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Designing the Organizational Metaverse for Effective Socialization

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Designing the Organizational Metaverse for Effective Socialization

Completed Research Paper

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Abstract

The metaverse is a virtual world that merges physical, virtual, and augmented reality, enabling collaboration between online users and offering limitless opportunities for connectivity and integration. While the metaverse has gained significant attention in organizations, it presents social challenges as organizations have unprecedented insight and influence over individuals' thoughts and beliefs. Our review is based on a theoretical framework and examines the impact of the environment, collaboration, avatars, and individual behavior on organizational socialization. We develop a conceptual model for the socialization process in the metaverse, contributing to a deep understanding of this emerging field and providing a research agenda for future work.

Keywords: Metaverse, Socialization, Organization, Research Agenda

Introduction

The metaverse has gained widespread attention and investment, and has the potential to generate up to 5 trillion in value by 2030 (Elmasry et al., 2022). Facebook rebranded their company as "Meta" in 2021 and announced their first metaverse solutions, while Microsoft acquired game developer Activision Blizzard for $68.7 billion to prepare for the metaverse. The concept of metaverse is a virtual world that is interactive and immersive, allowing collaboration between online users. As advanced technologies continue to develop, the goal of the metaverse is to merge physical, virtual, and augmented reality (AR) to facilitate social interaction in various contexts, including gaming, education, visualization, collaboration, and

entertainment (Dionisio et al., 2013; Lee et al., 2021).The emergence of 5G mobile networks, grid computing, artificial intelligence (AI), non-fungible tokens (NFTs), state-of-the-art game engines, and peripherals like virtual reality (VR) goggles have made access and participation more affordable, resulting in ever-increasing adoption (Reffait, 2022).

The metaverse has the potential to revolutionize organizations, internet usage, and social interactions. For instance, individual avatars can promote inclusivity and reduce discrimination (Park & Kim, 2022). A 2021 study found a positive relationship between mental workloads and task performance in the context of augmented reality (AR) systems. Positive perceptions of mental workloads were associated with positive effects on task performance, and vice versa (Jeffri & Rambli, 2021). In addition, the metaverse presents limitless opportunities for collaboration and connectivity, providing a sustainable alternative to long-distance travel (Davis et al., 2009). Despite the potential benefits for organization, society, and economy, the metaverse presents significant social challenges for organizations, individuals, economies, and societies. The extensive data collection enabled by the digital representation of individuals' behavior allows firms to capture social interactions in unprecedented detail (Falchuck et al., 2018). Additionally, the metaverse's immersive nature allows organizations to control the context of social interactions and even provide individuals with AI-enabled digital counterparts. This provides organizations with unprecedented insight and influence over individuals' thoughts and beliefs (Saunders et al., 2011).

As organizations have the possibility to adapt to the new digital landscape, it is essential to understand how the metaverse context affects the process of socialization within these entities. Socialization is the process through which new members of an organization learn about its values, norms, and expectations and develop relationships with other members (Nonaka 1994). This process is critical in creating a sense of community and shared identity within the organization. Given the significance of the emerging metaverse in organizations and the limited knowledge on how it may affect organizational socialization, we follow the call for research by Dwivedi et al. (2022) to explore the impact of the metaverse on organizations. Thus, we want to answer the following research question (RQ): *How does the metaverse context affect the process of socialization in organizations?*

To the best of our knowledge, we are the first conducting a structured literature review (SLR) according to the approach from vom Brocke et al. (2009) concerning the application of the metaverse on the process of socialization in organizations. Our research contributes in several ways: First, we encourage further research to revise and expand current frameworks. This contributes to a better understanding of how the metaverse affects the socialization process of organizations and the real-world behavior of employees. Second, it can shed light on the potential challenges and opportunities that arise from the increasing use of digital technologies in organizations. Third, it can help organizations better understand how to integrate the metaverse into their socialization processes. To answer the RQ, we categorize the literature based on the framework of Davis et al. (2009). This framework provides a valuable foundation for investigating socialization within the organizational metaverse, as it encompasses the crucial elements that impact communication and consequently, the potential for socialization within this setting.

Theoretical Background

Metaverse

In 1992, Neil Stephenson used the term "metaverse" in his science fiction novel “Snow Crash” to refer to a virtual world that interacts with the real world and generates value through social activities. The initial scientific publication on the metaverse was published in 1995 (Budiansky, 1995). The understanding of the metaverse has evolved over time, progressing from a single virtual world to a network of interconnected virtual worlds. Virtual worlds are a subset of virtual reality applications, which simulate three-dimensional objects or environments for user interaction (Dionisio et al., 2013). Due to its expansive and growing nature, there are various definitions and similar concepts associated with the metaverse. For example, Lee et al. (2021) differentiate between various concepts related to the metaverse, such as life-logging, mirror world, augmented reality, and virtual world, based on the orientation towards reality and the focus on individual or environmental information. Dionisio et al. (2013) define the metaverse as a fully immersive 3D digital environment that extends beyond the physical world, encompassing all dimensions of shared online space. Previous research has explored different aspects of the metaverse, including technological aspects, challenges and opportunities in the metaverse workspace compared to remote work (Park et al., 2023),

development status and infrastructures (Ning et al., 2021), security and privacy concerns (Wang et al., 2022), and societal implications such as social interactions, trust, privacy, bias, and addiction (Dwivedi et al., 2022).

Socialization in Organizations

Organizations can be viewed as a collective of (inter-)acting individuals pursuing a shared goal (March, 1991). Through the interactions involved, such collectives have been found to be able to achieve more than just the sum of the contributions of individuals (Fiol & Lyles, 1985): by sharing diverse (potentially complementary or conflicting) experiences and integrating each other's knowledge, collectives can take into account a much broader range of experiences and perspectives, thereby creating knowledge often proving to be more effective than that produced by any individual alone (e.g., Fiol & Lyles, 1985; March 1991; Argote & Miron-Spektor, 2011). Since knowledge can be considered one of the most important resources of organizations (as it is the basis for forming the norms, routines, and decision-making practices of organizations; e.g., Argote & Miron-Spektor 2011; March 1991), knowledge integration has been emphasized as one of the most important organizational activities (Grant, 1996).

Socialization is an essential organizational learning process for knowledge integration that focuses on the integration of so-called tacit knowledge (Nonaka, 1994). Tacit knowledge is any knowledge that is difficult to articulate because it is deeply rooted in an individual's experience (Nonaka, 1994). For example, knowledge about how to drive a car cannot be acquired simply by reading textbooks, but requires individuals to gather their own individual experiences through driving lessons. Sharing and integrating tacit knowledge among individuals has therefore been a major challenge for organizations for decades (e.g., Nonaka & von Krogh, 2009; Argote & Miron-Spektor, 2011). Because people struggle to understand each other's thought processes, it has been found that effective socialization involves interpersonal interaction to create shared experiences (e.g., solving a task together, observing someone perform a routine) that allow for the integration of tacit knowledge. In contrast, the mere exchange of information is often insufficient, as it largely neglects the emotional and contextual nuances that are captured by the shared basis for understanding through shared experiences (Nonaka, 1994). Research has shown that effective socialization therefore requires well-designed "fields of interaction," which refer to collaborative, dynamic environments in which individuals can come together to share and exchange their knowledge by engaging in various interactions such as experiments, demonstrations, observations, and debates, thus facilitating the integration of each other's tacit knowledge (Nonaka, 1994).

Socialization in Organization of Metaverse

The metaverse is believed to revolutionize not only our internet usage but also our social interactions in organizations. Based on a social perspective, the metaverse offers numerous opportunities, but also a number of challenges that need to be considered. Employees in organizations that use the metaverse want to get the information they need to collaborate efficiently, share information with colleagues about the metaverse, and get technical enjoyment from the experience. The metaverse can presumably promote both efficient work performance and enjoyment (Hwang et al., 2022). These results are consistent with previous studies (e.g. Kim and Lee, 2022). Organizations can use the metaverse platform to support user interfaces that enable efficient sharing of business information and various communication-supporting content, such as meetings and facilitate employee interaction (Hwang et al., 2022). Using a virtual reality metaverse system to compensate for the limitations of current remote communication methods allows users to fully engage with the system and interact with virtual objects. Since all user interactions take place in a virtual environment, expensive and dangerous scenarios can be safely simulated and complex training can be conducted repeatedly. Moreover, during training, the proposed system provides balanced learning through a convergent training approach (Lee et al., 2022).

Social interaction in the metaverse occurs primarily through the use of avatars, meaning that each user has at least one customized character that represents them in the virtual world (Park & Kim, 2022). Enabling users to freely modify their own and even others' appearance, the use of individual avatars can change how interacting individuals will perceive and interpret each other's (inter-)actions, thereby moderating arising dynamics. For example, individualized appearances can thereby potentially reduce discrimination and create a space for people of different skin color, gender, or social status in the physical world (Park & Kim, 2022). It can also promote inclusion of people with disabilities by allowing them to participate in a virtual

environment with low accessibility requirements for every user. Thereby, it is essential to provide technical access to as many users as possible (Papagiannidis et al., 2008).

Promoting inclusivity not only increases social interaction in the virtual world, but also in the physical world (Bourlakis et al., 2009). It presents unlimited possibilities for individuals to collaborate and meet with spatially separated colleagues, friends, and family members in virtual worlds (Davis et al., 2009). It also provides a sustainable alternative to traditional long-distance travel while enabling face-to-face interactions (Bourlakis et al., 2009). Moreover, it has the potential to facilitate creative endeavors and support imaginative explorations of augmented, past, future, or counterfactual worlds (Srivastava & Chandra, 2018). Meanwhile, users are concerned about privacy and attach great importance to privacy and anonymity in the virtual environment. Self-exposure in social virtual reality promotes relationship building, identity exploration, and other social goals. It is therefore imperative that the design of social VR addresses users' concerns and creates safe spaces for social experiences that are consistent with users' preferences in specific social contexts (Sykownik et al., 2022). However, it is important that organizations offering these spaces recognize their social responsibility and offer their services within an ethically appropriate framework to ensure equal protection for all users (Papagiannidis et al., 2008).

The metaverse serves as a new context for individuals to meet, engage in social interactions, and create and share new experiences. It can be considered a unique "field of interaction" that organizations can utilize to establish an inclusive, creative, and dynamic socialization space for their members. When effectively designed, the metaverse can serve as a strategic tool for organizations to facilitate the integration of tacit knowledge. However, if poorly designed, it may hinder the knowledge integration process by introducing unfamiliar issues and complicating organizational socialization. To delve into the key aspects of effective metaverse design, we will now examine a foundational framework of virtual worlds that will guide our subsequent analyses.

Conceptual Model for Metaverse Research

Davis et al. (2009) focus on the use of metaverses for collaboration in virtual teams and develop a conceptual model for exploring metaverses. This model for metaverse research takes an interactionist approach, which considers both the technological capabilities and the social interaction that takes place in a metaverse environment. This is particularly relevant to our research because it is a new and emerging technology that is fundamentally changing the way people work and interact in virtual teams (Davis et al., 2009). The model is not deterministic or technology-centric, but instead, it recognizes the role of human actors and the multiple potential paths they can take through their interaction with each other and with technology. It is based on adaptive structuration theory, which emphasizes the interplay between technology and social processes, and how different outcomes can develop from the same starting point (DeSanctis & Poole, 1994; Davis et al., 2009). This is important for our research of the organizational metaverse because technology and social processes are constantly evolving and changing in response to each other (DeSanctis & Poole, 1994; Davis et al., 2009). The model consists of five interacting components: the metaverse, people/avatars, metaverse technology capabilities, behaviors, and outcomes. Figure 1 illustrates the model. Circular relationships among these components illustrate the ongoing social interaction that affects and is affected by metaverse technology capabilities (Davis et al., 2009). This is a useful starting point for exploring socialization in the organizational metaverse, as it covers the key factors that influence interaction and thus likely socialization in this context. The first two components, the metaverse, and people/avatars, set the context for interaction and how people represent themselves. The metaverse technology capabilities, behaviors, and outcomes characterize the relationships among key concepts in the interaction and emergent results. The model treats technology capabilities as dynamic, representing a starting point that can change through interaction in the metaverse and also incorporates the concepts of tailorable technologies and dynamic switching, which support the idea that social structures or interaction in metaverses can affect and change metaverse technology capabilities (Davis et al., 2009; Germonprez et al., 2007; Mowshowitz, 1997). The metaverse shares similarities with virtual environments, immersive technologies, and virtual interactions. Thus, we apply this conceptual model as a starting point for understanding certain aspects of the metaverse.

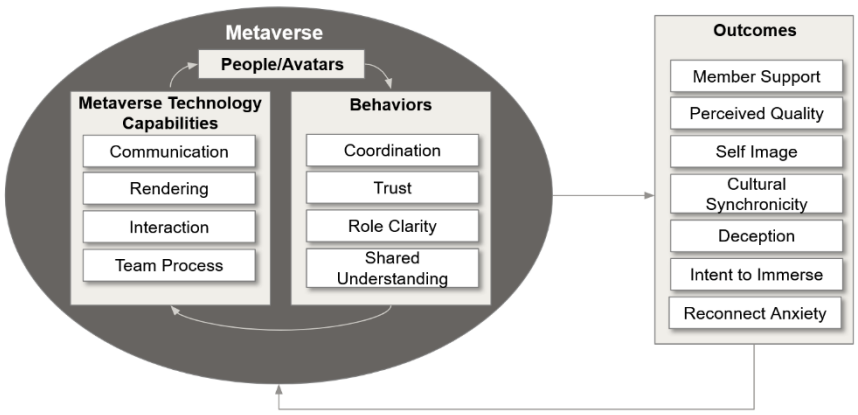

Figure 1. Conceptual Model for Metaverse Research (Davis et al., 2009)

Methodology

We conducted a systematic literature review (SLR) following the approach of vom Brocke et al. (2009). SLR is appropriate for studying effective socialization in the organizational metaverse as it objectively identifies and synthesizes existing literature. The systematic approach helps identify research gaps and provides a comprehensive understanding of effective socialization, considering various factors. Using an established method ensures quality, rigor, transparency, relevance, and reproducibility (vom Brocke et al., 2009). This SLR integrates influences and factors into a neutral conceptual model for both specific and broad audiences interested in the metaverse.

Keyword and Database Definition

Our primary objective was to generate an all-encompassing list of relevant publications related to the metaverse. To achieve this goal, we utilized a diverse set of search terms that encompassed a wide range of topics related to the metaverse. This approach was aimed at identifying as many relevant publications as possible, which would enable us to establish a comprehensive and forward-looking foundation for our analysis. To develop the search strategy, an initial sample of publications that addressed the topics of "socialization in organizations" and "metaverse" was selected, and these publications were used to derive relevant search terms. Our deliberate decision to utilize a wide range of keywords enables us to encompass diverse literature on virtual worlds and related concepts. While our review extends beyond the term "metaverse," we specifically employ established terminology within the research domain of socialization in organizations to align with existing literature and enhance clarity. In particular, we identified relevant synonyms with the initial sample of publications. As the scientific contributions to the socialization process in organizations are to be searched in the context of the metaverse, the term "metaverse" was included in the search term. Other relevant terms, such as "digital world" and "virtual," were also incorporated in the analysis to describe the characteristics of the metaverse. The final search term was therefore: "metaverse" OR "virtual" OR "digital world". Our methodology ensures comprehensive coverage while maintaining focus on the subject, despite the absence of standardized terminology. A comprehensive search applied on the Web of Science database was then conducted in September 2022 using a combination of these relevant keywords in the titles and abstracts of the publications. To ensure the quality of the SLR, we focused on high-quality review publications as recommended by Rowley and Slack (2004). IS scholars evaluate the quality of IS journals to create rankings, such as those created by, e.g., Lowry et al. (2004). We decided to include in our SLR the eight highest-ranked peer-reviewed IS journals along with AoM Review, AoM Journal, Org. Science, and Mgmt. Science. Given that socialization has predominantly been explored within the realm of organizational research, we have included herein a selection of journals that are recognized for publishing studies pertaining to this area. The search yielded 409 hits, which represent the number of

publications found in the search process. The final selection includes those hits that met the inclusion criteria and were deemed relevant to the RQ.

Conducting the Search Process

To narrow down the pool of hits and identify the publications that could contribute to our research framework, we carried out an initial analysis of each publication. We carefully scrutinized the title, abstract, and keywords of each publication according to the recommendation of vom Brocke et al. (2009), which allowed us to filter irrelevant publications and identify those that were most pertinent to our RQ. Our criteria were as follows: The inclusion criteria are the following: Publications that (1) are related to the socialization process in organizations in the context of the metaverse, (2) provide potential factors influencing the socialization process in organizations in the metaverse, (3) are written in English, (4) contain relevant keywords such as "metaverse," "virtual," or "digital world" in the titles or abstracts. We applied the following exclusion criteria: (5) Publications that are not published in one of the top eight peer-reviewed IS journals, AoM Review, AoM Journal, Org. Science, and Mgmt. Science, (6) publications that are not available in the Web of Science database, and (7) publications that do not contain relevant keywords such as "metaverse," "virtual," or "digital world" in the titles or abstracts. After this initial review of the publications, the number of relevant hits was reduced from 409 to 282. As a further result, we were able to identify three core streams of research that were related to the metaverse: Virtual worlds, information and communication technologies (ICTs) & social media, and digitalization. We were able to assign the 266 hits to the core streams as follows: 67 publications were assigned to the area of virtual world, 145 to the area of ICT & social media, and 54 to the area of digitalization.

Process of the Analysis

To refine our publication selection, we employed the visualization of similarities (VOS) analysis based on bibliographic coupling. This technique identifies relationships and main theoretical approaches within a field by examining shared references. The resulting graphical output represents the similarity between publications based on their jointly cited references. Clustering algorithms group publications with a higher number of shared references, revealing distinct research areas (van Eck & Waltmann, 2009).

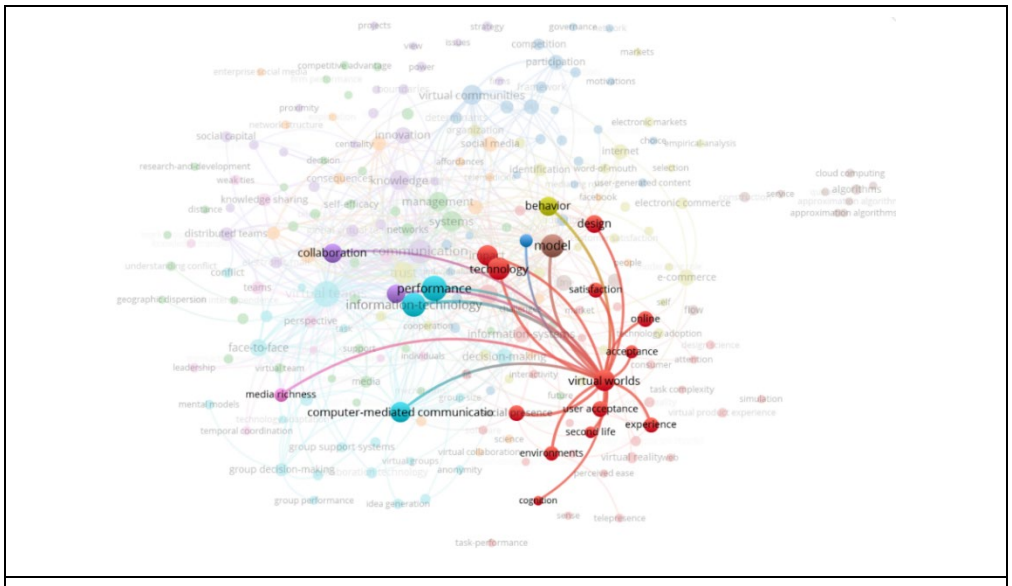

Figure 2. Visualization of 409 Metaverse-topic Scientific Publications

Our analysis using this methodology confirmed the presence of three prominent streams within the collected publications, and the VOSviewer graphical representation demonstrates that these streams are not closely related. Using this methodology confirmed our identification of three predominant streams in the hits. The VOSviewer graphical representation shows that the domains are not closely related. Since ICT & social media as well as digitalization are not relevant to our investigation of socialization in organizations,

we will focus on the core stream virtual world in the following. Therefore the final number of publications included in the analysis is 67. After this pre-selection, we conducted a content analysis of metaverse-related publications to identify their main and secondary themes or viewpoints on the socialization process of organizations in the metaverse context. We used a classification conceptual model according to Davis et al. (2009), based on four dimensions (number of hits): "Environment" (18 publications), "Collaboration" (7 publications), "Avatars" (7 publications), and (4) "Individual Behavior" (9 publications). We classified the publications based on their abstracts, metadata, and full-text versions. Due to thematic overlap, some publications were assigned to multiple categories. In addition, further subject areas could be identified: Gaming (9 publications), virtual products (7 publications), and specific context (12 publications). We group these three additional sub-categories under the category "Others."

Results

We structure our results based on the conceptual model by Davis et al. (2009). Following the primary screening of the publications, we identified three core streams, which is presented in Figure 2. As the virtual world stream was deemed more relevant to our research inquiry compared to the ICT & social media and digitalization streams, we excluded the latter two core streams from further analysis. Our final sample set consists of 67 relevant publications. Table 1 contains the publications with an assignment to each category. The research publications differ in their frame of reference and technical depth.

Category	**Sources**
Environment	Berente et al. (2009); Davis et al. (2009); Schultze et al. (2010); Schultze and Orlikowski (2010); Chaturvedi et al. (2011); Goel et al. (2011); Mueller et al. (2011); Saunders et al. (2011); Wasko et al. (2011); Boughzala et al. (2012); Nardon and Alton (2012); Nevo et al. (2012); Schultze and Mason (2012); Greenhill and Flechter (2013); Hinz et al. (2015); Baskerville et al. (2019); Steffen et al. (2019); Diederich et al. (2022).
Collaboration	Davis et al. (2009); Kohler et al. (2011); Chandra et al. (2012); Schmeil et al. (2012); Venkatesh et al. (2012); Bhagwatwar et al. (2018); Harrison and Windeler (2020); McKenna (2020).
Avatars	Davis et al. (2009); Suh et al. (2011); Riedl et al. (2014); Schultze (2014); Schultze and Brooks (2019); Seymour et al. (2018); Srivastava (2018); Seymour et al. (2021).
Individual Behavior	Chesney et al. (2009); Davis et al. (2009); Wang and Haggerty (2009); Lee and Chen (2011); Schwarz et al. (2012); Goel et al. (2013); Junglas et al. (2013); Riedl et al. (2014); Zhou et al. (2015); Srivastava et al. (2018).
Others	*Gaming:* Putzke et al. (2010); Roquilly (2011); Ma et al. (2014); Lee et al. (2017); Guo et al. (2019); Gong et al (2021); Meng et al. (2021); Kwak et al. (2022); Le Wang et al. (2022). *Virtual products:* Animesh et al. (2011); Kim et al. (2012); Yang et al. (2012); Goode et al. (2014); Liu et al. (2019); Chen et al. (2020); Huang et al. (2021). *Specific contexts:* Nah et al. (2011); Goh and Wasko (2012); Altschuller and Benbunan-Fich (2013); Boughzala and de Vreede (2015); Yang et al. (2015); Zahedi et al. (2016); Kinzinger et al. (2019); Peukert et al. (2019); Yang and Xiong (2019); Pfeiffer et al. (2020); Westmattelmann et al. (2020); Li et al (2022).

Table 1. Review Search Results

By performing the content analysis, we were able to identify the categories depicted in Table 1. By analyzing the literature, we grouped similar articles into the categories that reflect the underlying themes. This helps

to categorize the literature and provide a clear picture of the research landscape (vom Brocke et al., 2009). In the following section, the content of the first four categories of Table 1 is presented in which the respective factors are discussed. The last presented "Others" category in the Table 1 will not be explored further since the content of the does not match our research question.

Environment

The first element of the conceptual model of Davis et al. (2009) labeled as environment, describes a virtual domain consisting of virtual spaces and environments. It has become a ubiquitous platform for social, educational, and commercial activities, where many organizations have established a virtual presence (Davis et al., 2009). Within the metaverse, the environment can be characterized by several factors. Some factors are presented as examples in the following: **Type**: One key distinction in the metaverse is between virtual worlds and mirror worlds. Virtual worlds are independent of physical reality and offer users new and distinct environments. Mirror worlds are representations of existing environments. Understanding the type of metaverse is important for determining how users interact with their environment (Chaturvedi et al., 2011). **Environmental Awareness**: Previous scholars classify different levels of awareness concerning the metaverse: Environmental awareness in the metaverse refers to how users interact with the virtual environment and with others. Social awareness includes the possible interactions with others, while task awareness refers to what actions are appropriate in relation to others. Location awareness is also important, as users need to be able to identify where they are in relation to others (Goel et al., 2011). **Technical design dimensions:** Technical design dimensions refer to the specific features and design elements that make up the metaverse. Multi-user capability allows multiple, geographically dispersed users to interact, while synchronous communication allows users to interact in real time. Media diversity is also important, as users require a variety of communication channels, including 3D visualizations, speech, text, and body language. Embodied representation of users through digital proxies called "avatars" and providing a shared 3D interaction context increases physicality. In addition, longevity is also critical, as the program must continue to run even when someone is using it, and must remember the location of people and objects, as well as the ownership of objects (Mueller et al., 2011). **Characteristics of realities:** The environments of physical reality, augmented reality, and virtual reality each have different characteristics. Therefore, different realities enable different activities, with physical reality being preferred when virtual or augmented reality is not sufficient. However, virtual and augmented reality can enhance aspects of physical activities, such as providing additional information and reducing resource costs. They can also enable experiences for users who have physical limitations in the real world. Virtual environments can even enable experiences that are impossible in the real world, such as riding a dragon (Steffen et al., 2019). **Familiarity:** In virtual worlds, familiarity with objects is of importance for human perception. Therefore Saunders et al. 2011 describe familiarity in three dimensions: Directionality, social contact, and interaction with objects. Here, being "embedded" depends more on sensory cues than social cues. Although space is represented in virtual environments, individuals use mental image processing to better understand it (Saunders et al., 2011).

Collaboration

Schmeil et al. (2012) developed an avatar-based collaboration framework to design 3D virtual environments and their collaborative activities. This framework supports innovative collaboration patterns, activities, settings, and technological support. It also classifies communicative, navigational, object-related actions and links goal-related actions and VR infrastructure elements with who, when, where, and what (Schmeil et al., 2012). **Value creation:** VR is also fundamental to active and passive value creation and enables real-time and media-intensive collaboration. Importantly, user-generated environments should invite users to create or co-create content (Kohler et al., 2011). **Trust:** In a virtual world, a user's cognitive absorption is influenced by his or her compatibility with the values and characteristics of the environment. User confidence is positively influenced by cognitive absorption in virtual environments and positively associated with intentions to use virtual worlds for workplace collaboration. Moreover, there is a significant positive relationship between cognitive absorption and trust, which supports the proposal of a nomological network for adaptive intention to use virtual worlds in workplace collaboration (Chandra et al., 2012). **Priming:** Previous research also identified priming as relevant in the metaverse. Priming is a cognitive phenomenon that occurs when exposure to a stimulus affects behavior or cognition without conscious guidance or intention. They discovered that the creativity-primed environment could enhance individuals'

creativity by influencing non-conscious cognition and behavior. Thereby, using 3D objects in a contextual priming approach is appropriate for implementing priming in a virtual environment and encouraging design thinking, particularly during ideation (Bhagwatwar et al., 2018). **Convivial affordances:** Another study explores the use of virtual worlds by social organizations to create awareness and safe spaces. The technical environment of virtual worlds is critical to the success of these movements. The concept of convivial affordances allows users to create positive outcomes for social movements based on their goals and community engagement. In doing so, understanding affordances is necessary for metaverse users to creatively shape their use of IT artifacts. By creatively combining affordances, users can achieve convivial outcomes that align with their goals and desires. In addition, different online communities can also use convivial affordances and different technologies to achieve their own convivial outcomes (McKenna, 2020). **Communication performance:** Given the salience of communication in the digital domain, communication performance has emerged as a crucial area of interest, with both organizations and individuals seeking to comprehend the factors that facilitate successful communication (Lewis, 2008). Communication performance is affected by personal goals, even in collaborative environments. Media synchronicity is a factor in communication when goals are aligned, but it has limitations in partially collaborative communication contexts. Furthermore, anonymity and communication frames are important when communicators' intentions differ (Harrison & Windeler 2020). As socialization in the metaverse becomes increasingly relevant, it is essential to understand how communication performance can be optimized to facilitate successful interactions between individuals and organizations in virtual environments. **Team cohesion:** High self-efficacy related to required tasks has been shown to motivate individuals to focus on tasks, leading to high levels of performance. Team cohesion can improve individual performance and trust among distributed team members and promote more intense collaboration. Venkatesh and Windeler (2012) found that team cohesion has a positive impact on team performance when virtual worlds are used for collaboration. They also found that team collaboration promoted knowledge sharing. In addition, a positive relationship between agreeableness, conscientiousness, extraversion, and openness to experience on the use of team technology (Venkatesh & Windeler, 2012).

Avatars

Realistic visual presence: Realistic avatars in virtual collaboration settings have the potential to improve human-machine interaction. The "uncanny valley" phenomenon refers to the eerie feeling humans experience when faces are nearly realistic but not quite there (Seymour et al., 2018). Researchers investigated the relationship between face realism and user affinity with avatars and found that interacting with avatars changes the mode of engagement, resulting in a sensation of being with a nonhuman actor as if it were human. Realistic visual presence is the key to this experience, while realistic faces are only noticeable if they are off-putting (Seymour et al., 2018). Virtual customer assistants (VCAs) require both domain competence and social competence for building relationships (Seymour et al., 2018). A recent study by Seymour et al. (2021) addressed the challenge of crossing the uncanny valley in virtual reality using human-realistic avatars rendered in real-time, and found that this approach resulted in better affinity, trustworthiness, and preference for the avatar, demonstrating the feasibility of crossing the uncanny valley. Additionally, the study found that human-realistic avatars have already passed through the uncanny dip, supporting the idea that they hold promise for enhancing human-machine interaction (Seymour et al., 2021). It is remarkable that all publications in this field originate from the new wave of metaverse research. Research on the possibilities to create completely realistic representations has become interesting due to the rapid technological progress of the last few years. Similarity to the user: In task-oriented virtual settings, users' attitudes and intentions towards avatars can be affected by the resemblance of the avatar to the user, according to research by Suh et al. (2011). Greater resemblance between the user and their avatar can result in positive attitudes, such as affection and connection towards the avatar. Furthermore, users can better evaluate the quality and performance of virtual apparel products in shopping settings when the avatar closely resembles them. Positive attitudes and usefulness towards the avatar in realistic virtual settings positively impact users' intentions to use the avatar (Suh et al., 2011). Consequently, replicating the human shape and appearance of the user's body in their avatar, known as representationalism, can be useful in experiencing and evaluating various business areas related to users' lives in the real world. This includes virtual apparel shopping, matchmaking, plastic surgery, fitness clubs, and other applications. Additionally, performativity, which is based on habitual practices of the body, such as clothing oneself, plays a crucial role in embodied identity enactment. Previous research highlights that habitual practices, rather than user volition or technological affordances, constitute the engine of embodied identity performance (Schultze,

2014). **Social presence:** Focusing on moral obligation, Schultze and Brooks (2016) highlight three phases of social presence in virtual spaces: Copresence, focused interaction, and interlocking commitments to participation. Copresence occurs when people are in the same virtual space and can observe each other, while focused interaction occurs when people engage in a shared activity. The third phase is characterized by interlocking participation commitments that emphasize the interdependence between the primary actor and others in the shared activity (Schultze & Brooks 2016). Avatar-based communication can enhance interpersonal trust in anonymous online environments, but humans are better at assessing the trustworthiness of humans than avatars, as evidenced by greater activation of brain areas involved in mentalizing when interacting with humans (Riedl et al., 2014). Social presence may moderate the relationships between trust-building factors, including situational normality and structural safety, and user trust in virtual worlds. In addition, social presence helps reduce uncertainty and promote communication in virtual workplaces, which is consistent with uncertainty reduction theory that states that structural collateral can enhance trust and influence behavior (Srivastava & Chandra, 2018).

Individual Behavior

The metaverse offers a unique experience by removing physical boundaries among avatars, allowing deliberate control of verbal and nonverbal cues. This provides a new way for individuals to express behavior without the limitations of physical constraints, which is not possible with current collaboration technologies (Davis et al. 2009). **Griefing:** The phenomenon of negative behavior, or "griefing," in a virtual world is widespread. It is defined as unacceptable, persistent behavior and is usually directed at inexperienced residents who are more familiar with the virtual world. For example, when an avatar takes a seat on a surface, such as a chair or the floor, it becomes immovable and resistant to attacks. This knowledge can be utilized as a defensive strategy by those aware of this characteristic. One possible strategy to combat griefing is for the user community to use the controls available to them (e.g., land controls) to collectively deal with disruptive avatars (Chesney et al., 2009). **Virtual competence:** Virtual competence is a construct that refers to the knowledge, skills, and abilities that individuals acquire to work effectively in virtual environments. It is composed of three dimensions: virtual self-efficacy, knowledge transfer, and virtual competence. The latter dimension is further subdivided into virtual media competence and virtual social competence. Advanced virtual media competence enables individuals to use digital technologies effectively and communicate information more efficiently. Similarly, higher levels of virtual social competence enable individuals to build shared knowledge and interpersonal relationships that are essential for effective communication in virtual environments. Consequently, high virtual competence improves knowledge transfer within virtual organizations and enables the creation, transfer, and interpretation of information artifacts using various technological tools (Wang & Haggerty 2009).

Research Agenda

Research on how the metaverse affects socialization in organizations is crucial for successful implementation as virtual environments become increasingly important (Dwivedi et al., 2022). Researchers can explore various topics to investigate how metaverse environments can be leveraged for effective socialization. To guide future research endeavors, we present a comprehensive research agenda in Table 2. Furthermore, we would like to draw attention to additional areas (design and security) that may have potential implications for socialization in organizations but were not comprehensively addressed in our study.

Environment: As noted in the existing literature, there are different types of metaverse environments, including virtual worlds and mirror worlds. Future research could compare the effectiveness of these different types of environments for socialization purposes, and explore whether certain types of environments are better suited for specific types of organizations or socialization goals. This could be done by conducting experiments in the form of case studies in different metaverse environments. The results could then be evaluated to compare the advantages and disadvantages of different environments for individual applications. **Collaboration:** Literature is identifying avenues to foster aspects of teamwork such as creative processes. These are either focused on strengthening immersion through VR or on the added value of objects/interactions only possible in the virtual world. Furthermore, the metaverse has the potential to bring together individuals from different backgrounds and countries, which could have a positive impact on diversity and inclusion efforts in organizations. Future research could explore whether

metaverse-based socialization leads to increased diversity and inclusion and how organizations can use the metaverse to promote these outcomes. We encourage researchers to design experiments where teams can design and build objects in virtual environments that would be difficult or impossible to achieve in the real world. Thus, a comparison of effectiveness between collaboration in physical and virtual reality could be enabled. In addition, researchers could interview people who have already worked collaboratively in the metaverse and ask them about their perceptions of diversity and integration, as well as potential risks or barriers. **Avatars:** The urge for immersion and technological advancements are driving avatar research forward. Besides realistic embodiment, the current focus is on behavioral interaction and, for example, the expression of emotions through avatars. Future research could investigate how the use of avatars in the metaverse affects socialization processes. For example, researchers could explore whether the use of avatars increases or decreases social presence, and whether certain avatar features (such as customization options) have an impact on socialization outcomes. **Individual Behavior:** As with any technology, the metaverse raises ethical questions that need to be addressed. The theory proposes that people may initially feel disconnected and anonymous in virtual environments, leading to reduced inhibition. As a result, they may behave and communicate differently than they would in their real-life persona. Future research could explore the ethical implications of metaverse-based socialization, including issues related to privacy, security, and the potential for addiction or other negative outcomes. This research could inform the development of guidelines or best practices for organizations using the metaverse for socialization purposes. **Outcomes:** In order to maintain a focused examination of metaverse research in this study, we did not include the category mentioned and highly recommend its exploration in future studies. Davis et al. (2009) integrate into their framework in Figure 1 another set of outcomes, encompassing unique aspects pertinent to the metaverse environment, namely self-image, cultural synchronicity, deception, intent to immerse, and reconnect anxiety. Exploring the interactions and effects between these outcomes and the other categories, as well as their specific implications, would be of particular interest for future research.

In addition to addressing the RQ related to the main categories identified in our study, we acknowledge that there are other important aspects within the organizational context that were not specifically explored in our investigation but hold significant value. We would like to draw researchers' attention to these understudied areas, as we believe they can greatly impact socialization within the organizational metaverse. Firstly, incorporating general ***design*** criteria as guidelines for organizations can facilitate the integration of the metaverse into existing structures. Furthermore, given the distinct employee-employer relationship, it is imperative to address ***security*** concerns and ensure that metaverse-based socialization aligns with labor laws. In the following, we provide a more detailed exploration of these additional aspects. **Design:** There is a lack of an evaluation of the effects of metaverse on the socialization process in organizations by comparing the different influences and weighting their respective characteristics. Conducting such an evaluation could provide important insights into the key features shaping socialization processes in organizations in the context of the metaverse, thus going beyond previous descriptions and consolidating the primary findings of previous research. To fill this research gap, we should examine how organizations should design the metaverse context for effective socialization in organizations (Park et al., 2023). **Security:** Research on security issues in the organizational metaverse for socialization is limited, and there is a need for future studies to investigate potential security risks and the best practices for mitigating them. Specifically, research is needed to explore the organizational measures that can be put in place to protect sensitive information, prevent cyber-attacks, and ensure the privacy and safety of employees who engage in socialization activities in the metaverse. Furthermore, studies could examine the attitudes and behaviors of employees towards security in the metaverse, and how organizations can promote a security culture to improve the overall security posture of their metaverse environments (Lowry et al., 2023).

Category	**Future research topic**
Environment	Future research should explore the effectiveness of different metaverse environments for socialization in diverse organizational contexts.
Collaboration	Future research should explore the potential of the metaverse to enhance diversity and inclusion in organizations, examining its impact on teamwork, creative processes, and the ability to bring together individuals from diverse backgrounds.

Avatars	Future research should examine the impact of avatar usage in the metaverse on socialization processes, investigating factors such as social presence and the influence of avatar features (e.g., customization options) on socialization outcomes.
Individual Behavior	Further research is needed to address the ethical implications of metaverse-based socialization, including privacy, security, and potential negative outcomes, in order to establish guidelines for organizations using the metaverse for socialization.
Outcomes	Future research should explore the relationship between metaverse socialization and organizational outcomes. Understanding the interactions and implications of these outcomes with other categories is crucial for advancing research in this area.
Additional aspects	Future research should focus how to design metaverse for an effective socialization. In addition, Future research should also investigate security measures to protect sensitive information and ensure employee safety in the metaverse.

Table 2. Research Agenda

Contributions and Limitations

As organizations seek to leverage advancing technology, the metaverse becomes increasingly important. To examine the process of organizational socialization in this area, we conducted a SLR. New technologies require us to revise and update the existing model of Davis et al. (2009). In doing so, we were able to develop four main categories from the identified literature. The categories Environment, Collaboration, Avatars and Individual Behavior form the foundation for the analysis and can be further explored and supplemented with the help of the research agenda we developed. In addition, we describe other aspects such as Outcome, Design, and Security that should be addressed in future research. Our **theoretical contribution** to the metaverse literature stream is manifold. First, this review aims to make previously implicit knowledge explicit by synthesizing existing domain knowledge and incorporating new perspectives. Through this process, we provide an holistic overview of the literature related to the topic how metaverse affects the process of socialization in organizations. In this vein, we reviewed the existing body of knowledge, structured our findings based on the conceptual model of Davis et al. 2009 and captured explicit domain meta knowledge, making it available to other researchers. Thus, we were able to provide an overview of relevant concepts. Second, we identify research gaps in the research by identifying areas within the existing body of knowledge and developing a research agenda. By identifying these gaps and presenting areas that need more research attention (e.g., the attractive outcomes, general design and the security aspect of metaverse socialization), we contribute to guiding future research in this young and fragmented research stream. Thus, we were able to identify research areas that have not been adequately addressed (e.g., metaverse's impact on teamwork). Overall, this can guide future research and objectives to filling those gaps. Third, this research advances our theoretical understanding of socialization processes by examining them within the unique context of the metaverse. By considering the specific characteristics and affordances of this virtual environment, the study expands our knowledge of how socialization unfolds and the factors that shape its outcomes. This knowledge can guide future empirical research projects in identifying and analyzing factors that impact the usage of the metaverse. Finally, we successfully synthesized the findings of previous studies and we were able to identify inconsistency in the literature. Thus, different scholars have employed varying definitions of the metaverse, leading to potential inconsistencies when different studies examine different aspects of the metaverse based on their own definitions. This highlights the need for a more standardized and agreed-upon definition of the metaverse to ensure coherence and comparability across research studies. Moreover, our paper sheds light on the inconsistencies regarding the impact of the metaverse on social interaction. Some studies emphasize the potential of the metaverse for social integration, cultural exchange, and the facilitation of new forms of collaboration (e.g., Buana, 2023). Conversely, other studies highlight the risks of social isolation and the loss of direct personal contact

associated with the metaverse (e.g., Kooshari et al., 2023). By exploring these contrasting perspectives, our paper highlights the complex and nuanced nature of the social implications of the metaverse, paving the way for future research to delve deeper into this area. This study also makes important **practical contributions** by providing organizations with guidance on effectively utilizing the metaverse for socialization purposes. By investigating the factors that influence socialization within the organizational context of the metaverse, the study contributes to a deeper understanding of this phenomenon. It offers valuable insights that can inform organizations in facilitating the use of the metaverse to enhance collaboration, communication, and team cohesion among employees.

The study has certain **limitations** that need to be addressed in future research. To begin with, the research was solely conducted on the Web of Science. Therefore, researchers should explore the use of different databases and keywords to search for new perspectives and contributions. One further limitation of our research paper is that we primarily focused on the categorization and providing a broad overview of previous knowledge, particularly using the framework of Davis et al. in 2009. Although we extended the scope by introducing new topics, we acknowledge that there are additional analyzing dimensions that could have provided an overall picture of the metaverse in socialization processes. Specifically, we did not extensively explore the measurement instruments, research methods, and influencing factors utilized in the studies. To overcome this limitation, we recommend that future research endeavors expand the analyzing dimensions. By delving deeper into the used measurements, research methods, and influencing factors, a broader and more nuanced understanding of the metaverse context in socialization processes can be achieved. As a relatively young field of research, more academic investigation is needed to overcome these limitations and explore the areas we identified in our future research agenda.

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