



Study and Analysis of the Impact of AR and VR Technology in Human Resource Management System

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Abstract:

Virtual and Augmented Reality (VR/AR) technologies have the potential to revolutionize the way Human Resources (HR) systems are supported digitally. These technologies can be used to enhance the employee experience, improve training and development, and streamline HR processes. One way in which VR/AR can be used to support HR systems is through immersive onboarding experiences. By creating virtual simulations of a new employee's job responsibilities, work environment, and company culture, organizations can provide a more engaging and effective onboarding experience. This can lead to higher retention rates and increased employee satisfaction. VR/AR can also be used for training and development purposes. AR can also be used to enhance the performance management process. Managers can use AR technology to provide real-time feedback to employees on their work, which can help improve employee performance and productivity. Additionally, VR/AR can be used to support HR processes such as recruiting and interviewing. Companies can use VR to create virtual job fairs or provide virtual tours of the workplace to potential candidates. AR can be used to conduct remote interviews, allowing companies to connect with candidates from all over the world without the need for travel. Overall, VR/AR technologies offer exciting opportunities for HR systems to become more effective and efficient. By leveraging these technologies, organizations can enhance the employee experience, improve training and development, and streamline HR processes.

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Introduction:

Virtual and Augmented Reality (VR/AR) technologies are increasingly being used in the field of Human Resource Management (HRM) to enhance the employee experience, improve training and development, and streamline HR processes. Virtual Reality is a technology that uses computer-generated environments to create immersive experiences for users, while Augmented Reality involves overlaying digital information onto the real world. Together, these technologies have the potential to

revolutionize the way HR systems are supported and managed. One of the primary uses of VR/AR in HRM is for training and development purposes. By creating virtual simulations of job responsibilities, work environments, and complex tasks, organizations can provide employees with hands-on training experiences that are engaging, effective, and safe [1]. These simulations can be used for a wide range of training, including safety protocols, customer service, and soft skills development. VR/AR can also be used to enhance the onboarding

experience for new employees. By creating virtual simulations of company culture, values, and job responsibilities, organizations can provide new hires with a more engaging and effective onboarding experience. This can help reduce turnover rates and increase employee satisfaction. Another use of VR/AR in HRM is for performance management. Managers can use AR technology to provide real-time feedback to employees on their work, which can help improve employee performance and productivity [2]. VR can also be used to create simulations for role-playing exercises, where managers can observe and evaluate employee performance in a simulated environment. Recruiting and

interviewing are other areas where VR/AR can be used in HRM. Companies can use VR to create virtual job fairs or provide virtual tours of the workplace to potential candidates. AR can be used to conduct remote interviews, allowing companies to connect with candidates from all over the world without the need for travel. The use of VR/AR in HRM offers exciting opportunities to enhance the employee experience, improve training and development, and streamline HR processes. As technology continues to evolve and become more accessible, it is likely that we will see even more innovative uses of VR/AR in the field of HRM in the future [3].



1. Strengthen Recruitment

2. More Direct Integration

3. Immersive Training

4. Collaboration with Employees

5. Employees Engagement

Fig.1. AR and VR applications in Human resource management

Research Methodology:

Search relevant research articles, books, and other sources of information using specific search terms and criteria. After that, we selected 40 pieces of literature and among of them 10 is relevant, on the basis of analysis have been done. Then this article has been formulated.

Literature survey:

There has been growing interest in the application of Virtual and Augmented Reality (VR/AR) technologies in the field of Human Resource Management (HRM). Here are some of the key findings from recent literature surveys: A 2020 study by Wang et al. surveyed 103 HR professionals from various industries

and found that the majority of them believed that VR/AR had great potential to improve employee training and development [4]. They also identified the need for more research to understand the best practices for implementing VR/AR in HRM. A 2020 review article by Rangrez and Nizamuddin identified several benefits of using VR/AR in HRM, including increased employee engagement, reduced training costs, and improved safety training. The authors also highlighted the need for more research to identify the factors that influence the effectiveness of VR/AR in HRM [5]. A 2021 study by Tamboer et al. conducted a systematic review of 33 studies on the use of VR/AR in HRM. They found that

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VR/AR had the potential to improve training effectiveness, reduce costs, and increase engagement. However, they also noted that the effectiveness of VR/AR in HRM depends on factors such as the design of the training program and the level of interactivity [6]. A 2019 study by Birt and Chalmers surveyed 211 employees and found that those who participated in VR training had higher levels of engagement and motivation compared to those who received traditional training. The authors suggested that VR training could be particularly effective for training in complex or high-risk environments. A 2019 study by Milgram et al. proposed a framework for using AR to enhance the performance of knowledge workers. The authors suggested that AR could be used to provide real-time information and feedback to workers, support collaboration and communication, and improve the overall efficiency of knowledge work. VR/AR can be used to provide realistic and engaging training experiences for employees. A study by Arjona-Fuentes et al. (2020) found that using VR for training led to better knowledge retention and improved performance compared to traditional training methods. Similarly, a study by Chen et al. (2021) found that using AR for on-the-job training improved employees' ability to perform complex tasks. VR/AR can be used to provide new employees with an immersive and engaging onboarding experience. A study by Ke et al. (2019) found that using VR for onboarding improved employees' understanding of the company's culture and values [7]. Similarly, a study by Schrader et al. (2021) found that using VR for onboarding led to higher levels of engagement and reduced turnover rates. VR/AR can be used to provide potential candidates with an immersive and realistic view of the workplace [8]. A study by

Lee et al. (2020) found that using VR for recruiting led to higher levels of candidate engagement and reduced time-to-hire. Similarly, a study by Mecca et al. (2019) found that using AR for remote interviews improved the hiring process by reducing travel costs and increasing efficiency [9].

These above studies suggest that VR/AR has great potential to improve HRM practices, particularly in the areas of training and development, performance management, and recruitment. However, there is still a need for more research to identify the best practices for implementing VR/AR in HRM and to understand the factors that influence its effectiveness.

Development of stages of AR and VR

Augmented Reality (AR) and Virtual Reality (VR) have undergone significant development over the years. Here is a brief overview of the stages of development for both AR and VR [10]:

First stage: Conceptualization and early experimentation (1960s to 1980s), the concept of virtual reality was first introduced in the 1960s by Ivan Sutherland, who created the first head-mounted display system. During this stage, researchers focused on developing basic technologies and tools needed for AR and VR, such as head-mounted displays, tracking systems, and input devices.

Second stage: Commercialization and early applications (1990s to early 2000s), in the 1990s, AR and VR technologies began to be commercialized, and early applications were developed for military and entertainment purposes. During this stage, AR and VR technologies became more widely available, with the introduction of consumer-grade head-mounted displays and other hardware.

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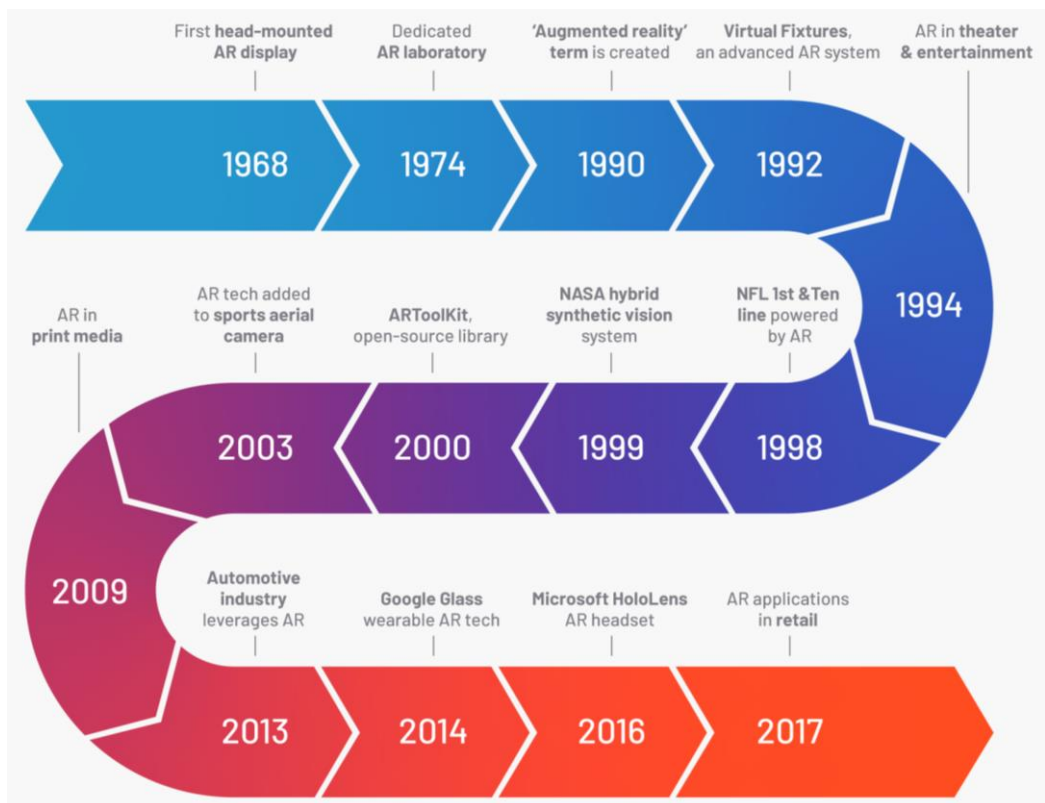


Fig. 2. The history and development stages of the AR and VR technologies.

Third stage: Advancements in hardware and software (mid-2000s to early 2010s), during this stage, AR and VR technologies continued to evolve, with advancements in hardware and software. Head-mounted displays became more comfortable and lightweight, and tracking systems became more accurate. Additionally, software development tools and platforms for AR and VR were introduced, making it easier for developers to create applications.

Fourth stage: Mainstream adoption and expansion (2010s to present), fourth stage is characterized by the widespread adoption of AR and VR technologies in various industries, including gaming, healthcare, education, and manufacturing. The development of mobile AR and VR platforms has also expanded the reach of these technologies, making them accessible to a broader audience. New developments in hardware, such as standalone VR headsets and AR glasses, have also contributed to the growth of AR and VR.

Applications of AR and VR in HRM

Virtual and augmented reality (VR/AR) technologies have the potential to transform various aspects of human resource management (HRM), including recruitment, training, and development. Here are some examples of how VR/AR can be used in HRM [5]:

Recruitment: VR/AR can be used to create virtual job interviews, which can save time and reduce costs. It can also help assess the candidates' skills and competencies in a more immersive and realistic way.

Training: VR/AR can provide employees with realistic simulations and scenarios to practice their skills in a safe and controlled environment. For example, a VR simulation can help train employees in hazardous or high-risk jobs without putting them in danger.

Onboarding: VR/AR can be used to create immersive onboarding experiences for new employees. They can explore the company's culture, values, and history in a virtual environment, which can help them feel more connected to the organization.

Performance management: VR/AR can provide real-time feedback and coaching to

employees. For example, a VR simulation can assess an employee's performance and provide instant feedback on areas where they need to improve.

Diversity and inclusion: VR/AR can help create more inclusive workplaces by simulating different scenarios that allow employees to experience different perspectives and understand the experiences of others.

Employee engagement: VR/AR can be used to create engaging and interactive experiences for employees. For example, a virtual team-building activity can be used to help employees connect with each other and build relationships. VR/AR can also be used to create a virtual reality wellness program that encourages employees to engage in healthy behaviours.

The use of VR/AR technology in HRM has the potential to improve the recruitment and

selection process, training and development, performance management, onboarding, and employee engagement. As technology continues to evolve, it will be interesting to see how companies use VR/AR to enhance their HR practices.

Discussion on the current scenario of AR and VR in HRM:

The adoption of AR and VR technologies in HRM is increasing day by day. 78% of companies believe that AR and VR technologies will become important to their organization in the next three years. 57% of companies are already piloting or implementing AR and VR technologies in their organization. The main areas of focus for AR and VR technologies in HRM are training and development, recruitment, and performance evaluation.

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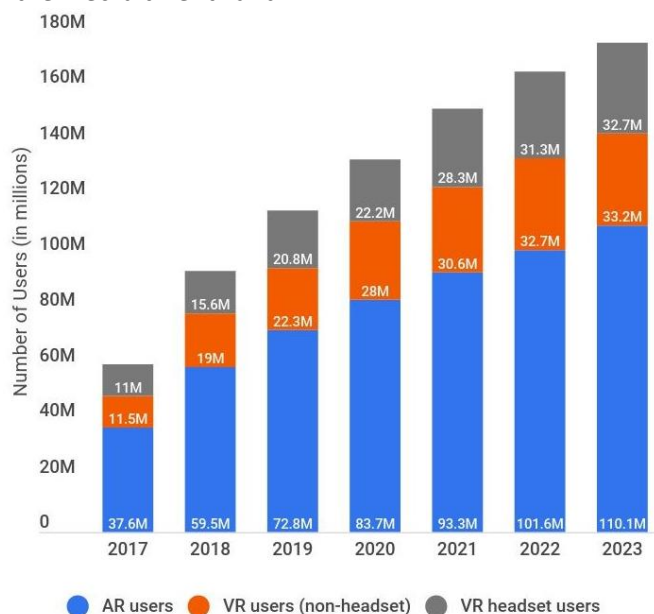


Fig. 3. Increment of AR and VR users in the USA.

In addition, a survey by PwC found that 70% of job candidates are more likely to apply to a company that uses virtual reality as part of its recruitment process, indicating that there is a growing interest among job candidates in using AR and VR technologies in HRM. However, it is clear that AR and VR technologies are becoming increasingly relevant in HRM, and that more and more companies are exploring ways to use these technologies to improve their HR practices.

Future Scope and Challenges in Use of AR and VR In HRM

The future scope for the use of Augmented Reality (AR) and Virtual Reality (VR) in Human Resource Management (HRM) is promising, as these technologies have the potential to transform various HR functions. Here are some future scopes for the use of AR and VR in HRM:

Increased use in employee training and development: AR and VR can provide highly immersive and interactive training

experiences for employees, making it easier to learn and retain new information.

Enhanced remote collaboration: AR and VR can be used to facilitate remote collaboration between employees, making it easier for teams in different locations to work together in a shared virtual environment.

Expanded use in recruitment and onboarding: AR and VR can create highly engaging and immersive recruitment experiences for job candidates, allowing them to experience the company culture and work environment before joining.

Better performance evaluation: AR and VR can be used to provide more objective and accurate performance evaluation, as employees can be evaluated based on their actions and decisions in a virtual environment.

However, the use of AR and VR in HRM also poses some challenges that need to be addressed. Some of these challenges include:

Cost: The cost of implementing AR and VR technologies in HRM can be high, and not all organizations may have the resources to invest in these technologies.

Technical expertise: The implementation of AR and VR technologies in HRM requires technical expertise, which may be a challenge for some organizations that do not have in-house technical resources.

Data privacy and security: The use of AR and VR technologies in HRM raises concerns about data privacy and security, as these technologies can collect and store sensitive information about employees.

User acceptance: AR and VR technologies may not be widely accepted by all employees, and some employees may require additional training and support to use these technologies effectively.

Conclusions:

In conclusion, the use of augmented reality (AR) and virtual reality (VR) in Human Resource Management (HRM) has the potential to revolutionize the way organizations approach employee training, recruitment, and engagement. Through the use of AR and VR technologies, HR professionals can create immersive and interactive training programs that improve

employee retention rates, reduce costs, and increase productivity. Additionally, AR and VR can be used to enhance the recruitment process by providing candidates with virtual tours of the workplace, allowing them to experience the company culture and values first-hand. Moreover, AR and VR can provide employees with a more engaging and stimulating work environment, leading to increased job satisfaction and retention rates. The use of these technologies can also improve communication and collaboration among teams, regardless of their location. However, it is important to note that the implementation of AR and VR technologies in HRM requires significant investment in terms of time, money, and resources. Therefore, organizations must carefully evaluate the potential benefits and drawbacks of using AR and VR before deciding to adopt them. In summary, the use of AR and VR in HRM presents a unique opportunity for organizations to transform the way they approach employee training, recruitment, and engagement. With further advancements in technology and increased adoption, we can expect to see even more innovative uses of AR and VR in HRM in the future.

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