

AI-HRM: Artificial Intelligence in Human Resource Management: A Literature Review

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ABSTRACT

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Artificial intelligence (AI) is key in human resource management (HRM) in today's competitive business environment. AI has the potential to revolutionize HRM practices by automating mundane tasks, streamlining processes, and providing customized solutions for HR managers. AI can also improve recruitment, training, performance management, and compensation management. By leveraging AI technology, HR departments can become more efficient and effective in managing their employees. With AI-powered solutions, HR departments can provide better employee service while optimizing costs. AI in HRM is becoming increasingly important as it enables organizations to increase efficiency while improving employee satisfaction. AI technologies can help HR departments gain insights into employee engagement and productivity, as they can analyze employee feedback to understand better how they view their work environment and growth opportunities. It enables HR departments to automate the selection process, making identifying the right candidates for the job easier. The literature review can help better define the current landscape of AI in HRM and provide insights into AI opportunities in HRM.

1. Introduction

"artificial intelligence" (AI) is a technology that enables machines to do tasks intelligently and cleverly. The development of artificial intelligence (AI) is a change that has wide-ranging ramifications, particularly for fields like engineering, business, and the management of human resources [1].

The term "human resource management" (HRM) refers to several actions involved in organizational management as well as related policies pertaining to human resources. Developing an organizational human resources strategy, selecting and recruiting personnel, delivering training and development, evaluating employee performance, managing compensation, and managing employee relationships are all tasks that fall under this category [2].

Artificial intelligence (AI) is essential in human resource management (HRM). AI technologies are being utilized in HRM to streamline various HR activities like recruitment, onboarding, performance management, and others [3, 4]. AI technology can assist HR departments in gaining insights into employee engagement and productivity. This is because HR departments can evaluate employee feedback to understand better how employees view the growth prospects and the work environment in which they are employed. It helps human resources departments to automate the selection process, which makes it easier to determine which individuals are the best fit for the job. In addition to this, it has the capability of tracking employee performance and ensuring that workers achieve their objectives [2].

AI can assist human resource managers in automating monotonous operations, maintaining personnel records and performance, and making more informed decisions through predictive analytics. AI can also assist human resource managers in analyzing data and developing more effective procedures. HR managers may reduce the amount of work they have to do, boost productivity, and improve their ability to make

decisions regarding the future of their firm, all by utilizing AI. In a nutshell, artificial intelligence is changing how HR departments function, and its application will only grow in the near future [1].

2. Definitions and Theoretical Aspects

There are many definitions of artificial intelligence, and different academics have created different definitions for it [5]. The various definitions of artificial intelligence emphasize the concept's capacity to learn, carry out tasks, and think like humans. The field of study known as artificial intelligence focuses on finding ways to program computers to accomplish tasks at which humans excel. By imitating the information processing of human thoughts and consciousness, artificial intelligence (AI) can explore databases efficiently, extract facts, effectively react to our requests, and deliver the best answers plainly and sensibly [3]. According to [6], [7], the capability of a system to accurately explain external data, derive meaningful skills from that data, and then apply those learnings to finish specific activities and achieve particular goals by flexible adaptation is what is meant by "external data explanation capability."

[8] Managing and employing people within a corporation falls within the purview of human resource management, sometimes known as HRM. It encompasses a variety of actions and procedures, including strategic human resource management, human capital management, resourcing management, knowledge management, learning and development, performance management, and employee relations [1, 8].

The application of AI in a company enhances the organization's management processes by making them more agile and accurate, raising the bar for the efficacy and productivity of HR procedures [9]. The different HRM processes, such as human resources strategy and planning, recruiting and selection, training and development, performance management, and compensation management, have been significantly reshaped due to the increasing use of AI technology [10]. A Human Resource Information System, an HRIS, is an extremely important component of human resource management. A human resource information system (HRIS) is a systematic procedure for collecting, storing, retrieving, and maintaining data that an organization needs concerning the actions of its workers, the characteristics of its organizational units, and its human resources [11]. HRIS is a strong tool that may be used in HR planning, the construction of job descriptions, the design of training programs, the evaluation of employee performance, and other HR-related tasks [10].

2. Literature Review

A conceptual artificial intelligence framework for human resource management was developed in the study [2], based on the six pillars of HRM and the current state of AI technologies. The six dimensions are human resource strategy and planning, recruiting, training and development, performance management, employee relationship management, and wage evaluation. In this study, technologies such as data mining, knowledge discovery, face recognition, natural language processing, intelligent robots, visual scanning, neural network systems, and robot and voice interaction are applied to each of the six dimensions to form and establish respective intelligent decision support, interview, teaching and learning, incentive systems, salary evaluation, and corporate advisory systems. Face recognition is one of the most important aspects of this research. Based on the study's findings, artificial intelligence should be included in business human resource management using the AIHRM conceptual paradigm.

The authors carried out a comprehensive literature assessment of artificial intelligence (AI) in human resource management [12]. They presented a comprehensive analysis of the applications of AI in the academic literature on HRM. According to what they discovered, the research and practice of HRM have been profoundly influenced by information technology in converting routine and nonroutine HR tasks. This transformation began as an administrative personnel records management function and evolved into the strategic management of people. AI enables machines to execute tasks in the same way people do by integrating different information databases. Human resource managers can use AI to perform productive data analyses and plan their efforts toward desired results by employing various developing technologies

that enable machines to perform tasks as humans do. The research produced a one-of-a-kind AI-HRM concept map that explains how AI might be used to comprehend better the decision-making processes involved in HRM. In addition, they provided a deeper knowledge of the ethical challenges associated with AI's applications in HRM. They proposed an indicative preliminary framework for integrating ethical practices and techniques to assist in the transition toward ethical AI.

During the personnel recruiting process, the relationship between the behavioral limits imposed by AI-adopted enterprises and the facilitators of such companies was explored [13]. The study presented the integration of the TOE model and the transaction cost theory to comprehend the many limitations and potential opportunities better. They employed both online and paper-based surveys to collect data for this study, and they obtained it from HR managers and senior managers familiar with HR in 297 Chinese organizations. The results of the survey show that companies' perceptions of artificial intelligence's complexity act as a barrier to adoption, whereas technological competency and regulatory support act as drivers of adoption. The research shed insight into the moderating effects of transaction costs on the influence of technical complexity and organizations' technological competency.

The purpose of the study [14] was to investigate the various AI technologies employed in HRM practices and the perceptions of these technologies held by the employees. The research was carried out in Chennai using the sociological survey approach, with participants consisting of HR experts and employees working in the IT sector. They discovered that employees did not have a favorable impression of the AI system's attitude toward AI technologies. They provided an overview of the obstacles that prevent the AI system from being implemented in HRM procedures. The study provided a greater understanding of the importance that businesses place on incorporating AI technology in HRM practices such as planning and decision-making, recruitment, training and development, performance analysis, and work-life balance.

The use of AI technology in HRM was the focus of the systematic search [15] of 45 papers. It was emphasized that intelligent automation technologies provide a new approach to employee management and the advancement of organization performance. These technologies offer various prospects for human resource management. They provided an overview of several significant issues that exist on both a technological and ethical level. They revealed the influence that modern AI technologies are having on HRM. The study went into great detail about the prospects and made several important contributions to theory and practice.

The study [16] aimed to investigate the applicability of AI strategies to HRM in general. The writers offer a concise introduction detailing the essential capabilities of AI approaches and the fundamental requirements of HRM, utilizing the task-technology fit methodology as the basis for the discussion. They chose six different use cases to investigate the possibilities of AI in HRM: turnover prediction, candidate search, staff rostering, HR sentiment analysis, resume data gathering and employee self-service. In addition to this, they investigated as well as summarized the fundamental and exploration-based learnings.

[17] looked into the impact that high-performance work systems play in the links between change readiness for AI adoption, the beliefs of HR managers, and AI apprehension. According to the study's findings, the HR managers' beliefs and levels of worry around AI were highly influenced by the degree to which their organizations were ready to implement AI. They found that those with positive beliefs were more likely to be open to embracing AI, while those who felt greater concern about it were less prepared to implement it. Those who held positive beliefs were more likely to be open to using AI. They combined the HR managers' beliefs, AI anxiety, and perceptions of implementing high-performance work systems within the firm to present insights into the readiness of HR managers to adopt AI.

The purpose of the study [18] is to gain an understanding of how AI is utilized in HRM. The research looked at 23 pertinent papers found in the Scopus online database between 1991 and 2020. According to the findings of the study, nine different HRM activities could benefit from the application of AI technology, allowing businesses to enhance their levels of efficiency and effectiveness to meet the needs of their customers better.

The primary objective of the qualitative research [4] was to describe how AI has been incorporated into various HR operations and the implications this integration had had on firms, employees, and HR. The research helped shed light on the rapid expansion of artificial intelligence's use in human resources, particularly regarding various HR processes and activities such as the hiring process, onboarding, and training. They provided light on the function that AI plays in assisting HR managers in focusing on strategic work rather than mundane and low-value add duties, which was one of the main points of their research. They presented an overview of how AI may assist in streamlining and reorganizing HR tasks for increased efficiency and agility in the workplace.

3. Opportunities of Artificial Intelligence in Human Resource Management

The management of human resources has several potentials for the application of artificial intelligence. These opportunities include but are not limited to, human resources strategy and planning; human resources recruitment and selection; human resources training and development; human resources performance management; and human resources compensation management. These opportunities will be described in more detail in the following section.

3.1. Human Resources Strategy and Planning

Planning for the use of human resources strategically is the beginning point for human resource management. Managers use artificial intelligence (AI) technologies to help decision-making processes to achieve effective strategic planning. Tools for data mining and knowledge discovery are used to collect data from both internal and external sources. This helps to summarize the information, which is necessary for comprehending the present state of affairs regarding human resources and for predicting, evaluating, and adjusting the company's future management. A report containing the necessary information is compiled with the assistance of the statistics and modification features of the intelligent decision support system [14].

3.2. Recruitment and Selection

Recruiting and Choosing Candidates Because it can provide decision support systems that help map the most suitable professional profiles for a given position and reduce the average time it takes to complete recruitment activities, artificial intelligence can be a strong instrument in recruitment and selection. Artificial intelligence can help map the most suitable professional profiles for a position. The decision support system could be developed using fuzzy logic, artificial neural networks, case-based systems, expert systems, or genetic algorithms. AI can be utilized to construct a virtual assistant that can respond to questions posed by candidates, evaluate the actions and talents of candidates in real-world scenarios, and assist in matching union candidates and corporations [19]. Regarding recruitment and selection, AI makes it feasible to develop a model of the ideal candidate by cross-referencing information about a company that has been profiled in the past. This approach then compares candidates for new openings regarding tests, experience, and information regarding the overall curriculum. It is helpful to analyze each candidate in terms of how favorable they are for filling a vacancy in the company [20].

3.3. Training and Development

Artificial intelligence (AI) is a key component in maintaining the current rate of technological advancement. During the process of training, the robot instructor of the training can use the visual scanning system to monitor each student's daily learning progress, accurately calculate the overall level of attention of all of the students, use data analysis to retrieve teaching events of different stimulation levels and adjust the degree of relaxation and the teaching rhythm based on the student's feedback. During training, the robot

instructor can also use the visual scanning system to retrieve teaching events of different stimulation levels. In addition, with big data analysis, corporate training can decide which employees need to learn from the enormous knowledge base, create a customized employee curriculum, and utilize technology to test and assess the employees' levels in an all-encompassing manner. AI instructors can also become all-around helpers, able to do tasks such as assessing learner data and creating high-quality reports on learner progress. AI instructors will rethink the fundamental logic behind the instructional design as employees enter the learning objectives, important points, and archives. The artificial intelligence tutors will finish the course for you automatically [3].

3.4. Performance Management

Management of Your PerformanceThe: Employee performance management is an HRM practice of critical significance. Along with the information gathered and analyzed on the workers' performances on the job, the performance appraisal model can also be incorporated into the system [2]. In an intelligent decision support system, using 360-degree performance evaluation approaches as scientific methodologies can allow for automatic and successful employee performance reviews. The intelligent decision support system is provided with the employee performance evaluation criteria and any other relevant data to produce performance evaluation findings [10]. At the beginning of the year, the business objectives for each division of the corporation can be mapped out and written down. After that, the system can conduct an all-encompassing analysis and evaluation based on individual performance goals, department manager evaluations, peer feedback, and other criteria [2].

3.5. Compensation Management

Compensation ManagementDirect, monetary payment, or indirect benefits to the employee can both count as forms of employee compensation. Not only does "compensation" relate to monetary payment, but it also encompasses other perks and privileges employers provide for their workers in exchange for their services. The effective management of remuneration can lead to increased levels of organizational productivity [21]. Management of compensation is an essential component of human resource management (HRM), and it has a tight connection to the performance of employees. It refers to establishing an employee's pay following a predetermined set of guidelines and policies. An effective compensation management system can support improving individual and group performance. The use of AI technologies can assist in ensuring fairness in the management of compensation. [10] Using big data as input, artificial neural networks can be designed to be used as intelligent decision support systems, which can then be used to construct a fair compensation evaluation system.

5. Discussion

AI technologies have increasingly transformed all the various HRM practices, such as human resources strategy and planning, recruitment and selection, training and development, performance management, and compensation management. According to studies, various AI technologies such as data mining, knowledge discovery, face recognition, natural language processing, intelligent robots, visual scanning, artificial neural network, and robot and voice interaction technologies are applied to HRM practices to form and establish intelligent decision supports, teaching and learning, incentive, salary evaluation, and corporate advisory systems.

The role played by HR managers during the integration of AI into HRM routines has been seen as extremely crucial. AI adoption is affected by HR managers' beliefs and concerns about AI. HR managers with positive beliefs were more likely to adopt AI technologies in their organizations, while those concerned were less willing to adopt AI technologies. HR managers can focus on strategic work by AI

assistants in performing productive data analyses and organizing activities toward desired outcomes by utilizing various emerging technologies that enable machines to perform tasks like humans do through the integration of several databases of knowledge.

Most of the research findings highlight the AI technologies' contribution to streamlining and reshaping HRM practices for better efficiency, productivity, and decisions about the organizations' future.

6. Conclusion

In human resource management, applying artificial intelligence technologies can bring greater economic benefits. Improving human resource management efficiency through AI technology will become an important trend in the future development of human resource management.

AI technologies have increasingly transformed all the various HRM practices, such as human resources strategy and planning, recruitment and selection, training and development, performance management, and compensation management.

The literature review can help better define the current landscape of AI in HRM and provide insights into AI opportunities in HRM. It focuses on the current state of AI in HRM and its potential applications in human resource management practices such as human resources strategy and planning, recruitment and selection, training and development, performance management, and compensation management.

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