

The Impact of Artificial Intelligence on Human Resource Practices

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Abstract:

This research investigates the effects of Artificial Intelligence on practices within Human Resources Management. It examines various important results, including precision, automation, computational ability and capacity, real-time interaction, customization, and time and cost savings. The aim is to identify the potential advantages of incorporating AI. Data was gathered from 274 IT workers in Chennai City through a well-designed online survey. The study introduces a new research framework using IBM SPSS version 21 software for analysis as well as AMOS version 21. The results show that factors such as Precision, Computational Ability & Capacity and Customization significantly impact Time-Saving & Cost Reduction while Automation and Real-Time Interaction do not have significant influence. This study's unique contribution lies in investigating specific outcomes when utilizing AI technologies in Human Resources Management Practices by focusing on key variables like Precision, Automation, Computing Power & Capacity Real-time experience, Customization, and Time-Saving Cost Saving capturing an extensive understanding of anticipated outcomes during AI implementation within Human resources management along with their interrelationships.

Keywords: Artificial intelligence, Human resource management practices, Automation Accuracy, Computing power & capacity, Real-time experience, Personalization, Time-saving & cost reduction.

1. INTRODUCTION

After nearly six decades of development, Artificial Intelligence has become widespread in the last twenty years ([Morgenstern et al., 2021](#)). AI technologies have started to continuously expand and gain significant recognition in nearly every industry, such as healthcare, engineering, agriculture, business management, tourism, transportation, and more ([Mintz & Brodie, 2019](#)) and have participated in both the public and business sectors ([Haenlein & Kaplan, 2019](#)). Today's AI applications and technologies are not a universal solution, but rather a versatile toolkit with various tools for carrying out different tasks. These tools come in the form of software or devices with user-friendly interfaces and have been thoroughly developed and designed. It is up to individuals (knowledge engineers or AI developers) to choose the most suitable tools and employ them thoughtfully based on the specific task at hand ([Ertel, 2011](#)). So, based on the previous conversation, AI is poised to become a common aspect of our daily lives in the near future, similar to the internet and social media. Regarding the concept of AI, Kaplan's paper "A Brief Chronicle of AI: On the Present, Past, and Future of AI" provides a definition stating that it is "the capability of a system to accurately interpret external data, learn from this information, and utilize these insights for specific objectives and activities through adaptable adjustments." ([Haenlein & Kaplan, 2019](#));([Morgenstern et al., 2021](#)).

AI's rapid development is poised to revolutionize individuals' everyday lives and reshape the way businesses interact with their staff and clients. This technological upheaval is at the heart of organizational change, altering the workplace by redefining when, how, where, and by whom tasks are carried out ([Jesuthasan, 2017](#))([Hemalatha et al., 2021](#)). Industries are experiencing major digital transformation, with a noticeable trend towards incorporating AI into decision-making processes to drive the success and expansion of businesses ([Varsha, 2023](#)). Organizations must enhance their operational effectiveness and improve the skill sets of their employees to attain maximum company performance. Companies have increasingly acknowledged the necessity and importance of AI in overseeing human resources to adapt to a rapidly evolving environment and stand out in fierce competition ([Waheed et al., 2019](#)). AI has become prevalent in nearly every industry and garnered significant interest. This has prompted researchers to concentrate on developing advanced human resource management strategies supported by AI technology ([Wang et al., 2020](#)). Organizations worldwide encounter obstacles in reducing expenses and improving efficiency. It has now been recognized that integrating technologies like the Internet of Things, machine learning, and AI into management can serve as a strategic asset to address these challenges ([Hemalatha et al., 2021](#)). Undoubtedly, the future of AI in Human Resources Management looks promising. However, incorporating AI into HR processes presents challenges; for instance, AI can only function effectively when provided with high-quality data and there is a risk of misuse of confidential documents and policies shared by organizations. Despite these obstacles, companies are still keen on integrating AI into HR functions because the benefits outweigh the challenges ([George & Thomas, 2019](#)). Organizations can fully realize the advantages and potential of AI by preparing their employees to effectively collaborate with intelligent machines. While this transformation will undoubtedly take time, the rewards will be significant ([Waheed et al., 2019](#)). During the period of lockdown and the challenges brought on by COVID-19, HR departments shifted their focus away from performance and towards adaptability, resilience, and recovery. The qualitative analysis conducted by Boston Consulting Group Survey 2020 revealed that while productivity remained steady during the pandemic, executives were more concerned with employees' stress levels and overall well-being. The crisis prompted a rapid shift towards digitalization within HR functions; nearly all aspects of HR operations including recruitment, onboarding, and performance evaluations have been revamped in the digital sphere ([Minbaeva, 2021](#)). AI technology improves HRM operations by increasing their efficiency and effectiveness, which ultimately enhances employee experience and helps organizations better support performance ([Garg et al., 2021](#)).

When it comes to AI in HRM, AI technologies offer promising solutions, from automating repetitive tasks to improving HR processes with minimized biases. As AI continues to change workplaces, organizations are realizing the importance of upgrading their HR practices for optimal performance and competitiveness. At this stage, while we have a theoretical understanding of concepts like AI, Automation, and Robotics, there is insufficient research on applying AI in organizational management. The field of Human Resources management is currently facing significant disruptions; both academics and HR practitioners must focus on reframing HR procedures ([Minbaeva, 2021](#)) HRM as a field of practice and research is often criticized for lacking in necessary refinement. While organizations acknowledge the potential of AI to reduce the time and effort required by HR managers, allowing them to strategically enhance overall productivity by freeing up resources, there is still room for improvement in this area ([Meshram, 2023](#)). Organizations lack a thorough grasp of these advanced technologies and the effects of using them in HRM at both an organizational and individual employee level ([Vrontis et al., 2021](#)).

Embracing the AI work environment can result in increased employee contentment, improved balance

between work and personal life, and elevated productivity overall ([Malik et al., 2021](#)). There is a growing demand to gain a deeper insight into the anticipated results of implementing AI in HRM and the connections between these results. This research aims to examine scholarly perspectives on the integration of AI technologies in Human Resources management, uncover potential outcomes, and explore how these outcomes impact each other. Thus, the study is driven by the following research question:

1. What are the possible results of integrating AI into HRM?
2. Do the variables for expected outcomes influence each other?

The research aims to explore the impact of utilizing AI in Human resources management on Accuracy, Automation, Computing Power & Capacity, Real-Time Experience, and Personalization within HR functions. Additionally, it seeks to investigate whether these outcomes lead to Time Saving & Cost Reduction (outcome variable) in Human resources functions at Selected IT companies in Chennai City. The study intends to provide insights into the potential benefits of using AI in HRM for both professionals and academics which may result in Time Saving & Cost reduction.

The study will examine the existing literature on AI technologies in HRM to explore their impact, following the Introduction. Drawing from an extensive review of the literature, the study also presents a conceptual framework diagram that illustrates the link between potential outcomes of implementing AI in HRM. In Section 3, the study aims to test hypotheses regarding relationships among potential outcome variables based on previous research findings and theory. Sections 4 and 5 will focus on understanding expected outcomes of integrating AI technologies in HRM and elucidating their interrelationships. Finally, the paper concludes with Section 6 presenting conclusions and suggestions for future research studies.

2. LITERATURE REVIEW

2.1. The function of artificial intelligence in human resource management

AI's role in human resource management has been steadily growing, revolutionizing the execution of HR processes across all key areas. With a large amount of data involved in organizational operations and workforce management, AI is being more and more integrated into various operational HR procedures to enhance sustainable business frameworks, as noted by ([Votto et al., 2021](#)). AI in HRM makes it easier for organizations to access highly skilled individuals, streamlining the recruitment process ([Meshram, 2023](#)). AI technologies bring a new perspective to personnel management, improving overall company performance and providing various opportunities for managing employee performance ([Khaled et al., 2022](#)) and ([Hemalatha et al., 2021](#)).

Training with AI technology allows organizations to transform into knowledge-driven entities that can address individualized training requirements and improve the quality of education ([Chen, 2022](#)). AI is increasingly being embraced in HRM due to its capacity to create value for customers, employees, and organizations alike ([Chowdhury et al., 2023](#)).

2.2. Potential Implications of Artificial Intelligence Technologies in Human Resource Management

2.2.1. Accuracy

AI technologies have been gaining popularity in Human Resources management over the past twenty years. Research indicates that AI offers effective solutions for HR professionals, from screening candidates to improving employee retention by handling time-consuming and repetitive tasks. This helps enhance the quality of HR processes while mitigating biases ([Hmoud & Várallyai, 2020](#)).

2.2.2. Automation

Organizations are utilizing AI technology to automate repetitive tasks and improve precision in carefully crafted decision-making through predictive algorithms (Parry et al., 2018). Machine learning has the ability to forecast future events and identify issues with greater precision than humans. In the hiring process, AI is likely to surpass human capability in selecting applicants and can also help mitigate biases often found in this process. By reducing human errors and risks, AI can deliver highly accurate results with minimal chance of mistakes or errors, achieving enhanced precision and accuracy. AI technologies have positive results such as time efficiency, cost savings, improved accuracy, elimination of bias, and reduced workload (Hemalatha et al., 2021). AI's recent progress has allowed systems to be automated for a thorough transformation (Agostinelli et al., 2020). The combination of the natural learning process with deep learning algorithms leads to impressive results such as speech or text translation, extraction of meaning from human language, and automatic content generation from natural language. AI has provided advantages to HR professionals by automating routine administrative tasks (Vedapradha et al., 2019). HR professionals have a wide range of essential administrative tasks, some of which are repetitive in nature. These include posting job openings, sourcing candidates, screening, scheduling interviews and meetings, preparing timesheets and schedules, as well as recording and verifying accounts (Langer et al., 2019); (Nawaz, 2019); (Niehueser & Boak, 2020); (Nocker & Sena, 2019); (Hewage, 2023)).

If these tasks can be automated using AI, it will greatly help HRs by freeing them from repetitive tasks and allowing them to focus more on creative and strategic thinking as well as decision-making (George & Thomas, 2019). AI automation allows the job to be divided into separate tasks that can be efficiently carried out through various methods, from machinery to technology (Jesuthasan, 2017).

2.2.3. Computing power & capacity

Modern businesses handle a large amount of data and information, requiring them to adapt intelligently and creatively using technologies such as AI (Barboza, 2019).

AI is intentionally created to be highly effective and profitable, as well as to assist humans in decreasing their repetitive tasks (Khatri et al., 2019). AI and human resources working in tandem can empower managers to actively monitor the configuration of their workforce, harnessing the potential of their employees. This can lead to overall improvements in management efficiency and work effectiveness, ultimately contributing to the high quality and advancement of organizations. AI's computing capabilities have facilitated automation, leading to enhanced analysis of large volumes of organizational data through the use of AI technologies and Big Data (Pillai & Sivathanu, 2020). AI-powered educational platforms have the potential to provide personalized training programs for individual employees. This is expected to lead to a substantial improvement in overall employee productivity and consequently, contribute to enhancing their potential and skill set (Iqbal, 2018).

2.2.4. Real-time experience

AI chatbots facilitate immediate employee interaction and the digitalization of HR tasks such as screening candidates and conducting interviews (Vedapradha et al., 2019). Organizations are now able to utilize artificial intelligence to capture and analyze real-time data, incorporating this updated information into their decision-making processes (Hughes et al., 2019a). AI technology provides an opportunity to create an automated real-time employee feedback system that collects feedback from employees quickly and efficiently, which in turn can help address complex workplace issues. This real-time system has the potential to enhance learning and support the professional development of employees. AI systems are capable of analyzing large datasets, both structured and unstructured, in real time to identify patterns and

trends. They play a role in supporting human decision-making by providing intelligent assistance ([Laat et al., 2020](#)). AI can help managers identify anomalies by providing immediate understanding of early warning indicators for serious issues, enabling them to take timely corrective ([Jarrahi, 2018](#)). Real-time interactions lead to efficient utilization of resources and services offered, ultimately resulting in reduced expenses ([Gopal et al., 2018](#)). The most recent advancements in technology, such as the Internet of Things, are enabling physical objects to link with the digital world, resulting in a large volume of instantaneous data ([Pillai & Sivathanu, 2020](#)). AI-powered real-time video interviews with candidates from different countries enable the attraction of a larger pool of applicants and expedite the processing ([Thomas et al., 2020](#)).

2.2.5. Personalization

AI has the ability to perceive, explore, examine, and function in a customized manner similar to that of a typical human ([Khatri et al., 2019](#)). Organizations utilize chatbots to offer tailored guidance and assistance to both job applicants and employees based on their specific needs. Traditional pay and benefits approaches are being replaced with customized packages that align with both organizational and individual objectives. HR professionals, in conjunction with AI, have the capability to manage adaptable and personalized compensation structures. Additionally, AI has the potential to streamline pay and benefits while decreasing employee turnover rates and enhancing employee involvement ([Hughes et al., 2019](#)). AI has the potential to support personalized employee training and development by identifying individual and group needs, and offering virtual personal mentors tailored to those needs ([Maity, 2019](#)). AI-powered systems for providing real-time support to websites by utilizing gathered data to offer personalized recommendations, explanations, or solutions to inquiries from customers or employees, including highly complex issues ([Xu et al., 2020](#)).

2.2.6. Time saving & cost reduction

[\(Sołek-Borowska & Wilczewska, 2018\)](#) stated that using a proficient and experienced HR team in combination with AI-based HR processes can certainly yield advantages such as decreased timeframes and lower expenses. Utilizing modern technologies like AI in the HR process guarantees project success and enables businesses to save both time and money. One of the primary advantages of incorporating AI into HR is cost reduction, while ML algorithms have the potential to minimize the risks linked to hiring underqualified candidates or turning down suitable ones, thereby cutting costs ([Chwastek, 2017](#)). The organizations strive to introduce AI-driven automation procedures throughout the HR functional domains, minimizing manual labor and cutting down on the time dedicated to mundane tasks ([Nawaz, 2019](#)). Cognitive human resource systems help in identifying, attracting, and retaining skilled employees within the company while also enhancing their competitive edge at an affordable price ([Chwastek, 2017](#)). Firms that use AI for their hiring process have found reduced expenses and improved effectiveness ([Johnson et al., 2020](#)). AI streamlines all HRM processes and is a cost-efficient solution ([Nawaz, 2019](#)). AI always takes into account the importance of features designed for real-time usage ([Ghasemzadeh et al., 2015](#)). AI is widely recognized to offer numerous potential benefits when applied in HRM. According to experts such as academics, researchers, and AI specialists, the implementation of AI technologies has a significant impact on HRM processes and yields various inherent advantages. Extensive literature review suggests that adopting AI in HRM can result in increased accuracy, automation, computing power and capacity, real-time experience, personalization, as well as time-saving and cost reduction.

3. THEORETICAL BACKGROUND

In a world characterized by constant change and unpredictability, human resource management has shifted from routine tasks like hiring and firing to becoming a strategic partner in business. In the same way, artificial intelligence has transformed from a basic search tool to the development of intelligent robotics. AI now encompasses a range of powerful technologies that are reshaping various functional areas, including HRM. The integration of AI into HRM is seen as beneficial because it can create maximum value at minimal cost through the development of tools with human-like discernment and intellect ([Kalia & Mishra, 2023](#)). Human resource management has significantly evolved with the incorporation of digital technology into its processes. This includes leveraging advancements like the internet and computers to improve productivity, reduce costs, and enhance competitiveness in the market ([Votto et al., 2021](#)). The rapid evolution of Human Resource Information Systems was sparked by technological progress, enabling the incorporation of strategic practices into HR operations with modern elements like artificial intelligence. This integration enhances sustainable business models and has led to an increase in the amount of organizational, personnel, and task-related data that HR is primarily responsible for managing. Consequently, AI has been integrated into various tactical HR processes ([G.M. & Suganthi, 2022](#)).

Nevertheless, the advancement and growth of capabilities involve understanding the current state of artificial intelligence in tactical HR processes. This requires HR professionals and researchers to explore existing literature that explains AI-enhanced HR abilities and areas for improvement within the HR industry ([Rodgers et al., 2023](#)). Artificial intelligence has the ability to make instant decisions by using pre-programmed algorithms and computational technologies developed through data analysis. These components can independently learn and adapt to offer more advanced responses to situations. The incorporation of AI applications in human resource management, alongside the human element, holds promise for improving the employee experience within an organization. It is clear that potential benefits such as precision, automation, computing power, real-time experiences, and personalization directly or indirectly contribute to the primary benefit of using AI in HRM: time savings and cost reduction. Furthermore, it's worth noting that AI-powered recruitment tools are capable of accurately matching candidates' skills and qualifications with job requirements. Additionally, AI-enabled HR analytics can efficiently process large volumes of data with accuracy and provide valuable insights for better decision-making ([Malik et al., 2020](#)). Leveraging AI precision in HRM enhances different HR functions, resulting in time and cost savings as well as improved overall efficiency and employee satisfaction ([Vrontis et al., 2021](#)). AI-driven automation has the ability to streamline repetitive tasks that would normally need human intervention. These activities can be carried out more effectively and consistently by AI systems, resulting in lower costs and quicker processing times ([Burgess, 2017](#));([Malik et al., 2022](#)). AI tasks can be completed more quickly due to the substantial computational power, leading to faster results. The enhanced computing capabilities of AI and cloud platforms allow organizations to access extensive resources as needed, enabling them to harness AI functions without making significant investments in costly hardware (([Gill et al., 2019](#)); ([Murshed et al., 2021](#)); ([Pillai & Sivathanu, 2020](#))). Real-time AI-enabled information allows for decision-making, feedback, and adjusting actions based on progress and responses. This capability helps companies save time and costs by improving efficiency, reducing operational expenses, and enhancing overall productivity (([Achhab & Tamsamani, 2021](#)); ([Rai & Singh, 2023](#))). AI-driven personalization in HRM enables companies to cultivate a more involved and content workforce, resulting in heightened productivity, decreased turnover, and ultimately savings in both time and costs (([Huang et al., 2023](#)); ([Modgil et al., 2021](#))).

Some previous studies have explored the potential impact of AI on Human Resources Management, but none have specifically investigated the interplay between these impacts. This research aims to fill this gap by analyzing the relationships among outcomes, focusing on selected IT companies in Chennai City and presenting findings through a diagram.

H1: There is an impact of Accuracy on Time Saving and Cost Reduction in selected IT companies.

H2: There is an impact of Automation on Time Saving and Cost Reduction in selected IT companies.

H3: There is an impact of Computing Power & Capacity on Time Saving and Cost Reduction in selected IT companies.

H4: There is an impact of Real-Time Experience on Time Saving and Cost Reduction in selected IT companies.

H 5: There is an impact of Personalization on Time Saving and Cost Reduction in selected IT companies in Chennai city.

4. METHODOLOGY

When it comes to the research design, it is descriptive. The study aims to identify the impact of utilizing AI in HRM practices and explore the connections between these impacts. It is constructed based on primary data collected from participants as well as secondary information sourced from reports, databases such as Scopus, Emerald, Elsevier, Google Scholar, online open-access journals etc. These resources were extensively utilized to obtain relevant and current information on the selected topic. To examine the potential effects of using AI in Human Resources Management and their interrelationships, researchers focused on employees within specific IT companies in Chennai City where AI technologies are integrated into HRM practices. The views of IT staff are gathered using a structured survey, which was developed based on existing research. The comprehensive questionnaire included personal and organizational information from employees. Additionally, AI factors (such as Accuracy, Automation, Computing power & Capacity, Real-Time Experience, Personalization, and Timesaving & Cost Reduction) were rated on a five-point scale ranging from strongly agree to strongly disagree. Researchers employed convenience sampling and collected primary data from around 274 IT employees in Chennai City. Online Google Forms were utilized for data collection; links to the survey were shared through personal connections and social media platforms like Twitter and LinkedIn between May 2021 and September 2021. Out of all responses received, only 274 fully completed surveys were considered for further analysis. IBM SPSS version 21 software and AMOS version 21 software were used for the analysis phase.

5. RESULTS

Out of 274 participants, 55.5% are women and 44.5% are men, suggesting that female employees have shown greater willingness to participate in the survey and exhibit more interest in the topic area. The findings also reveal that the majority (51.5%) fall within the age group of 26 to 30 years, indicating a higher level of enthusiasm for participation among young individuals. In terms of educational attainment, respondents are classified into undergraduates, postgraduates, and professionals; it is observed that 39.1% hold a professional degree while postgraduates account for 35.4%. Data was gathered from IT professionals across various job titles and levels within the organization, spanning from entry-level to top management. The majority of survey respondents were found to be software engineers at 30.3%. Results also revealed that 81.4% of participants were married, while only 18.6% were single or unmarried. In terms of monthly income, the largest portion (44.2%) fell in the range of Rs 25,001–Rs 50,000, followed

by 26.3% falling between Rs 50,001–Rs 75,000. The survey showed that individuals with 2–5 years' experience made up the highest percentage of participants at 37.6%, followed by those with a tenure ranging from six to ten years experience at 32.1%.

5.1. Statistical modeling of relationships between variables

In the field of advanced data analysis, the SEM technique is preferred over conventional statistical methods because it enables researchers to explore complex causal relationships among different constructs by examining both observed and hidden variables. Its ability to accommodate measurement errors and handle multiple variables at once makes it the ideal choice for this research, which aims to gain a thorough understanding of interconnections among various factors. The study utilizes SEM to assess the suitability of the model based on the collected samples (Renganathan et al., 2012). AMOS version 16 is utilized for examining the structural model. SEM is known as a valuable tool for assessing the causal connections between variables and confirming the compatibility of the model (Tobbin, 2011). This comprehensive approach enables a complete examination of the relationships between different elements when employing AI in HRM. The table above indicates that the calculated P-value is 0.051, signifying greater significance than 0.05 and indicating model fitness. Gerbing and Anderson propose that an acceptable model should have an RMSEA of 0.08 or lower, a CFI of 0.90 or higher, and an NFI of 0.90 or higher (Anderson & Gerbing, 1988). Hu and Bentler stated that the adequacy of the proposed measurement model's fit with the data can be assessed using a chi-square goodness-of-fit test, wherein a probability value equal to or greater than 0.9 indicates a well-fitting model (Hu & Bentler, 1999). In this study, the GFI was 0.922, exceeding the recommended value. Additionally, the Adjusted Goodness of Fit Index (0.902) also surpassed the recommended threshold of 0.9, indicating a good fit. The Comparative Fit Index value calculated at 0.987 suggests a perfect fit as well. Moreover, it was found that the Root Mean Square Error of Approximation value is 0.023, below the standard threshold of 0.08 and showing a satisfactory model fit as indicated in Table 2.

Table 1 Personal characteristics of employees.

| Personal Characteristics | Frequency | (n=274)% |
|------------------------------|-----------|----------|
| Gender | | |
| Male | 122 | 44.5 |
| Female | 152 | 55.5 |
| Age (Years) | | |
| 22–25 yrs | 42 | 15.3 |
| 26–30 yrs | 141 | 51.5 |
| 31–40 yrs | 85 | 31 |
| Above 40 yrs | 6 | 2.2 |
| Marital Status | | |
| Single | 51 | 18.6 |
| Married | 223 | 81.4 |
| Qualification | | |
| UG. | 70 | 25.5 |
| PG | 97 | 35.4 |
| Professional | 107 | 39.1 |
| Income -Monthly | | |
| < Rs 25,000 | 54 | 19.7 |
| Rs 25,001–Rs 50,000 | 121 | 44.2 |
| Rs 50,001–Rs 75,000 | 72 | 26.3 |
| > Rs 75,000 | 27 | 9.9 |
| Designation | | |
| Administrator | 33 | 12 |
| Business and Program Analyst | 43 | 15.7 |
| software engineer | 83 | 30.3 |
| Project and HR Manager | 43 | 15.7 |
| Managing Director | 10 | 3.6 |
| Others | | |
| < 2 years | 27 | 9.9 |
| 2–5 years | 103 | 37.6 |
| 6–10 years | 88 | 32.1 |
| 11–15 years | 38 | 13.9 |
| Above 15 years | 18 | 6.6 |

5.2. Measurement model

As recommended by Anderson and (Anderson & Gerbing, 1988), we initially assessed the measurement model and displayed the CFA findings in Table 3. The following table illustrates the results of confirmatory factor analysis. The test for confirmation also indicated a satisfactory fit. The subsequent table presents an overview of the model's fit for this research. 2

The findings indicate that the model effectively represents the data ($\chi = 383.133; df = 260; \chi^2 / df = 1.474$; Root mean square error of approximation = 0.042; Comparative Fit Index = 0.97; SRMR = 0.071 & Pclose = 0.944 are indicative of a strong fit for the model with the data) (MacCallum and Browne, 1993). The findings suggest that the CFA model for adopting AI in human resource management variables is appropriate. In this study, the square root of AVE for all variables is greater than the correlations between variables, indicating strong support for discriminant validity of all the factors (Fornell and Larcker, 1981). The square root of AVEs for Accuracy 0.703; Automation = 0.730; Computing power and Capacity = 0.695; Real Time Experience = 0.593; Personalization 0.513; Time saving & Cost Reduction = 0.538 and the composite reliability (CR) for all the variables exceeded 0.70 (ranging between 0.800 and 0.915). The average variance extracted (AVE) was found between 0.513 and 0.730, over the minimum acceptable level of 0.50 shown in the Table 3, Table 4 and Table 5.

5.2.1. Hypothesis results

The table above indicates that the p-values for the variables Accuracy, Automation, and Real-Time experience are all below 0.001, signifying significance at the 1% level. This supports hypothesis Hence hypothesis H1: There is an influence of Accuracy on Time Saving and Cost Reduction in selected IT companies, H2: There is an impact of Automation on Time Saving and Cost Reduction in selected IT companies and H4: There is an impact of RealTime Experience on Time Saving and Cost Reduction in selected IT companies are supported by the study findings. Regarding the variables Computing power & Capacity, and Personalization the P values are not significant and hence the hypothesis is not supported.

Table 2 Model fit summary of the structural equation model.

| Parameter | CMIN | P | CMIN/DF | GFI | AGFI | CFI | RMSEA |
|-----------|--------|-------|---------|-------|-------|-------|-------|
| Outcome | 296.13 | 0.051 | 1.148 | 0.922 | 0.902 | 0.987 | 0.023 |

Table 3 Showing the measurement model fit summary of AI adoption in HRM model.

| Measure | Estimate | Threshold | Interpretation |
|---------|----------|-----------------|----------------|
| CMIN | 383.133 | - | - |
| DF | 260 | - | - |
| CMIN/DF | 1.474 | Between 1 and 3 | Excellent |
| CFI | 0.97 | >0.95 | Excellent |
| SRMR | 0.071 | >0.08 | Excellent |
| RMSEA | 0.042 | <0.06 | Excellent |
| PClose | 0.944 | >0.05 | Excellent |

5.2.2. Confirmatory factor analysis

The correlation between potential results of employing AI in HRM applications selected IT companies in Chennai City depicted in Figure 1 and Figure 2, encompassing aspects such as accuracy, automation, computing power and capacity, real-time experience, personalization, time saving, and cost reduction.

6. DISCUSSIONS

6.1. Discussions concerning the implementation of AI in HRM procedures

The novel theoretical contribution of this study lies in our identification of the potential impacts of AI technologies on human resource management practices, including Accuracy, Automation, Computing Power & Capacity, Real-Time Experience and Personalization. Furthermore, this research has developed an integrated model that uncovers the relationships between these factors and their effects on Time Saving and Cost Reduction within selected IT companies in Chennai City. The theoretical results of this study provide insight into the effects of different causal factors linked to AI implementation in Human Resources Management on the outcome measure of time-saving and cost reduction. The study's findings led to the following discussion.

The research confirms the initial hypothesis, demonstrating that the use of AI technologies in Human Resources management can result in significant time and cost savings for organizations due to improved accuracy. The findings indicate that by minimizing human errors and enhancing precision in prediction and analysis, AI can help streamline workforce planning and decision-making processes. Essentially, AI functions as an intelligent machine designed to mimic human behavior, with its main objective being to complete tasks at a remarkable speed and level of accuracy (Sugawara & Nikaido, 2014) AI's precision in prediction and analysis can streamline HR processes like workforce planning and decision-making, leading to improved overall efficiency.

Table 4 Results of validity measures.

| | CR | AVE | MSV | MaxR(H) | A | AUT | CP | RTE | P | TSCR |
|------|-------|-------|-------|---------|--------------|--------------|--------------|-------------|--------------|--------------|
| A | 0.904 | 0.703 | 0.399 | 0.908 | 0.838 | | | | | |
| AUT | 0.915 | 0.73 | 0.259 | 0.917 | 0.506*** | 0.854 | | | | |
| CP | 0.899 | 0.695 | 0.276 | 0.933 | 0.526*** | 0.198*** | 0.834 | | | |
| RTE | 0.851 | 0.593 | 0.187 | 0.889 | 0.416*** | 0.256*** | 0.161* | 0.77 | | |
| P | 0.8 | 0.513 | 0.187 | 0.842 | 0.428*** | 0.239*** | 0.251*** | 0.433*** | 0.717 | |
| TSCR | 0.851 | 0.538 | 0.399 | 0.871 | 0.631*** | 0.465*** | 0.345*** | 0.342*** | 0.264*** | 0.733 |

Table 5 Model regression weights (variables in SEM analysis)

| | | | Estimate | SE. | CR. | P | Label |
|------|------|-----|----------|-------|--------|----------|------------------|
| TSCR | <--- | A | 0.422 | 0.06 | 7.042 | <0.001** | H1-Supported |
| TSCR | <--- | AUT | 0.194 | 0.05 | 3.887 | <0.001** | H2-Supported |
| TSCR | <--- | CPC | 0.049 | 0.035 | 1.393 | 0.164 | H3-Not Supported |
| TSCR | <--- | RTE | 0.09 | 0.044 | 2.057 | 0.04** | H4-Supported |
| TSCR | <--- | P | -0.25 | 0.058 | -0.425 | 0.671 | H5-Not Supported |

The research does back up the second hypothesis, indicating that Automation (independent variable) greatly influences HRM Practices in the chosen IT firms. Numerous other studies also affirm that AI automation results in Time Saving & Cost Reduction, aligning perfectly with this study's findings. This discovery strongly confirms the widely held belief that AI automation invariably leads to saving time and reducing costs. AI incorporation into HRM operations results in significant time and cost advantages. Through the automation of repetitive duties like screening job candidates, onboarding, and managing payroll, AI enhances operational effectiveness. This enables HR professionals to focus their efforts on more strategic initiatives (Hmoud & Várallyai, 2020). AI-driven analytics improve decision-making,

allowing for proactive steps to reduce employee turnover and its related expenses ([Sahota & Ashley, 2019](#)). The research indicates that AI-powered automation in HRM speeds up processes and reduces expenses, enabling more flexible and efficient workforce management ([Johnson et al., 2020](#)).

On the other hand, despite the earlier mentioned discovery, the study results do not support the third hypothesis. They indicate that the Efficiency of AI technologies' Computing Power & Capacity has no impact on Time-saving and Cost Reduction outcomes in IT companies in Chennai City. Although many studies are positive about the increased computing power & capacity of using AI in HRM, this finding does not align with those conclusions. The current findings do not suggest that enhanced computing power, capacity, and advanced memory enable AI technologies to take control or lead to time-saving and cost reduction through routinely made software system decisions ([Braun et al., 2016](#)) in the functions of managing human resources ([Duan et al., 2019](#)).

The research emphasizes that insufficient computing resources in IT firms could impede AI systems from swiftly and accurately processing data, leading to prolonged decision-making processes and reduced operational efficiency. Inadequate capacity may restrict AI's ability to manage complex tasks, resulting in missed opportunities for automating labor-intensive processes and optimizing resource allocation. These limitations could diminish the expected advantages of integrating AI, such as cost minimization and time savings.

The study findings indicate that real-time experience has a direct influence on the outcome variable, Time-saving & Cost Reduction in the chosen IT firms. The results also suggest that implementing AI can enhance employee experience and engagement within the organization, leading to reduced employee turnover and retention of valuable talent ([Dahlbom et al., 2019](#)). AI systems with real-time capabilities can quickly analyze data and offer immediate insights, allowing for fast decision-making and timely interventions ([Laat et al., 2020](#)). Harnessing the real-time potential of AI enables organizations to respond quickly to changing conditions, take advantage of immediate insights, and achieve tangible reductions in time-related expenses and operational costs. Lastly, the fifth hypothesis is not supported by the study results; the variable personalization does not have a significant impact on the outcome variables "Time Saving & Cost Reduction" in selected IT companies. Although several other studies assert that AI-enabled personalization leads to time saving and cost reduction, this finding challenges the common belief that organizations using AI in HRM can benefit from time-saving and cost reduction through personalization ([Maity, 2019](#)). The discovery indicates that despite employees expressing optimism about the benefits of personalization and believing that AI-powered personalization tools can enhance their work, leading to time-saving and cost reduction, the actual impact of personalization on time-saving and cost reduction is indirect. Rather, this process of employee engagement consumes time, with cost reduction anticipated in the long term rather than during the initial stages ([Bhatnagar, 2007](#)). The theoretical findings emphasize the complex connections among various causal factors and their impacts on time-saving and cost reduction in HRM through the implementation of AI technologies. These results enhance our understanding of AI's potential in HRM and lay groundwork for future research in this field.

6.2. Managerial implications

The practical implications derived from this study's results provide useful guidance for organizations looking to implement AI technologies in HRM to save time and reduce costs. To fully benefit from AI technologies in HRM, companies should prioritize accuracy and precision by investing in reliable data analysis and decision-making capabilities. In order to take advantage of time-saving and cost reduction

opportunities, managers should strategically automate repetitive tasks within HR operations. By reallocating the time of HR professionals from administrative duties to more strategic initiatives, organizations can optimize their workforce and allocate resources more effectively, leading to improved operational efficiency and reduced costs.

However, it is essential for companies to be mindful of the constraints of computing power and capacity, as shown in the research. Leaders need to assess if their IT infrastructure is prepared to back AI implementations. Sufficient computing resources are crucial for AI systems to work at their best and achieve desired efficiency improvements. Neglecting limitations in computing power and capacity could impede the attainment of time-saving and cost-reduction benefits, highlighting the importance of matching technological capabilities with strategic AI implementation strategies. Real-time experience has a positive impact on employee engagement, so organizations should acknowledge the potential of real-time capabilities to improve both employee engagement and retention. Furthermore, the study's discovery that personalization may not directly result in immediate cost savings highlights the significance of managing expectations. Managers need to convey the extended duration of cost-saving benefits linked to AI-driven personalization, making sure that stakeholders grasp the expected timeline for achieving financial gains from these efforts. Aligning AI strategies with this understanding enables organizations to fully exploit AI's potential in HRM, leading to considerable time savings and cost cutting while enhancing their workforce management methods.

6.3. Limitations & further research directions

The research verified the impact of artificial intelligence technologies (causal variables): Accurate, automated, high computing power and capacity, real-time experience, and customization only affect the outcome variable of time efficiency and cost reduction. This study could explore additional potential benefits of AI in HRM practices such as impartiality, data-driven decision-making, competitive advantage, etc. The current research focused on IT organizations based in Chennai with 274 samples from HR professionals. Future studies could include larger sample sizes from other major cities like Bangalore, Hyderabad, and Delhi. Since this research is limited to the information technology sector, its findings may not be applicable to other sectors such as healthcare or tourism. Additionally, future research could address challenges associated with implementing AI in human resources management practices; analyze motivational factors or determinants for using AI in different sectors and industries.

7. CONCLUSION

The current study seeks to examine the integration of AI in HRM procedures. The research also aimed to evaluate the influence of causal factors such as Precision, Automation, Computing Capability, Real-Time interaction, and Customization. The findings concluded that AI technologies provide various prospects and advantages for HR departments, enhancing human resource management in diverse aspects ([Hemalatha et al., 2021](#)). As advanced technologies such as AI become more widespread, it's crucial for workers to develop the necessary skills in order to remain competitive in the job market. This study examined seven potential outcomes based on existing research and aimed to determine the causal relationship between these variables. The findings indicate that factors like accuracy, automation, and real-time experience have an impact on time-saving & cost reduction. Additionally, it was discovered that AI can be utilized in various ways to streamline HRM processes and enhance overall work efficiency. While respondents generally expressed optimism about the potential outcomes of AI, there is uncertainty

regarding whether computing power & capacity and personalization features will result in cost-effectiveness and time-saving.

In conclusion, the study highlights the positive results of employing AI in HRM. The findings indicate that the various outcomes of using AI in HRM are interconnected and affect each other causally. Overall, the survey respondents have expressed optimism toward all seven AI variables but remain uncertain about whether AI technologies related to computing power & capacity and personalization would result in cost-efficiency and time savings. To unlock the full potential of AI, it is advisable for organizations to raise awareness among employees about the computing power and personalization aspects of AI. Employees should be educated about collaboration between humans and machines, enabling organizations to incorporate AI technologies as an extension of the HR team and as an augmentation tool. A careful approach to implementing AI, taking into account both its benefits and challenges, will facilitate successful integration of AI technologies in HRM practices.

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