Educational Administration: Theory and Practice
2024, 30(4), 9116-9120
ISSN: 2148-2403
https://kuey.net/

Research Article

An Application Framework For Conceptual Artificial Intelligence In Human Resource Management

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Citation: V. A. Ragavendran, S. Vennilaa Shree et.al (2024 An Application Framework For Conceptual Artificial Intelligence In Human Resource Management *Educational Administration: Theory and Practice*, *30*(4), 9116-9120
Doi: 10.53555/kuey.v30i4.3168

ARTICLE INFO

ABSTRACT

In this paper, a conceptual framework for the use of artificial intelligence (AI) technology in human resource management is proposed (HRM). Based on the premise of the six fundamental components of human resource management, including recruitment, training and development, performance management, salary evaluation, and employee relationship management, it is possible to apply AI technology in these areas. The recruitment dimension and training dimension using AI are further investigated through the case studies of leap. AI's hiring and Baidu's online training. Finally, the application and further research are added. The conceptual model for AIHRM offers recommendations and guidelines for the advancement of AI in corporate human resource management.

Keywords: Intelligent training system, intelligent recruitment system, and the six dimensions of human resource management

INTRODUCTION

A new generation of labour, such as the human intelligence of artificial intelligence, has become essential for businesses to survive and change in a changing environment as a result of the advancement of artificial intelligence (AI) technology (Ertel, 2018). Artificial intelligence has caught the interest of both researchers and practitioners after Google's Alpha Go algorithm defeated South Korean player Lee Sedol by a wide margin (AlphaGo, 2016). An interdisciplinary discipline called artificial intelligence, commonly referred to as machine intelligence, imitates human talents and intellectual conduct. AI is the study of how to programme computers to perform tasks that, at the moment, people are better at, according to Elaine Rich (Rich, 1983). It can swiftly retrieve the database, extract information, answer our doubts effectively, and deliver the best solution immediately and logically while replicating the information process of human mind and reasoning. Applications for artificial intelligence theory and technology are growing, and numerous AI tools, such artificial neural networks, intelligent decision-making systems, and fuzzy sets, are employed in a variety of industries (Holland, 1992). One of them is the use of AI in the area of human resource management, which is still in the research phase (Sheila, 2018).

AI has gradually being incorporated into business management decision-making, taking over and speeding up managers' daily, tiresome, and repetitive tasks. It offers strong database and analytical support, freeing managers from tedious tasks and allowing them to focus on more important tasks (Partridge & Hussain, 1992). The utility and impact of intelligent systems can alter the manager's work contents for coordination and governance, issue resolution and collaboration, employee and community, strategy, and innovation activities. Managers' everyday dull and repetitive tasks can be taken on and sped up with the aid of artificial intelligence. Additionally, it can offer strong database and analytical support so that managers can focus on more important tasks rather than tedious ones. The term "human resource management" refers to a number of enterprise management tasks and related human resources policies. These activities primarily consist of developing corporate human resources strategy, hiring and choosing people, providing them with training and development, managing performance and remuneration, managing employee mobility and relationships, and managing employee safety and health (Noe et al., 2006). The application of artificial intelligence technologies can have better financial advantages when managing human resources. An important trend in the future growth of human resource management is the use of AI technology to increase the effectiveness of human resource management.

However, there is currently a lack of a general framework for AI application in the human resource management study field, as well as the unique dimensions of human resource management, to examine its specific application. As a result, this article provides a conceptual AI application to HRM model based on the six dimensions of HRM and the primary technical applications of AI in order to instruct businesses on how to use AI technology to support human resource management. On the basis of the examination of the Leap.ai and Baidu industrial instances, we talk about the hiring and training practises used in AI applications. The suggested AIHRM framework offers conceptual direction and practical application suggestions for the fusion of human resource management and AI technology. There are also some suggested areas for future research.

AI Research in Human Resources:

An application of AI has a basis thanks to the development of human resource information systems (HRIS). HRIS With the advancement of AI's capabilities for human-computer interaction, managers have the opportunity to increase management effectiveness. "HRIS is a process for gathering, storing, maintaining, accessing, and validating data that an organisation needs regarding its personnel activities, organisational unit characteristics, and human resources" (Kovach & Cathcart, 1999; Lippert & Michael Swiercz, 2005). HRIS can help with strategic planning by providing information on labour market supply and demand estimates, application qualifications, training information, performance evaluation information, and other things. In contrast to AIHRM, the information system is primarily focused on data entry and storage, and its capacity for intelligent decision assistance is still somewhat constrained. The business analytical capabilities of the system can be strengthened by artificial intelligence in order to produce more output references for decision-making. Methods of data mining are also suggested for scanning the e-resume. To address the problem of knowledge management in businesses, expert systems are suggested. Also highlighted is the debate over whether AI can replace human resources (Turban & Frenzel, 1992; HRPA, 2017). The application of AI technology in the fields of HRM is still lacking in research.

Human Resource Management in Six Dimensions: A successful human resource management system is made up of the interconnected and interacting six human resource management dimensions.

1. Human resource management begins with human resource planning. Through the strategy, it primarily assists the organisation in predicting future personnel demands and fundamental employee attributes.
2. Recruitment and deployment, with human resource planning as an input, are comparable to the organization's blood, giving it nutrition and resolving staffing and staffing concerns.
3. "Education" has training and development as its central theme.
4. The essential component of the six dimensions is performance management. It serves as the primary source of data for other dimensions.
5. The goal of compensation management is to inspire workers to address issues facing the business.
6. The goal of employee relationship management is to manage staff and assist the business in creating a successful cycle for the wise allocation of human resources (Noe et al., 2006).

IDEAL Research:

The fundamental goal of the "AI+HRM" framework's design is to help human resource managers make better decisions more quickly in the face of a mountain of data. The framework provides information on how AI can function in tandem with HRM.

Strategy and Planning for Human Resources:

The foundation of HRM is strategic planning for human resources. Artificial intelligence is used by managers as a secondary decision-making tool that allows for more thorough strategic planning. In order to gather global information and mix it with already-existing internal and external information, methods like data mining and knowledge discovery are first required. After condensing the data, we may foresee, assess, and modify the company's future management while also comprehending the rationality of the current human resources position. The intelligent decision support system's statistics and modification features are relied upon to give the report with the many necessary pieces of information.

Selection and Assignment:

The hiring process, which is a crucial component of the system, entails reviewing, screening resumes, interviewing people, matching suitable openings, etc. The CEO of a software company called Ideal Corp, which use artificial intelligence to streamline recruiting processes, Somen Mondal, claims that eliminating bias and automatically screening candidates is where artificial intelligence will have the most influence. The capabilities of successful employees in a given role can be learned by artificial intelligence, which can then use this information to choose competent candidates and score and rate applicants. Mondal claims that by using artificial intelligence software, the company was able to enhance recruitment efficiency by three times while reducing recruitment expenditures by 71%. (Denise, 2017).

In order to identify paper resumes and images, optical character recognition (OCR) is used. Alternatively, the big data approach can be used to filter electronic resumes, analyse resumes, combine resume characteristics with text information extraction techniques, and perform statistical analysis, matching, and correlation

analysis on the combined data. The candidate's resume can be accurately and promptly sent to the firm using the database, which can easily transform into a structured resume. In addition, the system can suggest relevant jobs to applicants through resume and job matching analysis, particularly for some high-end abilities. Artificial intelligence (AI) is capable of impartial candidate screening in this procedure (Hutson, 2017).

The company has a recruitment model built up for the interview process, and a robot will be asking the candidate questions. The business can set the relevant matching-posts problem and the keyword extension problem based on the candidates' responses. For instance, if the candidate has experience working on data development projects, the robot will ask about the operation flow and then ask which database to utilise based on the response. By gathering the keywords and word meanings that are comparable, the response can be assessed. The interviewer can watch the video again if he has any questions. A 15-minute video interview is transformed into 20,000 data points for tone, phrase choice, and facial expressions by artificial intelligence. The method can considerably increase interview efficiency while maintaining interview quality.

The big data approach is used to gather applicant information, screen openings, match the outcomes of hired employees' interviews, assess candidates' personality traits, advantages, and disadvantages, and match candidates to corresponding positions through personality and IQ/EQ test analysis. Additionally, employees might undergo routine testing (such as the annual). Managers may find new hires with the best chance of success using artificial intelligence, and then place them in the appropriate team. The sophisticated system may also assist staff members in finding the appropriate managers, offer training possibilities and career pathways, and even alert them when they may be on the verge of quitting. Rematching roles for employees that are open to changing positions might also be beneficial.

The Development of Training:

Employees continue to advance in the process of continual development as a result of both internal and external developments. It can be more comprehensive to assist businesses in creating a learning organisation culture by using a variety of artificial intelligence technologies as opposed to the standard teaching design approach based on the age-old ability gap analysis. (Human resources managers must do research, discover personnel gaps, and categorise individuals using a variety of analysis techniques, including surveys, interviews, job observations, tests, and job data analysis.)

The first possibility is artificial intelligence for training instructors. The robot training teacher can precisely determine the average value of each student's attention during the training process by using the visual scanning system, and can then recover the teaching events with various stimulation levels through data analysis. According to input from the pupils, the teachers can also alter the degree of relaxation and the pace of the lesson. These students' curiosity is also increased by their frequent robot interactions (Oshima et al., 2012). The vast knowledge base can also be used by enterprise training to identify the specific employees who need to be trained. From there, a customized employee curriculum can be created, the staff level can be thoroughly tested and located using technical means, and courses can be intelligently promoted.

Artificial intelligence technology can assist students in the training process by automatically recording training data. The analysis of the intuitive data reveals the extent and impact of employee learning, saving time for training managers and enabling managers to learn about training outcomes immediately. In order to provide a quick and effective learning experience, businesses can also leverage voice technologies, learning material databases, and core algorithms. Not only can artificial intelligence (AI) teachers increase learning effectiveness and quality, but they can also greatly simplify the administration and management of both online and offline training. Additionally, AI teachers can function as a comprehensive helper, providing everything from student supervision to learning ranks automatically. The fundamental principles of instructional design will be redefined by AI teachers. The course will be finished by the AI teacher automatically when the employees enter the learning objectives, archives, and important points. The "intellectual" construction will become the primary focus of curriculum designers in the AI era in order to realise the fundamental task from the development of learning methodologies to the definition of problem-solving knowledge transfer.

Performance Administration:

When it comes to performance management, the information regarding workers' work performance can be collected and analysed while the performance appraisal model is integrated into the system. Some scientific evaluation techniques, such 360-degree performance evaluation techniques, can be employed more automatically and swiftly by using the intelligent decision support system (Otley, 1999). The decision support system is programmed with these assessment techniques to more accurately count the results of employee evaluations.

The company's business objectives for each department can be put up at the start of the year. The system may analyse and assess a variety of data, including individual performance goals, punch card access control records, resignation records, department manager scores, peer scores, customer scores, and other detailed data. The decision-makers can examine each indicator's success, suggest fixes for indications that failed, create and use useful new indicators, and suggest upgrading plans with the use of AI. Setting up the future performance goals might also involve predicting the future trend.

Compensation Administration:

A dynamic management process called compensation management, often known as salary management, establishes, assigns, and modifies employee compensation principles, methods, levels, structures, and components under the direction of organisational development plans (Henderson, 2003). AI applications can help to make the management of remuneration more equitable. A supervised artificial intelligence technique called BP neural networks is based on biology, neurology, psychology, and statistics. It can create a regular computational model, replicate the nervous system of the human brain, and combine numerous neural network nodes (Richard & Lippmann, 1991). With the use of large data input, BP neural network system may be utilised to develop an intelligent decision support system to create a fair compensation evaluation system.

Employer-Employee Relations:

Corporate culture and labour relations are included in employee relationship management, which coordinates the connection between employers and employees. Artificial intelligence technology can be utilised as a support system in labour relationship management and communication management to resolve numerous complex process stereotypes, carry out management activities, and serve as performers, helpers, and advisors. The manager's team receives the assistant's primary support in the form of recording, scheduling, reporting, and scorecard upkeep. The "Virtual Assistant System," which schedules meetings by reading and writing emails, organising participants, and monitoring calendars, is an example of artificial intelligence applications in this field. By incorporating their own and their colleagues' expertise, these intelligent systems will gradually expand their service areas and increase pertinent knowledge. These technologies broaden the concept of artificial intelligence in the workplace and are referred to as "advisor systems."

Future Research and Practical Implications:

Human and machine cooperation:

The collaboration of humans and machines while there is dispute is still the future trend of AI for HRM. According to the McKinsey Global Institute, artificial intelligence can replace more than 30% of tasks in 60% of occupations (Chui & Francisco, 2017). According to a study from the University of Oxford, in the next 10 to 20 years, approximately 47% of US workers will have jobs, but 50% of the 702 jobs in the country will be affected by IT. Based on these findings, it may be quite challenging to handle how to improve the competitive intelligence of human resource managers and efficiently deploy the human resources.

Another crucial challenge is how to use emerging technology to collaborate between humans and machines. Unpopularity and resistance will also result from the significant increase in the jobless rate. Each aspect of human resource management has specific research problems that need to be addressed. For instance, the HR model and AI were used to build the process for matching job seekers and providers. The AI algorithms, performance evaluation standards, and intelligent performance evaluation system together (Dom, 2018).

Analytics and Information System for Data Driven Human Resource Management:

Businesses can develop a strategy plan for the AI transformation by gradually enhancing their internal data analysis systems and information systems in order to keep their competitive advantages. This will serve as the framework for an AI system embedding. The new AI technology may be tested for each aspect of HRM. As demonstrated by case analysis, recruiting and training can be the starting points. Both practise and research can use the machine learning approaches for predicting employee performance. With data input, AI analytics can also be used to comprehend organisational behaviour.

Benefits, Drawbacks, and Real Application Process:

The merging of AI with HR has unquestionably been a trend in the HR revolutions. The fully developed chatbot and machine learning application is currently used for recruiting. Algorithms for machine learning and augmented learning are being developed to offer practical approaches to human resource management (Jill, 2018). However, the majority of businesses today are still not prepared for HR applications of AI. This process involves the fusion of strategy, organisational behaviours, enterprise culture, and management processes within the firm, in addition to the dissemination of technology. Therefore, it is still worthwhile to investigate how to develop and progressively integrate AI technology into HR practise. Aside from the benefits AI delivers to HR, there may also be hazards, such as data leakage and unintentional abuse (Josh 2018).

CONCLUSION:

Based on the six pillars of HRM and current AI technology, this paper suggests a conceptual AI framework for HRM. An appropriate intelligent decision support system can be created by combining knowledge discovery and data mining with human resource strategy and planning; Face recognition and natural language processing technologies are integrated with the interview process to create a system; Intelligent robots and visual scanning technology can help people educate and learn during the training and development process; An intelligent incentive system can be created by combining data mining technology with the performance

management process; Neural network technology can be used to build an intelligent compensation appraisal system; Finally, speech and robot interface technologies can be used to support employee relationship management to create a corporate advisory system. The recruitment dimension and training dimension using AI are further investigated through the case studies of leap. AI's hiring and Baidu's online training. Finally, the application and further research are added. The conceptual model for AIHRM offers recommendations and guidelines for the advancement of AI in corporate human resource management.

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