



Analysis of the Impact of Artificial Intelligence in Enhancing the Human Resource Practices



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Abstract: Artificial intelligence, in a larger sense, refers to computers that have human intelligence-specific capabilities such as obtaining information, perceiving, seeing, thinking, and making decisions. At first glance, artificial intelligence, often known as "Artificial Intelligence" (AI) in the literature, causes everyone to associate something distinct. According to researches, the concept of artificial intelligence evokes an electro-mechanical robot replacing human beings, but everyone involved in this field is aware that there is a definite difference between human beings and machines. The aim of this article is to show the importance of using AI in today's HR practices. In this context, one of the qualitative research designs, phenomenological research, was deemed inappropriate for the thesis study. Because phenomenology establishes a framework for exploring subjects that aren't utterly unfamiliar but whose meaning isn't quite clear. AI-based HR apps have the ability to boost employee productivity while also assisting HR personnel in becoming educated advisers who can boost employee performance. AI-enabled HR solutions are capable of evaluating, predicting, diagnosing, and locating more powerful and capable employees.

Keywords: Artificial intelligence; Digital transition; Human resource

1. Introduction

Artificial intelligence is a field of study that uses computer models to evaluate and formulate mental functions associated to intelligence in humans and then apply them to artificial systems. Artificial intelligence, in a larger sense, refers to computers that have human intelligence-specific capabilities such as obtaining information, perceiving, seeing, thinking, and making decisions. At first glance, artificial intelligence, often known as "Artificial Intelligence" in the literature, causes everyone to associate something distinct. According to researches, the concept of artificial intelligence evokes an electro-mechanical robot replacing human beings, but everyone involved in this field is aware that there is a definite difference between human beings and machines. Computers will never have the ability to convey the analogy of human creativity, emotion and temperament. However, computers have the ability to direct machines that perform certain human behaviors (such as picking up objects and placing them in certain places) and to be the brains of systems that simulate the human thinking process related to a particular area of expertise (such as data computing, medical diagnosis) it is possible. Today, however, large-scale research in the field of artificial intelligence is economically feasible because to the inexpensive and powerful processors made available by advances in computer technology. As a result, significant progress has already been made in expert systems, a sub-field of artificial intelligence, and it has been recognized that expert systems are beneficial in the decision-making process in the corporate world. HR managers collect accurate data on personnel and work processes, personnel training and recruitment, orientation process, and performance appraisal, among other things, in a world where competition is increasing rapidly with the development of technology. They use

artificial intelligence technologies to facilitate difficult functions. HR managers may use artificial intelligence to execute their duties more quickly and efficiently. Today, however, large-scale research in the field of artificial intelligence is economically feasible because to the inexpensive and powerful processors made available by advances in computer technology. As a result, significant progress has already been made in expert systems, a sub-field of artificial intelligence, and it has been recognized that expert systems are beneficial in the decision-making process in the corporate world. HR managers collect accurate data on personnel and work processes, personnel training and recruitment, orientation process, and performance appraisal, among other things, in a world where competition is increasing rapidly with the development of technology. They use artificial intelligence technologies to facilitate difficult functions. HR managers may use artificial intelligence to execute their duties more quickly and efficiently [1].

2. Methodology

The aim of this article is to show the importance of using AI in today's HR practices. In this context, one of the qualitative research designs, phenomenological research, was deemed appropriate for the thesis study [1-3].

Because phenomenology establishes a framework for exploring subjects that aren't utterly unfamiliar but whose meaning isn't quite clear. Everyone is familiar with technological advancements, but the infrastructure required comprehending the concept of AI and its relationship to human resource management produces a phenomenological study pattern. In this article you will become more familiar with the importance and technological Human Resource Management and Artificial Intelligence and its influence in recruiting process. With the advancement of technology, the concept of AI specifies the link between people, objects, and systems through data interchange. With AI, it's possible that the connection between man and machine will take an unanticipated turn from the past to the present. This necessitates firms having their human resource management divisions examine both human-related and digital space technologically. From a practical standpoint, the study of human resource management functions in the context of AI is critical at this time. There are three primary sections to this research. The conceptual framework on which the research is based is discussed in the first section. The theoretical concept of human resource management has been thoroughly investigated in this context. At the same time, the technological development of human resources and the EU and the sectors it covers have been studied. The second section examines at how artificial intelligence is being used in the recruitment process, as well as Wild Intelligence Trainings and HR Performance Assessments, as well as cognitive approaches to the influence of Wild Intelligence on HR management in various countries. The study's third and final segment examines the impact of wild intelligence on human resource management in various firms. Data collection and analysis were used to examine HR management systems in various firms, and the process of data collection and analysis was documented in detail during the identification and investigation of participants [4-6]. Finally, there are findings, which present the outcomes of the data gathered during the field research done with three human resource management candidates working in three distinct firms' human resource management departments. The study is based on questionnaire –interviews in different countries of 230 people, interviews with three human resources management department in the energy, service, information technology, automotive, and telecommunication sectors. After all of the data had been collected, the research data was analyzed. The participants were asked a few questions. In this context, the google survey program, which is widely used in analytical research around the world and in our country, was utilized to analyze the interviews with the participants. During the interview, the participants examined the difficulties brought by Artificial Intelligence one by one and gave their personal opinions.

There were 230 participants in the study, with 83 percent of men and 17 percent of women. When we look at the age groups, we can see that the majority of the young people properly answered the questions. As a result, 33.3 percent of respondents were between the ages of 23 and 25, and 33.3 percent were between the ages of 26 and 35. Young people and respondents aged 36-45 identified other locations.

Because the respondents are young, around 67 percent of them said they have a master's degree when asked about their level of education. On the one hand, this demonstrates that the younger generation is more interested in AI. In addition, respondents were asked if they were now employed. The fact that 83 percent of respondents said yes indicates that the participants are familiar with human resources and the recruitment process. No matter how simple AI is to use, we are more concerned with the financial aspect than with the speed of the procedure. As a result, respondents were questioned, "Do you believe artificial intelligence in human resources is financially important?" 84 percent of those polled said "yes" when questioned.

As a consequence of this study, we can conclude that we require AI, whose rapid development will impact all aspects of our lives in the future, but we also believe that the human factor plays a vital part in human governance.

3. Theoretical Approach to Human Resources Management

According to the traditional economic literature, there are four basic factors of production in the economy: entrepreneur, labor, capital and natural resources. In general, "management activities" in organizations are grouped

under five main headings. According to the classification made, there are activities of planning, organizing, directing, controlling and employing in organizations. People were like a “serfs” as an extension of machine and the psychological needs were ignored. However, the term employee was changed since the 1930s. Due to considerations such as increased competitiveness as a result of globalization, the value of knowledge, and innovation, corporations have sought out various tactics. As a concept, “human resources” is defined as people who work for the organization and contribute to the organization with their knowledge, skills and abilities.

In this way, it is aimed to achieve the goals of the organization by increasing the job satisfaction and motivation levels of the employees. However, the basic procedures in HRM are divided into ten categories, as follows:

- Conducting job analyses,
- Choosing from a group of candidates for a job,
- To provide new hires with orientation and training,
- Setting salaries and pay, providing incentives and bonuses, evaluating performance, and managing communication processes (interview, consultation, warning),
- To ensure and build employee loyalty to the firm,
- To address the training and development needs,
- To ensure and build employee loyalty to the firm.

In a brief, HRM covers applications such as determining the organization's personnel needs, hiring and selecting employees, motivation, training, development, performance evaluation, conflict resolution, communication, and organizational restructuring, as well as creating a work environment where the sense of “we” is dominant through the adoption of corporate culture includes a variety of policies and procedures. Human resource management has two primary functions. The first of these goals is to make the best use of current resources in order to achieve the organization's objectives. The second is to ensure that the organization's employees' expectations are met and that their growth is ensured. In fact, today's knowledge of HRM is widely accepted as the result of working-life experiences, particularly following the Industrial Revolution.

In the literature, the processes that underpin human resource management are classified into four categories:

- Scientific Management Approach
 - Human Relations Approach
 - Staff management
 - Human Resources Management

These advancements, which form the foundation of today's HRM strategy, have advanced steadily from the early 1900s, leading to the idea of “strategic human resources management. In many ways, the Industrial Revolution, which began in England in the second part of the eighteenth century, changed the structure of work and work itself. Small family enterprises were widespread prior to the Industrial Revolution, allowing employers to personally care for their staff.

The massive factories that arose following the Industrial Revolution, on the other hand, weakened the link between employer and employee. Managers have found it challenging to make decisions in this complex system. Employees' work unhappiness was found in this atmosphere, and a strike inclination formed. In the literature, the Scientific Management Approach is considered within the context of the Classical Management Approach. Within the purview of the Classical Management Approach, research and theories on management that originated between the Industrial Revolution and the 1930s are assessed. The German sociologist Max Weber, who created the “bureaucracy” concept, and the French industrialist Henry Fayol, who conducted more management-oriented studies- are two additional key contributors to the Classical Management Approach. Henry Fayol is acknowledged of being the father of modern administration. Fayol's “management process approach,” which is built on discipline and control, is the result of extensive research, particularly in the areas of “management process” and “administrative management” [7-10].

Elton Mayo et al., who performed research on employee productivity in firms and unveiled the “Human Relations Approach” as a result of the findings collected as a result of the trials. This is due to the fact that the “experimental group” outperformed under all circumstances. As the research progressed, it became clear that positive and caring behavior toward employees, rather than physical characteristics, had an impact on the employees.

4. Technological Development of Human Resources Management

The field of human resources management is continually evolving and developing as technology advances. With Industry 4.0 becoming a larger role in our lives, technology also necessitates some significant changes in human resource management units in enterprises. Human resource management is responsible for coordinating and managing employees' efforts, knowledge, and abilities. Human resource management experts have a critical role not only in working digitally in their own divisions, but also in transforming other parts of the company. The digital transformation process in human resources management has begun as leaders in the field learn about new technology, platforms, and ways of working. Industry 4.0 requires intelligent business processes, which need

intelligent production and innovation. People's abilities, aided by learning and information, are essential for innovation. Effective and appropriate management practices can have an impact on learning and knowledge management. Appropriate management strategies are critical for increasing corporate compliance with Industry 4.0. Businesses must rethink and restructure their management techniques in the event of noncompliance [10].

Since 2001, managers have responded that the human resource management department spends 80% of its time administering services such as payroll, relocation, record keeping, and monitoring and development of human resource management systems in some businesses [11-13]. Human resource management departments, on the other hand, have evolved with time. This is due to HR managers' use of strategic and new data collecting and analysis tools to revolutionize effective human resource management. The most important drivers of change in human resource management are advanced new information technology applications.

5. Industry and Business Analysis

A job description is a written summary of the tasks, responsibilities, and behaviors that must be carried out in a certain position. Job requirements are the skills and abilities that employees must possess in order to perform their duties effectively. The fundamental building element of human resource management, job analysis, interacts with a variety of other activities. Technological advancements have changed the organization of work in both production and knowledge-intensive occupations by removing the dependence on fixed workplaces and work schedules. Information and communication technologies, which have not yet reached revolutionary advancements, are expected to play a crucial part in future company design strategies, and human-computer contact will shift from factories to offices, resulting in human-computer cooperation. All of this will necessitate new competences for industrial workers [6]. Defining the required competencies was necessary for developing a workforce to satisfy current and future market needs. Competencies are the set of skills, abilities, knowledge, attitudes, and motivations that an individual requires to successfully complete work-related activities and problems. Companies must provide employees with the option to develop their own essential skill sets. For each specialty, different levels of criteria are required for each job description [13].

A task-based job analysis aims to identify all of a job's activities and responsibilities. Competency-based job analysis, on the other hand, looks at how people apply their knowledge, talents, personality traits, and skills.

Technical competences: state of the art knowledge, technical skills, process understanding, media skills, coding skills, understanding IT security.

Methodological competencies: (creativity, entrepreneurial thinking, problem solving, conflict resolution, decision, analytical skills, research skills, productivity orientation).

Social competencies: (intercultural skills, language skills, communication skills, internet skills).

Personal competencies: (flexibility, uncertainty tolerance, motivation to learn, ability to work under pressure, sustainable mindset, rapport). Strategies must be developed to attract people with the right digital skills. Success with Industry 4.0 will depend on skills and knowledge.

6. Artificial Intelligence

Artificial intelligence brings to mind of an electromechanical robot that takes the place of a human. Everyone working in this field, however, recognizes that humans and machines are not the same. Computers, it is obvious, will never be able to transmit the same level of originality, emotion, or temperament as humans. Artificial intelligence technology applications enable us to expand or automate complex manual tasks. Furthermore, by integrating artificial intelligence technologies with other computer-based information systems, the capabilities and applicability of computers are significantly improved. Marvin Minsky, a pioneer of artificial intelligence research at MIT (Massachusetts Institute of Technology), describes artificial intelligence as a "shifting horizon" in this regard. Artificial intelligence (AI) is an area of science and engineering that creates intelligent systems. Intelligent systems are made up of software and hardware that are designed to achieve a specific goal. The following overlapping titles can be used to group artificial intelligence technologies: robotics, machine learning, deep learning, reinforcement Learning, computer vision, voice and speech recognition, natural language processing and generating, virtual agents, neuromorphic computing, common system, internet of things, crowdsourcing, games, biometric, artificial intelligence supported hardware. The goal of AI is to create machines that can execute tasks that would ordinarily be performed by humans. The goal of AI research is to create machines that can exhibit what we call "intelligent behavior," which we see in humans. When done by people, AI can be defined as any efforts to construct a mechanism that can do activities that need natural intelligence. According to the 2018 Forbes Artificial Intelligence study, 44 percent of manufacturing respondents believe AI will be vital to "production function" in the next five years, while 49 percent believe it would be "critical to success." Our country's exports include durable consumer products (white goods, televisions, air conditioners, and so on), automotive, chemical materials, and mechanical parts [14].

7. Reviewing of the Usage of Artificial Intelligence in the Recruitment Process

Although the term artificial intelligence was first used by John McCarthy in 1956, studies on artificial intelligence were started by English mathematician Alan Turing during World War II. Today, artificial intelligence is used in almost every field. In the HR departments of enterprises, a digital transformation is experienced with Industry 4.0, and this transformation also has effects on recruitment practices [14], states that some of the world's largest companies, such as IBM, Amazon, Google etc. Kolbjornsrud, Amico, and Thomas (2016) state that artificial intelligence will be able to perform administrative tasks that consume most of the time of managers in the near future, faster, better and at a lower cost. Businesses may save a lot of money and time by using artificial intelligence in recruitment. According to Somen Mondal, CEO of Ideal Corp., the usage of artificial intelligence software in recruitment results in a 71% cost reduction and a threefold boost in recruitment productivity [15]. In addition, the accuracy rate in identifying candidates with artificial intelligence applications is quite high. According to Midas IT, a company that specializes in AI analytics, AI interviews can find talented candidates with an accuracy of up to 82 percent. Given that the validity of personality/aptitude testing averages 30-40% and the validity of unstructured interviews lowers to 10%, this is an extremely high level [16]. One of the most important benefits of using artificial intelligence systems to run recruitment procedures is that it eliminates prejudiced or biased behavior on the part of recruiters. Recruiters are said to make a conclusion about a candidate in the first few minutes of a traditional recruitment interview and look for evidence to back up their decision in the following minutes. Artificial intelligence is now applied in a variety of industries, including finance, agriculture, health, manufacturing, marketing, e-commerce, and human resource management [17]. Artificial intelligence also has a significant impact on HR functions. By automating monotonous activities and using predictive algorithms, artificial intelligence technologies enable complicated strategic HR decisions to be made faster and more correctly [18]. Although recruitment methods have numerous advantages, it does not appear that all processes can be completed alone. Companies used to manage the recruitment process more stringent standards before they were involved in the AI process. To get to the island they required, they employed newspaper advertisements or their own advertisements. Companies began to gain from online marketing for recruiting as the Internet became more widely used. As a result, more islands were discovered. The troubles with the recruitment process, however, did not end there. Because a lot of people who had nothing to do with the job criteria applied just to see what would happen. As a result of digitization, there is a deep divide between machine and human power. Artificial intelligence is having a big impact on HR and recruitment as a result of this transition. HR managers recruit applicants with the necessary work skills for a job position through recruitment [19]. In recent years, AI has become an indispensable tool for recruiters, with 76 percent of recruiters believing that AI will have a substantial impact on HR's recruitment role [14]. Artificial intelligence enables for a much faster and more efficient evaluation of massive data in recruitment than traditional methods. A huge number of applications must be assessed during the recruitment process in order to discover the right individual or avoid missing out on a particularly talented candidate. One of the most significant aspects of job applications for candidates is providing feedback on their applications. Because many organizations do not provide feedback to candidates, most candidates have a bad image of the company. Most job seekers, according to study, have a poor image of a company if they do not receive any feedback from employer roles [20, 21]. As a result, candidates are dissatisfied when they receive a late or no response to their job applications. Artificial intelligence allows employers to respond to job applications more quickly. Chatbots are one of the most commonly used artificial intelligence tools in the recruitment process (Chatbots). Chatbots are AI-powered assistants that communicate with applicants in real time and on a personal level. During the employment process, these AI-powered bots are used to chat with applicants, solve problems, and connect with candidates. Although artificial intelligence is quite effective at finding talents, talent consultants, must play an active part in activities such as orientation and cultural fit evaluation.

8. Artificial Intelligence Trainings and Performance Evaluations of HR

Human Resources (HR) management has risen to prominence in management science as a result of tremendous technological advancements in the last quarter of the twentieth century. The process of change, which has become a requirement in all aspects of life in order to adapt to these changes, has had a swift and profound impact, particularly in the workplace. Technology advancements provide enormous convenience to daily life, but they also initiate a new transformation process in sectors such as business, labor, security, economy, social relations, and psychology for businesses. Artificial intelligence product applications are slowly becoming an industry, and they are affecting people's lives more and more every day. Artificial intelligence has made a name for itself in a variety of fields as a result of its revolutionary progress. Industry 4.0, for example, is now being applied in a variety of fields, including cancer diagnosis, Instagram effects, the defense and space industries, driverless vehicles, and energy network management.

Artificial Intelligence is gaining traction in the manufacturing industry, particularly with the introduction of Industry 4.0 facilities and production methodologies [22-24]. Artificial intelligence is reshaping the functions of

organizations today, thanks to the digital age's development. As a result, HRM will need to modify its plans. Artificial intelligence (AI) is a broad category of technology that allows computers to perform tasks that would ordinarily require human cognition, such as decision-making. Deep learning with neural networks has become increasingly common in some data-rich organizations as a result of recent advances in pattern recognition and natural language processing, resulting to an approach to true artificial intelligence, which reflects the ability of machines to mimic adaptive human decision making. Artificial intelligence is reshaping the functions of organizations today, thanks to the digital age's explosive growth. As a result, HRM's strategies will need to be reshaped. Artificial intelligence (AI) is a broad category of technology that allows computers to perform tasks that would ordinarily need human cognition, such as making decisions. Today's HR department is embracing the digital revolution, employing big data analytics, artificial intelligence, and cloud computing to streamline resources. Most businesses have chat, screening, job integration programs, and interviews, among other things. Artificial intelligence or digital technologies such as chatbots, machine learning, and robot transaction automation are employed in HRM, which provides support. The following is a list of the function of artificial intelligence in human resource management [21]:

- Recruitment process
- Screening and interview process
- Reducing Administrative Burden
- Selection process
- Reducing discrimination
- Increasing efficiency
- Enriching learning (eg. Duolingo)

Work data such as an employee's work history, team information, or performance rating can also be accessed by managers or HR personnel. Through conversational AI, they may also provide analytical and key performance indicator information, such as top performers and pending transaction requests among staff [15]. Team managers can use AI to develop digital training opportunities for their employees based on skill gap analyses. Employees and managers can use conversational AI to track their training progress. HR managers, on the other hand, should be aware of their limitations. Those working with artificial intelligence technologies should receive regular training and improvement in digital skills. Artificially Intelligent Human systems require constant HR monitoring and supervision. Humans are the only ones who can understand certain human phrases, symbols, and languages. Creativity, empathy, teamwork, and the capacity to interact with artificial intelligence systems can all contribute to a more productive workplace [25]. One of the industry's most fundamental issues is finding the suitable individual to employ AI tools, and hiring the HR department might be difficult. Another limitation and challenge is to prevent the HR department from making daily decisions, because technology can sometimes override authority. Empathy and human interaction, or the ability to choose a candidate and get to know them personally during the employment process, are two of the most crucial features that artificial intelligence technology lacks. Humans, on the other hand, have emotions when AI sees data. As a result, whether AI technology is the ideal solution for business demands is up for dispute. On the other side, if cognitive technologies such as artificial intelligence become more widely used in the future, the human resources department is likely to diminish.

9. The Impact of Artificial Intelligence on the HR Management in Different Countries

According to the Future Professions Report (2016), ten basic skills are required between 2015 and 2020, based on corporate expectations. Problem solving skills, teamwork, people management, critical thinking, negotiating skills, quality control, service orientation, reasoning and decision making, active listening, and creativity are among the top skills for 2015. However, as a result of the digital transformation process, this ranking is projected to shift in 2020, with new capabilities being added to the list. According to the World Economic Forum, the top three qualities that anyone seeking a successful job in the labor market of 2020 should possess are problem solving, critical thinking, and creativity.

Emotional intelligence and cognitive flexibility are two additional qualities added to the list. According to studies, a child born today will change occupations at least seven times throughout his working life. Five of the aforementioned vocations are not currently available in the labor market, according to the World Economic Forum (2016), and these are the employment that will arise in the labor market as a result of digitalization and technological improvements. The total number of new jobs created equals the total number of jobs lost. Unlike recent years, though, job creation is anticipated to slow.

On the other side, it is anticipated that by 2025, 85 million employment could be lost due to a shift in human-machine collaboration, while 97 million new occupations better suited to the new human-machine-algorithm collaboration could arise (World Economic Forum, 2020). In the next five years, half of the current workforce will need to upgrade their abilities. Many young people lack fundamental and digital skills, and few have the opportunity to learn them once they graduate from high school. In any given month, just one out of every ten adults

attends any training, while 1 million ICT job openings stall investments in digital transformation. More than half of organizations who employed or attempted to hire ICT specialists in 2018 said they had trouble filling vacancies. According to the National Bureau of Statistics, between 2011 and 2017, 25.3 percent of all supermarket checkout assistant jobs in the UK vanished, owing mostly to automation. As a result of automation, entry-level jobs such as laundry workers, farm workers, and tire repairers have declined by 15% or more. On the other hand, in the United Kingdom, the effects of automation are hidden by atypical work in the form of zero-hour contracts at the labor market entry level, as well as the development of such unusual jobs (ILO, 2020: 87). Nine technology-related jobs reached a Team Lease analysis of vacancies posted on specialized job portals in India in the last four months of 2018: CAD Technician, Java Developer, CAD Designer, Mechanical Designer, Mechanical Engineer, Quality Engineer, Design Engineer, Junior Software Engineer, and CAD Drafter. The demand for specialist high technology has risen dramatically. Technical talents (e.g., artificial intelligence, automation, cloud technology, internet of things) and soft skill sets are required in this sector (e.g. analytics and problem solving, interpersonal communication and the ability to work in teams). The employment information network managed by the Korean Employment Information Service (KEIS) in the Republic of Korea, for example, contains of several databases and systems: Work-Net (contains information about all open positions in the country); Employment Insurance (provides information on unemployment benefits services); Human Resources Development Network (deals with vocational education and training); BaroONE system (integrates welfare and employment services); W-Net (contains information about all open positions in the country); W-Net (contains information about all open positions in the (providing integrated information about jobs in public employment programs and supporting the management of such jobs). The country's public employment service provides precise information to job seekers and businesses in this way [26-29]. The Republic of Korea's goal is to track job applicants throughout their careers so that governmental employment services can better satisfy their demands. The X-Road data exchange system, which was launched in Estonia as part of the "e-Estonia" initiative, allows all government departments and collaborating companies to share information about individuals. During the employment matching process, the Belgian Flemish Public Employment Services focuses on the individual's qualifications, talents, and licensing, rather than professions and credentials. It also provides an example for certain other European countries in this regard. Belgian Flemish Public Employment Services aims to find the person with the right set of qualifications, motivation, and a productive and effective match for a job where certain certifications are demanded in today's labor market, which requires more qualifications, based on the individual's skills.

10. Conclusions

Due to the influence of Artificial Intelligence, it's more crucial than ever to figure out how human resource management departments understand the subject and what kinds of applications they've produced. Because this method reveals whether the field of human resources management may be further computerized in the future. The participants were told that Artificial Intelligence should not be disregarded in its historical evolution, or even in its application now, as a result of the difficulties identified as a result of the literature research and interviews. This might be seen as a measure of how important human resource management is in the current industrial environment. Artificial Intelligence's economic, social, technical, environmental, political, and legal forces have also proved beneficial in the area of human resource management. The notions of man and machine generated by Artificial Intelligence have been explored together, and human-machine collaboration has come to us as a meeting more intensely articulated by the participants, despite widespread views on the idea that the machine will take the place of man. AI-based HR apps have the ability to boost employee productivity while also assisting HR personnel in becoming educated advisers who can boost employee performance. AI-enabled HR solutions are capable of evaluating, predicting, diagnosing, and locating more powerful and capable employees. Every company has its own set of objectives, budgets, and desires. The beauty of the AI sector, on the other hand, is that it has a solution for everyone, no matter how big or small their problem is. Artificial intelligence is now used in a variety of applications, including cell phones, aviation controls, and field operations. HR professionals can also use AI to improve results and dismiss personnel more quickly. However, the implications for business and HR have yet to be completely realized. HR departments, on the other hand, must strike a balance between AI technology advancements and openness. To decrease prejudice against their initiatives, HR leaders and practitioners must have a thorough understanding of how decisions are made. This openness will be critical in gaining employee trust in new technology. Although there are numerous benefits to employing AI technology for human resource and recruitment needs, nothing in life is flawless [10].

Data Availability

The data used to support the findings of this study are available from the corresponding author upon request.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

References

- [1] D. Angrave, A. Charlwood, I. Kirkpatrick, M. Lawrence, and M. Stuart, "HR and analytics: Why HR is set to fail the big data challenge," *Hum. Resour. Manag. J.*, vol. 26, no. 1, pp. 1-11, 2016. <https://doi.org/10.1111/1748-8583.12090>.
- [2] K. Ardiç and Y. Özdemir, *İnsan Kaynakları Yönetimi (DersNotları)*, Sakarya: Sakarya Yayıncılık, 2018.
- [3] A. K. Upadhyay and K. Khandelwal, "Applying artificial intelligence: Implications for recruitment," *Strat. HR Rev.*, vol. 17, no. 5, pp. 255-258, 2018. <https://doi.org/10.1108/SHR-07-2018-0051>.
- [4] R. Khosla, M. T. Chu, and K. Nguyen, "Human-robot interaction modelling for recruitment and retention of employees," In International Conference on HCI in Business, Government, and Organizations, Toronto, Canada, July 17-22, 2016, Springer, pp. 302-312. https://doi.org/10.1007/978-3-319-39399-5_29.
- [5] W. Bauer, M. Hämmerle, S. Schlund, and C. Vocke, "Transforming to a hyperconnected society and economy towards an 'Industry 4.0'," *Procedia Manuf.*, vol. 3, pp. 417-424, 2015. <https://doi.org/10.1016/j.promfg.2015.07.200>.
- [6] S. Button and J. Mathieu, "Goal orientation in organizational research: A conceptual and empirical foundation," *Organ. Behav. Hum. Dec.*, vol. 67, no. 1, pp. 26-48, 1996. <https://doi.org/10.1006/obhd.1996.0063>.
- [7] P. Tambe, P. Cappelli, and V. Yakubovich, "Artificial intelligence in human resources management: Challenges and a path forward," *Calif. Manage. Rev.*, vol. 61, no. 4, pp. 15-42, 2019. <https://doi.org/10.1177/0008125619867910>.
- [8] C. Çetin, M. L. Arslan, and D. Esra, *İnsanKaynakları Yönetimi*, 4. Bs., İstanbul, Beta Basım Yayım A.Ş., 2015.
- [9] S. Shamim, S. Cang, H. Yu, and Y. Li, "Management approaches for industry 4.0: A human resources management perspective," In 2016 IEEE Congress on Evolutionary Computation, Vancouver, BC, Canada, July 24-29, 2016, IEEE, pp. 5309-5316. <https://doi.org/10.1109/CEC.2016.7748365>.
- [10] E. Premnath and A. A. Chully, "Artificial intelligence in human resource management: A qualitative study in the Indian context," *J. Xi'an Uni. Arch. Techn.*, vol. 11, no. 12, pp. 1193-1205, 2020.
- [11] B. Hmoudve and V. Laszlo, "Will artificial intelligence take over human resources recruitment and selection?," *Network Intell. Stud.*, vol. 7, no. 13, pp. 21-30, 2019.
- [12] R. House, P. Hanges, M. Javidan, P. Dorfman, and V. Gupta, "Culture, leadership and organizations: The GLOBE study of 62 societies," *Sage Publications, Inc.*, vol. 49, no. 4, pp. 641-647, 2004.
- [13] Q. Jia, Y. Guo, R. Li, Y. Li, and Y. Chen, "A conceptual artificial intelligence application framework in human resource management," In ICEB 2018 Proceedings, (ICEB), Guilin, China, 2018, AIS eLibrary, pp. 105-114.
- [14] B. C. Lee and B. Y. Kim, "Development of an ai-based interview system for remote hiring," *Int. J. Adv. Res. Eng. Techn.*, vol. 12, no. 3, pp. 654-663, 2021. <https://doi.org/10.34218/IJARET.12.3.2021.060>.
- [15] I. Tewari and M. Pant, "Artificial intelligence reshaping human resource management: A review," In 2020 IEEE International Conference on Advent Trends in Multidisciplinary Research and Innovation, (ICATMRI), Buldhana, India, December 30, 2020, IEEE, pp. 1-4. <https://doi.org/10.1109/ICATMRI51801.2020.9398420>.
- [16] A. Hemalatha, P. B. Kumari, N. Nawaz, and V. Gajenderan, "Impact of artificial in: Intelligence on recruitment and selection of information technology companies," In 2021 International Conference on Artificial Intelligence and Smart Systems, (ICAIS), Coimbatore, India, March 25-27, 2020, IEEE, pp. 60-66. <https://doi.org/10.1109/ICAIS50930.2021.9396036>.
- [17] R. Geetha and S. R. D. Bhanu, "Recruitment through artificial intelligence: A conceptual study," *Int. J. Mecha. Eng. Techn.*, vol. 9, no. 7, pp. 63-70, 2018.
- [18] B. Hmoud and V. Laszlo, "Will artificial intelligence take over human resources recruitment and selection," *Netw. Intelli. Stu.*, vol. 8, no. 13, pp. 21-30, 2019.
- [19] M. V. V. Yawalkar, "A study of artificial Intelligence and its role in human resource management," *Int J. Res. Anal Reviews*, vol. 6, no. 1, pp. 20-24, 2019.
- [20] "The new age: Artificial intelligence for human resource opportunities and functions," Ey, 2018, [https://www.ey.com/Publication/vwLUAssets/EY-the-new-age-artificialintelligence-for-human-resource-opportunities-andfunctions/\\$FILE/EY-the-new-age-artificial-intelligence-for-human-resourceopportunities-andfunctions.pdf](https://www.ey.com/Publication/vwLUAssets/EY-the-new-age-artificialintelligence-for-human-resource-opportunities-andfunctions/$FILE/EY-the-new-age-artificial-intelligence-for-human-resourceopportunities-andfunctions.pdf) (E.T. 18.07.2019)
- [21] M. Soleimani, A. Intezarive, and N. Taskin, "Cognitive biases in developing biased artificial intelligence recruitment system," In Browse the contents of Hawaii International Conference on System Sciences 2021, Honolulu, HI United States, January 5-8, 2021, HICCS, pp. 5091-5099.

- [22] M. Armstrong and S. Taylor, *Armstrong's Handbook of Human Resource Management*, Koganpage, London, 2020.
- [23] S. Jain, "Is artificial intelligence –the next big thing in HR?," In International Conferance on Innovative Research in Science Technology and Management Modi Institute of Management & Technolohy, Dadabari, Kota, Rajasthan, January 22-23, 2017, SMU, pp. 1-1.
- [24] S. Müller, F. Willicks, S. Stiehm, A. Richert, and S. Jeschke, "Demography management in industry 4.0: First results of a qualitative study," In Proceedings of the 12th European Conference on Management, Leadership and Governance, UK, 2016, Academic Conferences and Publishing International Limited, pp. 199-205.
- [25] N. Oswal, M. Khaleeli, and A. Alarmoti, "Recruitment in the era of industry 4.0: Use of artificial intelligence in recruitment and its impact," *PalArch's J. Archae. Egypt/Egyptology*, vol. 17, no. 8, pp. 39-47, 2020.
- [26] N. Nawaz, "Artificial Intelligence interchange human intervention in the recruitment process in Indian software industry," *Int. J. Adv. T. Com. Sci. Eng.*, vol. 8, no. 4, pp. 1433-1442, 2020.
- [27] O. Allal-Chérif, A. Y. Aránega, and R. C. Sánchez, "Intelligent recruitment: How to identify, select, and retain talents from around the world using artificial intelligence," *Technol. Forecast. Soc.*, vol. 169, Article ID: 120822, 2021. <https://doi.org/10.1016/j.techfore.2021.120822>.
- [28] B. Sivathanu and R. Pillai, "Smart HR 4.0 – how industry 4.0 is disrupting HR," *Hum. Resour. Manag. Int Digest*, vol. 26, no. 4, pp. 7-11, 2018. <https://doi.org/10.1108/HRMID-04-2018-0059>.
- [29] S. Strohmeier and F. Piazza, "Artificial intelligence techniques in human resource management-A conceptual exploration," *Int. Tec. Eng. Manag.*, vol. 87, pp. 149-172, 2015. http://dx.doi.org/10.1007/978-3-319-17906-3_7