

The Role of Artificial Intelligence in Virtual Reality-enhanced Human Resource Management

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Abstract

The technologies of artificial intelligence (AI) and virtual reality (VR) are reshaping human resource management (HRM). This chapter pays attention to the convergence of these cutting-edge technologies to change human resource (HR) practices like recruitment, training and employee engagement. Algorithms that are AI-driven can analyse vast datasets to recognise the best candidates, while VR simulations provide immersive environments for the performance evaluation of employees. AI and VR escalate the training and onboarding processes, contributing to the offering of personalised, interactive learning experiences that ameliorate retention and performance. Moreover, these emerging technologies can promote comparatively more inclusive and fair workplaces by reducing the biases that would arise with promotions and hiring. The unification of AI and VR in HRM gives birth to novel opportunities for data-driven decision-making by giving real-time feedback and bestowing better employee productivity levels and satisfaction. Challenges and provocations such as data privacy and ethical considerations are too inscribed to clinch on transparency and accountability about the usage of AI and VR. Thus, it concludes with the intuitions into the potential of these technologies in HRM and their influence on organisational success aspects. By welcoming AI and VR, HR departments can create more efficient, just and engaged work environments for their employees.

Keywords

Artificial intelligence, virtual reality, human resource management, ethical considerations, human resource practices

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Introduction

The surfacing of cutting-edge technologies, like artificial intelligence (AI) and virtual reality (VR), has made far-reaching changes in different sectors, including human resource management (HRM). As organisations attentively attempt to restyle the fast-changing business landscape, integrating AI and VR into HRM processes has already become a prudent requisite. This approach not only optimises efficiency and effectiveness in talent management but also creates immersive, engaging experiences for employees. With the expertise of AI in data analytics and predictive modelling, it has enabled HR professionals to use data-driven decision-making and amplify key HRM processes like recruitment, selection and performance evaluation (Murugesan et al., 2023).

For instance, AI-driven tools help organisations source and screen potential candidates more effectively and efficiently, saving time and resources used for recruitment procedures. Besides, AI algorithms possess the ability to go through the data related to employee performance to trace the prevailing trends and patterns in them, enabling managers to make decisions on matters such as promotions, succession planning and career development. In contrast to that, another important area in which AI and VR merge to enhance HRM is in relation to the field of diversity and inclusion initiatives. For example, these technologies can point out biased patterns in hiring, promotions and other HR procedures with an analysis of data, focusing on equity and equal opportunity. The VR simulations make one feel in the skin of other employees, and through them, they develop empathy and understand different perspectives that help create a more inclusive work environment. AI can also help in smoothing the process of creating fixed-on training and development programmes, keeping in mind the diversity and inclusion gaps within an organisation.

In parallel, VR opens new perspectives on training and development by opening new avenues for immersive simulation and realistic scenarios that bestow broader skill-building and knowledge-transfer opportunities. The space to practice new skills in a safe and controlled environment is initiated through VR training modules, which subsequently enable experiential learning and faster feedback. Not only that, but this technology also fosters collaborative work and communication among the staff, enhancing team-building efforts and encouraging and strengthening workplace relations.

All things considered, this chapter explores the pivotal role that AI and VR play in streamlining HRM. It emphasises how these technologies ameliorate the whole employee lifecycle, from recruitment and onboarding to ongoing training and career development. On top of that, it also examines the benefits and potential challenges of embodying AI and VR in HRM, shedding light on the times ahead of this innovative convergence and its potential to metamorphose the workplace. This exploration aims to provide a detailed understanding of how AI and VR are reshaping human resource (HR) practices and promoting more zestful, efficient and effective workforce management strategies.

Background

The expeditious advancement of technology in recent decades has had a keen effect on the field of HRM. Conventionally, HRM was heavily administrative, concentrating on tasks such as recruitment, selection, onboarding and employee training using traditional methods. Nevertheless, the initiation of AI and VR has started to modify HRM practices and processes, escorting a new dimension to how organisations handle and develop their workforce (Malik et al., 2021).

Artificial Intelligence in Human Resource Management

AI technology sways data analytics, machine learning and predictive modelling to provide novel solutions across the HR spectrum. AI tools possess the capacity to automate routine tasks like resume screening, scheduling interviews and managing payroll, generating space for HR professionals to linchpin on strategic initiatives. Moreover, AI can bring forth up-to-the-minute insights through predictive analytics, aiding in decision-making regarding talent acquisition, employee retention and workforce planning. Considering the current applications of AI in HRM, AI is aiding in revolutionising the shape of HRM by being comparatively smarter and more efficient through the advanced analytics that it uses in traditional HR practices. Considering talent acquisition, AI-assisted algorithms can screen, and rank job candidates based on their qualifications, skills and experience, which narrows the endless pool of applicants by filtering and obtaining their profiles. Apparently, with automation, there is an increased level of accuracy of the candidates matched with the position and a clear reduction in biases. AI is also enhancing performance management along with its ability to deliver data-driven insights into the factors that contribute to high employee productivity and areas in which employees can be helped to develop themselves. Subsequently, through advanced analytics, leaders can figure out general trends in performance results. With that, the responsible parties can generate personalised feedback sessions and construct individual development plans. Furthermore, the AI instruments may be used to cut down on staff turnovers and, therefore, enable HR professionals to engage in proactive measures to boost the satisfaction and motivation of employees. Not only that, but also focusing on the perspective of employee engagement, the AI-driven chatbots are meant to enhance prompt communication between the employees and the HR department by being the fateful answer points and real-time support lenders for them (Dutta et al., 2022). Likewise, the application of AI extends to performance management and employee engagement, where AI algorithms can analyse employee data to recognise trends and provide customised feedback. Simply put, AI-driven insights can bolster strategic initiatives like developing targeted training programmes and planning customised career paths for employees, encouraging a more inspired workforce.

Virtual Reality in Human Resource Management

In parallel, VR technology initiates immersive and interactive experiences that transform HR practices such as training, onboarding and team building. VR lets

employees be captivated by realistic simulations and virtual scenarios, opening doors for experiential learning and quick responses. This can create the path to more effective training results and an in-depth understanding of comparatively complex tasks. VR can also sharpen up employee engagement by presenting mesmerising experiences during onboarding, helping new hires adapt to the company culture and environment faster (Transforming New Hire onboarding with VirtualReality, n.d.). Further, VR offers moments for remote collaboration and virtual team building, which can enrich a sense of connection among employees across geographical distances. Focusing on the current applications of VR in HRM, VR possesses the power to offer a paradigm for HRM processes where actual learning and training become a kind of reality. This comprises areas such as training, induction (onboarding) and collaborative work. VR training programmes help employees use VR for participation in real-world scenarios and hands-on practices, which can be very supportive for skill acquisition and retention (VR Training in the Workplace, 2022). With this practical knowledge in mind, such skills are useful for exploring difficult challenges. VR in this scenario offers recruits virtual tours of their working environment and an interactive introduction to company culture and policies, which creates a smooth onboarding process. VR technology is helping people collaborate with various ranks and positions in remote places through virtual means, allowing them to work together in virtual worlds. Besides that, VR may be applied for training diversity and inclusion, where the person working may experience different perspectives and situations beyond their own that can boost the person's respect and understanding (Bastian, 2021). This can lay the basis for a wider reinforcement of places where people are differently positioned and treated equally.

Convergence of Artificial Intelligence and Virtual Reality

The convergence of AI and VR in HRM offers an influential synergy that can make a huge impact on the field. For instance, AI can generate distinctive VR training observations based on an individual's performance and learning style, certifying a tailored and effective learning journey (Pardamean, 2022). Moreover, AI can help create VR training courses that tackle specific skills shortages among staff members, thus opening avenues to make the best use of their workforce's skills. The integration of AI and VR in HRM is a strategic move for firms trying to keep up with the changing business environment, which could improve efficiency, effectiveness and employee engagement (Aydin & Karaarslan, 2023). This creates a context to realise where we are now regarding AI in combination with VR applied within HRM, as well as what might be gained or lost by utilising these technologies for future practice in the field of HR management.

The fusion of AI with VR will be an important factor for sustainable HR practices in the context of the future work environment. AI-guided insights can create training experiences that are customised for specified employees so that they fit their learning style preferences (Vishwanath & Vaddepalli, 2023). Such an adaptive application speeds up the process of training and mitigates the chances of the

unequal effects of training occurring. Workforce planning in this field combines AI and VR to simulate possible patterns, situations or trends in the future using VR simulations and forecast demand and analytical variations (Bharadiya, 2023). Thus, having both components on the same page energises strategic planning and lets the organisations successfully face and cope with the forthcoming challenges. Not only that, but also AI, along with VR, can be applied to develop remote working practices by incorporating virtual offices and team spaces, which include AI tools for work efficiency and communication. It results in the creation of cohesive teams with higher connectivity and sound coordination, even when they do not come together in a physical space.

Alongside the progress of AI and VR technologies in every sphere, the possibilities for modifying HR management continue to rise. Organisations leveraging these technologies will more likely experience boosts in productivity, higher employee satisfaction and a competitive advantage in the market. HR practitioners must keep their eyes open to any emerging technology or ethical concerns that could affect their ability to make the most of AI and VR.

In gist, AI and VR are transforming traditional HRM by utilising novel solutions in recruitment, training and embracing automation. In addition, with the advances in the platform it provides within human resources, new possibilities and avenues for innovation and advancement arise.

Benefits of Artificial Intelligence and Virtual Reality Blend in Human Resource Processes

The amalgamation of AI and VR in HR processes offers numerous benefits. The HR department's novel tech tools like AI and VR assist in simplifying several tasks, allowing for the automation of activities like onboarding, resume screening and performance evaluation. This has a dual result: on the one hand, it helps HR professionals focus more on complex jobs like employee engagement and talent management, and on the other hand, it releases HR professionals from routine tasks like workforce engagement. In addition, AI-based data analysis reduces subjectivity in recruitment and performance reviews, resulting in objective and even-handed decision-making.

Further, VR can create realistic environments and introduce elements of interactivity and engagement to training and development that contribute to better knowledge retention and skill acquisition. Thus, workers may engage in job-specific activities or simulated situations that look like the actual situation by using VR technologies. That will enable them to learn and react to distinct situations more efficiently.

Another elemental advantage AI offers in HRM is the provision of personalised experiences. AI devices are designed to personalise the onboarding and training experience to an employee's needs, thus creating a higher level of job satisfaction and engagement among employees. Customised HR processes that take account of unique talents and capabilities play their part in a motivated and productive working environment.

AI and VR are prospective resources and strengths that can be linked to HRM, but on the other hand, it is also important to consider the fact that organisations possess a certain level of responsibility and obligation to address the challenges that will emerge towards the smooth running and implementation of these technologies with HRM.

Taking data privacy and security into account, AI and VR resources can be applied to the analysis of the data, which would ultimately lead to minimising the workers' privacy issues and the data breach risk. Over and above that, data governance and security, which are strong, are essential to safeguarding the sensitive data of the employees.

Paying attention to training and adoption, HR personnel and employees should go through appropriate training to be able to use AI tools and VR devices properly and successfully. The fundamental training programmes should be set up in such a way that the foundation for adaptation is properly laid, since adaptation is hindered by resistance to change and insufficient knowledge and expertise.

On ethical grounds, AI algorithms may unconsciously do wrong by implying biases in HRM steps like recruitment and evaluation. So, on-the-go scrutiny and alteration should have to be maintained to prevent favouritism and unequal treatment of organisational workers.

In a nutshell, this allows these technologies to offer immense room for organisations to leverage the transformative ability of AI and VR in HR while maintaining privacy and safety. The incorporation of AI and VR into HR processes will improve the firm's understanding of the coping mechanisms within the organisation that it will use to govern its workforce. Generally, efficiency, precision and personalisation will be higher across the whole recruitment, onboarding, training and performance management procedure, strengthening the impact that new technologies have on a well-engaged and efficient workforce. However, thoughtful analysis of confrontations and best practices is rather important to the successful employment of such a strategy and to the long-term benefit and optimisation of task performance for both the organisation and its members.

Practical Challenges and Limitations of Implementing Artificial Intelligence and Virtual Reality Technologies in Human Resource Management Processes

Implementing AI and VR technologies in HRM processes presents several practical challenges and limitations that organisations need to consider. These challenges and limitations can impact the successful integration and utilisation of these technologies in the HRM domain.

Complex Implementation Process

One of the primary challenges associated with implementing AI and VR technologies in HRM processes is the complex implementation process. Integrating these

advanced technologies into existing HR systems and processes requires significant planning, resources and expertise.

Cost and Resource Intensiveness

The implementation and maintenance of AI and VR technologies in HRM processes can be resource-intensive. Organisations may face significant costs related to acquiring the necessary hardware, software and expertise to effectively integrate and utilise these technologies. Additionally, the logistical hurdles of integrating AI and VR into existing HR systems can pose challenges. Maintaining and updating these technologies can be resource-intensive and require dedicated IT support. Furthermore, ensuring seamless integration with existing human resources systems can present technical challenges and require customised solutions.

Data Privacy and Security Concerns

The use of AI in HRM processes raises concerns about data privacy and security. As these technologies often rely on vast amounts of sensitive employee data, organisations must ensure robust data protection measures to safeguard employee privacy and comply with data protection regulations.

Ethical Considerations

Ethical considerations are another important factor to consider when implementing AI and VR technologies in HRM processes. Organisations need to ensure that the use of these technologies aligns with ethical standards and does not result in biased decision-making or discriminatory practices.

Employee Training and Adaptation

Introducing AI and VR technologies into HRM processes requires comprehensive training programmes for employees to adapt to these new tools effectively. Ensuring that employees are proficient in using these technologies and understanding their implications for HR processes is crucial for successful implementation.

Integration with Existing Systems

Integrating AI and VR technologies with existing HRM systems and processes can be challenging. Compatibility issues and the need for seamless integration with legacy systems may pose obstacles to the effective implementation of these technologies.

In summary, while AI and VR technologies offer significant potential to revolutionise HRM processes, organisations must carefully consider and address the practical challenges and limitations associated with their implementation. By

proactively addressing these challenges, organisations can maximise the benefits of these technologies while mitigating potential risks and drawbacks.

Role Played by Artificial Intelligence in Virtual Reality-enhanced Human Resource Management

In addition to the above, AI plays many critical roles in intensifying HRM within VR settings. Since VR technology is progressively gaining ground and improving day by day, AI can be used to fine-tune various HR processes and employee experiences.

Recruitment and Onboarding

Analysing Candidate Responses During Virtual Interviews within Virtual Reality Environments

Virtual interviews conducted in an immersive VR environment offer a holistic approach to candidate assessment beyond traditional CV screening or phone interviews. Non-verbal cues can be assessed, and the communication skills of a candidate can be weighed against their reaction to simulated work situations. Grasping how candidates can solve problems and fit culturally in the organisation becomes easier by placing the candidates in realistic environments. For example, a candidate's reaction to a problematic situation in a VR environment might reveal their decision-making process, resilience under pressure, and the candidate's value alignment with the company. Real-time assessment of candidates during virtual interviews allows recruiters to make better hiring decisions. This approach decreases the possibility of bias and subjectivity in evaluating candidates, as recruiters may objectively assess candidates based on their performance in simulated work scenarios.

Creation of Immersive Onboarding Experiences

Conventional onboarding processes usually include static presentations, manuals and training sessions in classrooms that might not be interesting to new recruits or answer their needs in a personalised manner. On the other hand, immersive onboarding experiences with VR expose trainees to a dynamic and interactive environment representative of real life. Using VR technology, organisations can design simulations that help recruits get oriented with their role, responsibilities and workplace dynamics in a vivid and effective manner. For instance, new employees can virtually go around the office, interact with virtual colleagues and practice their job-specific tasks within a simulated work environment. The adaptive learning component within VR onboarding modules helps an organisation tailor the content to the pace and style of learning of each recruit. This makes learning quite personalised, enhancing comprehension, retention and engagement since recruits can learn at their own pace and dwell on areas of confusion where they need further support or clarification. Besides, immersive onboarding experiences create a feeling of belonging and connection among recruits, for they can get a first impression of the company culture, values and expectations in the VR environment. This kind of immersion makes it easier for new recruits to get

adjusted to their new role more quickly and to settle into the organisational culture more smoothly.

Training and Development

Virtual Reality Training Scenario Analysis

Learners may experience VR, in which they train in a dynamic and interactive manner as opposed to the conventional classroom type of training. This means that employees can be put into simulated work scenarios where they practice what they have learned in realistic settings. The analysis of how employees perform within VR training scenarios helps organisations spot exactly where there is a need for improvement and helps to identify the gaps in skills that prevail among employees. Thus, for example, data analytics in VR environments can monitor such things as employee interaction, decision-making processes or job completion durations to establish their strongholds and vulnerabilities. These insights help organisations customise training experiences to address the individual learning needs of employees effectively. In this manner, those employees who have difficulty with performing certain tasks or explanations could receive focused instruction or extra practice within the VR scenario towards confidence and skill development. Further, VR training programmes are convenient because they are adaptable to different learning preferences and styles. Be it interactive simulations, multimedia presentations or self-paced modules, employees can use any of these materials according to their own tastes and preferences.

Provision of Quick, Specified and Personalised Feedback

VR-based training always beats any other method as it provides immediate and focused feedback to the workers. The time it takes and the general approach applied in conventional training are not useful for learning or enhancing skills adequately. In VR, AI algorithms can study workers' movements and actions within the same moment, thus providing them with feedback on their performance. For instance, a staff member might be given certain tips on how best to sort out problems, communicate or adhere to work rules while navigating through virtual working situations. This on-time feedback is helpful as they provide concrete suggestions that the employees could use in order to adjust their behavioural tendencies and any choices accordingly. Employees get quick changes from feedback during their interaction with this content, resulting in the sharpening of their skills. Moreover, individualised feedback based on an employee's performance ensures his or her commitment and motivation by recognising achievements made so far as well as identifying areas that require specific growth. Employees feel supported and empowered to take responsibility and ownership of their learning journey, boosting confidence levels and resulting in increased efficiency at work.

Performance Management

Simulation of Complex Work Scenarios in Virtual Reality Environments

VR environments offer a dynamic platform for simulating complex work scenarios that closely resemble real-world situations. These simulations can recreate

various job tasks, challenges and interactions that employees face in their roles, allowing organisations to assess performance in a controlled and immersive setting. By simulating work scenarios within VR environments, organisations can evaluate employees' responses and decision-making processes in real-time, analyse employees' interactions, communication skills, problem-solving abilities and overall performance using AI algorithms integrated into VR platforms, and not only that, but also provide objective assessments for performance evaluations based on observable behaviours and outcomes.

This approach to performance management has several advantages over , like:

- **Eliminating biases:** It removes biases inherent in subjective assessments by providing standardised criteria for evaluating performance.
- **Targeted evaluation:** VR simulations enable organisations to assess employees' readiness for specific roles or responsibilities by replicating job tasks and challenges relevant to those positions.
- **Informed decision-making:** This targeted evaluation approach helps organisations make more informed decisions about promotions, role transitions or training opportunities.
- **Identification of employees' strengths and weaknesses**

VR-based performance evaluations allow organisations to identify employees' strengths and weaknesses with precision. By analysing data from VR simulations, organisations can gain insights into employees' competencies, capabilities and areas for improvement. AI algorithms to analyse employees' performance metrics within VR environments, such as task completion times, accuracy rates, problem-solving strategies and communication effectiveness, enable organisations to:

- Identify patterns, trends and outliers that indicate areas of strength or weakness.
- Develop targeted interventions to address employees' development needs based on these insights.

For example, employees identified as having strengths in certain areas may be assigned mentorship roles or leadership opportunities. Those with development areas may receive additional training or coaching.

Further, performance evaluations, which are based on VR, provide employees with feedback that would be actionable and developmental opportunities that are aligned with their specific needs and goals.

This personalised approach to performance management fosters a culture of continuous learning, growth and improvement within the organisation.

Employee Engagement

Creation of Interactive Virtual Reality Environments for Team-building Tasks

Through VR, there have recently been discovered ways of accelerating the engagement of employees and collaborating with them through the formation of

interactive VR environments. These technologies provide rich, interactive and immersive experiences that develop teamwork, creativity and communication. Organisations can use AI-driven VR platforms that offer virtual team-building exercises, collaborative projects or social events that tie employees together in one virtual space. With the manipulation of the specimen, the organisational workforce can participate in varied team challenges, problem-solving activities or group brainstorming sessions with the manipulation of VR. Such highly interactive experiences build camaraderie and links with employees despite their geographical locations. By mitigating barriers to communication and collaboration, team-building activities done through VR strengthen and encourage relationships, develop trust and boost morale within an organisation. Moreover, different team-building activities are highly relevant for the development of crucial skills in teamwork, such as communication, problem-solving and conflict resolution. By having good collaboration on a task in a VR environment, employees can practice and sharpen their skills in a low-risk and simulated environment.

Collection of Employee Feedback in the Virtual Reality Environment

VR environments present unique and distinct opportunities for collecting employee feedback in a more immersive and interactive way. Instead of sticking to traditional surveys or feedback forms, employees can provide their very own feedback within the VR environment through their gestures, voice commands or any virtual interactions. Organisations gain the possibility to design virtual feedback sessions or any town hall meetings within the VR environment, where employees can share their views, thoughts, ideas and any prevailing issues on the spot in real-time. The possibility of collecting feedback in the VR environment can result in highly rich data for an organisation to get an idea about the workplace culture, employee satisfaction and any areas for improvement. Also, the AI algorithms can be used to analyse data from virtual feedback sessions to recognise themes, trends and sentiment patterns among the employees. This approach aids in pinpointing areas of strength and weakness within the organisation and helps design targeted interventions for addressing employee concerns. Moreover, collecting feedback in the VR setting raises employee engagement and participation by making the process interactive and engaging. The feelings of empowerment to voice their opinions and to be a part of decision-making processes create a culture of inclusiveness and collaboration in the organisation.

Data Analytics

Analysis of Data from Virtual Reality Simulations to Forecast Future Performance-related Trends and Needs of the Workforce

VR simulations generate vast amounts of data regarding employee interactions, behaviours and performance within simulated environments. By leveraging data analytics techniques, organisations can gain valuable insights from this data to forecast future performance trends and recognise emerging needs in the workforce.

Further, AI algorithms can analyse data from VR simulations to get an idea of the patterns, trends and correlations that might indicate changes in employee behaviour, performance levels or skill requirements. Thus, for example, changes

in time-related task completions, error rates or levels of engagement within VR training scenarios may indicate evolving training needs or skill gaps prevailing within the workforce.

These insights encourage organisations to anticipate future workforce needs and proactively develop tactics to address emerging needs. By forecasting trends in employee performance, productivity and engagement, organisations can align their talent management practices with strategic business objectives and ensure they have the adequate and exact skills and capabilities to meet future demands.

In essence, AI in VR-enhanced HRM offers innovative and novel ways to improve recruitment, training, performance management and employee engagement, all while providing data-driven insights for more effective HR practices with quality outcomes.

Theories Related to Artificial Intelligence in Virtual Reality-enhanced Human Resource Management

When looking at ‘Artificial intelligence in VR-enhanced human resource management’, it is also important to investigate the theories that act as the basis in the fields of HRM while understanding the given technologies effects on their practices. AI and VR are pioneering technologies that revolutionise HRM by bringing benefits such as cost savings, efficiency, precision and interesting management methods for developing and managing human resources. In this segment, the main approaches that assist in considering AI and VR in the management of human resources are being emphasised.

Resource-based View

The resource-based perspective emphasises resources and capabilities that make a firm have a sustainable competitive advantage (Madhani, 2010). AI and VR can be identified as strategic resources that can be equipped to improve organisational HR practices and bring them to a level that will continually ensure the organisation is ahead of its competitors in the market. On the other hand, AI can optimise smart hiring processes and improve performance management activities, and VR can upgrade training and development processes in the company. Such an approach can help organisations build up competent HR resources that notably support the entities’ success.

Social Exchange Theory

According to the social exchange theory, a person’s relationship is mainly decided by their stance on a proper return on value. AI and VR create employee–employer bonds better as they extend customised experiences, efficient HR processes and effective feedback mechanisms. For instance, the continuous feedback that can be

produced by AI to improve employee engagement and the immersive training made possible by VR technology can enable more satisfaction and fulfilment for employees.

Organisational Learning Theory

Paying attention to organisational learning theory, it emphasises that learning is not just a one-time event but a continuous process of collecting knowledge and implementing these insights in organisational practice (Saadat & Saadat, 2016). AI and VR technology provide organisations with new learning opportunities and gather data that can be used to give rise to better decisions and to set up a workplace culture where people are continuously improving (Aydin & Karaarslan, 2023). For example, VR practices could be used to speed up the pace of skill acquisition, and AI-powered analytics could be used to recognise workforce trends and potential growth.

Technology Acceptance Model

The Technology Acceptance Model (TAM), in comparison to others, proposes reasons for why users adopt and retain a given technology (Mugo et al., 2017). Using TAM in the application of AI and VR in HRM can lend a helping hand for the researchers in exploring factors affecting the adoption of these technologies by employees and HR professionals (Perello Marin & Tuffaha, 2021). Factors such as perceived usefulness, social influence and ease of use play a vital role in determining acceptance and effective integration.

Human Capital Theory

Human capital theory focuses on workers' abilities and puts emphasis on investing in their training and skill development to improve organisational productivity (Robinson & Pope, 2023). AI and VR technologies allow for the delivery of customised training in a manner that is most effective for the learners, which would make space to likely raise the employees' human capital level (Al-Ansi, 2023). Learners can receive individually created pathways and interactive training experiences that speed up their skill acquisition and contribute to the organisation's success.

Job Characteristics Theory

The concept of job characteristics theory puts a focus on common job attributes such as variety, autonomy and feedback as the ones that significantly affect job satisfaction and level of motivation (Vasilenko, 2019). AI and VR can add many new dimensions to jobs in manufacturing through simulations covering multiple training methods, choice of work schedule and feedback using AI (Holuša et al., 2023). Such elements can have an effect, which makes work more interesting and improves employee engagement.

The application of AI plus VR inside HRM has been established on several key theories to provide a theoretical framework to comprehend the effect. Such theories reveal an advanced way of implementing AI and VR in this sphere to raise the performance of HR functions and boost the satisfaction level of employees. With more organisations adopting AI and VR technology, these theories may be utilised during research and practice in a way that they can provide ethical and effective guidelines for the application of AI and VR in HRM.

Causes of Artificial Intelligence and Virtual Reality Integration in Human Resource Management

When deep diving into the focal point ‘Artificial intelligence in VR-enhanced human resource management’, it is quite important to pay attention to the causes and consequences of integrating these technologies into HR practices. AI and VR offer innovative and fresh chances to transform traditional HR functions, including recruitment, training, performance management and employee engagement. However, their adoption also presents both potential benefits and challenges. This section addresses the causes and consequences of AI and VR integration in HRM.

Technological Advances

Rapid Innovation

AI and VR technologies are making new advancements at a fast pace and hence changing, or rather transforming, the way we do HRM, which includes automation, streamlining and enhancing HR processes. AI could be utilised in the HR process for traditional HR activities such as resolving candidates, putting together schedules and conducting employee evaluations. VR offers the freedom to create a more realistic and hands-on training situation, which was scarcely attainable in real life until now. Integration is two sides of the same coin. The combination of AI and VR together enables HR departments to be more initiative and proactive in their duties, as well as in managing the workforce. For instance, AI algorithms can act to provide the basis to filter high-potential employees and tailor development programmes, and parallelly, VR can create real-like simulations to train employees for specific job tasks.

Data Availability

The availability of big data within organisations has laid the foundation to create the path for AI-driven insights in HR-related decision-making. AI can collect huge volumes of employee data; this data comprises performance metrics, scores and responses from the surveys, and from all these, at the end of the day, what AI tries is to identify different patterns and trends. This data-driven approach lets HR professionals make more informed decisions regarding employee development, any promotions and succession planning. Furthermore, in addition to that, AI can forecast workforce needs and trends, helping organisations anticipate challenges and opportunities in talent management (Natarajan et al., 2024).

Process Optimisation

In the contemporary business world, organisations are subject to continuous improvement requirements that target boosting performance and cutting down on expenses through HR optimisation. AI and VR present automated solutions for time-consuming and routine tasks like payroll processing and benefit administration. By dividing or simply delegating these specified tasks to AI-powered systems, HR professionals can pay attention to strategic initiatives such as talent acquisition and employee development. Other than that, AI provides real-time analytics and reporting, thus enabling data-driven decision-making that can improve HR outcomes (Nyathani, 2023).

Enhanced Employee Experience

Firms are eager to enhance job experiences by implementing HR strategies as a measure of success in a competitive world of work. AI and VR provide innovative training, development and engagement with the workforce designed to match the employees with the organisation. By way of example, AI helps to design custom learning paths and employees' career goals, coupled with their performance histories. VR-based simulations offer realistic training environments, emphasising knowledge retention and engagement. These personalised experiences act as a driving force for higher job satisfaction and employee retention (Stamolampros et al., 2019).

Workforce Dynamics

As modern workers demand more flexible work arrangements, personalised development and a better work–life balance, managers must change their traditional management styles and discover new and better ways of leading people. AI and VR can act as good tools for supporting the implementation of remote work, allowing it to include virtual collaboration tools and remote training opportunities. This flexibility in the working hours preceded the trend that permits employees to manage their work schedules according to their suitability, hence the employees become satisfied with their jobs and become more productive at work. Additionally, AI can provide personalised coaching and feedback, aligning with employees' expectations for continuous development (Loutfi-Hipchen, 2024).

Changing Demographics

Nowadays, managers are responsible for managing and handling multigenerational staff within their organisations, which requires different training and communication styles. AI and VR can give people individualised remedies that help struggling learners at the office or even the elderly. On the other hand, younger employees might prefer VR-based training that has gamified technologies, while older employees might find AI-driven coaching attractive, as it has a more structured form. These stratified treatment regimens enable firms to reach out to their employees at various times, thus addressing diverse tastes and styles of learning (Jia et al., 2024).

Consequences of Artificial Intelligence and Virtual Reality Integration in Human Resource Management

Like the two sides of a coin, AI and VR integration have positive and negative consequences. Focusing on the positive consequences, AI and VR, through HR,

come with loads of benefits. Automation, where AI is the core driver, removes mundane tasks and thus leads HR professionals to refine their job descriptions towards strategic roles. Experiential learning, which is provided by VR, makes it possible to grab new knowledge and skills at a faster pace and therefore has a positive impact on the effectiveness of training. Human–AI collaborative feedback and VR experiences show the result of greater employee satisfaction and retention. In addition to its data-based intelligence reports, AI also helps decision-making and strategic planning by managers, resulting in improved personnel management.

Despite the positive consequences, there are also certain negative consequences when considering AI and VR integration in HRM. Such an integration will also have a series of hazardous consequences. The issue of data privacy stems from employee data collection and analysis; however, this can be lowered through a good data governance system that guarantees data security. Technostress, or a problem developed because of the exploitation of modern technologies, may impact staff and HR representatives, who will be forced to adopt AI and VR instruments and tools. Organisations would be able to assist their employees through these stresses by offering them support and resources that would leave them stronger. Subsequently, as a result, these algorithms may propagate biases extrinsically in HR fields like recruitment and performance evaluation, regardless of whether such biases exist at all. In a dynamic HR environment, there is a necessity for routine monitoring and timely corrections that will lead to the elimination of biases and the promotion of an equitable and fair system (Varsha, 2023).

The causes and consequences of AI and VR integration in HR departments are an indicator of the strong possibility that it can cause a huge transformation, or else, in a much simpler form, the causes and consequences underscore the transformative potential of these AI and VR technologies. The application of AI and VR in the workplace brings numerous benefits in relation to efficiency, effectiveness and worker satisfaction, as well as challenges around privacy, stress and the influence of prejudice on humans. Organisations must be able to balance the advantages and the dangers, introducing intimidate policies and practices to ensure that the AI and VR technologies in HRM will be used properly and ethically.

Measures to Ensure the Proper Functioning of the Role of Artificial Intelligence in Virtual Reality-enhanced Human Resource Management

AI and VR have become quite popular in the field of HRM. Thus, coordinated steps should be implemented to uplift the positive impact generated by these AI and VR technologies and minimise the prevailing risks and challenges. Therefore, it is pivotal to study the assorted aspects of AI and VR that should be brought to attention while executing them with HRM.

Data Confidentiality and Protection

Safeguarding data confidentiality and protection is earth-shaking in the epoch of AI and VR amalgamation within HRM. Firms must lay the foundations of sturdy data governance frameworks that encompass guidelines for the gathering, retention and utilisation of staff data. These frameworks, as advocated by Cheong and Chang (2007), act as guiding principles to ensure adherence to stringent data-safeguarding regulations such as GDPR and CCPA. In addition to that, building defences around data storage through encryption and the deployment of secure storage solutions, as recommended, diminishes the risk of unauthorised entry and any potential data breaches. Furthermore, regulating access to staff data solely for authorised personnel and conducting routine audits, as underscored by Yazdanmehr et al. (2024), further bolsters defences against security risks and breaches.

Moral Utilisation and Equitability

The ethical consequences of AI and VR technologies in HRM are decisive. Firms must boldly and carefully examine AI algorithms for biases that may pop up in various HR processes like recruitment, assessment and advancement. Routine assessments and audits, as proposed by Osasona et al. (2024), are vitally important to figure out and rectify biases, thereby ensuring fairness and impartiality in HR practices. Moreover, fostering transparency in relation to the utilisation of AI and VR in HRM is critical to cultivating trust and upholding ethical standards. Transparent and clear communication with staff about the application of these technologies nurtures transparency and accountability within the firms. Additionally, establishing an ethics committee comprising diverse stakeholders, as recommended by Schnackenberg and Tomlinson (2016), makes smoother and more responsible decision-making and motivates ethical AI and VR usage by safeguarding against potential ethical quandaries.

Staff Training and Assistance

The triumphant integration of AI and VR technologies focuses on providing comprehensive training and support to staff and HR practitioners. Organisations must invest in training programmes and useful resources tailored to equip personnel with the mandatory skills and knowledge to effectively utilise AI and VR tools in their roles (Gayathri & Bella, 2024). The needfulness of offering training initiatives that cater to multiple learning needs and preferences, thereby certifying proficiency in technology usage. Moreover, supporting change management initiatives is influential in aiding staff in getting adjusted to new technologies and overcoming resistance. By facilitating change management processes advocated by Jalagat (2016), firms can minimise disruptions and foster a culture of innovation and agility. Over and above that, providing resources for managing technostress associated with AI and VR usage, such as wellness programmes and counselling services, is essential for promoting staff well-being and resilience, as highlighted by Atanasoff and Venable (2017).

Performance Assessment and Feedback

AI-driven performance assessment and feedback mechanisms hold massive potential for intensifying HRM processes. However, it is essential to establish clear and objective performance metrics to ensure fairness and consistency in evaluations. By bringing up transparent metrics aligned with organisational objectives, as suggested by Ilić et al. (2023), firms can get rid of biases and promote equitable assessments. Furthermore, offering continuous feedback through AI-driven mechanisms leads towards staff professional development and growth. Real-time insights and personalised suggestions and recommendations provided by AI systems, as advocated by Xiuqing et al. (2023), enable ongoing coaching, mentoring and guidance, thereby enhancing performance outcomes. Regular review and refinement of AI-driven performance assessment processes are essential to ensuring their efficacy and relevance. By periodically evaluating and updating performance assessment systems based on feedback and organisational priorities, as recommended by Nyathani (2023), firms can continually optimise HRM practices.

Staff Engagement and Interaction

Potent communication and engagement are fundamental for the development of a positive organisational culture amidst the integration of AI and VR technologies in HRM. Encouraging open dialogue between staff and HR practitioners smooths up the identification of issues and opportunities. By building up channels for transparent communication, as proposed by Suciati Wahdaniah et al. (2023), firms empower staff to voice their opinions and contribute to decision-making processes. Additionally, involving staff in decisions about AI and VR utilisation ensures their perspectives and experiences are considered, thereby fostering ownership and a sense of belonging. By engaging staff as collaborators in the adoption of new technologies, as advocated by Dwivedi et al. (2022), firms promote a sense of inclusivity and collaboration. Continuously seeking feedback from staff regarding the use of AI and VR technologies enables firms to pinpoint areas for improvement and address potential issues proactively. By leveraging staff insights and experiences, as emphasised by Wamba-Taguimdje et al. (2020), firms can drive iterative enhancements and boost the effectiveness of AI and VR-enabled HRM practices.

In summary, excelling in HRM with AI and VR demands a multifaceted strategy covering data confidentiality, moral considerations, staff assistance, performance assessment and interaction. By giving precedence to these spheres and enacting measures to tackle significant obstacles, organisations can unleash the complete capabilities of AI and VR technologies to refine HRM procedures and enrich staff experiences. By continuously investing in these technologies, organisations can navigate the intricacies of the digital age and establish themselves as pioneers in utilising technology for human-centred HRM methodologies.

Successful Implementation of Artificial Intelligence and Virtual Reality Technologies in Human Resource Management Processes

BP employs VR technology to educate its employees on start-up and emergency exit protocols at its Hull, England, oil refinery. Through virtual simulations, employees can learn from errors in a simulated environment, subsequently decreasing the likelihood of repeating such mistakes in real-life scenarios, which could potentially have life-threatening consequences.

Retorio's Artificial Intelligence-powered Video Analysis for Recruitment

Retorio, an AI and behavioural intelligence platform, empowered HR professionals to make data-driven decisions in the recruitment process. Its AI-powered video analysis offered insights into candidates' non-verbal cues, facial expressions and communication style, aiding recruiters in assessing candidate fit for specific roles.

Walmart harnesses VR technology to train its employees in customer service, allowing new hires to engage in simulated interactions with customers, handle challenging scenarios and practice stocking shelves within a virtual store. This immersive approach aims to instil confidence and readiness in employees from their first day on the job.

Siemens has adopted an innovative safety training method by developing VR simulations of potentially risky situations. This enables employees to navigate these scenarios in a risk-free environment, ensuring their preparedness to handle emergencies in real-life settings.

Accenture, a global consulting firm, utilises VR for team-building exercises, enabling new employees worldwide to virtually convene in a shared space. This fosters a sense of community and collaboration right from the outset.

Conclusions and Recommendations

The AI-powered VR union into the HRM of organisations holds the door open to examinable changes in HR operations and employee satisfaction. These technologies have enabled the development of creative approaches towards the organisation of the work, personalised development of projects and the delivery of good performance management and feedback. When firms can lean on AI and VR technologies, they will tend to experience enhancements in efficiency, efficacy and a high level of employee engagement.

However, as organisations welcome these recalibrating technologies, it is much decisive to give attention to prioritise ethical considerations as well as human-centric values. While AI and VR technologies offer wide range of potential to these complex HRM practices, they also on the other hand come up with complex ethical dilemmas in relation to data privacy, algorithmic biases and the

ethical implications of immersive experiences. So simply, organisations must set up strong and sturdy governance frameworks, transparent policies and accountability mechanisms to verify the responsible and ethical usage of AI and VR in HRM. Policies to address such issues must implement proper data storage facilities that involve encryption techniques and other access limitations to avoid hacking and eliminate security risks. Thus, at the end of the day, it would support organisations to protect the rights and dignity of the workforce.

A comprehensive method that examines all the elements of technology, ethics and human resources in the process of human management must be adopted for the successful implementation of AI and VR in HR. In this way, companies can get the full advantages of AI and VR technologies without facing the respective risks that these technologies entail and, consequently, improve both their workforce and their general performance.

Ethical AI and VR use in HR will have to become the norm for HR departments. AI algorithms need to be monitored regularly to make sure that the biases have been successfully uncovered and excluded from the recruitment, appraisal and promotion procedures. Open dialogue between the HRM personnel on the part of the enterprise and the personnel about AI and VR use in HRM will create an atmosphere of trust and provide an ethical impulse.

It is of utmost importance that training programmes give employees and people in charge of the HR department the necessary skills to use such AI and VR tools. Facilitating change management implementation by helping the staff and becoming accustomed to the new technologies is also helping overcome resistance to change. Moreover, the provision of wellness programmes, counselling and stress management methods will be part of company policy and will help employees to handle stress. Organisations should upgrade performance appraisal and feedback procedures by establishing firm-level performance indicators for AI-based performance evaluation to create a sharp and transparent work system. Deploying an AI-enabled feedback mechanism is also a good practice; it promotes employees' development and provides consistent mentorship. Analysing and revising quality schemes requires AI-assisted appraisals to be appropriate for organisational objectives and worker requirements.

To add into, building engagement and communication between management and employees is also vital to achieve efficient AI and VR integration in HRM. Communication among the workforce with HR specialists helps employees to understand the prevailing concerns and offerings for advancement. Involving employee feedback on the utilisation of AI and VR could facilitate the discovery of areas to be improved and the pinpointing of concerns.

By following this guidance, organisations can make sure that AI and VR are properly operated by management, which may result in enhanced HR processes through improved employee experiences. In the age of technology transformation, organisations that leverage these revolutionary technologies should monitor and adjust to maintain the control and efficiency of human and AI and VR usage.

This is due to the point that the amalgamation of AI and VR into organisational frameworks is being stressed as a tactful manoeuvre that can lay the foundation for the optimisation of HR procedures and the upliftment of employee

experiences. By focusing on these clearly specified instructions, enterprises will be able to steer the complex landscape of AI and VR with the support of managerial oversight. The prominence is placed on the promotion of an environment in which these highly advanced technologies are not only utilised, but also rigidly supervised in order to ensure that they are flawlessly integrated into the operational paradigms that are contemporarily in place.

Adding into, the strategic orchestration of AI and VR within institutional frameworks presents a vital evolutionary leap towards the maximisation of HR operations and the development of a culture that is technologically savvy. As the guardians of this transformational journey, management entities are assigned with the responsibility of directing their businesses towards the peak of technological capability. This is the point at which the synergistic interplay between human brilliance and artificial augmentation has the capability to generate synergies that are unmatched in the industry.

Over and above that, the role played by AI in VR-enhanced HRM shows up a paradigm shift in the way organisations attract, develop and retain talent in this digital age. By hitching up the power of AI-driven insights and VR experiences, which are immersive, organisations can open up paths for new levels of employee engagement, satisfaction and performance, ultimately driving towards business success and competitive advantage in an acceleratingly complex and dynamic global marketplace. As technology keeps up to evolve, and advance firms must stay observant, adaptive and highly ethical in the application of AI and VR, ensuring that these transformative tools cater to supplement, rather than to replace, the human touch in HRM. Through this strategic alignment, uninterrupted innovation and a devotion to ethical leadership, organisations can gear up the maximum potential of AI and VR to design a future where work is not merely limited about tasks but also about material human experiences.

In conclusion, the integration of AI and VR into HRM shows up a watershed moment in the change of organisational practices, presenting pathways to redefine work with much quality in the digital age.

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