Navigating ethical concerns in the Metaverse: an integrative review and an agenda for future research

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Received 26 April 2024
Revised 29 September 2024
22 December 2024
17 May 2025
Accepted 28 May 2025

Abstract

Purpose – The Metaverse's ongoing evolution and emerging disruptions pose ethical concerns. Hence, we aim to establish a comprehensive understanding of potential ethical issues in the Metaverse.

Design/methodology/approach – We conducted an integrative review of 64 relevant works within the context of ethical concerns in the Metaverse and its associated technologies.

Findings – We identified four themes, developed a multi-layered conceptual framework and proposed 18 research questions for future studies. We demonstrated that ethical problems in the Metaverse are broader than those arising from technologies constituting it and highlighted the evolving nature of the Metaverse with emerging disruptions corresponding to an ever-changing ethical landscape.

Research limitations/implications – Recognizing the evolving nature of the Metaverse, with technological disruptions contributing to an ever-changing ethical landscape, we propose a framework and research questions with an actionable research agenda for empirical studies focused on ethical concerns within the Metaverse.

Practical implications – We offer insights for integrating ethics into the design and development of Metaverse solutions. The framework highlights the complex, multi-layered ethical issues and emphasizes the need for platform stakeholders to collaborate with consumers and policymakers to address these concerns. Additionally, the review reinforces the importance of data management in the Metaverse, urging policymakers to prioritize data privacy on the Metaverse platforms and revise regulations to tackle these challenges.

Originality/value – The review underscores the unique nature of ethical issues in the Metaverse, which extends beyond those associated with its foundational technologies and calls for increased attention to these issues in information systems research.

Keywords Metaverse, Ethics, Virtual reality, Augmented reality, Integrative review

Paper type Research paper

1. Introduction

The Metaverse refers to a highly interlinked virtual environment that can profoundly change how individuals and organizations engage with a seamlessly integrated collection of virtual realities (VR) (Barrera and Shah, 2023). Studies project that by 2026, 25% of the world's population will spend at least one hour per day in the Metaverse (Rimol, 2022). The transformative potential of the Metaverse spans a wide range of applications, including helping individuals overcome disabilities (Statista, 2021) and facilitating nations' transition toward a more environmentally sustainable future (Townsend, 2022). Over 500 companies worldwide are constructing

Funding: Open access funding was provided by LUT University (previously Lappeenranta University of Technology [LUT]).

Research involving human and animal rights: This article does not contain any studies by the author involving human participants or animals.

Internet Research
Vol. 36 No. 7, 2026
pp. 43-62
Emerald Publishing Limited
e-ISSN: 2054-5657
p-ISSN: 1066-2243
DOI 10.1108/INTR-04-2024-0657

Metaverse ecosystems owing to their enthusiasm for the technology and its many possibilities (Takahashi, 2022). As corporations rush to profit from the expanding use cases of the Metaverse and the myriad of applications it promises, it is crucial to assess whether these Metaverses are being constructed and operated ethically (Cheng *et al.*, 2024; Fernandez and Hui, 2022).

While some ethical concerns in the Metaverse mirror those found in the physical world, such as privacy, socioeconomic disparities, and identity control (Ozair, 2022a), new concerns emerge through access to biometric or brainwave data that can be used to manipulate people's thoughts and behaviors or represent users through multiple identities and deepfakes on different Metaverse platforms (Ozair, 2022b). Moreover, the growing use of artificial intelligence (AI) for personalization, data gathering, and automated decision-making in the Metaverse introduces privacy-related challenges, potential biases, and the loss of personal control over digital interactions (Zhuk, 2024). In this context, the Metaverse is already facing accusations of greenwashing, while ethical concerns are increasingly coming to light, accompanied by growing doubts about its long-term viability (Arti, 2022). As the Metaverse grows more complex and data usage increases, energy consumption, and CO_2 emissions from data centers are expected to be significant (UNESCO Courier, 2023). Surveys have revealed a rise in sexual harassment within virtual environments, with assaults in the Metaverse emerging as a troubling trend that calls for a unified response from policymakers, the tech industry, and society (Chaudhary, 2024; Stevenson, 2024).

Given these wide-ranging implications, the Metaverse could be exploited in unethical ways without adequate safeguards. Considering the limitless promise of the Metaverse and its potential socioeconomic impact (Dwivedi *et al.*, 2022), disregarding ethical considerations could prove disastrous for societies, firms, and individuals. Without an ethical standpoint, the technology could result in firms excessively collecting and exploiting our data, posing privacy, security, and safety concerns as a result of prying on us and following us into the Metaverse (Hunter, 2022). A critical perspective on the ethical considerations in the design and functioning of the Metaverse is essential to ensure a thoughtful and responsible transition into this virtual space (Louveaux and Ho, 2022).

However, technology itself is neither inherently ethical nor unethical; rather, its ethical implications are determined by the ecosystem and the need for interdisciplinary perspectives (Rogerson, 2021). Hence, assessing the ethical implications of digital technologies requires examining the decisions and actions involved in their creation and development and holding accountable the actors responsible for these processes (D'Cruz *et al.*, 2022). This calls for a cohesive perspective incorporating the various ethical viewpoints in the existing literature on the Metaverse's foundational technologies, synthesizing them to identify the intellectual structure, including ethical challenges and their implications. This prompts the need for an integrative review at the interface of the Metaverse, its associated technologies, and ethics, as this approach is particularly effective in contexts where existing research is fragmented across various disciplines (Scully-Russ and Torraco, 2020). Integrative reviews not only influence the direction of future research but also pave the way for future reviews that may be systematic, narrative, or meta-analyses (Cronin and George, 2020). Additionally, this study advances the need for interdisciplinary research within the information systems (IS) discipline while staying grounded in IS (Tarafdar and Davison, 2018), given that the Metaverse and its associated enablers are inherently technological and linked to the IS domain.

Hence, to develop a cohesive perspective through an integrative review that advances research on ethics in the Metaverse and reconciles the diverse ethical viewpoints in existing literature, we ask: *How can the literature on the Metaverse and its underpinning technologies be used to advance future research around ethical considerations in the design and implementation of the Metaverse?*

To address this question, we search the existing literature through 2023 and identify articles exploring ethical issues in the Metaverse and related technologies. Based on that, we capture the research profile, identify thematic groupings, and present a future research agenda consisting of a conceptual framework and research questions at the intersection of the Metaverse and ethics. We also discuss implications for IS research and practice.

2. Background

2.1 The Metaverse: an overview of the phenomenon and its use

The first historical reference to the Metaverse may be traced back to Neal Stephenson's 1992 novel *Snow Crash* (Hollensen *et al.*, 2023). The novel inspired the development of the software "Second Life," which allowed users to create and interact with virtual avatars in various digital environments (Hollensen *et al.*, 2023). While this software was marred by poor network infrastructure, the phenomenon has advanced multifold in the past few years and is expected to boom further with the help of fifth-generation networks (Hollensen *et al.*, 2023). While early definitions of the Metaverse referred to it as a single VR world, later definitions introduced the aspect of interconnectedness (Frey *et al.*, 2008; Messinger *et al.*, 2009), describing the Metaverse as a virtual environment that blends physical and digital aspects with the convergence of Internet and online technical advancements (Lee *et al.*, 2024).

The Metaverse comprises several components, including networking systems, the Internet of Things, three-dimensional (3D) modeling, AI, blockchain, extended reality, and interface devices (Barrera and Shah, 2023). While technological advances connected with the Metaverse may still be in their infancy, the Metaverse offers strategic options, with more expected to emerge in the future (Pamucar *et al.*, 2023; Wiles, 2022). The phenomenon is increasingly gaining popularity in marketing, branding, retail, tourism, and education, among other fields (Dwivedi *et al.*, 2022; Xi *et al.*, 2024; Xu *et al.*, 2024). As use cases evolve, there is growing enthusiasm for the prospects of the Metaverse. However, this plethora of use cases is accompanied by ethical considerations such as privacy, safety, integrity, equality, and inclusion for users in these virtual environments (Bibri and Allam, 2022). While the developments in AI, robotics, and data-driven society emphasize the urgent need for ethical considerations around technology changes (Lee *et al.*, 2023b; Stahl *et al.*, 2014; Turja *et al.*, 2020), the Metaverse blurs the lines between the actual and virtual worlds and requires even more attention (Jones *et al.*, 2022).

2.2 The distinctiveness of ethical considerations in the Metaverse

The growing popularity of emerging technologies has thrust ethics to the forefront of analysis (D'Cruz *et al.*, 2022). Ethics is crucial in ensuring the efficacy of technology, and it is imperative to establish a framework for ethical considerations to ensure the success of technological advancements (Green, 2021; Metcalf *et al.*, 2019). Recognizing this imperative, recent IS research advocates for increased attention to ethical considerations within the Metaverse, emphasizing the significance of protecting users' identities on these platforms (Kar and Varsha, 2023). The Metaverse presents not only business opportunities but also societal and individual challenges (Marabelli and Newell, 2022), highlighting the need for a perspective that goes beyond the business realm.

Several of the Metaverse's ethical concerns, including privacy, socioeconomic disparities, and identity management, reflect those of the real world (Ozair, 2022a). Access to biometric or brainwave data that can be exploited to modify people's thought patterns or represent persons with many identities on different Metaverse platforms may provide new challenges (Ozair, 2022b). The ethics of technology in business have been well-established by scholars (North-Samardzic, 2020), which raises the question of whether new ethical dilemmas exist in the Metaverse. In illuminating the impact of new technology on ethics, Johnson (2001) argued that new technologies may not present new ethical dilemmas but rather new behaviors. For instance, the Metaverse would allow individuals' avatars to interact with other avatars in the virtual world, similar to the VR experience, with comparable ethical problems of whether touch between avatars could be considered inappropriate.

However, as the Metaverse use expands, individuals lose touch with the real world and have a diminished perception of physical space. In this scenario, a diversified worldwide virtual society based on particular moral and ethical principles may arise (Ozair, 2022a). Similarly, some companies offer immortality features in the Metaverse, allowing people to communicate

with their loved ones long after death (Strachan, 2022). While the feature requires massive amounts of personal data, the aspect of immortality raises ethical questions (Romina, 2022) as discussions of ethics surrounding immortality have primarily been restricted to life-extending therapies and related elements such as genetics (Cutas and Harris, 2006; Harris, 2004). These emergent possibilities imply that the Metaverse necessitates deliberation on new ethical considerations, and the purpose of this review is to investigate the literature on ethics in the Metaverse and associated technologies and present key themes that warrant due consideration.

3. Methodology

Our methodology comprises five steps, including devising the search protocol for the review, querying academic databases for relevant literature, assessing alignment with research objectives, constructing the research profile, and identifying the underlying themes. These thematic observations help in crafting a future research agenda.

3.1 Step 1: devising the search protocol for the review

The first step involves designing the search protocol. The review encompasses ethical aspects in the context of the Metaverse and associated technologies published in peer-reviewed journals. Our keywords for ethics were guided by prior reviews (e.g., Vasist and Krishnan, 2024). In the context of the Metaverse, prior reviews have noted the limited literature rendered through a search protocol incorporating only Metaverse as a keyword, prompting an expanded list of keywords by seeking guidance from recent literature (e.g., Barrera and Shah, 2023; Kar and Varsha, 2023). To this end, the search string was applied to the title and abstract of the articles (see Figure 1).

3.2 Step 2: querying academic databases for relevant literature

This phase entails selecting the relevant databases for our search to ensure that appropriate articles are chosen for the review. We consulted three widely recognized databases – Scopus, Web of Science (WoS), and EBSCOhost. These databases have been utilized in previous reviews on ethics (Tan and Salo, 2023; Vasist and Krishnan, 2024) and the Metaverse (Barrera and Shah, 2023; Jauhiainen *et al.*, 2023). As previously mentioned, although the term is relatively new, "Metaverse" is commonly linked to Neal Stephenson's 1992 novel *Snow Crash* (Hollensen *et al.*, 2023). Hence, we did not restrict the starting point of our search to any specific year in the recent past. Moreover, the debate over whether the Metaverse represents the next revolution in internet technology became one of the most widely discussed topics in 2023 (Cheng, 2023), with numerous editorials and opinion pieces exploring the subject in depth (e.g., Gruson *et al.*, 2023; Peña-Rios and Wu, 2023; Richter and Richter, 2023). Therefore, our search encompassed all relevant research through 2023 [1] with specific criteria for inclusion and exclusion, as outlined in Figure 1.

3.3 Step 3: assessing alignment with research objectives

The search yielded 1,261, 435, and 995 articles from Scopus, WoS, and EBSCOhost, respectively. The next step involved narrowing the results to peer-reviewed English-language scientific journals in the social sciences and humanities domains, which resulted in 373 articles from Scopus, 147 from WoS, and 307 from EBSCOhost. After conducting an additional check for duplicates, 502 articles were identified. Subsequently, we classified articles based on journal reputation, following guidance from recent literature (e.g., Obregon *et al.*, 2022). Using the Scimago Journal Rank (SJR) bibliometric indicator, we retained 398 journal articles published within the first and second quartiles and excluded 104 articles (SCIMAGO, 2023).

These 398 articles were classified as "relevant," "irrelevant," or "unclear" by the authors after screening the title and abstract. The classification was based on whether the article addressed issues at the intersection of the Metaverse, associated technologies, and ethics and met the criteria specified in Figure 1. We included 27 articles classified as "unclear" or

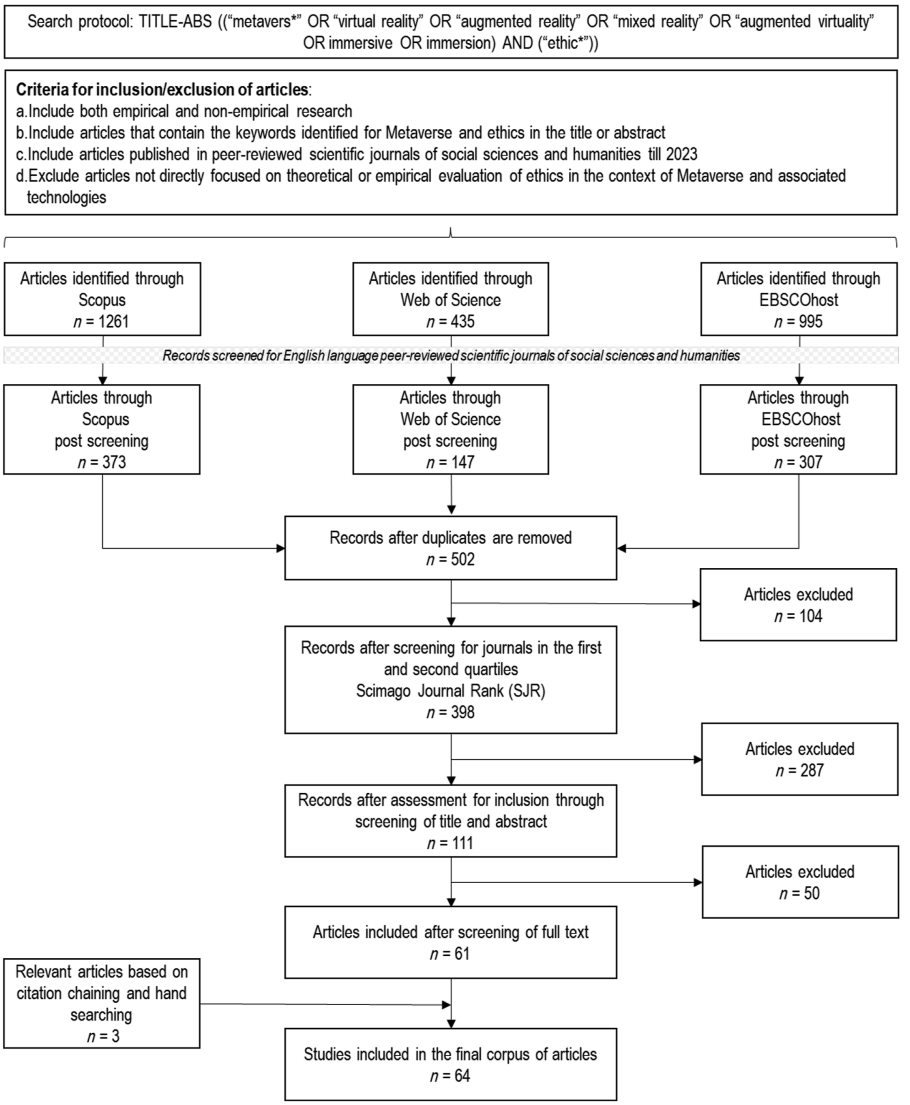

Figure 1. Flowchart of study selection. **Source:** Authors' own work

disputed between authors in the full-text analysis. This procedure led to the retention of 111 articles, which were subjected to a thorough full-text analysis to comprehend the articles' objectives, the research designs, and the methodological approaches. This process led to retaining 61 articles. Finally, to include any articles potentially missed during this process so far, articles were obtained through hand searching and citation chaining, which resulted in the inclusion of 3 articles in the final corpus of 64 articles (see Appendix A for a summary of articles and Figure 1 for the detailed flow).

3.4 Step 4: constructing the research profile

We profiled 64 articles that formed the corpus for the review. More than 70% of the articles in the corpus were published since 2018. A word cloud was generated using the R programming

language. The word cloud (see Figure 2a) reveals that "augmented," "virtual," "reality," "ethics," "digital," and "technology learning" are among the most frequently used keywords. We also analyzed publications by country based on the affiliation of the first author's institute. This analysis showed that Europe leads in publications discussing ethical aspects related to the Metaverse and associated technologies ($n = 32$), while among countries, the USA ($n = 17$), United Kingdom ($n = 10$), and Netherlands ($n = 5$) dominate the publications (see Figure 2b for details).

3.5 Step 5: identifying the underlying themes

To better understand the nature of linkages between the Metaverse, its associated technologies, and ethics, we meticulously examined the 64 articles. Seeking guidance from Braun and Clarke (2006), thematic analysis was employed to synthesize the existing research and identify the key themes [2]. In contrast to methods such as content analysis, which is typically applied to qualitative data and emphasizes micro-level frequency counts, enabling quantitative insights into qualitative information (Ryan and Bernard, 2000; Wilkinson, 2000), thematic analysis generally eschews quantification and instead prioritizes the synthesis and interpretation of key themes across a large data corpus (Braun and Clarke, 2006). Furthermore, the decision to employ thematic analysis was largely influenced by its inherent flexibility, allowing it to be "applied across a range of theoretical and epistemological approaches" (Braun and Clarke, 2006, p. 78). The adaptability of this approach has made it a popular choice for conducting literature reviews (e.g., Cartwright *et al.*, 2021; Raihan *et al.*, 2024). In this study, we closely followed the thematic analysis approach employed in recent literature reviews (Cartwright *et al.*, 2021; Raddats *et al.*, 2019).

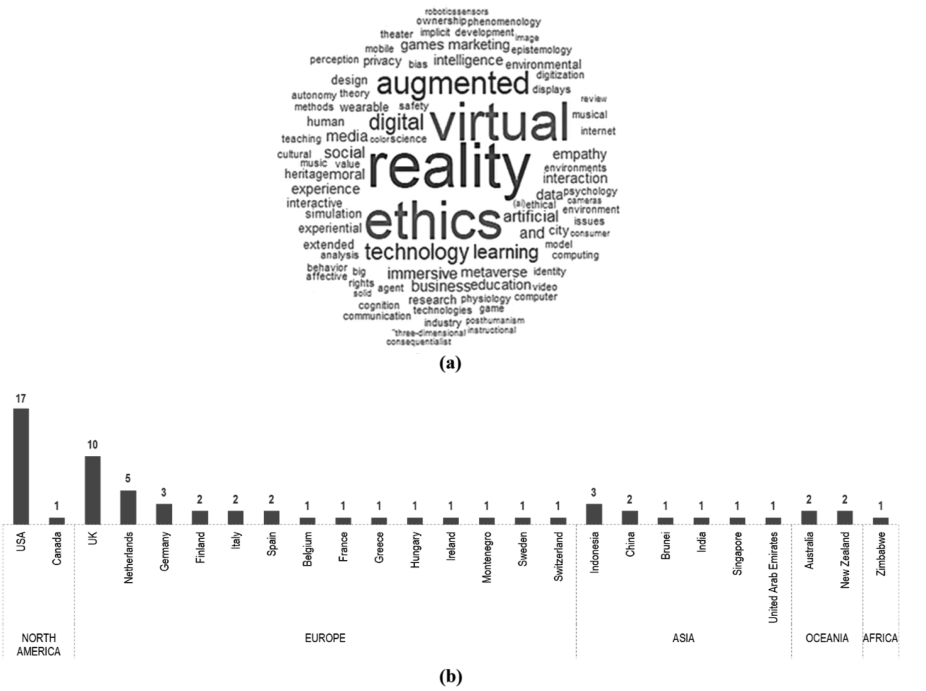

Figure 2. (A) Word cloud of author-provided keywords (b) Country-wise distribution of articles based on the affiliation of the first author's institute. **Source:** Authors' own work

The review process started with each author conducting an independent evaluation of the papers, assigning each paper to one or two initial themes based on their analysis. The research team then collaborated to identify the dominant theme for each paper. If disagreements arose, the authors met to discuss and resolve the discrepancies. They engaged in additional discussions to reach a consensus on the sub-themes and the overarching key theme (see Appendix B for illustrative text from the literature). This iterative approach relied on continuous dialogue among the authors, allowing for the refinement and adjustment of their thematic interpretations of each study (Tranfield *et al.*, 2003). This process yielded four broad themes that capture the essence of existing research at the intersection of ethics, the Metaverse, and its associated technologies (see Figure 3).

4. Thematic foci

Based on the themes identified in the previous section, we present the details of each theme along with its associated sub-themes, drawing on relevant literature from the corpus (see Appendix C for detailed discussions on each of these themes and sub-themes).

5. Conceptual framework

In this section, we elaborate on the three-tier conceptual framework discussing ethical concerns emerging from use cases of the Metaverse and associated technologies, as well as the boundary conditions that attenuate the consequences that may arise from neglecting these ethical concerns (see Figure 4). Subsequently, we suggest theoretical perspectives grounded in general ethical theories.

5.1 Ethical concerns

The Metaverse enables a variety of social (macro), organizational (meso), and individual (micro) use cases. At the societal level, we contend that in line with concerns over societal

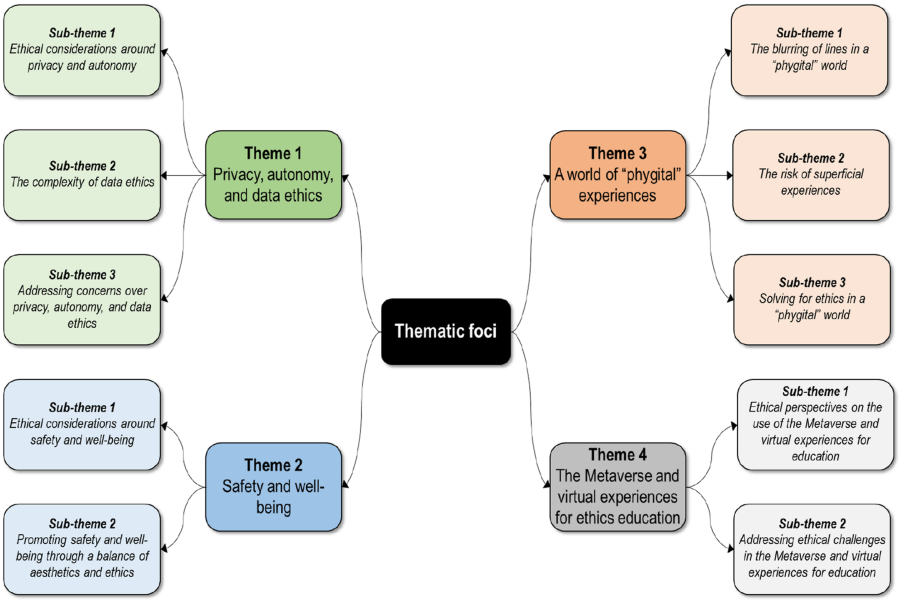

Figure 3. Thematic manifestations. **Source:** Authors' own work

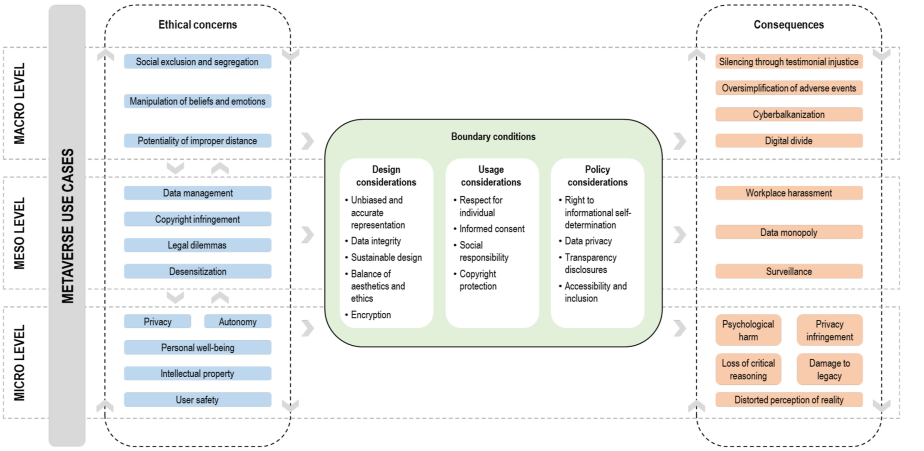

Figure 4. Conceptual framework. **Note**: Chevrons within "Ethical concerns" and "Consequences" signify the interconnectedness of concerns and consequences, which may span across macro, meso, and micro levels. The arrows extending from "Ethical concerns" to "Consequences" represent the resultant outcomes stemming from ethical violations, while the boundary conditions may serve to attenuate their impact. **Source:** Authors' own work

exclusion and segregation that manifest in digital cities (Komatina and Jašarović, 2020), similar concerns also emerge in the Metaverse. Given the possibility that not everyone will have access to the underlying technology, the Metaverse may exacerbate the current digital gap and social disparities (Sharma, 2022). Likewise, VR technologies could be used maliciously to manipulate beliefs and emotions (Spiegel, 2018), with concerns voiced over the Metaverse further polarizing societies (Canales, 2021). In addition, literature raises concerns about the potential loss of perspective in VR settings in which a narcissistic reflection of one's own experience may become the basis for moral reaction (Nash, 2018).

As organizations use the Metaverse, we believe four significant ethical challenges will emerge. First, data management is a crucial component of ethical compliance in smart workplaces (Segkouli *et al.*, 2023) and must be extended to the Metaverse environment. This is especially important given that real-time data may be incorporated into the Metaverse via streaming services (Chaimy, 2022). Second, in light of the digitalization of our settings, copyrights must be secured, and infringements must be prevented (Royakkers *et al.*, 2018). Non-fungible token (NFT) trading systems, for instance, enable peer-to-peer trading of digital assets, enabling artists to generate revenue by exchanging digitized versions of songs and merchandise without relying on record companies and distributors (Kim and Chakraborty, 2024; Turchet, 2023). However, these NFTs present additional copyright issues, as copyright owners' authorization is required before using their assets (e.g., trademark) on a digital object in the Metaverse (Ramos, 2022). Third, Metaverses present a variety of legal issues that extend beyond copyrights and include compliance with regional data protection regulations and intellectual property protection (Turchet, 2023). Lastly, the concern over desensitization as a result of engaging in VR environments (Kenwright, 2018) is an ethical issue that we believe applies to the Metaverse as well. Organizations (e.g., gaming platforms) need to consider this since virtual experiences such as violence may alter cognitive, affective and behavioral processes, and lead to desensitization.

At the individual level, immersive environments pose a threat to the privacy and autonomy of users (O'Brolcháin *et al.*, 2016), while safety and personal well-being also emerge as concerns since frequent VR users may develop a distorted perception of reality and ignore their physical and social environs (Royakkers *et al.*, 2018). Intellectual property gains significance in the

Metaverse in circumstances such as the musical Metaverse, where ownership rights are essential for monetizing digital music assets. While such ecosystems allow artists to generate revenue through NFTs by trading digital versions of their songs and merchandise without depending on record labels and distributors, ownership rights must be protected (Turchet, 2023).

In addition, we contend that ethical concerns are interlinked across all three levels. For instance, when individuals are concerned about privacy and autonomy, these concerns can extend to societal-level ethical issues regarding the possibility of inappropriate intrusion in VR environments. Likewise, ethical concerns about protecting intellectual property at the level of individuals can lead to firm-level challenges due to copyright infringement. Similarly, apprehensions regarding desensitization resulting from extended immersion in VR settings can lead to changes in cognitive functions. This, in turn, amplifies ethical concerns at both societal and individual levels due to distorted beliefs and the potential threat to personal well-being caused by the impact on cognitive processes.

5.2 Consequences

The exploitation of the Metaverse may result in a variety of outcomes if ethical considerations are disregarded. At the social level, immersive experiences that permit silencing other AR users may result in testimonial injustice since the muted speaker cannot fully express their opinions in verbal discourse (Turner, 2022). Similarly, ethical issues in war games that provide an immersive experience may result in a negative experience with the oversimplification of adverse events such as wars (Del-Moral and RodrÍguez-GonzÁlez, 2020). In contrast, VR environments in social networks risk creating filter bubbles and cyberbalkanization (O'Brolcháin *et al.*, 2016), which can lead to opinion polarization (Chan and Fu, 2017). Similarly, the inaccessibility of technology that powers the Metaverse to all segments of society might exacerbate the existing digital divide (Sharma, 2022).

At the organizational level, a primary concern is the propensity for harassment due to the technology's abuse (Basu, 2021; Wiederhold, 2022). Also, while blockchain has several uses in the Metaverse (Huynh-The *et al.*, 2023) and may be utilized to promote stakeholder interests through increased governance, it could be used for surveillance, exploited by market players to create a dominant market position and establish a data monopoly (Tan and Salo, 2023).

At the individual level, the technologies that enable the Metaverse might have a variety of repercussions, including psychological injury due to unethical behavior and a skewed impression of reality owing to frequent usage of VR technology (Royakkers *et al.*, 2018). Similarly, AR tends to invade privacy and personal freedom (Stockinger, 2015). Likewise, when technological advancements such as 360-degree videos aim to increase audiences' ethical engagement with news stories, the danger lies in the audience believing that the footage is sufficiently engaging without the need for further investigation into the news story (Palmer, 2020), resulting in a loss of critical reasoning. When virtual reanimations recreate the dead, they disenfranchise the departed by replicating their physical likenesses but disposing of their identities and minds that previously inhabited them (Stein, 2021), which may represent a threat to the person's legacy (Öhman and Floridi, 2018; Stein, 2021).

Lastly, we contend that consequences stemming from neglecting ethical considerations can extend across macro, meso, and micro levels. For instance, the macro-level ramifications of cyberbalkanization and the formation of filter bubbles within VR settings lead to restricted information availability, potentially hindering individuals' critical reasoning abilities due to the narrow scope of available information (Habibi, 2020). Likewise, approaches concerning surveillance within workplaces may violate personal privacy, contingent upon the handling of gathered data.

5.3 Boundary conditions

The boundary conditions highlight aspects that attenuate the consequences arising from ethical issues within the Metaverse. We draw on insights from the reviewed studies and other

discussions surrounding the Metaverse and its foundational technologies to establish these conditions. Based on this, we propose three distinct factors crucial to mitigating the aforementioned consequences emerging from ethical deviances in the Metaverse.

Firstly, regarding design considerations, the Metaverse's parallel virtual world affords designers a significant opportunity to create an ethical Metaverse (Goldman, 2022). In this setting, organizations must embrace an ethical mindset and culture, assuring data veracity, transparency, and privacy protection during the design phase and avoiding possible biases such as algorithmic, racial, ideological, and gender prejudices throughout the development phase (Dwivedi *et al.*, 2021). Artists involved in 3D modeling may delete, add, or edit details for various reasons in the context of 3D reconstructions, given the necessity to find a balance between accuracy, details, and visualization performance (Lu *et al.*, 2023). Since such endeavors to provide a genuine experience may result in divergence from guidelines (Lu *et al.*, 2023), we argue that designs for the Metaverse must balance ethics and aesthetics. Additionally, in the context of VR, encryption is core to protecting user privacy (O'Brolcháin *et al.*, 2016), and we extend this to the Metaverse. Moreover, despite technological capabilities enabling the recreation of humans in various virtual contexts, protecting people's identities is a fundamental criterion for preserving their dignity (Stein, 2021). Lastly, while considerations of embracing sustainability in the Metaverse have been rare in the literature, some (e.g., Wang, 2022) have highlighted the necessity for digital sustainability, particularly emphasizing safety, privacy, and justice by design and systems developed for trust and safety.

Secondly, regarding usage considerations, the right to privacy is a vital feature of human dignity that must be at the core of digital ethics (Floridi, 2016). Additionally, when VR environments include touch, the ethical necessity of consent must be considered (Ley and Rambukkana, 2021). Certain use cases, such as the musical Metaverse focused on musical activities, bring ownership and copyrights of artists to the fore (Turchet, 2023), and users must be mindful of ownership rights before engaging with digital assets on such platforms. In light of the ethical concern of social exclusion and social segregation, as a large segment of the world's population still lacks a basic standard of living and the technological means to participate in a virtual community (Komatina and Jašarović, 2020), we argue that users of Metaverse platforms must demonstrate social responsibility.

Thirdly, policy considerations can significantly contribute to establishing ethical boundaries for the Metaverse. Given the likelihood of VR settings resurrecting the dead, extending an individual's right to informational self-determination beyond death is crucial, especially considering the enduring nature of digital data in contemporary times (Buitelaar, 2017; Stein, 2021). While a utilitarian perspective might suggest that firms may incur an ethical risk by embracing the Metaverse, a deontological stance emphasizes the need to ensure that data privacy is safeguarded and transparency is offered to allay the concerns of users (Anshari *et al.*, 2022). Therefore, we argue that privacy and openness must be incorporated into policy considerations. Lastly, considering ethical concerns of honesty, authenticity, accessibility, long-term considerations of the heritage sector in the context of 3D reconstructions (Khunti, 2018), and problems of social exclusion in the context of digital cities (Komatina and Jašarović, 2020), we argue that these considerations should also be embedded in Metaverses through accessibility and inclusion.

5.4 Exploring theoretical perspectives

Several studies in our review explored theories outside the realm of ethics, such as the technology acceptance model (Jagger *et al.*, 2016; Matsika and Zhou, 2021). Here, we first explore ethical theories to guide assessments in the Metaverse and then discuss additional perspectives.

Consequentialism and deontology are two notable ethical theories prominently featured in the discussions around ethical considerations in the Metaverse and associated technologies (Brey, 1999; Lee *et al.*, 2023a). Consequentialism posits that the right course of action is

determined by the outcome it produces. According to this theory, there are no absolute restrictions on actions, and the sole determinant of ethicality is the consequence of the action taken (Mason, 2009). Conversely, the deontological perspective asserts the existence of absolute rules that should be adhered to, even when the outcomes are unfavorable. This ethical framework maintains that certain actions must never be performed, regardless of the consequences they might yield (Mason, 2009).

Regarding ethical concerns within the Metaverse, the intricate, multi-level implications highlighted in the framework emphasize the futility of disregarding consequences. Simultaneously, welfare maximization within Metaverse experiences necessitates considering the methods used to achieve such objectives. This calls for a delicate equilibrium between the consequentialist and deontological ethical perspectives within Metaverse experiences. While achieving this balance may present challenges, other theories discussed in our collection of articles can assist in reconciling the conflicts between consequentialism and deontological lines of thought.

In this context, for instance, feminist ethics and feminist moral theory underline the necessity for enhanced inclusivity and the duty to ensure diverse perspectives are considered in arriving at a consensus. These frameworks prioritize moral considerations rooted in care and responsibility (Gigliotti, 1995). A more straightforward approach would involve basing ethical evaluations on the principle of equivalence, applying the same ethical standards to digital entities in the Metaverse as are applied to human individuals (Grinbaum and Adomaitis, 2022). On the contrary, employing self-distancing theory and reflecting from perspectives other than our own (Slater and Banakou, 2021) could present solutions for mitigating adverse impacts within virtual environments, including those in the Metaverse.

6. An agenda for future research through potential questions

Recent ethics research emphasizes the importance of research questions as a foundation for scholars to develop further the literature on a particular phenomenon (Stock *et al.*, 2024). Hence, we introduce a series of research questions to operationalize the proposed framework, laying the foundation for an actionable research agenda (see Appendix D for details on these research questions).

7. Discussion

We reviewed 64 studies at the intersection of ethics, the Metaverse, and associated technologies, identified key themes, developed a three-tier conceptual framework, and put forth an agenda for future research by proposing research questions. Cumulatively, this review addressed the research question posed at the outset, demonstrating how the extant literature on the Metaverse and associated technologies can inform and advance future research on ethical considerations in its design and implementation.

7.1 Implications for IS research

The study highlights ethical concerns that arise in the setting of the Metaverse with two implications for research at the intersection of IS and ethics [3]. Firstly, ethics has been largely overlooked in the IS discipline over the years, with a significant lack of research addressing the ethical aspects of IS (Rogerson *et al.*, 2019). Specifically, in the realm of emerging technologies like the Metaverse, while numerous positive use cases demonstrate its potential, IS researchers have consistently emphasized the importance of addressing potential risks, including ethical challenges arising within Metaverse environments (Cheng *et al.*, 2023). In this context, the study highlights that ethical issues emerging from the Metaverse are more extensive than those posed by foundational technologies such as AR/VR or blockchain in isolation. This highlights how the ever-evolving technology landscape can reshape ethical perspectives and reinforces the urgency of addressing critical ethical issues (Enriquez, 2021;

Rogerson, 2021). The study calls on scholars to prioritize ethical issues within the Metaverse as a dedicated area of inquiry, recognizing that these challenges may not only stem from its underlying technologies but also be amplified within the context of the Metaverse.

Secondly, addressing ethical issues in emerging technologies is inherently complex, making it impossible to fully anticipate all ethical implications (Stahl and Eke, 2024). Nevertheless, through a conceptual framework and future research agenda, this study emphasizes that the Metaverse raises significant ethical concerns with wide-ranging implications, but thoughtful designs, responsible usage, and robust policy considerations can mitigate potential adverse outcomes. By addressing these issues, the study responds to calls within IS research to investigate pathways for creating a safe and ethical Metaverse that prioritizes and promotes well-being (Dwivedi *et al.*, 2023). We contend that the ripple effects of ethical considerations highlighted in this review should prompt IS scholars to undertake comprehensive multi-level research exploring ethics across various tiers, while the research questions from this framework should guide further research efforts by initiating empirical studies focused on ethical concerns within the Metaverse, thereby advancing the framework.

7.2 Implications for practice

The study has three implications for practice. Firstly, the themes and conceptual framework provide IS practitioners with a holistic view of ethical issues in the Metaverse and associated technologies, as well as the repercussions of ethical deviance. At the heart of the Metaverse is the notion that these real-time, interactive environments will revolutionize human engagement. However, ethical breaches could undermine the safety of interactions and users within the Metaverse and hamper the widespread adoption of the technology (Li and Lalani, 2022). In this context, we offer useful insights to incorporate ethics into the design and development of Metaverse solutions. We hope this perspective will prompt designers to deeply introspect the ethical implications of their design choices (Goldman, 2022). In addition, the evolution of the Metaverse will make digital rights and ownership more tangible, subjecting designs to increased scrutiny. Furthermore, the potential for virtual mobs and protests in Metaverse environments may rise as they engage in digital vandalism to express their demands (Goldman, 2022). Given the increasing significance of designs within the Metaverse, the range of perspectives we provide on ethical considerations within these virtual environments should serve as a helpful resource for Metaverse designers, offering insights to integrate into their designs.

Secondly, the conceptual framework highlights that ethical issues in the Metaverse are multi-layered, encompassing organizational, social, and individual deviances and repercussions. We contend that this should nudge platform players to collaborate with various stakeholders in pursuing advanced Metaverse use cases since doing so would ensure a comprehensive ethical approach and minimize deviations. IS studies have long advocated for systems with more significant ethical considerations (Spiekermann *et al.*, 2022). Metaverse platform stakeholders responsible for establishing ethical guidelines within these immersive virtual realms must engage in collaborative deliberations with platform users and policymakers. Given the multi-faceted nature of these concerns and their cascading effects, as demonstrated by the framework, companies, governments, and civil societies must collaborate to address challenges to digital safety, ensuring that virtual environments do not jeopardize users' well-being.

Thirdly, our framework reinstates the significance of privacy and data management in the Metaverse. As the Metaverse becomes increasingly pervasive, it will expose new categories of personal data for processing. This could encompass facial gestures and other expressions that avatars might exhibit during interactions within the Metaverse (Lau, 2022). With AI regulations, such as the AI Act in the European Union, being introduced to complement the existing General Data Protection Regulation (GDPR), discussions around the handling of personal data are anticipated to intensify (Heikkilä, 2023; Vale, 2022), mainly due to the

novelties of the Metaverse. Therefore, safeguarding users' rights calls for a re-evaluation and potential revision of procedures related to informed consent for data processing (Lau, 2022). Specifically, the limitless nature of the Metaverse is likely to ignite debates over the application of geographic restrictions on data processing and movement within these virtual spaces. Consequently, as highlighted in this review, the ethical issues arising from insufficient data management practices may push policymakers to prioritize data privacy and protection on Metaverse platforms, prompting the redrafting of regulations to address these challenges.

7.3 Limitations and future research directions

Despite the usefulness of this review, it has limitations. Firstly, as per best practices, we excluded gray literature, such as conference proceedings, from the review. Considering the possibility of additional insights through such literature, future investigations may consider incorporating it into the evaluation process. Secondly, this review incorporates both empirical and non-empirical works. Future research must aim to undertake systematic reviews and meta-analyses to provide more robust support for our findings. Lastly, we reviewed the literature on the Metaverse, including its associated technologies, focusing on ethical concerns and applying thematic analysis to understand underlying themes comprehensively. Nevertheless, considering the broad ethical considerations they address, some studies could arguably align with multiple themes or sub-themes. Given the expanding body of work focused exclusively on the Metaverse, future reviews could focus on deriving ethical insights solely from this domain, employing other analytical approaches to derive a more nuanced understanding of the literature.

8. Conclusion

This study aimed to examine ethical considerations in the context of the Metaverse. Toward this, we reviewed 64 relevant publications in the context of ethics related to the Metaverse and associated technologies. We first uncovered the existing body of knowledge about the Metaverse and associated technologies that discuss ethical issues by providing descriptive statistics regarding research in the area. Then, we extracted four themes via thematic analysis and highlighted noteworthy insights. This discussion of themes and accompanying observations served as a foundation for developing a multi-layered conceptual framework and a set of research questions as part of an actionable future research agenda at the interface of the Metaverse and ethics. Overall, this review elevates the prominence of ethical considerations in the Metaverse, which we contend should motivate further research on ethics in Metaverse experiences.

Notes

1. This refers to the online publication year. However, citations in this article may refer to the later date when the article was published as part of a journal issue or conference proceedings.
2. We thank Referee #3 for this thought.
3. We thank Referee #1 for this thought.

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Supplementary material
The supplementary material for this article can be found online.

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