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Digital Revolution in HR: AR Implementayion for Employee Training and Recruitment

Anike Retawati[1*], Achmad Syamsudin[2], Muhammad Ruzaini Abdi[3]
[1,2,3]Universitas Palangka Raya

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ABSTRACT

This research examines the implementation of Augmented Reality (AR) technology in the employee training and recruitment process at Dicoding Indonesia. The purpose of this research is to evaluate the effectiveness, challenges, and opportunities of using AR in improving training interactivity and supporting the recruitment process of digital talents. The approach used wxas qualitative with a case study method. Data was collected through in-depth interviews, direct observation, and analysis of Dicoding's internal documents. The results showed that the implementation of AR in training increased the interactivity and engagement of participants, and helped in the development of practical skills. However, there were technical challenges related to AR devices and difficulties in integrating the technology with training materials. On the recruitment side, AR provided a more realistic simulation experience for prospective employees, which improved the effectiveness of their practical skills assessment. This research suggests further development of AR technology in Dicoding and other companies as a solution to improve efficiency and effectiveness in training and recruitment.

Corresponding Author:

Anike Retawati
Universitas Palangka Raya
Email: anikeretawati@gmail.com

INTRODUCTION

The digital revolution has brought major changes in various aspects of life, including in the world of work and human resource management (HR). Advanced technologies such as Augmented Reality (AR) are gaining attention as one of the innovations that can revolutionize the employee training and recruitment process. By utilizing AR, companies can create a more interactive, realistic, and effective experience compared to traditional methods. This technology can be used to train workers in high-risk sectors, such as manufacturing, construction, and healthcare. In the context of employee training, AR allows workers to learn through simulations that are close to reality. For example, in the healthcare industry, AR can be used to train medical personnel in handling emergency situations without risk to patients (Latif & Loppies, 2019). Other research shows that the use of AR in training can accelerate learning and reduce the likelihood of fatal errors, as employees can practice in a safe and controlled environment (Ashari, 2023).

In addition, AR can also increase employee engagement in the learning process, which contributes to increased motivation and information retention (Putra, 2023). Compared to conventional training methods such as lectures or online modules, the experience AR provides is more immersive and engaging. With AR, employees not only passively receive information, but are also actively involved in the learning process, which increases the overall effectiveness of learning (Apriyani, 2023). Experiential learning, facilitated by AR, has been shown to have a higher level of effectiveness, making it an ideal tool for improving overall employee

competencies (Manurung, 2024). On the recruitment side, AR opens up new opportunities to more accurately identify candidates who best fit the company's needs. Traditional selection processes often rely on interviews and written tests that have limitations in assessing candidates' practical abilities (Wadjdi, 2023). By using AR, companies can conduct work simulations that allow candidates to demonstrate their skills directly in a relevant context. This not only provides a better insight into the candidate's abilities, but also allows companies to assess the candidate's fit with the organization's culture (Burrichter et al., 2022).

The implementation of AR in recruitment can also improve the candidate experience, especially the younger generation who are more familiar with digital technology. With this approach, companies can attract more quality talent and build an image as an innovative and progressive organization. Candidates who participate in AR-based selection processes tend to feel more engaged and enthusiastic, which in turn increases the chances of recruitment success. However, the adoption of AR technology in HR is not free from challenges. Such as the implementation of AR in training and recruitment including the need for significant initial investment and training for staff to effectively utilize this technology (Hardika, 2021). In addition, companies must consider aspects of data privacy and security when using AR in the recruitment and training process (Huda et al., 2021). Data privacy and security issues are also a concern in AR implementation. AR-based training and recruitment processes often involve collecting personal data of candidates and employees. Therefore, companies must ensure compliance with data protection regulations, such as GDPR or similar laws in their respective countries. Nonetheless, the benefits that AR offers far outweigh the challenges. Many global companies have already started integrating this technology in their HR strategies. For example, companies in the technology and healthcare sectors have used AR to improve the efficiency of employee training and selection. The successful implementation of AR by these companies is inspiring other organizations to follow their lead.

In the future, Augmented Reality (AR) is expected to become an integral part of human resource (HR) management, particularly in employee training and recruitment. This technology not only improves operational efficiency but also provides interactive learning experiences through realistic simulations, allowing employees to learn new work procedures and skills without field risks (Ashari, 2023; Putra, 2023). In addition to improving motivation and information retention, AR plays an important role in building a more competent and competitive workforce, while creating an inclusive and adaptive work environment. By providing access to training to employees from various backgrounds, including those with special needs, AR supports the creation of a more open organizational culture (Alam, 2021). This technology also opens up opportunities for collaboration between companies, technology providers, and educational institutions to design relevant training and recruitment programs, and allows educational institutions to adapt their curriculum to the needs of modern industries (Latif & Loppies, 2019; Fany, 2024). Despite offering various benefits, AR implementation faces challenges such as high costs, the need for specialized training for HR teams, and limited technology infrastructure that can hinder adoption, especially in small and medium-sized enterprises (Latif & Loppies, 2019). With the right strategy and solid collaboration, AR becomes a revolutionary solution in facing the challenges of the digital era, creating significant added value for organizations, and increasing competitiveness in the global market (Latif & Loppies, 2019; Ashari, 2023).

METHODOLOGY

This research uses a qualitative approach with a case study method to examine the implementation of Augmented Reality (AR) technology in training and recruitment at Dicoding Indonesia, Bandung. Dicoding was chosen as the research location because it is one of the leading technology training platforms that has adopted and promoted modern digital technology. The research was conducted over three months, starting from preparation to data collection and analysis. Primary data was collected through in-depth interviews with training managers, HR staff, and trainees at Dicoding. These interviews aimed to understand the process of implementing AR, its benefits in improving training effectiveness, and its impact on digital talent recruitment. In addition, direct observation of AR-based training sessions was conducted to gain an in-depth understanding of the use of this technology in a practical context.

The subjects of this research consisted of various parties involved in the implementation of AR technology at Dicoding Indonesia. Interviews were conducted with training managers who provided insight into the process of implementing AR technology in training sessions and how this technology is integrated in the development of participants' skills. Dicoding HR staff were also involved to provide perspectives on the application of AR in the recruitment and selection process of digital talent. Trainees at Dicoding, who are direct users of AR technology, were also the subject of the research, with the aim of exploring their experiences regarding the effectiveness and benefits of AR in improving learning.

Secondary data was obtained from Dicoding's internal documents, such as training reports, AR-based training materials, and relevant recruitment data. This information was analyzed to identify patterns, challenges, and opportunities in AR implementation. Data analysis was conducted using thematic analysis techniques to identify key themes related to the effectiveness and efficiency of AR technology in the context of training and recruitment. Data validity was maintained through data triangulation, by comparing interview,

observation, and document data. The results of this methodology are expected to provide deep insight into the implementation of AR at Dicoding Indonesia, as well as a reference for other companies that want to adopt similar technology. The following are presented the instruments used in this research, including;

Table 1. Interview Instrument

No	Pertanyaan	Tujuan
1	What is the company's motivation in adopting AR technology for employee training?	Understand the background and reasons for implementing AR at Dicoding
2	How is the process of integrating AR in employee training in the company?	Understand the background and reasons for implementing AR at Dicoding.
3	What are the main challenges faced when adopting AR technology?	Identify obstacles or barriers that occur in the implementation of AR.
4	What are the main benefits of using AR in employee training?	Assessing the effectiveness of AR in improving the quality of training.
5	How do participants respond to the use of AR in training?	Understand trainees' acceptance and response to AR technology.
6	Does AR affect the way companies recruit digital talent? If so, how?	Does AR affect the way companies recruit digital talent? If so, how?
7	Explore the impact of AR on recruitment strategies and assessment of prospective employees.	Know the success indicators used in evaluating training programs.
8	Does the company plan to develop the use of AR in the future?	Understand the prospects and development plans of AR technology at Dicoding.

This interview instrument contains a list of questions designed to explore in-depth information related to the implementation of Augmented Reality (AR) technology in employee training at Dicoding company. Each question has a specific purpose, ranging from understanding the company's motivation to evaluating the success and prospects of developing AR technology in the future. This instrument covers various aspects such as reasons for implementation, integration process, challenges, benefits, participant acceptance, impact on recruitment strategies, and evaluation of the success of AR-based training. By using this instrument, it is expected that comprehensive data can be obtained to analyze the effectiveness and sustainability of the use of AR technology in the corporate environment.

Table 2. Direct Observation Instrument

No	Aspek yang Diamati	Indikator Pengamatan
1	AR-based training process	Smoothness of training implementation, participants' understanding of the material, and participants' involvement in activities.
2	AR facilities and technology used	Quality of AR devices (hardware and software), availability of supporting facilities, and integration of AR technology.
3	Interaction between participants and AR technology	Participants' comfort level in using AR and how often AR technology is used during training.
4	Instructor's role in AR-based training	Instructor's ability to guide participants and overcome obstacles related to AR technology
5	Participants' response to AR technology	Participants' enthusiasm, level of focus, and verbal or non-verbal feedback during the training.
6	End result of AR-based training	Achievement of training objectives, participant evaluation results, and expected skill improvement.

This Direct Observation Instrument contains the aspects observed during the Augmented Reality (AR)-based training at Dicoding, along with the observation indicators used to assess the effectiveness of the training. Observations focused on a variety of important elements, including the smooth running of the training, the quality of the AR technology used, the interaction between participants and the technology, and the role of the instructor in facilitating the training process. In addition, participants' responses to the AR technology and the final results of the training were also observed to evaluate the impact of using AR in improving participants' skills. This instrument aims to provide a comprehensive picture of the AR-based training experience and the factors that influence the success of the program.

RESULTS

This study aims to evaluate the implementation of Augmented Reality (AR) technology in the employee training and recruitment process at Dicoding. Based on secondary data obtained from internal company documents, such as training reports, AR-based training materials, and relevant recruitment data, a thematic analysis was conducted to identify patterns, challenges, and opportunities in the application of AR technology. The data validation process is carried out using data triangulation that compares the results of interviews, observations, and documents. The table below presents the results of the analysis that provide in-depth insights into the effectiveness, efficiency, and challenges faced in the implementation of AR at Dicoding. The results of this study are expected to be a reference for other companies that want to adopt similar technology.

Table 3. Research Results on Implementation and Evaluation of AR Technology in Training and Recruitment at Dicoding

Aspects Observed	Data Source	Analysis Method	Main Findings	Data Validity
Implementation of AR in Employee Training	Implementation of AR in Employee Training	Thematic Analysis	- The implementation of AR increases interactivity in training. - Challenges: limited tools and participants' understanding.	Data triangulation through interviews, observations, and documents
Effectiveness of AR Technology in Training	Participant evaluation report, participant feedback	Thematic Analysis	- Participants showed improved skills after the AR-based training. - Some participants needed more time to adapt to the technology.	Data triangulation through interviews, observations, and documents
Challenges in AR Integration	Training report, AR technology evaluation document	Thematic Analysis	Technical constraints on the AR device. - Difficulty in integrating the technology with the training materials..	Data triangulation through interviews, observations, and documents
Opportunities in AR Development at Dicoding	Training report, recruitment data	Thematic Analysis	- Potential development of using AR for advanced training and digital talent recruitment.	Data triangulation through interviews, observations, and documents
Impact of AR on Digital Talent	Recruitment Recruitment data, AR-based training reports	Thematic Analysis	- The use of AR supports the recruitment process by providing a more real-life simulation experience to potential employees.	- The use of AR supports the recruitment process by providing a more real-life simulation experience to potential employees.

This research examines the implementation of Augmented Reality (AR) technology in training and recruitment at Dicoding Indonesia, Bandung, with a qualitative approach using the case study method. The results revealed that the application of AR in training increased interactivity and participant engagement. Nonetheless, the main challenges faced were the limitations of AR devices and participants' adaptation time to this technology. The findings showed that trainees who used AR experienced significant skill improvement, although some participants took longer to adjust to the technology.

In addition, the study also showed challenges in integrating AR with training materials. Technical constraints such as hardware and software issues hindered optimal implementation. However, this research also identified great opportunities in the development of AR at Dicoding, especially in enhancing advanced training and in the recruitment process of digital talent. AR provides a more realistic experience in simulations used in the selection process of prospective employees, which can improve recruitment effectiveness.

Secondary data obtained from Dicoding's internal documents, such as training reports, AR-based training materials, and recruitment data, were analyzed using thematic analysis techniques to identify patterns and challenges that arise in the application of AR technology. Data validity was maintained using triangulation,

which compared the results of interviews, observations, and document data. The results of this study provide useful insights for Dicoding in improving its use of AR and can serve as a reference for other companies interested in implementing similar technologies.

DISCUSSION

Application of AR in Employee Training

The application of Augmented Reality (AR) technology in employee training at Dicoding Indonesia has shown significant results in increasing participant interactivity and engagement. AR allows trainees to experience a more immersive and interactive learning experience, which in turn significantly improves material comprehension. Previous research shows that AR can create an immersive learning environment, allowing participants to interact directly with training materials, thus increasing learning effectiveness (Lebedeva et al., 2020; Kanivets et al., 2022). In addition, AR is known to reduce cognitive load and increase participant engagement during the learning process (Altmeyer et al., 2020; Крамаренко et al., 2019). However, the implementation of AR in Dicoding is not free from challenges. One of the main obstacles is the limitation of the AR hardware used. Inadequate device quality can reduce the optimal learning experience, while participants' initial lack of understanding of AR technology can be a barrier to training effectiveness (AlNajdi, 2023; F, 2023). For example, some participants have difficulty understanding how this technology works in the early stages of training. This requires special strategies, such as introductory AR technology training, to make participants more prepared and confident in using the technology (Nechypurenko et al., 2023).

Furthermore, the application of AR in training at Dicoding not only aims to improve understanding of the material but also encourages active engagement of participants through interactive simulations. The study of Lebedeva et al. (2020) emphasizes that AR technology is very promising for vocational training, especially in management and education. However, research by Kaplan et al. (2020) shows that the effectiveness of XR technologies, including AR, may vary depending on the training needs and context. Therefore, the selection of tools and the design of training materials are crucial to achieve optimal results. In the context of Dicoding, steps to overcome technical challenges such as device quality and understanding of AR technology are important. Dicoding needs to consider collaborating with AR technology providers to ensure the availability of reliable hardware and structured training programs. With this approach, the application of AR technology can provide maximum benefits, both in increasing the interactivity of training and the overall effectiveness of participants' learning.

Effectiveness of AR Technology in Training

Research shows that the use of AR in training can significantly improve participants' skills. Participants report improved abilities, particularly in understanding the material and applying skills in real-world simulations (Velázquez & Méndez, 2021; Rudnik, 2023). AR provides an interactive and immersive learning experience, allowing participants to interact with the training content more deeply. This is in line with the finding that AR is able to improve participants' learning motivation and performance (Majid & Salam, 2021). However, while AR provides great benefits in training, there are challenges that need to be considered, especially related to the time it takes for participants to adapt to this technology. Participants who are less familiar with advanced technological tools often take longer to adjust, which can affect their overall learning experience (Tosto et al., 2022). Laia's research (2024) shows that participants who are unfamiliar with AR technology tend to experience difficulties at the beginning, so there is a need for a special approach to overcome this barrier.

To overcome these challenges, it is important for training organizers, such as Dicoding, to provide sufficient time for participants to adapt to the technology. One effective solution is to hold an introductory training session before the AR-based training begins (Syamsinar, 2022). This not only helps participants be better prepared for the new technology, but also increases their confidence during the training process. Furthermore, research by Han et al. (2022) highlighted that AR can improve visualization and problem-solving skills, which are highly relevant in the context of professional training. Thus, despite the challenges in implementing AR technology, the benefits it offers in improving participants' skills and understanding are much more significant. Therefore, an implementation strategy that includes initial training and technical support will be critical to ensure the success of future AR-based training programs (Familoni, 2024).

Challenges in Integrating AR with Training Materials

The application of Augmented Reality (AR) technology in training at Dicoding faces various challenges, especially in terms of integration with existing training materials. One of the main obstacles is the difficulty in aligning conventional materials with AR-friendly formats. Using AR requires materials to be specifically designed to be compatible with this technology, so traditional materials are often not immediately usable. This adjustment involves redeveloping content to optimally utilize AR's potential, such as interactive elements and rich visuals. Research shows that the successful implementation of AR relies heavily on the

design of materials that support AR-based learning experiences (Singh et al., 2019; Altmeyer et al., 2020). In addition, technical constraints related to AR devices are also a significant challenge. Hardware, such as display quality, processing speed, and battery life, is often a bottleneck in AR-based training. If the devices are inadequate, the user experience may be compromised, ultimately affecting learning effectiveness. The study by Крамаренко et al. (2019) showed that suboptimal devices can demotivate participants and hinder the learning process. Therefore, selecting the right device compatible with AR technology is crucial to ensure the training runs smoothly.

Successful AR implementation also requires careful preparation, including the development of training materials that are tailored to the needs of AR technology and the devices used. Research by Kourouklis and Papadopoulos (2021) emphasizes the importance of close collaboration between content developers and technology providers to ensure effective integration. Training organizers need to pay attention to careful planning so that AR technology can be used optimally (AlNajdi, 2023). To overcome these challenges, collaboration with AR device developers is a strategic step. This collaboration not only aims to ensure the compatibility of technology with training materials, but also to create a curriculum that utilizes the full potential of AR technology. With this step, Dicoding can design more interactive training materials, enhance participants' learning experience, and maximize the benefits of AR technology (F, 2023).

Thus, although technical and conceptual challenges remain, appropriate strategies such as the development of AR-based materials, selection of appropriate devices, and collaboration with developers can ensure the successful implementation of AR in training at Dicoding.

Opportunities for AR Development in Dicoding

The results show that there are great opportunities to develop the use of Augmented Reality (AR) technology at Dicoding, both in the context of advanced training and the digital talent recruitment process. The use of AR can be extended from basic training to more in-depth advanced training or complex work simulations. In advanced training, AR allows for a more interactive and immersive learning experience, as revealed by Rachim (2024), which shows that the implementation of AR in education is able to create significant changes through an engaging learning experience and according to the needs of students in the digital era. By utilizing this technology, Dicoding can design training modules that reflect real situations, thus improving participants' understanding and skills (Putra et al., 2023). In addition to training, AR also has great potential in digital talent recruitment. This technology allows Dicoding to provide a more real-life selection experience through AR-based job simulations, helping companies better assess the abilities of potential employees. This is in line with research showing that technology in recruitment can increase the effectiveness of the selection process, provide a clearer picture of candidate abilities, and help companies find the right talent (Devayanti, 2023; Akbar, 2024). With this interactive experience, AR also provides added value for prospective employees, helping them understand the work situation more concretely (Murdy & Wilyanita, 2023).

The long-term benefits of developing AR technology at Dicoding are promising. By improving the quality of training and recruitment processes, Dicoding can strengthen its position as a leader in educational innovation and digital talent development in Indonesia. Research by Kaur et al. (2020) confirms that the use of AR in education can increase student motivation and engagement in the learning process, so investing in AR development is a strategic step to support Dicoding's future growth. Overall, the development of AR technology at Dicoding does not only create a better learning experience for students.

The Impact of AR on the Recruitment Process of Digital Talent

The use of Augmented Reality (AR) technology in the recruitment process at Dicoding has proven to have a significant positive impact, especially in enhancing a more real-life simulation experience for prospective employees. AR supports the selection process by allowing prospective employees to experience situations or tasks that they will face in the working world, thus providing a clearer insight into their technical abilities and problem-solving skills. This is particularly important as such skills often cannot be revealed through traditional interviews or written tests alone (Rachim, 2024). By integrating AR, Dicoding can create an interactive and immersive experience for prospective employees, where they can participate in simulated tasks and challenges that reflect everyday work. Research shows that interactive learning experiences such as those offered by AR can improve participants' understanding and skills, giving Dicoding an edge in assessing candidates' practical skills (Rachim, 2024; Rahmat et al., 2022). In addition to improving skills assessment, the implementation of AR in recruitment also positively impacts the overall candidate experience. Candidates feel more engaged and valued as they get a chance to interact directly with the technology used in the company. This not only improves the company's image in the eyes of prospective employees, but also demonstrates Dicoding's commitment in adopting the latest technology for recruitment and training (Nafi'ah et al., 2022). Thus, AR not only serves as a selection tool, but also an effective means to attract quality digital talent.

Furthermore, the application of AR in the recruitment process has significant long-term potential. By utilizing this technology, Dicoding can expand the application of AR to increase the effectiveness of digital

talent selection in the future. Research shows that AR is able to improve learning experiences and engagement, which in turn can contribute to improving the quality of human resources in the company (Rachim, 2024). Therefore, investing in AR technology is a strategic step that can ensure Dicoding gets the best candidates according to company needs. Overall, the positive impact of AR in the digital talent recruitment process at Dicoding is promising. The technology not only enables better skills assessment through real and interactive simulations, but also increases candidate engagement and satisfaction, while opening up opportunities for further development in the future.

CONCLUSION

Based on the research results, it can be concluded that Augmented Reality (AR) technology has great potential in improving the effectiveness of training and recruitment processes at Dicoding. The application of AR in employee training accelerates the learning curve and enriches the learning experience by providing more immersive and realistic simulations. Despite some technical challenges and the need to further integrate the technology with training materials, the benefits of AR in improving training quality and participant engagement are clear. In terms of recruitment, the use of AR facilitates a more accurate assessment of the practical skills of potential employees, thus improving the efficiency of the selection process. Overall, the implementation of AR at Dicoding showed positive results and can serve as a model for other companies looking to adopt this technology in optimizing training and recruitment.

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