A Review on the Relationship between Metaverse and Employee Training

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ABSTRACT:

The aim of this conceptual study is to look at how the Metaverse and Employee Training are connected. In the previous two years, a great number of studies have created with link of Metaverse and Employee Training. This study contributes to the literature by evaluating how this research is built on diverse conceptual frameworks and locating relevant references, authors, topics, and publications. To do this, we used bibliometric approaches to analyze over 211 papers published between 2000 and 2023. We employed Publish or Perish to locate the papers and Vosviewer to produce the maps. According to the findings, the link between the Metaverse and Employee Training has been addressed in the last five or six years.

KEYWORDS: Metaverse, Training Environment, Virtual Reality, Augmented Reality, Worklife Balance, Competency

INTRODUCTION :

The metaverse is a collaborative virtual platform in which users can find themselves in a mix of physical and digital domains. This convergence enables continuous interaction, exploration, and production over an infinite digital world. Within this vast domain, metaverse training stands out as a revolutionary tool, providing a platform that goes beyond typical learning barriers. The core of metaverse training is its capacity to cross physical limits, allowing individuals to participate in realistic simulations, practical learning settings, and collaborative activities. Learners can explore virtual settings that resemble real-world complexities, allowing them to experiment, learn, and perfect skills in a risk-free environment. In the framework of human psychology, psychological empowerment reflects the fundamental nature of individual agency, self-belief, and intrinsic drive. Psychological empowerment, which is based on motivation and self-determination theories, shows people's ability to regard themselves as capable, competent, and in charge of their own actions.

The connection between metaverse training and psychological empowerment is complicated and diverse, showing a dynamic interplay between virtual worlds and the individual's psychological state of empowerment. With its immersive, interactive, and virtual surroundings, metaverse training has the ability to fundamentally change numerous elements of psychological empowerment. Metaverse training allows people to participate in realistic simulations, practical learning, and skill-building exercises in a safe, virtual environment. Users may build and enhance their abilities in this way, resulting to increasing emotions of competence and mastery. Individuals' confidence in their talents develops as they negotiate hurdles, solve issues, and reach phases in the metaverse, adding to psychological empowerment. Metaverse training frequently enables personalised learning experiences, allowing users to customise their learning courses, pace, and options inside the virtual environment. This liberty in decision-making and exploration corresponds to the psychological empowerment part of self-determination. Users may travel the metaverse, make decisions, and experience implications giving them a sense of autonomy and control over their learning experience. However, there are complexity and issues in the interaction between metaverse training and psychological empowerment. Potential isolation, reliance on technology, ethical problems, and the requirement for a mix of virtual and real-world experiences may all have an influence on the degree and reliability of psychological empowerment gained through metaverse training.

As a result, our goal is to explore the link between metaverse training and psychological empowerment. And to see how metaverse training affects psychological empowerment.

LITERATURE REVIEW :

The metaverse can open up fresh opportunities for training and development programs.Employees may gain hands-on experience in interactive and realistic settings, making learningmore interesting and effective.

Gavish et al. (2015) assessed the viability of training for industrial maintenance and assembly(IMA) jobs using platforms for virtual and augmented reality that were created as part of the SKILLS Integrated Project. The findings imply that using the AR platform for IMA task training should be promoted and that using the VR platform for that purpose needs more research. Voegtlin et al., (2015) investigated, both theoretically and practically, whether an employee training programme may improve work units' collective perceptions of empowerment within an organisation. Barsom et al. (2016) determined the extent to which augmented reality applications are now being utilized to properly assist medical professional training. Public and scientific interest has grown in augmented reality technologies that enable blended learning in medical training. Fehling et al. (2016) described the Social Augmented Learning (SAL) program, which enablesthe use of Augmented Reality (AR) during on-the-job training and vocational training. Hanaysha, (2016) investigated the impacts of three elements on organisational commitment in the Malaysian higher education context: employee empowerment, collaboration, and employee training. Ahmad and Manzoor, (2017) investigated the direct impacts of collaboration, employee empowerment, and training on employee performance in the telecom sector in Islamabad, Pakistan. Upadhyay and Khandelwal (2018) examined the influence and implementation of augmentedreality (AR) in training practice in the age of e-learning. The use of augmented reality in training Medical students can investigate human anatomy using augmented reality asa visualization aid. Gorski et al. (2018) stated that the report provides the findings of pilot research that employed augmented reality techniques for teaching and practicing the Fused Deposition Modelling (FDM) 3D printing process. The findings indicated that students utilizing simply augmented reality have a significant requirement for professional assistance. Mekacher (2019) stated that a didactic-methodical approach for virtual interactive education and training utilizing VR and AR technology is what this essay aims to propose. This research showed that these new digital engagement tools, like VR and AR, as essential educational resources that may greatly enhance the processof learning, reviewing, and training. Mishra and Kumar (2019) emphasized that in the relevant literature e-recruitment and trainingcomprehensiveness as latent antecedents of employer branding (EB), which may increase the employer's knowledge and contribute to organizational growth. Ferrati et al. (2019) evaluated the viability of boosting training, shortening learning times andreducing mistake rates, this research provides an Augmented Reality (AR) demonstrator. Maity (2019) investigated whether artificial intelligence (AI) will be able to drive training and development processes in organizations in the future. Stavroulia et al. (2019) suggested the usage of virtual reality (VR)-based strategy to improveteacher education and lifelong professional development. Guan and Frenkel (2019) ensured the competitiveness of modern Chinese manufacturing, this research aims to explore the impact of company training on the work performance of mostly semi-skilled manufacturing personnel. Sorko and Brunnhofer (2019) examined how well augmented reality technology can address the problems mentioned. This study examines the potential of augmented reality as a cutting- edge learning tool and demonstrates numerous use cases to achieve this goal. Pennazio and Genta (2020) described the findings of an experimental study designed to determine the benefits and drawbacks of using virtual and augmented reality to teach personnel in confined or potentially polluted areas and the level of acceptability. Saira et al. (2020) determined whether men and women experience the effectiveness of diversity training differently about affective commitment and whether affective commitment acts as a mediator between the effectiveness of diversity training and employee outcomes such as intention to leave the company and job satisfaction. Foroughi (2020) addressed the important need for supply chain workforce training to enable employees to adopt new digital technologies, as well as to identify and assess current supply chain training providers. Khaliq, (2020) examined the effects of employee training, employee empowerment, and teamwork on job satisfaction. Employee training, empowerment, and teamwork are all independent factors, whereas job satisfaction is a dependent variable. Alshawabkeh (2020) investigated the moderating influence of employee age on the impact oftraining techniques on employee well-being as well as the mediating function of employee training satisfaction on

the impact of training methods. Waqanimaravu and Arasanmi (2020) stated that the hotel industry's link between service quality and staff training is examined. The study looked at how perceptions of training's advantages, accessibility, and assistance affected the level of service in the hospitality industry. Panagiotakopoulos (2020) determined that formal management learning interventions aid small businesses by examining the effect of management training on organizational performance in the setting of small businesses. Dixit and Sinha (2020) demonstrated the effectiveness of augmented reality as a training transfer tool in ensuring the effective implementation of trained knowledge/skills and driving the implementation of knowledge/skills imparted during the training program(s) by providing trainees access to augmented reality as a technology platform to facilitate on-the-job implementation. Abusalim et al. (2020) investigated blended learning implementation in low-budget universities, determining the most important steps to invest in during the initial stage of implementation rather than investing in costly IT infrastructure or training faculty for student-centered learning and relevant pedagogies. Kaplan et al. (2021) examined the empirical data currently available on the transfer of training from virtual reality (VR), augmented reality (AR), and mixed reality (MR), and to assess if such extended reality (XR)-based training is as efficient as conventional training techniques. Oke and Arowoiya (2021) identified the significant impediments to augmented reality technology (ART) adoption in the Nigerian construction sector. Ayob et al. (2021) determined the impact of the blended learning method on achievement among students at higher education institutions in the United Arab Emirates (UAE). The studyused a quasi-experimental design. Moghaddam et al. (2021) stated that to assist manual or semi-automated industrial jobs that need both complicated manipulation and reasoning, this study attempts to further the fundamental understanding of the affordances of augmented reality as a workplace-based learning and training tool. Jain et al. (2021) examined that because of technological advancements or system transparency, the study has been an endeavor to comprehend the possibilities of blockchain technology that can generate better training assessment. Martins et al. (2021) stated that this SLR's (systematic literature review) objective is to evaluate published works on AR for corporate training. Butaslac et al. (2022) gathered and evaluated prototypes and apps designed to develop the knowledge, skills, and capacities of the target user. Upadhyay and Khandelwal (2022) evaluated and investigated the use of Metaverse as a trainingecosystem. The study focused on the ongoing controversy over the use of Metaverse in training. The future of training in the Metaverse appears to be promising, with advantages for both companies and employees. Akdere et al. (2022) investigated the traditional approaches of quantitative, qualitative, and mixed methods, as well as the cutting-edge biometric approach, in the evaluation and assessment of VR-based simulated training, and to discussed the implications for simulated training based on immersive technologies. Akther and Rahman (2022) stated that the goal of this study is to look at the factors that influence employee training effectiveness in the banking business in this digital age. Ma et al. (2022) contributed to the research on blended learning by realistically applying best practices in employee training. Lui and Goel (2022) compared the efficacy of virtual reality hospitality training to that of traditional hospitality training. Haber et al. (2022) investigated the advantages of VR technology for management training. Othayman et al. (2022) examined the difficulties encountered throughout the assessment process for training and development (T&D). Balwant et al. (2022) explored mediating mechanisms in the association between administrative staff productivity and the training and development environment at higher education institutions. Andoh et al. (2022) stated that since no study has specifically examined trainees' dislike of training, the purpose of this study was to look at trainees' dislike of employee training. Kuo and Tien (2022) determined that the inclusion of art-based approaches improves students' creativity as compared to traditional face-to-face (F2F) education, and whether such creative training and blended teaching methods result in more training transfer. Chaubey et al. (2022) comprehended how training and creativity affect organizational innovation while being moderated by the organizational environment. Ricci et al. (2022) examined the utilization of AR and VR for emergency care training for medical professionals, students, and lay people as the main emphasis of this research. Baashar et al. (2022) evaluated how well AR prepares medical students compared to other teaching strategies in terms of skills, knowledge, confidence, performance time, and satisfaction. Ronaghi (2022) assessed the influence of traditional training sessions and VR-based training sessions on sustainable behavior. Alieva and Powell (2023) examined that how employee behaviors, the use of digital technologyin manufacturing facilities, and the perceived impacts of these factors affect the development of digital waste. Ganiyu et al. (2023) stated that this research focused on an organization in the auditing industry where employees were deadline-driven and under extreme pressure. The usefulness of virtual training inside a South African public institution was investigated in this research. Cabezas et al.

(2023) examined participant impressions of a blended learning training program for mentor teachers (MTs) in Chile. Teachers received online questionnaires, and data from interviews was also gathered. Feng et al. (2023) stated that the purpose of this study is to ignore the potential of virtual reality technology for training in construction excavation safety. Mena et al. (2023) investigated a systematic literature review (SLR) was done on the application of augmented reality (AR) in teacher preparation. Lakshmi and Hymavathi, (2022) stated that by cultivating employee behaviour, attentive training and development practises promote a favourable attitude towards the organisation and, as a result, contribute to the organization's profitability. Individual staff training and development improve subject domain and aid in the identification of organisational goals. Hancock K. (2022) investigated remote worker management in the metaverse economy. Zvarikova et al. (2022) conducted a comprehensive review of works on virtual human resource management in the metaverse. Carter and Daniel (2022) discussed and expanded previous research on immersive employee experiences in the metaverse. Lyons and Nancy (2022) focused on looking at talent recruiting and management, immersive work environments, and machine vision algorithms in the metaverse's virtual economy. Ramachandran et al. (2023) investigated how the metaverse impacts corporate culture and communication by reviewing previous research and conducting new research. Schumacher and Patrik (2022) contended that this immersive internet provides a superior, more productive platform for social interaction and communication. Hwang et al. (2022) identified that the metaverse has been identified as one of today's most promising technologies. The utilization of the metaverse for educational reasons, on the other hand, is rarely considered. Min Kweon Ahn (2022) showed how Metaverse-based core nursing skill content (CNSC) designed for undergraduate nursing students fared. Daradkeh and Mohammad (2023) provided a comprehensive examination of the evolution, applications, and benefits of metaverse technology in the library context, as well as delves into the concept of intelligent librarians about metaverse, as well as identifying the necessary skills and training pathways for this emerging profession. Usmani et al. (2022) described the metaverse and NFTs in the context of their possible use in the treatment of mental health illnesses. Technological advancements are transforming people's lives at an increasing rate. Levin and Alla (2022) developed a strategic management framework based on two scientific theories and a thorough analysis of management practices that enhance work-life balance. Singh et al. (2023) addressed this issue by providing an overview of metaverse definitions and highlighting the contrasts between conventional, current, and metaverse workplaces. Ince and Fatma (2023) stated that because of the complexities of human psychology, well- being is dependent on numerous elements, hence it is beneficial to analyze several aspects in a multidisciplinary manner. However, it is uncertain how digital transformation will affect these elements, which are the keys to a better life. Work-life balance, social relationships, civic involvement, and governance all provide problems and possibilities. In this regard, this chapter discussed the digitization process first, followed by the notions of psychological adjustment and digital well-being. Mansoori and Aizat, (2023) described a study on analysing the mediation impact of employee training on the link between employee empowerment constructs and organisational performance characteristics. Adhiatma et al. (2023) provided a conceptual framework that explains the fundamentals required when a company employs the metaverse as an alternative to virtual offices. The specific goal of this research is to comprehend the prospects and difficulties of the future of work and the workplace.

RESEARCH METHODOLOGY :

To conduct a comprehensive investigation, we used the source publish or perish to look for relevant publications for our analysis. The literature review was put up by gathering ideas and data from several reputable databases, including Google Scholar, Emerald, Scopus, and others. First, we used the keywords Metaverse, Employee Training and Psychological Empowerment in publish or perish. With this, we receive 211 publications relating to the relationship between training environment and Psychological Empowerment, with some showing minimal resemblance. In publish or perish, we choose works from 2000 through 2023.

RESULTS :

We used the selection criteria to search the Google Scholar main collection database in publish or perish, completed the data preparation activities, and found 211 articles.

Publications per year

We looked at publications published between 2000 and 2023. Different times may be observed in the image below, which we build for better study and debate. Every year in the first several years, one or two papers are published. However, we may observe some increase in 2015, but not much. We can see from this statistic that the years 2018 to 2023 have the highest number of articles published. In 2022, 19 articles were published, while 20 papers were published in 2023. We may argue that the metaverse is expanding and that there are more opportunities for additional investigation at this moment. We used software like Vosviewer to create the maps.

Publication per year
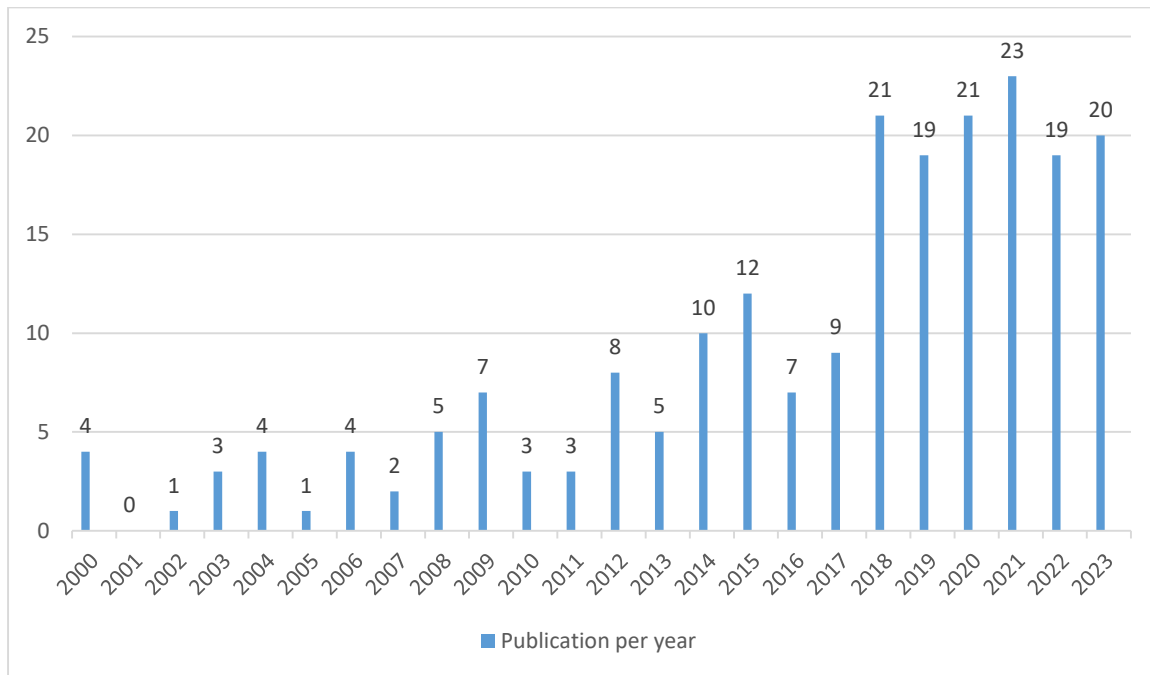
REFERENCES ANALYSIS :

In addition to author analysis, a study of the references they utilized in their articles aids in the creation of the area's conceptual map. The most frequently referenced study (V Vankatesh, 2000) was mentioned in 9134 articles. Papers by PA Pavlou and OA EI Sawy, DS Chiburu and DA Harrison, JH Jung, KM Sheldon are listed after the previously mentioned article.

Most cited articles

Articles	Cites
V Vankatesh, 2000	*9134*
PA Pavlou and OA EI Sawy, 2006	*1887*
DS Chiburu and DA Harrison, 2008	*1746*
JH Jung et al., 2010	*477*
KM Sheldon et al., 2003	*386*
JU Gallos, 2006	*315*
RD Pritchard et al., 2008	*260*
SC Kong et al., 2018	*231*
D McGuire and L McLaren, 2009	*228*

J Kavanaugh et al., 2006	*209*
S Sonnentag et al., 2004	*172*
M Weiss et al., 2018	*152*
A Muduli, 2016	*152*
S Park et al., 2018	*142*
C Curado and S Vieira, 2019	*141*
X Deng et al., 2004	*140*
SH Liao et al., 2009	*131*
EWL Cheng, 2000	*106*
DS Chiaburu DA Harrison, 2008	*99*
JD Kudish and VJ Fortunato, 2006	*91*
P Velija et al., 2013	*90*
J Wei et al., 2020	*86*
MJ Smith et al., 2017	*83*
MWC Choy and K Kamoche,2021	*57*
LM Steele et al.,2017	*56*
SLC Tan and CM Lau,2012	*51*
A Asi Karakas and A Okanli,2015	*51*

CONCLUSION :

The study of the link between metaverse training and psychological empowerment reveals an interesting area where technical innovation meets individual growth and empowerment in learning settings. The intricate dynamics between immersive metaverse training experiences and psychological empowerment have emerged as the main focus throughout this review, highlighting the transformative potential of virtual spaces in shaping individuals' perceptions, skills and sense of empowerment. With its immersive and participatory nature, metaverse training offers a potential terrain for creating psychological empowerment. The modelling of real-world circumstances within these virtual settings enables experiential learning, allowing individuals to build skills, gain confidence, and explore their potential in a risk-free environment. The capacity to explore, cooperate, and problem-solve inside these simulated environments fosters a sense of mastery and self-efficacy, both of which are critical components of psychological empowerment.

LIMITATIONS AND FUTURE RESEARCH :

Due to technical differences, the accessibility of metaverse training platforms may be a barrier for some groups. It is critical to investigate strategies to provide fair access to these platforms in order to avoid exacerbating societal inequities. The extent to which metaverse experiences convert into real-world empowerment requires further investigation. It is still difficult to assess the transferability of skills, confidence, and empowerment earned in virtual settings to real-life circumstances. The ethical implications of immersive training environments, including concerns of privacy, data security, and psychological well-being, necessitate extensive research and ethical standards. Given the novelty of metaverse training, longitudinal research assessing the permanence and sustainability of psychological empowerment obtained via these experiences are critical in order to comprehend its long-term influence.

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REFERENCES :

1. Abusalim, N., Rayyan, M., Jarrah, M., & Sharab, M. (2020). Institutional adoption of blended learning on a budget. *International Journal of Educational Management*, *34*(7), 1203–1220. https://doi.org/10.1108/IJEM-08-2019-0326

2. Adhiatma, A., Nurhidayati, & Fachrunnisa, O. (2023, June). Issues and Challenges When Metaverse Replaces the Workplace. In *Conference on Complex, Intelligent, and Software Intensive Systems* (pp. 243-249). Cham: Springer Nature Switzerland.

3. Akdere, M., Jiang, Y., & Lobo, F. D. (2022). Evaluation and assessment of virtual reality-based simulated training: exploring the human–technology frontier. *European Journal of Training and Development*, *46*(5–6), 434–449. https://doi.org/10.1108/EJTD-12- 2020-0178

4. Akther, S., & Rahman, M. S. (2022). Investigating training effectiveness of public and private banks employees in this digital age: an empirical study. *International Journal of Manpower*, *43*(2), 542–568. https://doi.org/10.1108/IJM-04-2021-0240

5. Alieva, J., & Powell, D. J. (2023). The significance of employee behaviors and soft management practices to avoid digital waste during a digital transformation. *International Journal of Lean Six Sigma*, *14*(1), 1–32. https://doi.org/10.1108/IJLSS- 07-2021-0127

6. Alshawabkeh, R. (2020). The Impact of Employee Training Methods on Employee Wellbeing : The Mediating Effect of Employee Training Satisfaction and the Moderating Role of Employee Age. *Test Engineering and Management*, *January*, 6452–6467.

7. Andoh, R. P. K., Annan-Prah, E. C., Owusu, E. A., & Agyei, P. M. (2022). Trainees' aversions of employee training programs. *European Journal of Training and Development*. https://doi.org/10.1108/EJTD-02-2022-0022

8. Aydın, Ö., Karaarslan, E., & Dutta, P. (2023). Artificial Intelligence, VR, AR ,and Metaverse Technologies for Human Resources Management. *SSRN Electronic Journal*, 1–4. https://doi.org/10.2139/ssrn.4480626

9. Ayob, H. H., Daleure, G., Solovieva, N., Minhas, W., & White, T. (2023). The effectiveness of using blended learning teaching and learning strategy to develop students' performance at higher education. *Journal of Applied Research in Higher Education*, *15*(3), 650-662.

10. Baashar, Y., Alkawsi, G., Ahmad, W. N. W., Alhussian, H., Alwadain, A., Capretz, L. F.,Babiker, A., & Alghail, A. (2022). Effectiveness of Using Augmented Reality for Training in the Medical Professions: Meta-analysis. *JMIR Serious Games*, *10*(3), 1–13.https://doi.org/10.2196/32715

11. Balwant, P. T., Mohammed, R., & Singh, R. (2022). Training and development climate and administrative employees' productivity in higher education. *Journal of Applied Research in Higher Education*, *14*(1), 77–91. https://doi.org/10.1108/JARHE-08-2020-0268

12. Barsom, E. Z., Graafland, M., & Schijven, M. P. (2016). Systematic review on the effectiveness of augmented reality applications in medical training. *Surgical Endoscopy*, *30*(10), 4174–4183. https://doi.org/10.1007/s00464-016-4800-6

13. Butaslac, I. M., Fujimoto, Y., Sawabe, T., Kanbara, M., & Kato, H. (2022). Systematic Review of Augmented Reality Training Systems. *IEEE Transactions on Visualization and Computer Graphics*, *PP*, 1–20. https://doi.org/10.1109/TVCG.2022.3201120

14. Cabezas, V., Pereira, S., Figueroa, C., & Straub, C. (2023). Teachers' perceptions about the delivery

and methodology of a blended learning mentor training course: a case from Chile. *International Journal of Mentoring and Coaching in Education*. https://doi.org/10.1108/IJMCE-05-2022-0032

15. Chaubey, A., Sahoo, C. K., & Das, K. C. (2022). Examining the effect of training and employee creativity on organizational innovation: a moderated mediation analysis. *International Journal of Organizational Analysis*, *30*(2), 499–524. https://doi.org/10.1108/IJOA-06-2020-2271

16. Carter, D. (2022). Immersive employee experiences in the Metaverse: Virtual work environments, augmented analytics tools, and sensory and tracking technologies. *Psychosociological Issues in Human Resource Management*, *10*(1), 35-49.

17. Dixit, R., & Sinha, V. (2020). Leveraging augmented reality for training transfer: a case of healthcare service providers in ophthalmology. *Development and Learning in Organizations*, *34*(6), 33–36. https://doi.org/10.1108/DLO-09-2019-0211

18. Daradkeh, M. (2023). Intelligent Librarians in the Metaverse: Concept, Competencies, and Career Pathways. In *Handbook of Research on Advancements of Contactless Technology and Service Innovation in Library and Information Science* (pp. 45-63). IGI Global.

19. Fehling, C. D., Müller, A., & Aehnelt, M. (2016, October). Enhancing vocational training with augmented reality. In *Proceedings of the 16th international conference on knowledge technologies and data-driven business*.

20. Feng, Z., Lovreglio, R., Yiu, T. W., Acosta, D. M., Sun, B., & Li, N. (2023). Immersive virtual reality training for excavation safety and hazard identification. *Smart and Sustainable Built Environment*. https://doi.org/10.1108/SASBE-10-2022-0235

21. Ferrati, F., Erkoyuncu, J. A., & Court, S. (2019). Developing an augmented reality based training demonstrator for manufacturing cherry pickers. *Procedia CIRP*, *81*(March), 803–808. https://doi.org/10.1016/j.procir.2019.03.203

22. Foroughi, A. (2020). Supply chain workforce training: addressing the digital skills gap. *Higher Education, Skills and Work-Based Learning*, *11*(3), 683–696. https://doi.org/10.1108/HESWBL-07-2020-0159

23. Ganiyu, I. O., Atiku, S. O., & Van der Byl, K. (2023). An evolution of virtual training: implications for talent development in the post-pandemic period. *Development and Learning in Organizations*, *37*(2), 10–13. https://doi.org/10.1108/DLO-02-2022-0039

24. Gavish, N., Gutiérrez, T., Webel, S., Rodríguez, J., Peveri, M., Bockholt, U., & Tecchia, F. (2015). Evaluating virtual reality and augmented reality training for industrial maintenance and assembly tasks. *Interactive Learning Environments*, *23*(6), 778-798.

25. Gorski, F., Wichniarek, R., Kuczko, W., Bun, P., & Erkoyuncu, J. A. (2018). Augmented reality in training of fused deposition modelling process. *Lecture Notes in Mechanical Engineering*, *0*, 565–574. https://doi.org/10.1007/978-3-319-68619-6_54

26. Guan, X., & Frenkel, S. (2019). How perceptions of training impact employee performance: Evidence from two Chinese manufacturing firms. *Personnel Review*, *48*(1), 163–183. https://doi.org/10.1108/PR-05-2017-0141

27. Haber, J., Xu, H., & Priya, K. (2022). Harnessing virtual reality for management training: a longitudinal study. *Organization Management Journal*. https://doi.org/10.1108/OMJ-02-2022-1482

28. Hancock, K. (2022). Virtual Team Performance, Collaborative Remote Work, and Employee Engagement and Multimodal Behavioral Analytics in the Metaverse Economy. *Psychosociological Issues in Human Resource Management*, *10*(2), 55-70.

29. Hwang, G. J., & Chien, S. Y. (2022). Definition, roles, and potential research issues of the metaverse in education: An artificial intelligence perspective. *Computers and Education: Artificial Intelligence*, *3*, 100082.

30. Ince, F. (2023). Digital Transformation and well-being. In *Digital Psychology's Impact onBusiness and Society* (pp. 1-27). IGI Global.

31. Jain, G., Sharma, N., & Shrivastava, A. (2021). Enhancing training effectiveness for organizations through blockchain-enabled training effectiveness measurement (BETEM). *Journal of Organizational Change Management*, *34*(2), 439–461.https://doi.org/10.1108/JOCM-10-2020-0303

32. Kaplan, A. D., Cruit, J., Endsley, M., Beers, S. M., Sawyer, B. D., & Hancock, P. A. (2021).The Effects of Virtual Reality, Augmented Reality, and Mixed Reality as Training Enhancement Methods: A Meta-Analysis. *Human Factors*, *63*(4), 706–726. https://doi.org/10.1177/0018720820904229

33. Kuo, T. H., & Tien, H. K. (2022). Enhancing the effects of creativity training for businessschool students through art-based methods and blended learning. *Education and Training*, *64*(5), 642–661. https://doi.org/10.1108/ET-07-2021-0282

34. Kral, P., Janoskova, K., & Dawson, A. (2022). Virtual skill acquisition, remote working tools, and employee engagement and retention on blockchain-based metaverse platforms. *Psychosociological Issues in Human Resource Management*, *10*(1), 92-105.

35. Levin, A. (2022). What Are the Management Strategies to Promote Work-Life Balance forHybrid Teams? A Systematic Review (Doctoral dissertation, University of Maryland University College).

36. Lui, T. W., & Goel, L. (2022). Learning effectiveness of 3D virtual reality in hospitality training: a situated cognitive perspective. *Journal of Hospitality and Tourism Technology*, *13*(3), 441–460. https://doi.org/10.1108/JHTT-03-2021-0091

37. Lyons, N. (2022). Talent acquisition and management, immersive work environments, andmachine vision algorithms in the virtual economy of the metaverse. *PsychosociologicalIssues in Human Resource Management*, *10*(1), 121-134.

38. Ma, G., Yang, R., Minneyfield, A., Gu, X., Gan, Y., Li, L., Liu, S., Jiang, W., Lai, W., & Wu, Y. (2022). A practical analysis of blended training efficacy on organizational outcomes. *Industrial and Commercial Training*, *54*(4), 637–646. https://doi.org/10.1108/ICT-12-2021-0085

39. Maity, S. (2019). Identifying opportunities for artificial intelligence in the evolution of training and development practices. *Journal of Management Development*, *38*(8), 651– 663. https://doi.org/10.1108/JMD-03-2019-0069

40. Martins, B. R., Jorge, J. A., & Zorzal, E. R. (2021). Towards augmented reality for corporate training. *Interactive Learning Environments*, *0*(0), 1–19.https://doi.org/10.1080/10494820.2021.1879872

41. Mekacher, D. L. (2019). Augmented Reality (Ar) and Virtual Reality (Vr): the Future of Interactive Vocational Education and Training for People With Handicap. *PUPIL: International Journal of Teaching, Education and Learning*, *3*(1), 118–129. https://doi.org/10.20319/pijtel.2019.31.118129

42. Mena, J., Estrada-Molina, O., & Pérez-Calvo, E. (2023). Teachers' Professional Training through Augmented Reality: A Literature Review. *Education Sciences*, *13*(5), 517.

43. Mishra, S., & Kumar, S. P. (2019). E-recruitment and training comprehensiveness: untapped antecedents of employer branding. *Industrial and Commercial Training*, *51*(2), 125–136. https://doi.org/10.1108/ICT-12-2017-0106

44. Min Kweon Ahn (2022). The development and effects of metaverse-based core nursing skill contents of vital signs measurements and subcutaneous injections for nursing students. *The Journal of Korean Academic Society of Nursing Education*, *28*(4), 378- 388.

45. Moghaddam, M., Wilson, N. C., Modestino, A. S., Jona, K., & Marsella, S. C. (2021). Exploring augmented reality for worker assistance versus training. *Advanced Engineering Informatics*, *50*(April), 101410. https://doi.org/10.1016/j.aei.2021.101410

46. Oke, A. E., & Arowoiya, V. A. (2021). Critical barriers to augmented reality technology adoption in developing countries: a case study of Nigeria. *Journal of Engineering, Design and Technology*. https://doi.org/10.1108/JEDT-12-2020-0519

47. Othayman, M. Bin, Mulyata, J., Meshari, A., & Debrah, Y. (2022). Challenges in the evaluation process of training and development programmes in public universities in Saudi Arabian higher education. *International Journal of Educational Management*, *36*(2), 206–217. https://doi.org/10.1108/IJEM-04-2021-0121

48. Panagiotakopoulos, A. (2020). Exploring the link between management training andorganizational performance in the small business context. *Journal of Workplace Learning*, *32*(4), 245–257. https://doi.org/10.1108/JWL-10-2019-0121

49. Pennazio, V., & Genta, M. (2020). Potential of deployment of virtual and augmented reality in emergency management training via an exploratory interview study. *International Journal of Virtual and Personal Learning Environments*, *10*(2), 15–34. https://doi.org/10.4018/IJVPLE.2020070102

50. Ramachandran, K. K., Lakshmi, K. K., Singh, J., Prusty, A., Panduro-Ramirez, J., & Lourens, M. (2023, May). The Impact of the Metaverse on Organizational Culture andCommunication. In *2023 3rd International Conference on Advance Computing and Innovative Technologies in Engineering (ICACITE)* (pp. 1009-1014). IEEE.

51. Ricci, S., Calandrino, A., Borgonovo, G., Chirico, M., & Casadio, M. (2022). Viewpoint: Virtual and Augmented Reality in Basic and Advanced Life Support Training. *JMIR Serious Games*, *10*(1). https://doi.org/10.2196/28595

52. Ronaghi, M. H. (2022). The effect of virtual reality technology and education on sustainable behavior: a comparative quasi-experimental study. *Interactive Technologyand Smart Education*. https://doi.org/10.1108/ITSE-02-2022-0025

53. Saira, S., Mansoor, S., Ishaque, S., Ehtisham, S., & Ali, M. (2020). Training effectiveness and employee outcomes: a study of an Australian manufacturing organization. *European Journal of Training and Development*, *45*(4–5), 301–319. https://doi.org/10.1108/EJTD-03-2020-0052

54. Singh, S., & Vanka, S. (2023). Metaverse and Future of Work: Avenues and Challenges. *IUP Journal of Organizational Behavior*, *22*(2).

55. Sorko, S. R., & Brunnhofer, M. (2019). Potentials of augmented reality in training. *Procedia Manufacturing*, *31*, 85-90.

56. Stavroulia, K. E., Christofi, M., Baka, E., Michael-Grigoriou, D., Magnenat-Thalmann, N.,& Lanitis, A. (2019). Assessing the emotional impact of virtual reality-based teacher training. *International Journal of Information and Learning Technology*, *36*(3), 192– 217. https://doi.org/10.1108/IJILT-11-2018-0127

57. Schumacher, P. (2022). The metaverse as opportunity for architecture and society: design drivers, core competencies. *Architectural Intelligence*, *1*(1), 11.

58. Upadhyay, A. K., & Khandelwal, K. (2018). In the age of e-learning: application and impact of augmented reality in training. *Development and Learning in Organizations*, *32*(5), 19–22. https://doi.org/10.1108/DLO-04-2018-0041

59. Upadhyay, A. K., & Khandelwal, K. (2022). Metaverse: the future of immersive training. *Strategic HR Review*, *21*(3), 83-86.

60. Usmani, S. S., Sharath, M., & Mehendale, M. (2022). Future of mental health in the metaverse. *General Psychiatry*, *35*(4).

61. Wang, Y., Su, Z., Zhang, N., Xing, R., Liu, D., Luan, T. H., & Shen, X. (2023). A Surveyon Metaverse: Fundamentals, Security, and Privacy. *IEEE Communications Surveys and Tutorials*, *25*(1), 319–352. https://doi.org/10.1109/COMST.2022.3202047

62. Waqanimaravu, M., & Arasanmi, C. N. (2020). Employee training and service quality in the hospitality industry. *Journal of Foodservice Business Research*, *23*(3), 216–227. https://doi.org/10.1080/15378020.2020.1724850

63. Zvarikova, K., Cug, J., & Hamilton, S. (2022). Virtual Human Resource Management in the Metaverse: Immersive Work Environments, Data Visualization Tools and Algorithms, and Behavioral Analytics. *Psychosociological Issues in Human Resource Management*, *10*(1), 7-20.