

The Future of Human Resource Management in the Era of Artificial Intelligence Applications with a Focus on Some Companies Experiences .

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Abstract:

The study aims to investigate the links between the use of artificial intelligence apps and the effectiveness of HR management in organizations. This may be achieved by tackling the concept of artificial intelligence and its key applications, as well as identifying the areas where AI can be adopted in HRM, and lastly the future of human resources in the presence of artificial intelligence. The study also highlights the experiences of some companies in the field of HRM under AI, relying on a descriptive approach. The study concluded that there is imperative to train and educate human resource personnel about the principles and practices of artificial intelligence, as well as to update and improve artificial intelligence technology utilized in HRM.

Keywords: Apps, Artificial Intelligence, Evolution, Human Resource Management.

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1. INTRODUCTION

Amidst the ongoing advancements and rapid digitization witnessed in the global economy, artificial intelligence represents a crucial tool due to its significant and essential role in reshaping business models. As work landscapes evolve, the process of human resource management is also facing new challenges that need to be addressed. Among these challenges is transforming human resources into a competitive advantage, which, in turn, impacts HR practitioners to utilize contemporary methods, including artificial intelligence, to enhance HR practices in terms of diversity, quantity, and impact.

The utilization of artificial intelligence in human resource management leads to cost-effectiveness and numerous qualitative benefits for both clients and employers. Based on the foregoing, the problematic of our research is formulated as follows: How do artificial intelligence applications contribute to the effectiveness of human resource management in the era of digital transformation?

To address the main problematic, we have formulated the following sub-questions:

- What does artificial intelligence mean, and what are some of its key apps?
What connection exists between HRM procedures and applications of artificial intelligence?
- What effects do applications of artificial intelligence have on the human resource management process?
- How may human resource management change in the future in light of uses of artificial intelligence?

The primary goal of this research is to highlight how artificial intelligence applications and HRM techniques are related through:

- By defining the key terms associated with the research issue (artificial intelligence, human resource management), the theoretical framework is established.
- Understanding how crucial it is to apply artificial intelligence applications in the human resource management process.

- Determining the ways in which artificial intelligence approaches are implemented in HRM in the context of the transition to the digital economy.
- Highlighting how, as the economy moves toward digitalization, artificial intelligence applications affect human resource management.
- Providing insight into how artificial intelligence applications are being used in various countries for human resource management in the context of the transition to the digital economy.

Methodology

The study adopts a descriptive-analytical methodology, given the multifaceted aspects it encompasses and with the aim of addressing the problematic, sub-questions, and analyzing the points outlined in the study's topic. This methodology relies on describing and analyzing the relationship between the study variables to reach results, draw conclusions, formulate recommendations, and provide solutions as suggestions.

2- Artificial Intelligence

2-1-Definition of Artificial Intelligence

Artificial intelligence (AI) is a widely circulated concept and was first used in a paper written by John McCarthy and others in 1955, He defined ai as "“The science and engineering of making intelligent machines." (Nosova, Norkina., et al.2022, 213-277). This is associated with a similar task to using computers to understand human intelligence. But only recently has it gained popularity because of an instant advance in machine learning algorithms, data availability, and processing power. It has influenced every discipline in the humanities, sciences, and technology.

Artificial intelligence (AI) can be defined as a branch of computer sciences that mimics human intelligence to perform tasks based on collected information.(Al-Azam, 2021, 477).

AI also refers to the scientific system that creatively designs and engineers' intelligent devices and software, as well as the use of algorithms for data analysis and interpretation. This system simulates the human

intelligence method of task performance by studying how the human mind thinks and decides when solving problems. Consequently, the results of this study are used to develop such software and intelligent devices. Moreover, these systems and devices can learn and improve their performance automatically based on the data and information they collect over time, becoming more intelligent and efficient to the extent of predicting future expected outcomes (Mukhtar, 2022, 290).

2-2 Characteristics of Artificial Intelligence

The application of artificial intelligence (AI) has permeated limitless fields, endowing it with distinctive characteristics, including (Sabira & Falaq, 2021, 273):

- Utilizing artificial intelligence to solve problems.
- The ability to think, learn, perceive, and acquire knowledge, as well as apply and employ past experiences in novel situations.
- Capacity to utilize trial and error to explore various matters and swiftly respond to new situations and circumstances.
- Capability to handle difficult and complex cases and ambiguous situations, even in the absence or scarcity of information.

2-3-Artificial Intelligence Applications.

Most artificial intelligence applications revolve around the following (OECD, 2021):

- Natural Language Processing: The ability of a computer to process natural language is known as natural language processing, or NLP. It is essential to many everyday applications, including email, web search, digital assistants, and automatic translation.
- Expert systems: They are programs designed to address issues in particular fields. They function by identifying each step of problem-solving based on the expertise of a human professional. Essentially, they act as artificial advisory systems for problem-solving.
- Neural Networks: These are among the most important flexible methods due to their resemblance to the human mind. They possess the ability for self-learning, rapid adaptation, and flexibility in

dynamic environments. The idea here is to simulate the human mind's capability for distinguishing objects and recognizing patterns using computers through the process of self-learning, mirroring what occurs in the human brain.

- **Fuzzy Logic:** This involves a system of principles and concepts utilized in approximate reasoning methods and precise inference techniques. It is used in numerous practical applications, including expert systems and artificial intelligence techniques, especially in decision-making, control, and regulation.
- **Genetic Algorithms:** These are numerical optimization algorithms inspired by natural selection and genetics. They can be used in various industrial fields and in robotic control systems.
- **Robots:** These are devices specifically designed to perform tasks and accomplish activities, including both motor and verbal skills typically associated with humans. Their applications range from automotive assembly lines to wire installations and other precision-based tasks.

3-The Theoretical Foundation of Human Resource Management

3-1-Human Resource Management

Human resource management is one of the most crucial systems for organizational management, as it concerns the human resource as one of the most strategic frameworks of the institution. It is defined as "the management concerned with the planning, organizing, leading, and controlling of human resources to achieve the goals of the individual and the institution. It is responsible for directing the workforce element within the institution through activities aimed at increasing its effectiveness, such as recruitment, employment, training, and reward (Al-Heeti, 2005, p28).

It is also defined as: "The aspect of management that deals with people as individuals or groups and their relationships within the organization, as well as the ways in which individuals can contribute to the efficiency of the organization. Organizational analysis, workforce planning, managerial development and training, industrial relations, employee compensation and benefits, the supply of social and health services, and,

lastly, employee information and records are among these functions."(Ahmed,2019, p562).

The employment, development, motivation, and retention of human resources within an organization are therefore all included in the field of human resource management, which aims to support both the institution's strategic goals and the highest possible level of productivity and effectiveness for its staff (Ahmed, 2019, p562).

3-2-The Importance of Human Resource Management

The significance of human resource management in an organization is highlighted in its preparation and development of human resources with diverse specializations and qualifications, ensuring a good reputation that leads to the enhancement of production in terms of quantity and quality. This importance can be summarized in the following aspects (Abbas, 1990, p33):

- Studying the human element, enhancing working individuals ' productivity, and ensuring stability and continuity in the practice of activities with high efficiency.
- Providing all means and procedures related to the working individuals through the preparation of training programs, wages, salaries, and incentives to ensure optimal performance and increase productivity.
- Coordinating between administrative units and activities related to individuals and workers through discussions with executive departments regarding these activities.
- Assisting in identifying the main difficulties and problems related to working individuals that affect the effectiveness of the institution.
- Helping diagnose organizational efficiency and effectiveness, as well as factors affecting performance adequacy, accident rates at work, complaint rates, regulations, delay rates, and absences through various means related to working individuals.
- Assisting trainers in formulating and implementing policies and solving problems related to working individuals by providing advice and guidance in all aspects.

3-3-The Relationship between Human Intelligence and Artificial Intelligence

The following points illustrate the link between artificial intelligence and human intelligence: By simulating some methods of human intelligence in (Shili, 2024, p86):

- Using symbols in interaction, processing, and object recognition.
- Developing solutions for problems and utilizing human expertise in a particular field, transferring it to computers in the form of programs and systems. This has led to the emergence and development of symbolic processing, problem-solving, knowledge processing, and expert systems.
- Simulating methods of human perception, understanding, and speech has led to the development of programs and systems for natural language processing, understanding, and processing, where computers understand natural languages such as English and Japanese, for example, and perform automatic translation between them.
- By creating models to simulate the workings of neural cells in the brain, especially those related to balanced processing, it has been possible to develop models for human mental behavior and advance mathematical modeling to simulate cognitive behaviors and develop theories of learning and balanced processing simulation.
- Advance neural networks and neural computing, which have become capable of simulating learning and recognition in humans.

3-4-Advantages of integrating artificial intelligence techniques into HRM practices

There are a number of advantages to integrating artificial intelligence tools into HRM procedures that support these practices.

Among these benefits are:

- Time-saving and cost reduction.
- Increased speed of accomplishment and enhanced efficiency.
- Reduction of errors.
- Neutralization of human bias and discrimination.

Enrichment of learning and organizational development.

4-The Relationship between the Use of Artificial Intelligence Applications and Human Resource Management Practices

4-1-Fields of Using Artificial Intelligence Programs in Human Resource Management

The fields of using artificial intelligence in human resource management are extensive and can be pointed as follows (Artificial Intelligence and its Applications, 2023):

Recruitment Field: Today, artificial intelligence programs have helped human resource specialists in the search for and attraction of talent. AI programs scour and verify individual profiles on recruitment websites and platforms, facilitating the talent acquisition process, which significantly impacts elevating an organization's status and achieving its objectives.

Employment Field: Today, the majority of countries and organizations rely on artificial intelligence programs in recruitment processes. Job applications are submitted electronically, and programs automatically filter job applications and resumes, automatically excluding those who do not meet the requirements. Accepted applicants are then corresponded with to qualify them for the second stage of the job application process.

Performance Analysis and Evaluation: Artificial intelligence programs now conduct self-analysis of employees' performance, identifying their strengths and weaknesses based on data inputted into employee files by human resources specialists.

Attendance Monitoring and Working Hours: Artificial intelligence applications have addressed the issue of employee absenteeism during working hours in organizations. This is achieved by integrating surveillance cameras in organizational buildings with AI programs to recognize facial recognition and automatically record attendance and departure times from work.

Automation of Human Resource Management Tasks: This involves archiving all tasks, data, schedules, and working hours for each employee in

a single file automatically, saving time and effort for human resources specialists.

4-2-Applications of Artificial Intelligence in Human Resource Management

From the most important applications of AI that is becoming more and more common in the work of HR specialists across a variety of enterprises are the following (Hajj, 2022):

A. Hire Smarter: With the help of this application, HR professionals may more effectively and strategically select the best candidates, aligning with the organization's goals and strategy. This tool matches candidate profiles to the abilities, credentials, and work history needed for certain job openings using artificial intelligence and machine learning based on data. It filters applications and eliminates those that do not match the requirements to save time and effort and maximize the success and prosperity of the recruited position. It eliminates administrative bureaucracy in recruitment processes by automating difficult tasks such as reviewing candidate profiles and resumes, matching required skills with job requirements, and saving and archiving all resumes in an independent database for reference when needed.

B. Engage Smarter: It facilitates effective interaction between managers, supervisors, and employees, optimizing employees' interaction with the organization to achieve higher levels of ethics, improve productivity, and maximize employee growth efficiently and effectively. Customized employee onboarding processes based on data and artificial intelligence can make an employee work quickly, efficiently, and effectively to improve overall employee productivity. It also provides additional features for employees, guiding professional growth through recommended procedures such as education, training, and suggested guidance

C. Work Smarter: This application provides features for automating routine tasks intelligently, efficiently, and effectively, ensuring compliance, detecting errors, suggesting modifications, and providing suitable tools to manage work affairs. These procedures and interfaces guide HR specialists in improving productivity and efficiency by automating routine and tedious

tasks, suggesting smart procedures for handling them, and providing appropriate solutions. Additionally, it includes automation of inputting dates, times, and expenses, as well as providing compensation packages for recruiting managers for new employees. All of these applications are cloud-based to assist human resources specialists in performing their tasks.

4-3-The effectiveness of human resource management practices in institutions with the use of artificial intelligence applications:

The main objectives of human resource management in the current Fourth Industrial Revolution are quality and efficiency. As a result, its digital transformation has become inevitable, serving as a strategic tool in the competitive business environment. Concepts such as electronic human resources, human resource information systems, and digital human resources have emerged, all indicating the integration of technology into HR practices.

In the face of rapid technological advancement, HR practitioners are challenged with integrating effective technological methods and tools into HR operations. The noticeable emergence of artificial intelligence technologies in the past decades has made it a major focus in the technical aspect of human resource field, with its usage continuously increasing, especially in recruitment and selection processes, described as the core of human resource management. Given the geographic diversity of job seekers and their large numbers, relying on artificial intelligence to manage these processes and make informed decisions to obtain the required human resources for organizations is imperative.

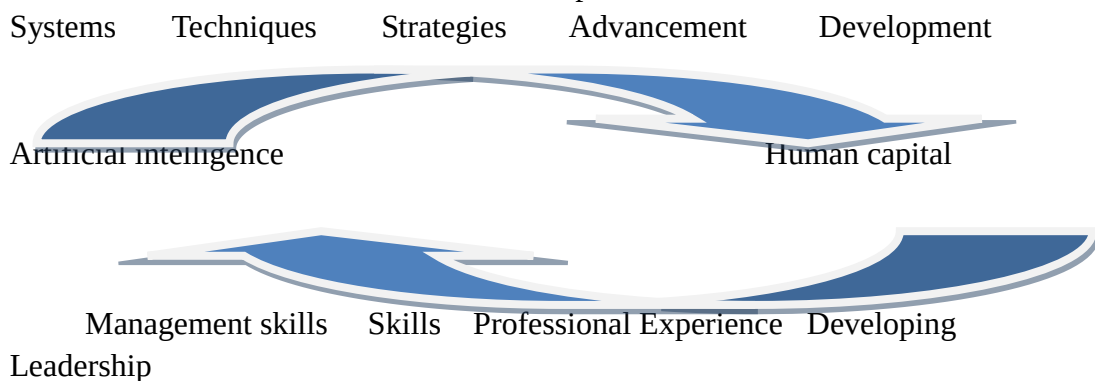
Researchers point out that organizational change, technological globalization, job seekers' awareness, and societal change are all factors contributing to the trend towards using artificial intelligence in recruiting suitable human resources for organizations. Consequently, HR managers have become aware of the necessity of integrating artificial intelligence into research to acquire competitive human resources that add value to the organization.

The most advanced aspect of using artificial intelligence in recruiting and selecting human resources extends beyond just conducting interviews

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and includes analyzing candidates' personalities through body language, detecting non-genuine responses when answering interview questions through applications (Saleh, 2022, p6). Artificial intelligence and its diverse technologies and future prospects fundamentally rely on the presence of efficient, skilled, experienced, and knowledgeable human capital. The figure below illustrates the relationship between artificial intelligence applications and human capital.

Figure (01): The Relationship between Artificial Intelligence Applications and Human Capital.



Source: Shili, I. (2023). Human Resource Management in the Face of Challenges of Artificial Intelligence Application. Arssad Journal of Economic and Administrative Studies, 6(1), 88.

4-4- How AI Might Impact Human Resource Management in the Future:

Like those in other industries, human resource departments in companies and organizations are carefully considering whether to use artificial intelligence technology to optimize performance.

However, they are also aware of the potential risks involved in embracing this technological revolution. In the future, artificial intelligence will be capable of appointing competent employees and separating those who fail to achieve their set goals from those set by the administrations.

Additionally, it will perform more complex tasks, such as responding to employee inquiries regarding HR matters like job evaluations, mechanisms for salary increases, managing and selecting programs that contribute to developing employees' performance, managing their records, and much more. As evidence of the increasing interest of HR departments in

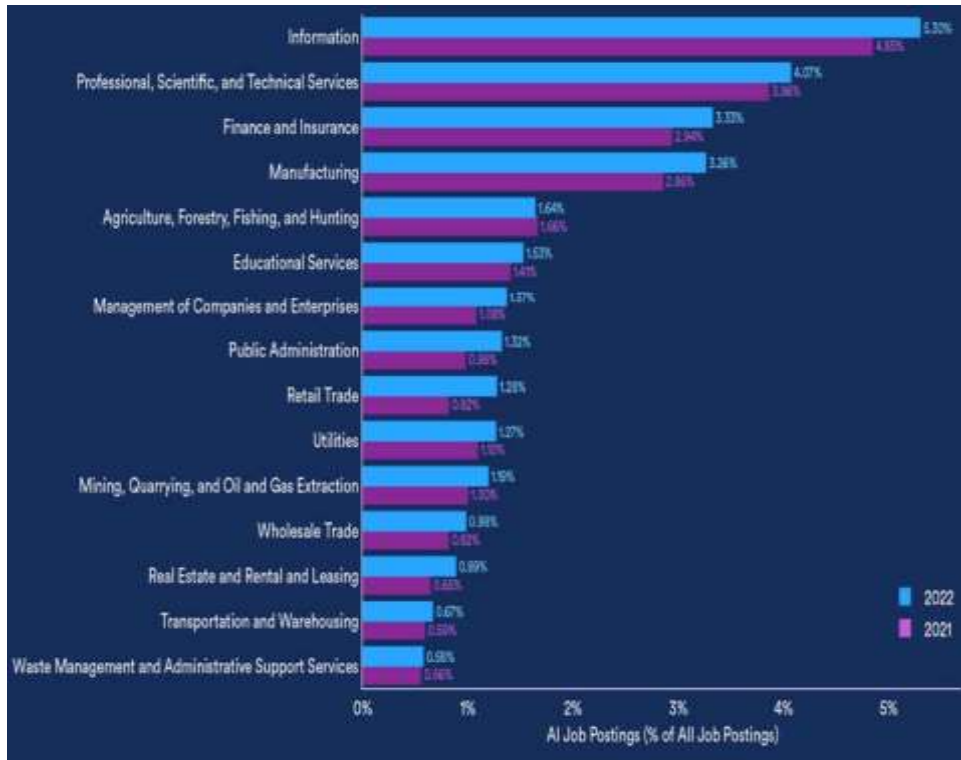
artificial intelligence applications, IDC, a research company, stated in a study about the future of businesses that 60% of global companies will adopt artificial intelligence and machine learning tools to support their operations and enhance employee performance and satisfaction. Moreover, 80% of international institutions stated that by 2024, they will have HR department managers supported by expertise in artificial intelligence to apply their knowledge in recruitment, evaluation, and employee-related development activities (Khalil,2023).

In light of artificial intelligence and digitization, employees are concerned about the possibility that robots and intelligent software may eventually replace them:

- It is expected that artificial intelligence would generate 97 million new employments worldwide by 2025.
- The global jobs that artificial intelligence will replace by 2025 are estimated to be 85 million.
- Half of the global workforce will need retraining by 2030. Digital technologies such as automation, robotics, AI, and machine learning could replace 16% of US jobs by 2025.
- Up to 20 million factory jobs could be replaced by robots by 2030.36 million Americans with jobs depending on automation and technology enhancements may be able to perform 70% of their tasks by robots by 2030.
- Over 800 million employees worldwide may lose their jobs (one-fifth of the global workforce), and robots will replace them.

The following figure illustrates the most important emerging jobs and professional fields in the future:

Figure (2): Future Jobs Related to Artificial Intelligence



Source: Available at :<https://hai.stanford.edu/news/2023-state-ai-14-charts>

5-Some Companies' Experiences in Utilizing Artificial Intelligence in Human Resource Management Practices

Artificial intelligence (AI) is on the verge of revolutionizing traditional methods of resume screening and new employee recruitment. Through specialized algorithms, AI enables the gathering of extensive applicant data online, such as profile information on social media platforms, records of previous employment, and educational qualifications aligned with the required job description. This capability can significantly reduce recruitment time by over twenty days and facilitate the identification of suitable candidates through unbiased search processes, unaffected by racial, gender, or religious stereotypes.

Open AI, a startup based in New York, has adopted the development of a blind resume screening system using AI. This system goes beyond mere resume screening to determine a person's suitability for an interview

by sending an email containing questions similar to those asked in a personal interview. The company's system distinguishes itself by removing names, gender, race, age, and other personal data from profiles, enabling comparisons based solely on candidate qualifications, thereby minimizing bias.

Similarly, HireVue, based in the United States, employs AI to build a tool for assessing candidates through video interviews. The tool analyzes interview responses, word choices, word repetition, eye movements, facial expressions, and other features. Interview questions for each job are customized in coordination with a team of data scientists, engineers, and psychologists, aiming to identify the characteristics that increase the likelihood of selecting the right person for the right position.

Conversely, the recent proliferation of conversational robots in the field of human resources aims to reduce workload pressure, time constraints, enhance employee autonomy, and minimize bureaucracy. These chatbots perform both simple and critical tasks simultaneously, such as answering employee questions and dealing with routine problems. Oracle, for instance, has launched its chatbot as a virtual assistant for the human resources department, capable of creating a virtual preview of an employee's inquiry card containing their name, address, and contact information within seconds via a short message conversation (Intelligence Center. (n.d.).)

6-Challenges in the Use of Artificial Intelligence Applications in Human Resource Management Practices

Despite the contribution of artificial intelligence to enhancing the efficiency and effectiveness of human resource practices, this is predicated on idealized application assumptions. Business organizations, as entities influenced by numerous variables and factors, pose potential challenges to the implementation of development agendas, especially when integrating AI technologies into human resource management. Among the significant obstacles are:

Lack of the head management support for transitioning towards AI technology, whether in allocating necessary financial resources or providing training.

Absence of an organizational culture conducive to innovation in digital technology.

Inadequate technological infrastructure and a shortage of human resources with the necessary skills to handle AI technologies.

7-Conclusion

The impact of artificial intelligence is increasingly felt across all aspects of life and work, including its broad influence on human resource management methods. With the advancement of AI technologies, it has become possible to simulate human cognitive functions such as learning, problem-solving, evaluation, and decision-making. Therefore, integrating human resources with artificial intelligence represents a qualitative leap and mitigates the negative effects of administrative processes and errors.

The study concluded the followings:

- The application of artificial intelligence technology in human resource management has become a necessity, calling for an expansion in the use of AI applications in human resource management processes.
- The study elucidates numerous areas where human resources benefit from activating artificial intelligence, notably in recruitment and selection, enabling transparency and improving overall performance.
- The integration of artificial intelligence with human resource management practices alters how organizations recruit, manage, and engage their workforce using AI.
- The study indicates the benefits of applying artificial intelligence in various human resource management processes, thereby addressing challenges facing the application of AI in human resource management and contributing to enhancing the effectiveness and efficiency of human resource functions in organizations.

8-Recommendations and Suggestions

It is imperative to update and enhance the artificial intelligence applications used in human resource management, especially considering the significant advancements in technology and digital transformation policies. This measure contributes to improving the efficiency of human resource management processes and enhancing employee experience.

It is essential for organizations to implement training courses for their employees in the field of artificial intelligence to develop their performance and keep pace with developments. This action enhances employee qualifications and enables them to maximize the benefits of modern technology in their daily work context.

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