Effective performance management may measure an employee's impact on the job. This structure allows organizations to track the impact of their training programs. This framework enables individuals to connect their job performance with organizational goals and objectives [11]. Traditional performance management involves several time-consuming stages, including setting objectives, self-assessment, manager evaluation, discussion, and signing off [20].

AI can monitor objectives in real time and provide feedback on progress and remaining tasks [11]. Integrating the assessment model into performance management involves acquiring and analyzing data on employee work performance. AI solutions provide effective management and analysis of employee behavior and performance. AI can provide reminders and ideas to increase productivity when targets are not reached on time [20]. Rewards can also be proposed to speed up the process. AI technology can reduce biases when comparing employee performance [21]. To accomplish this, establish explicit and comprehensive achievement standards.

This approach eliminates leaders' one-way assessment of employees. AI can assist in matching underperforming personnel with the necessary goals to increase performance. This information can aid HR professionals in succession planning by identifying employee potential and predicting performance levels. HR workers utilize these technologies to set goals, track team and individual performance, acquire insights, and save time [21]. This leads to optimal productivity and favorable outcomes.

4.5. Employee Engagement.

Employee engagement, also known as labor relations, involves collaborative efforts between employers and employees to foster a fair workplace. Some firms struggle to adequately understand their personnel and demands. Understanding the workforce can help HR managers better handle workplace conflicts. HR managers are responsible for preventing and resolving workplace abuse, including disagreements, sexual harassment, yearly leave disputes, bullying, and other employee relations issues that might negatively impact the corporation. Chatbot automation can improve communication, which is crucial for employee engagement. This tool enables employees to communicate more interactively and freely. This can provide real-time feedback to employees and HR officials, whether positive or negative [22]. Employees can express their emotions without the need for a formal meeting.

AI-powered prediction tools enable organizations to forecast employee engagement levels. AI analytics models may extract data from many text sources, including emails, chatbot messages, notes, and media comments, to monitor employee engagement. Large datasets are analyzed to forecast current and future employee engagement levels and provide valuable insights. Natural language processing (NLP) technology can organize information from multiple sources into structured data for examination [23].

AI-based technology saves time in processing engagement surveys, allowing HR professionals to quickly identify employee needs and deliver solutions.

4.6. Compensation Management.

This is a critical component of HRM. Employee compensation is the process of examining, administering, and setting individual incentives and benefits [24]. Employee retention is heavily

influenced by corporate compensation and benefits. In today's competitive corporate world, organizations have challenges in maintaining competitive benefits and compensation packages. HRM must establish salary and benefits to fulfill organizational needs. An effective compensation management system improves individual and group performance.

Artificial intelligence neural networks can promote fairness in employee salary evaluations [5]. Big data technologies can assist in constructing an automated support system for fair compensation appraisal. AI can save time and help firms adapt to shifting market trends and employee preferences. Big data analytics can gather historical and relevant data to anticipate future employee remuneration trends.

AI may monitor labor market changes, assure competitive salaries, and adjust remuneration depending on performance [25]. This encourages employees to work intelligently and conscientiously. AI can assist HR professionals in creating a fair compensation package for employees based on education, experience, and skill sets, helping organizations narrow pay gaps.

4.7. Employee Retention.

Low retention rates in several businesses can reduce production. In a competitive setting, personnel turnover can negatively affect the motivation and productivity of the remaining team members. Employee turnover impacts revenue, raises recruitment and training costs, and delays organizational growth. HRM is responsible for recruiting new employees to fill the vacancy.

AI machine learning technologies can assist HR professionals in predicting staff turnover rates, identifying high-risk personnel, and designing incentives to engage them. Historical data is studied to identify patterns [26]. This prediction takes into account all factors that may impact employee retention. AI can monitor employee involvement, gather feedback, and handle issues rapidly to maintain motivation and job satisfaction [12].

. AI-enabled solutions can reduce employee churn by facilitating a seamless onboarding process, responding rapidly to feedback, equipping workers with relevant skills, and offering competitive remuneration packages.

4.8. Career Path.

Artificial intelligence has long been used in HR to help individuals determine their career path, develop their skills, and pursue higher promotions. AI may use massive data sets, including gigabytes of biographies and performance ratings, as well as historical data, to improve training and education for certain professional levels or experiences.

Businesses worldwide use artificial intelligence to empower, train, and grow their employees. This enhances the work environment in institutions and promotes skill development and mastery.

Recently, the use of emotional analysis techniques to uncover biases and employees' views about everything from using social media sites like Twitter and Instagram has been put in place. Emotional analysis applications will become more widely used in HR to assess employee attitudes, engagement, and roles (27).

Entrepreneurs are increasingly adopting these technologies for their ventures.

In October 2018, the World Economic Forum identified a key challenge for the future workforce: a shortage of necessary competencies to keep up with rapid technology innovation [28]. It's crucial to ensure that the workforce can adapt to new technologies. The distinction between industrialized and poor nations has substantially widened due to the digital divide. The need for high-level professional and technical skills to design, operate, and maintain digital infrastructure, as well as mastery of fundamental skills and information and communication technology, cannot be overlooked, regardless of the cost of the technologies. Skill development is important for reducing workforce inequality and knowledge gaps.

5. BENEFITS

Artificial intelligence improves various businesses by decreasing time and effort for complex activities, leading to improved accuracy and results [12]. Data analysis takes more time as more

human resources are involved. AI-powered software can spot trends and manage data-intensive activities efficiently. Computers may spot errors and irregularities more quickly and precisely than HR humans. This reduces time and increases business margins. Businesses prioritize revenue generation and are leveraging AI and employee-machine collaboration to achieve this goal.

AI enables HR employees to focus on more complex tasks that require human involvement. This includes fostering customer relationships, increasing workplace engagement, developing staff careers, and prioritizing initiatives. Many firms use online learning tools for continual training, however, they are often chaotic and may not provide optimal benefits to employees. Using artificial intelligence tools to organize and display programs can improve learning outcomes (18). AI can cut costs for several organizational operations, including recruitment and training. Its analytical and forecasting capabilities give relevant and effective solutions, allowing for greater planning for future difficulties.

6. CHALLENGES

Although AI is expected to enhance HRM in the future, practitioners should be mindful of potential issues. Integrating AI into HR activities is a significant hurdle due to employee attitude. AI's ability to track employee behavior raises concerns among individuals. To facilitate a smooth transition, it's important to address concerns about the misuse of AI and unethical use of shared data. All parties involved should be made aware of the potential repercussions before using the technology.

Companies want individuals with diverse skill sets. Artificial intelligence is integrated into all departments' activities, including HR. Employees with little technology skills sometimes struggle to understand and apply new AI tools in their employment [29]. As technology becomes more influential in business decision-making, the HR department's ability to make daily decisions may be limited [7].

AI lacks emotional and psychological qualities, making it hard to monitor and understand human emotions and their impact on behavior, passion, and ambition [30]. The system lacks a human touch and cannot identify some traits in new hires. AI lacks an understanding of team dynamics and collaboration among diverse personalities. Human resource managers rely on their ability to read people in person, not technology. While AI can be integrated into business solutions, it cannot execute some in-person tasks like a manager.

AI involves human programming, which may lead to errors or biases. Analysis and projections rely solely on historical data [30]. AI technology "learns" using high-quality data that is unbiased during processing. The algorithm and data it processes can be influenced by the programmer's prejudices without their knowledge [31]. Implementing biased AI technology can lead to biased results. Using biased technologies can potentially influence a company's talent acquisition process. If the hiring process is contested or questioned, HR leaders and personnel must take ethical responsibility and not blame technology for bias. Errors in programming can lead to inaccurate data interpretation, incorrect sorting criteria, and missed opportunities for diverse applicants.

AI in human resource management has challenges with data availability and database compatibility. Company size influences data availability for projections. HR organizations typically have modest workforce sizes ranging from hundreds to a few thousand, resulting in little observational data. There are few observations for certain events in the organization. An event such as dismissal does not occur very often and would therefore have not enough observations for predictions. A larger dataset and observations are needed for accurate data predictions. There is also an issue of incompatible databases as many of the organizational datasets reside in different databases and need to be carefully merged before cleaning by data managers. AI will not understand the company as the HR professional would. It lacks the global understanding of a company that an HR possesses. An HR professional may go through rigorous study and research on a company to gain a good understanding of the organization's goals, values, culture, and objectives. Years of experience in the job also give the HR professional more experience and a better understanding of the job. AI technology may lack

the understanding that HR people have. The system may miss significant links in an applicant's past work that demonstrate their potential usefulness to the organization. An HR professional's expertise allows them to examine individuals who may not match formal recruiting standards but have relevant contacts. AI is unable to identify links and may overlook useful outliers.

7. FUTURE OPPORTUNITIES.

Artificial intelligence technology is expected to outperform humans in several tasks within a few years, according to researchers. Experts predict that AI will outperform humans and automate jobs in the future [32]. Some researchers believe AI will be a support system rather than a replacement for humans. The future will involve collaboration between humans and machines [33]. Another study on AI and deep learning emphasizes the necessity of collaborative engagement between machines and humans, with machines forecasting results and humans making decisions and taking action [34].

AI can play a greater role in HR by determining which data to track, analyze, manage, and preserve [35]. There is still much to learn and find in people analytics. As more organizations use AI technology, competition for elite talent will intensify. Organizations will differentiate themselves based on their ability to meet candidates' digital expectations and provide an optimal experience [35]. The industry will be dominated by the sector that best equips its workforce to leverage AI and big data to gain a competitive advantage [36].

8. CONCLUSION

The human resources industry has successfully adapted to the technological upheaval brought on by artificial intelligence, but there is still much catching up to do. To fully benefit from each new advancement, we must constantly seek strategies to overcome difficulties. HR professionals must take a similar technique. Based on the numerous studies presented in this paper, it is easy to conclude that data is required when applying artificial intelligence to organizational operations. As a result, the HR professional must be particularly vigilant in ensuring that reliable data is used. Artificial intelligence has been used in human resource management operations to improve planning and decision-making.

AI applications have improved worker productivity, workplace efficiency, cost reduction, automation of mundane tasks, smart data analytics, and forecasting for the future. To thrive in today's competitive and technological landscape, businesses must embrace and understand the value of AI from the start. The scarcity of experimental and statistical studies in this domain highlights the need for further research on this topic.

This article concludes that properly applying AI technology in human resource management can lead to unexpected opportunities. This ensures firms remain at the forefront of technological advancement.

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