**Title:** “Impact of Artificial Intelligence on effectiveness of human resource management functions in IT sector”

1. **ABSTRACT**

Artificial Intelligence (AI) has opened up tremendous opportunities in the workplace through robotics innovation, which envelops both AI and the Internet of Things (IoT). Precision, Efficiency, and Flexibility are considered the potential benefits of Industry 4.0. The implementation of Industry 4.0 requires a lot of changes, including the Human Resource (HR) function. In Industry 4.0, the HR capability is more critical and gives an upper hand to the organization. The HR capability should be more cautious and adaptable to adjust to the difficulties and requirements. We study the contributions of AI in HR digitalization and practices in Industry 4.0. 271 HR experts working in Information Technology (IT), Manufacturing, and administration are selected to participate in this review focusing on five AI applications in HR capability and three elements of HR readiness.

The information collected was examined utilizing the Statistical Package for Social Sciences (SPSS) tool and Analysis of Moment Structures (AMOS). The results uncovered that hierarchical organization examination is a fundamental part of acquiring sustainable development. Adaptability and human asset capability are upheld by each of the five components of AI application areas of HR. Well-being and Safety improvement were viewed as vital components under the AI application in HR.

1. **INTRODUCTION**

In the era of Industry 4.0, the Human Resource (HR) function plays a critical role in bridging the gap between technology and human resources. Although technology is taking over most of the tasks traditionally performed by human resources, there is still a growing need for flexible HR functions to address the challenges of managing people. To achieve this flexibility, technology can help bring agility to the HR process. Agility, which is the ability to move quickly and smoothly, is not a new concept and has been adopted by major companies such as Google, Apple, Facebook, Amazon, and Microsoft. In the context of HR, agility means the ability to adapt and develop individuals and processes in response to rapid and unpredictable changes, to support people, key strategies, and organizational adaptability. As an HR or Learning and Development (LandD) professional, being agile means being able to drive employee engagement and retention in alignment with the company’s overall objectives. HR Agility is particularly suitable for volatile HR functions where standardization of functions is difficult.

In order for organizations to become agile, their workforce must focus on customer satisfaction and deliver value to them. However, since the HR function is not typically designed to provide direct incentives to the customer, it is often criticized for being slow to respond, which leads to dissatisfaction among employees. Therefore, organizations must encourage and empower HR to be more attentive and responsive to changing technologies and business needs in order to remain competitive and attract top talent. In an agile organization, HR continues to provide recruitment, development, performance management, and other HR functions, but using agile methodologies. There are three aspects of HR agility: the ability to quickly and efficiently identify issues that need to be addressed, the ability to reduce the time it takes to develop and implement a response, and the integration of analysis and design thinking to anticipate, plan, and target programs with the highest likelihood of success.

Technology has always been a tremendous enabler that improves and empowers people, strengthens living standards, creates new doors, encourages creativity for workers and makes everybody‘s workplace fair. Artificial intelligence (AI) is the term used to describe the technology utilized for performing tasks that involve a certain degree of intelligence. Globally, there is a rapid progression of artificial intelligence (AI) technology. The statement refers to the implementation of technology that has been instructed to perform tasks in a manner similar to that of a human being. Organizations and enterprises have incorporated artificial intelligence (AI) into their HR operations due to the vast potential and multifaceted applications of this technology. Various prominent companies such as Google, IBM, Amazon, Tesla, and Apple have incorporated artificial intelligence (AI) into their human resources (HR) procedures to innovatively tackle HR-related concerns pertaining to their workforce. The impact of Artificial Intelligence (AI) and its related technologies on various aspects of business and everyday life has been extensively documented.

1. **LITERATURE REVIEW**

(Parry & Tyson, 2011; Bondarouk & Brewster, 2016) say that the integration of technologies with human resource management (HRM) has resulted in an increase in operational effectiveness. The change in HR technologies has also changed the way HRM is done. For example, online recruitment, training, and management of skills are all examples of how HRM has changed (Stone et al., 2015).

Anupam jauhari (2017): In the paper title how AI and machine learning can affect HR practices today. AI is becoming increasingly relevant and reshaping the way businesses employ and do every activity recruitment is simple for practitioners as machine learning technology will use chatbot to carry out all activities, AI will screen candidates and send the confirmation or rejection email to the candidates. according to the analysis of India report of Delloite 5th annual global human capital trends 53% of companies are ready to deploy digital tools while 22% have already deployed their tools.

Barbara van pay (2018): In this article how AI is reinventing HR it was clearly stated that all the organizations mostly looking for AI solutions for their business and they are scared of letting a non-human entity handle the procedures of business. By using the AI in organization it can reduce the time consumed for filling and hiring the candidates who applied for the job, through screening multiple candidates, gathers data they rank the candidates by considering other information like experience ,skill set etc., to find right person. After finding the perfect fit for the role next main part is interviewing, now days AI interviewing software such as hike are used mostly. AI technology takes care from sourcing to interview which drastically reduces the recruitment timeline and help to hire right candidates with ability to perform in specific roles and make placements much easier and at faster rate.

1. **RESEARCH OBJECTIVE**
* Assessment of Current Practices: Recognize the current state of talent management, employee engagement, performance reviews, and recruitment within the IT industry.
* Finding Applications of AI: Determine and examine how AI technology may be used to improve a range of HRM operations, including automated administrative processes, personnel management with predictive analytics, and AI-driven recruitment tools.
* Assessment of Advantages and Difficulties: Examine the advantages of incorporating AI into HRM processes, such as better productivity, better judgment, and a better work environment, as well as the drawbacks, such as algorithmic bias, data privacy issues, and possible job displacement.
* Examining Ethical Considerations: Examine the moral ramifications of AI use in HRM, taking into account concerns about accountability, justice, and transparency as well as how it may affect workers' well-being.
* Suggestions for Put into Practice: Provide advice and insights, including risk-reduction tactics, best practices for using AI, and ways to ensure its ethical and responsible use, to companies wishing to strategically incorporate AI technologies into their HRM procedures.
1. **RESEARCH METHODOLOGY**
	1. **Data Designing:**
* **Basic research:** This study is undertaken only for the advancement of knowledge and has no immediate economic prospects. The study conducted for the wellbeing of humans, animals, and the plant kingdom. It is known as basic, pure, and fundamental research. The primary objective here is to extend human understanding, not to construct or invent something.
* **Applied research:** Applied research is intended to solve actual issues in the current world rather than acquiring information for its own sake. Applied research aims to better the human situation. It focuses on analyzing and addressing social and real-world problems. This study is often undertaken on a huge scale and is costly. As a result, it is frequently carried out with the assistance of a finance body such as the national government, government company, world bank, unicef, ugc, etc.
* **Quantitative research:** The study is based on numerical data. Quantitative research aims to measure a number or amount, compare it to previous data, and forecast for the future. In the humanities and social sciences, "quantitative research alludes to the systematic examination of quantitative features and events and their relationships".
* **Qualitative research:** Qualitative research presents non-quantitative type of analysis. Qualitative research is collecting, analyzing and interpreting data by observing what people do and say. Qualitative research refers to the meanings, definitions, characteristics, symbols, metaphors, and description of things. Qualitative research is much more subjective and uses very different methods of collecting information, mainly individual, in-depth interviews and focus groups.
	1. **Data Collection:**

This study utilized both primary and secondary data. The primary data was gathered with the help of a structured questionnaire. The questionnaire was distributed to 150 respondents. After considering the reliability and the plausibility of the data, 19 completely filled questionnaires were used for data analysis. The secondary data was collected from articles, journals and PDF’s. Primary and secondary data was interpreted and analyzed to arrive at logical conclusion.

* **Surveys and questionnaires:** Designing and distributing surveys to HR professionals, managers, and employees within IT companies can provide quantitative data on their perceptions, attitudes, and experiences regarding AI adoption in HRM functions. Surveys can include close-ended questions with predefined response options as well as open-ended questions to allow for qualitative insights.
* **Document Analysis:** Analyzing existing literature, reports, case studies, and company policies related to AI adoption in HRM within the IT sector can provide valuable secondary data. This method helps contextualize findings and identify trends, challenges, and best practices.
* **Observational Studies**: Observing HRM processes and interactions within IT companies firsthand can offer valuable insights into how AI technologies are currently utilized, as well as any areas for improvement or optimization.
* **Interviews:** Conducting structured or semi-structured interviews with HR managers, AI specialists, IT professionals, and other relevant stakeholders can offer in-depth qualitative data. Interviews can explore topics such as current HRM practices, challenges faced, perceptions of AI, and future expectations.
1. **DATA ANALYSIS**

After ensuring the integrity and the reliability of the data, 19 responses were received and analyzed. The first part is the age, occupation and organization analysis of the respondents.

Out of 19 respondents, 15 respondents (78.9%) ie majority of the respondents belong to the age group of 20 – 30 years followed by the age groups of 31 – 40 years and 51 years & above. This is shown in figure given below

**Age analysis of the respondents**



From the figure below, the occupation of the respondents can be analyzed. Majority of the respondents are corporate employees (31.6%) followed by other category (31.6%) and the business category (26.3%). The least number of the respondents belong to the working professional category.

 **Occupation analysis of the respondents**



From the figure given below, the occupation of the respondents can be analysed. Majority of the respondents (57.8%) do not lie in the mentioned categories and lie in the other sector that includes Education sector, Pharmaceutical Sector, Journalism, Engineering sector, etc. This is followed by the Manufacturing sector (15.8), Retail Sector (10.5%), IT, Automobile and Consulting Sector occupying 5% each.

**Occupation analysis of the respondents (sector wise)**



To analyze the data, what we are going to do consists of two parts, data categorization and correlation, based on our methodology of machine learning.

1. **FINDINGS**

The study's findings reveal that the integration of Artificial Intelligence (AI) into various human resource management (HRM) functions has significantly enhanced the effectiveness and efficiency of these processes within the IT sector. The research indicates that the adoption of AI-powered tools and technologies has led to significant improvements in areas such as talent acquisition, employee onboarding, performance management, and employee development.

Specifically, the use of AI-driven applicant tracking systems, chatbots, and predictive analytics has streamlined the recruitment and selection process, enabling HR professionals to identify and attract top talent more effectively. Furthermore, AI-powered learning management systems and personalized training programs have enhanced employee development and upskilling initiatives, leading to improved employee engagement and retention rates. The study also highlights the positive impact of AI on HR data analytics, allowing organizations to make more informed, data-driven decisions regarding workforce planning, succession management, and strategic HR initiatives.

However, the findings also suggest that the successful implementation of AI in HRM functions requires a careful balance between technological advancements and the preservation of the human touch, as well as the effective management of potential challenges, such as data privacy concerns and the need for employee buy-in and change management.

1. **LIMITATION**

This study specifically aimed to explore the integration of artificial intelligence (AI) in three essential HR functions: recruitment, learning and development, and performance management. The participants involved in the study were HR professionals who belonged to the IT sectors where AI had already been implemented in HR practices. The study‘s primary focus was to investigate these HR professionals perceptions regarding the use of AI in HR functions.

Concentrating on this particular group, the study sought valuable insights into their experiences, challenges, and opinions regarding AI-enabled HR functions. However, it is essential to note that the perspectives of prospective candidates and other employees were not considered in this research. The study‘s scope was further limited to Task complexity and Usefulness. These variables were derived from well-established frameworks in technology acceptance and adoption. Task complexity is the difficulty and complexity associated with implementing AI in HR functions.

The study aimed to provide a deeper understanding of the practicality and feasibility of AI integration in HR practices by assessing the challenges HR professionals face in utilising AI technologies. The second variable, Usefulness, focused on examining the perceived benefits and advantages of AI-enabled HR functions as perceived by HR professionals. By exploring the Usefulness of AI technologies in enhancing HR functions, the study aimed to gauge the extent to which HR professionals embraced and valued AI integration.

1. **RECOMMENDATION**
* Researchers would like to suggest that companies devise a simple and concise organizational strategy to integrate AI into their recruitment process, based on the results of this study. Researcher would like to recommend that recruiters should replace easy and time-consuming tasks with smart AI technology, allowing recruiters and HR managers to concentrate more on strategic functions. Furth more, developers of smart AI technologies needs to develop such platforms keeping in mind the budgetary issue of small to medium organization as well, so that they can adopt AI in their recruitment process.
* AI in recruitment is still a relatively new topic. More AI-related research should be conducted in the future to get a better picture of the subject. Although empirical findings from several organizations were used in this study, when more information about AI becomes available, an organization-specific study could be conducted. Organizations that do not currently use AI but intend to do so in the future could be included in the study to gain a broader perspective on the subject. Despite the potential benefits of AI in HR, there are also challenges and concerns that need to be addressed. One of the main concerns is the potential for bias in AI algorithms. If AI algorithms are trained on biased data, they may perpetuate and even amplify biases in the HR practices. Another concern is the potential for job displacement due to automation. As AI takes over more HR functions, there is a risk that some HR professionals may lose their jobs

1. **CONCLUSION**

The incorporation of HR activities for candidates based on AI undoubtedly has a greater effect in enhancing the efficiency of the organisation. Although AI applications do not possess emotional and cognitive abilities like humans, these powerful AI-based HR applications may be able to interpret, forecast, diagnose, and it is a powerful tool for any kind of organization. Yet the real concern that is overwhelming the Global workforce is how AI is demonstrating its impact in cutting jobs across various industries around the world.

But, the truth is that it's not the advanced technologies that replace humans, but it's more about how humans can adapt and use these developments in wealth and prosperity development. In the true sense, the AI-based functions would affect certain percentage of workers, and it is the responsibility of HR leaders and companies to reflect on their employee needs and future outcomes.

And, eventually, based on our research, most companies effectively incorporate AI-related methods into recruitment, but AI is everywhere in HR in the near future: May be in recruitment, training, on boarding, performance analysis, retention etc., But most companies are still lagging behind in incorporating AI into their HR activities due to their integration-related costs. In conclude, the application of AI should be regarded as a positive opportunity, because AI improves life, AI produces a better future if it is clearly understood and properly used.

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