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Virtual influencers in the metaverse: Transformative advertising applications for social change and well-being

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ABSTRACT

This study explores the transformative potential of virtual influencers within metaverse environments as agents of social change and well-being in advertising. Employing a qualitative, multi-method approach – including case study analysis, semi-structured interviews, focus groups, and institutional analysis – this research examines how virtual influencers innovate advertising practices and advance inclusivity, sustainability, and mental health advocacy. Findings reveal that virtual influencers enable hyper-personalised, cross-platform, and gamified campaigns that foster engagement and representation among diverse audiences. However, challenges related to transparency, algorithmic bias, authenticity, and accessibility persist. The study underscores the need for ethical guidelines and continued methodological rigour to ensure that virtual influencers in the metaverse fulfil their promise as tools for transformative advertising and societal well-being.

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Introduction

Advertising has long been recognized as a powerful cultural force, shaping public narratives and profoundly influencing societal well-being (Gurrieri, Tuncay Zayer, and Coleman 2022). Traditionally, advertising has played a dual role: while it can perpetuate stereotypes and consumerism, it also holds the potential to promote positive social change and enhance collective well-being. In recent years, the rapid advancement of digital technologies – including augmented reality (AR), virtual reality (VR), artificial intelligence (AI), and the emergence of metaverse platforms – has dramatically expanded the capacity of advertising to catalyze social good (Allam et al. 2022). These technologies have transformed how brands engage with consumers and created new opportunities – and risks – for addressing complex societal challenges through innovative, immersive communication.

Among the most notable developments in this landscape is the rise of virtual influencers: AI-generated personas that interact with audiences across digital and metaverse environments. Unlike traditional influencers, virtual influencers are not constrained by physical or social limitations, enabling them to represent a broader spectrum of identities

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and to engage with audiences in highly personalized and immersive ways (Dondapati and Dehury 2024). Early research has examined the commercial and technological aspects of virtual influencers, such as their effectiveness in brand engagement and their technical design (Allam et al. 2022; Ameen, Hosany, and Taheri 2023). However, there remains a significant gap in understanding how virtual influencers can be strategically leveraged as agents of transformative social change – particularly concerning inclusivity, sustainability, and mental health – and what ethical, methodological, and practical challenges arise from their deployment in the metaverse (Gurrieri, Tuncay Zayer, and Coleman 2022).

Existing scholarship has tended to focus on the marketing potential and operational mechanisms of virtual influencers, often overlooking their broader societal implications and the nuanced ways they may reinforce or challenge existing inequalities (Allam et al. 2022). In particular, there is limited empirical research that critically examines (i) how virtual influencers are designed and deployed to advance (or hinder) inclusivity, sustainability, and mental health advocacy; (ii) the lived experiences and perceptions of diverse audiences engaging with these digital personas; (iii) the ethical tensions and unintended consequences, such as algorithmic bias, performative diversity, and digital exclusion, that accompany their use in immersive environments.

Furthermore, while transformative advertising research (TAR) has called for a more critical and multi-level analysis of advertising's role in societal well-being, few studies have integrated this framework with the emerging phenomenon of virtual influencers in the metaverse (Gurrieri, Tuncay Zayer, and Coleman 2022).

This study directly addresses these gaps by adopting a qualitative, multi-method approach to investigate the innovative practices and societal impacts of virtual influencers within metaverse advertising. Specifically, this research (i) examines how virtual influencers are reshaping advertising practices in the metaverse, with a focus on hyper-personalization, cross-platform storytelling, and gamification; (ii) analyzes their effects on inclusivity, sustainability, and mental health, drawing on the perspectives of campaign creators and diverse user groups; (iii) identifies the ethical and practical challenges – such as transparency, authenticity, algorithmic bias, and digital inequality – that complicate their transformative promise; and (iv) proposes actionable, evidence-based strategies for harnessing virtual influencers to address macro-social challenges and promote collective well-being.

By foregrounding these underexplored dimensions, this study advances the literature on transformative advertising and virtual influencers, offering theoretical insights and practical guidance for scholars, practitioners, and policymakers at the intersection of digital innovation and social good.

Literature review

Transformative advertising research framework

Transformative Advertising Research (TAR) has emerged as a significant subfield within advertising scholarship, aiming to examine and enhance the societal impacts of advertising. The TAR framework emphasizes the micro, meso, and macro institutional dynamics to reveal how advertising can foster well-being outcomes for individuals, institutions, and society (Gurrieri, Tuncay Zayer, and Coleman 2022). While TAR's multilevel approach is

widely recognized for its comprehensive scope, some scholars argue that its practical application is often challenged by the complex interplay of institutional actors and the persistent tension between commercial and social objectives (Dodds et al. 2024).

Rooted in institutional theory, TAR seeks to understand the transformational possibilities of advertising through the interactions between various institutional actors. The framework considers three key levels: (i) micro-level – individual actors and consumers; (ii) meso-level – advertising institutions and organizations; (iii) macro-level – broader socio-cultural forces and aggregate effects of advertising. By examining the intersections and interactions between these levels, TAR aims to reveal insights that can lead to better outcomes and enhanced well-being. However, critics note that the transformative potential of advertising is often constrained by entrenched industry norms and the performativity of ‘purpose-driven’ campaigns, which may prioritize brand image over substantive social impact (Nazir and Wani 2025). This raises concerns that some brands engage in ‘purpose-washing’, adopting the language of social change without enacting meaningful or lasting reforms (Fletcher-Brown et al. 2024).

The recent development of TAR coincides with the growing recognition of advertising’s potential to address global challenges, such as sustainability and social justice. This trend aligns with calls for businesses to integrate the United Nations Sustainable Development Goals (SDGs) into their strategies, positioning advertising as a vehicle for positive societal change (Fallah Shayan et al. 2022; Whittingham et al. 2023). However, the literature also highlights the risk of ‘purpose-washing’ – where campaigns superficially adopt social causes without meaningful structure change – raising questions about authenticity and the long-term credibility of transformative initiatives (Fletcher-Brown et al. 2024).

TAR acknowledges advertising’s dual capacity to help and harm consumer well-being. This nuanced perspective encourages researchers and practitioners to examine advertising practices and their societal impacts critically. For example, while some campaigns have demonstrated success in promoting sustainable practices and raising awareness about environmental issues (Campos et al. 2021), others have inadvertently reinforced stereotypes or excluded marginalized voices, revealing persistent gaps in inclusivity and representation (Kipnis et al. 2021). These tensions underscore the importance of interrogating the intended outcomes of transformative advertising but also its unintended consequences, such as the reproduction of social biases or the marginalization of vulnerable groups.

Collaboration among stakeholders – researchers, educators, managers, and policy-makers – is a cornerstone of TAR to foster ethical and impactful advertising strategies (Zayer, Gurrieri, and Coleman 2025). However, scholars caution that such collaboration can be undermined by power imbalances and commercial interests, which may limit the scope of genuine stakeholder engagement and the realization of systemic change (Dodds et al. 2024). Moreover, debates persist regarding whose voices are prioritized in these collaborative processes and whether marginalized communities are meaningfully included or merely symbolically represented.

As the field evolves, researchers are exploring new avenues for transformative advertising, including the potential of emerging technologies such as virtual influencers and metaverse environments to create positive social change (Nazir and Wani 2025). While these innovations promise greater inclusivity and engagement, they also introduce new

ethical challenges – such as algorithmic bias, lack of transparency, and questions about the authenticity of AI-generated personas. Recent studies suggest that the use of AI-generated diversity in advertising can sometimes backfire, with underrepresented consumers experiencing social identity threats or perceiving tokenism, ultimately leading to negative brand attitudes (Fletcher-Brown et al. 2024). Scholars have raised concerns that algorithmic systems, if not carefully designed and monitored, may perpetuate historical inequalities and embed subtle forms of discrimination into digital advertising practices (Kumar, Ashraf, and Nadeem 2024).

The Transformative Advertising Research framework provides a valuable foundation for understanding and enhancing advertising's role in fostering individual, institutional, and societal well-being. However, its application in digital and virtual contexts demands ongoing critical scrutiny. The literature reveals a need for more empirical research on the long-term societal effects of transformative advertising, greater attention to dissenting voices and adverse outcomes, and deeper integration of complementary theories – such as Technological Affordance Theory and Parasocial Interaction Theory – to broaden the field's conceptual depth and address unresolved ethical, methodological, and practical challenges. Ultimately, a more critical and reflexive approach is needed to ensure that transformative advertising lives up to its promise rather than simply reinforcing existing power structures or masking persistent inequalities.

Technological affordance Theory

Technological Affordance Theory provides a valuable lens for critically examining how the technical capabilities of virtual influencers shape user engagement, campaign outcomes, and broader advertising practices. Originating from Gibson's (1979) concept of 'affordances' – the actionable possibilities offered by an environment – this theory has been adapted to digital contexts to explore how technology both enables and constrains user behavior (Evans et al., 2017). In the case of virtual influencers, affordances such as adaptability, scalability, and cross-platform presence fundamentally transform the ways brands interact with audiences and pursue strategic objectives. However, scholars caution that these affordances are not inherently positive; instead, they are shaped by the intentions, biases, and limitations of those who design and deploy them (Fletcher-Brown et al. 2024).

Virtual influencers' adaptability is perhaps their most salient affordance. Unlike human influencers, these AI-generated personas can be instantaneously reprogrammed to reflect shifting brand values, respond to emerging social trends, or tailor their messaging to diverse audience segments (Raut, Chandel, and Mittal 2024). This flexibility enables brands to rapidly experiment with campaign narratives, optimize content for different cultural contexts, and maintain relevance in fast-evolving digital environments (Gammarano et al. 2025). However, this same adaptability raises concerns about authenticity and the risk of 'purpose drift', where virtual influencers may be perceived as opportunistically adopting causes or identities without genuine commitment (Sands et al. 2022). Critics argue that such flexibility can result in the performativity of diversity, where brands showcase diverse personas for reputational gain without addressing more profound structural inequalities or engaging authentically with marginalized communities (Fletcher-Brown et al. 2024).

Scalability is another critical affordance. Virtual influencers can simultaneously engage millions of users across multiple platforms, unconstrained by physical limitations or time zones (Ju, Kim, and Im 2024). This mass capacity, yet personalized, interaction allows brands to deploy hyper-targeted campaigns at an unprecedented scale, leveraging real-time analytics to refine messaging and maximize impact (E. Kim et al. 2024). However, the potential for hyper-personalization also introduces ethical dilemmas related to privacy, data exploitation, and the reinforcement of algorithmic echo chambers, as users may be exposed only to content that aligns with their existing preferences or biases (S. Kumar, Ashraf, and Nadeem 2024). Scholars have raised concerns that the data used to train these algorithms can perpetuate or even amplify historical biases, systematically excluding or stereotyping certain groups and undermining the promise of inclusivity (Fletcher-Brown et al. 2024).

The affordance of cross-platform integration further expands the reach and versatility of virtual influencers. Through seamless movement between social media, gaming, and metaverse environments, these digital entities can construct cohesive brand narratives and facilitate continuous engagement across the consumer journey (Dwivedi et al. 2022). While this integration enhances user immersion and campaign coherence, it also complicates efforts to ensure transparency and informed consent, as users may not always recognize when they are interacting with a virtual influencer or how their data is being utilized (Mertens and Goetghebuer 2024). This lack of transparency can erode trust and further blur the line between authentic engagement and strategic manipulation.

Critically, Technological Affordance Theory also draws attention to the constraints and unintended consequences of virtual influencer deployment. While their technical capabilities can foster inclusivity and representation, they can also perpetuate exclusion or bias if not thoughtfully designed. For example, the same algorithms that enable diverse avatar customization may inadvertently reinforce stereotypes or marginalize certain groups if training data or design choices are not inclusive (Fletcher-Brown et al. 2024). Moreover, the ease with which brands or third parties can manipulate virtual influencers raises questions about agency, accountability, and the erosion of trust in digital advertising (Nazir and Wani 2025). Critics emphasize the need for ongoing scrutiny of the power dynamics embedded in these technologies, warning that affordances can be leveraged to serve commercial interests at the expense of genuine consumer empowerment and well-being.

Applying Technological Affordance Theory to virtual influencers reveals a complex interplay of opportunities and challenges. While adaptability, scalability, and cross-platform integration offer new avenues for engagement and innovation, they also necessitate critical reflection on issues of authenticity, privacy, inclusivity, and ethical responsibility. As the technical affordances of virtual influences continue to evolve, ongoing research and stakeholder dialogue will be essential to ensure these tools are leveraged for commercial success and societal well-being.

Parasocial interaction Theory

Parasocial Interaction Theory (PSI) offers a powerful lens for understanding the unique, one-sided relationship that audiences form with virtual influencers and how these differ from traditional influencer dynamics. Initially developed by Horton and Wohl (1956), PSI

described the illusion of intimacy and friendship that media consumers experience with mediated personas despite the lack of real reciprocal interaction. In the context of virtual influencers, PSI has gained renewed relevance, as these AI-generated entities are designed to foster engagement and emotional connection while lacking genuine human subjectivity (Andrejevic & Volcic, 2025).

Research suggests that virtual influencers are particularly adept at cultivating parasocial relationships, often surpassing their human counterparts in their ability to maintain consistent, always available, and highly responsive engagement (Ju, Kim, and Im 2024; E. Kim et al. 2024). Their algorithmically curated personalities and interactions can be tailored to individual users' preferences, creating a sense of intimacy and relatability that is scalable and persistent (Dwivedi et al. 2022). Unlike traditional influencers, whose personal lives and behaviors can disrupt the carefully managed brand narrative, virtual influencers remain under the complete control of their creators, allowing brands to minimize reputational risk and maximize message coherence (Gammarano et al. 2025).

However, the simulated nature of these relationships raises important ethical and psychological questions. While users may experience genuine emotional bonds with virtual influencers, these connections are ultimately unidirectional and constructed for commercial purposes (Mertens and Goetghebuer 2024). Some scholars argue that such relationships can blur the line between authentic engagement and manipulation, as audiences may not always recognize the artificiality of the persona or the strategic intent behind their interactions (Sands et al. 2022). This blurring of authenticity and manipulation is particularly salient in the metaverse, where the immersive environment can intensify feelings of presence and attachment, potentially amplifying the positive and negative effects of parasocial engagement (Mansoor et al., 2024).

Critically, the construction of virtual influencer personas is shaped by algorithmic and commercial logic, which can introduce biases and reinforce stereotypes. The data and design choices used to create these AI entities may systematically exclude or misrepresent certain groups, raising questions about the authenticity and inclusivity of the identities being presented (Fletcher-Brown et al. 2024). There is an ongoing debate about whether the apparent diversity and relatability of virtual influencers are substantive or merely performative – crafted to appeal to a broad audience while avoiding meaningful engagement with the lived experiences of marginalized communities.

The dynamics of parasocial interaction with virtual influencers also differ across demographic groups and cultural contexts. Younger and digitally native audiences may be more comfortable with, or even prefer, relationships with virtual entities, viewing them as innovative and relatable (E. Kim et al. 2024). However, some users may experience dissonance or skepticism, especially when the boundary between human and artificial is ambiguous or when the influencer's identity is perceived as opportunistically constructed rather than authentically grounded (Fletcher-Brown et al. 2024). This ambiguity can undermine trust and raise concerns about the exploitation of users' emotional vulnerabilities for commercial gain.

Furthermore, while parasocial relationships with traditional influencers can foster community and social connection, those with virtual influencers may be more individualized and less likely to translate into real-world social capital. The individualized nature of these relationships raises questions about the long-term implications for social well-being and the potential for increased feelings of isolation or disconnection, especially among

vulnerable users (Dwivedi et al. 2022). Critics argue that the proliferation of virtual influencers risks normalizing one-sided, commercially mediated relationships at the expense of genuine human connection and collective engagement.

Parasocial Interaction Theory reveals the strategic potential and the ethical complexities of virtual influencer engagement. While these digital personas can foster deep emotional bonds and drive brand loyalty, they also challenge conventional notions of authenticity, reciprocity, and social connection. As virtual influencers become increasingly prevalent in advertising and the metaverse, ongoing research and ethical reflection will be essential to ensure that parasocial relationships contribute to, rather than undermine, individual and societal well-being.

Virtual influencers in advertising

Virtual influencers have emerged as a significant phenomenon in advertising, representing AI-generated personas operating within digital environments such as social media and the metaverse (Gerlich 2023). These artificial entities have demonstrated a remarkable ability to engage audiences and promote brands while addressing important ethical considerations and challenges for the advertising industry (D. Kim and Wang 2023).

Unlike traditional influencers, virtual influencers are computer-generated characters meticulously designed to mimic the appearance and behavior of human influencers. Their customizable personalities are 24/7 (Gammarano et al. 2025; Ju, Kim, and Im 2024). Proponents argue that these features reduce risks associated with human influencers – such as scandals or inconsistent messaging – and allow brands to exert greater creative control (Ekinici, Dam, and Buckle 2025). However, this very malleability raises questions about authenticity and the commodification of identity, as brands can engineer personas to align with shifting consumer trends or corporate interests, sometimes at the expense of genuine representation. Critics contend that this flexibility can lead to the performativity of diversity, where brands showcase superficially diverse personas for reputational gain rather than as a reflection of substantive values or community engagement (Fletcher-Brown et al. 2024).

Research suggests that virtual influencers can effectively promote brands and causes, especially among younger and digitally native audiences. Their perceived authenticity and reliability are often cited as assets for advancing inclusivity and social causes (Xu & Chang, 2023). For example, brands have leveraged virtual influencers to distance themselves from prior controversies and to craft new, socially conscious brand identities (Jin and Viswanathan 2025). However, this optimistic narrative is complicated by evidence of 'performative inclusivity' – where diversity is simulated rather than substantively enacted, potentially undermining trust among discerning consumers. Scholars have raised concerns that such representation, when not grounded in authentic narratives or community involvement, risks being perceived as tokenistic and may reinforce rather than challenge existing stereotypes (Fletcher-Brown et al. 2024).

A persistent challenge lies in the transparency and disclosure practices surrounding virtual influencers. Many accounts are intentionally designed to be indistinguishable from real humans, which can mislead users about the nature of their interactions (Mertens and Goetghebuer 2024; Sands et al. 2022). This ambiguity raises ethical concerns, as followers may not realize they are engaging with algorithmically controlled entities rather than

autonomous individuals. Calls for more transparent disclosure and ethical guidelines are growing, yet industry standards remain inconsistent (McGuire & De Cremer, 2023). This lack of transparency risks consumer deception and erodes trust in digital advertising more broadly.

The visual perfection often embodied by virtual influencers introduces further ethical dilemmas. Computer-generated models typically display flawless, idealized appearances, which can reinforce unrealistic beauty standards and exacerbate self-esteem and body image issues, particularly among vulnerable users (Ekinci, Dam, and Buckle 2025). While some campaigns have attempted to introduce more diverse and humanized representations, research cautions that AI-generated diversity can backfire: underrepresented consumers may experience social identity threats or perceived tokenism, leading to negative brand attitudes (Fletcher-Brown et al. 2024; Sands et al. 2024). These findings underscore the importance of moving beyond surface-level diversity to foster genuine inclusion and avoid the pitfalls of 'diversity-washing'.

Beyond representation, virtual influencers also surface concerns about fairness, algorithmic bias, and misinformation. The algorithms powering these personas can inadvertently perpetuate existing biases present in training data or design choices, challenging the notion that AI-driven advertising is inherently neutral or objective (Kumar, Ashraf, and Nadeem 2024). Furthermore, the potential for virtual influencers to spread misinformation – intentionally or otherwise – underscores the need for robust oversight, accountability, and transparent content moderation.

As the field evolves, researchers and practitioners are exploring new applications and frontiers for virtual influencers, from rapid brand localization to the integration of holographic technology and the blending of virtual and physical experiences (Dwivedi et al. 2022). However, these innovations heighten the urgency for clear regulatory frameworks and ethical standards to ensure consumer protection and responsible industry practice. Scholars emphasize that the transformative potential of virtual influencers will only be realized if these tools are deployed with a commitment to transparency, authenticity, and inclusivity rather than as mechanisms for superficial engagement or unchecked commercial gain.

While virtual influencers offer exciting possibilities for innovation and engagement in advertising, their adoption necessitates a critical and balanced approach. The literature highlights the importance of transparency, authenticity, and inclusivity while also foregrounding the risks of bias, performativity, and consumer deception. As AI technology continues to advance, the advertising industry must prioritize the development and enforcement of ethical guidelines and best practices, ensuring that virtual influencers serve as agents of positive social change rather than sources of new inequities or harms.

Metaverse business applications

The metaverse represents a new frontier for business applications, offering immersive platforms where brands can interact with consumers in novel and engaging ways. Defined as a collective virtual shared space resulting from the convergence of virtually enhanced physical reality and persistent virtual space (Papadopoulos et al. 2025), the metaverse is widely celebrated for its potential to revolutionize marketing, e-commerce, and customer engagement. However, as this digital ecosystem evolves, it also surfaces

complex ethical, social, and practical challenges that demand critical scrutiny (Christou et al., 2025).

A primary advantage of metaverse business applications is the ability to create highly immersive brand experiences. Companies are increasingly designing virtual storefronts, hosting product launches, and developing interactive advertising campaigns that leverage dynamic billboards, virtual try-one, and personalized avatars (Rane, Choudhary, and Rane 2023b). Notably, brands such as Gucci and Nike have pioneered virtual environments where users can browse digital products, attend branded events, and interact with AI-powered brand ambassadors in real-time. While these innovations deepen customer engagement and offer new forms of value creation, they also raise questions about the authenticity of brand-consumer relationships and the potential commodification of user data (Marchowska-Raza & Rowley, 2024). Critics argue that the immersive and persistent nature of these environments may blur the boundaries between genuine connection and commercial manipulation, with users' behavioral and psychological data increasingly leveraged for targeted advertising and profit.

The metaverse is also transforming e-commerce by enabling virtual showrooms and customizable shopping experiences. Users can explore products in unprecedented detail, participate in virtual auctions, and interact with brands through tailored interfaces (Ntumba, Aguayo, and Maina 2023). This shift towards 'phygital' commerce – blending physical and digital interactions – presents businesses with new revenue streams and opportunities to strengthen customer loyalty (Silva and Cachinho 2021). However, critics caution that the increasing reliance on immersive technologies may exacerbate digital divides, privileging those with access to advanced hardware and high-speed internet while marginalizing others (Farooq & Bashir, 2025). This raises concerns about equitable access and the risk of reproducing or amplifying offline social inequalities within virtual spaces.

A unique feature of the metaverse is its capacity for experimentation and innovation in advertising. Companies can test marketing strategies in simulated environments, gather real-time consumer feedback, and deploy AI-driven analytics to optimize engagement (Kumar, Ashraf, and Nadeem 2024). Gamified marketing campaigns, for instance, embed brand messages into interactive experiences, fostering deeper emotional connections with audiences (Chan 2023). However, as recent research notes, these strategies can also blur the boundaries between entertainment and persuasion, raising concerns about the transparency of advertising and the potential for manipulative practices (Rubin, 2022). There is an ongoing debate about how much agency users truly have in these environments and whether the affordances of the metaverse are being leveraged to empower consumers or primarily to serve commercial interests.

Despite these opportunities, significant challenges and ethical considerations persist. Privacy and data security are paramount, as the immersive nature of the metaverse requires extensive data collection, including biometric, behavioral, and psychological metrics (Al Falahi et al. 2024). Without robust safeguards, this data is vulnerable to third-party exploitation, targeted advertising, and even manipulation (Hacker 2023). The literature highlights the urgent need for clear regulatory frameworks and industry standards to protect user privacy and ensure responsible data stewardship (Oluwabunmi Layode et al., 2024). The potential for algorithmic bias in data-driven personalization further

complicates these issues, as it can reinforce stereotypes or systematically disadvantage certain user groups.

Accessibility remains a critical yet often overlooked issue. Many metaverse environments inadvertently exclude users with disabilities, relying heavily on visual cues or specific motor skills for navigation. Such design choices create barriers for individuals with visual or mobility impairments, underscoring the necessity of proactive solutions such as voice controls, haptic feedback, and inclusive design principles (Dudley et al. 2023). The literature warns that unless inclusivity is prioritized from the outset, the metaverse risks becoming yet another space where marginalized groups are underrepresented or excluded. Addressing these gaps is essential for ensuring equitable access and preventing the reproduction of offline inequalities in virtual spaces.

Mental health impacts are also an emerging area of concern. The heightened sense of presence in virtual environments can intensify the psychological impact of online harassment, exacerbate digital addiction, and blur the boundaries between online and offline identities – especially among users who strongly identify with their avatars (Dwivedi et al., 2023). While the metaverse offers new opportunities for social connection and self-expression, it also demands vigilant attention to user well-being and the development of support mechanisms for vulnerable populations. Scholars have raised alarms about the permissibility of well-being initiatives in the metaverse, cautioning that superficial campaigns may mask deeper systemic issues related to digital harm and exclusion.

As businesses explore metaverse applications, they must navigate these challenges while adhering to ethical marketing practices. The use of AI-driven personalization and virtual influencers – though potentially effective – raises further questions about authenticity, transparency, and the perpetuation of unrealistic standards or biases (Raut, Chandel, and Mittal 2024). Recent scholarship emphasizes that the transformative potential of the metaverse will only be realized if industry stakeholders commit to ongoing research, ethical guidelines, and inclusive innovation (Al-Kfairy et al., 2024). Without such commitments, there is a risk that the metaverse will serve as a platform for the performative display of diversity and innovation rather than as a site for genuine social transformation.

Metaverse business applications offer transformative opportunities to engage with consumers in unprecedented ways. However, realizing this potential requires a critical approach that foregrounds ethical implications, addresses privacy and accessibility challenges, and prioritizes mental health and well-being. As technology and practice evolve, the future of metaverse business applications will depend on the industry's willingness to balance commercial ambition with social responsibility and consumer protection (Anshari et al., 2022).

Methodology

This study adopted a qualitative, multi-method research design to provide a rigorous and nuanced examination of how virtual influencers in the metaverse transform advertising practices, focusing on inclusivity, sustainability, and mental health (Dodgson 2017). The methodology was carefully structured to ensure transparency, depth, and credibility, directly addressing the need for detailed reporting of procedural choices and actual implementation.

Case study analysis

The first strand of the research involved an in-depth case study analysis (Martinsuo and Huemann 2021). Purposeful sampling was selected as the most appropriate method to identify information-rich cases that could illuminate the transformative potential of virtual influencers across diverse social issues. This approach enabled the study to focus on campaigns with maximum relevance to the research questions rather than aiming for statistical generalizability.

Case selection process

An initial pool of 18 metaverse advertising campaigns was identified through systematic searches of industry reports, award listings, and social media analytics platforms. Campaigns were screened and shortlisted using the following criteria:

- (a) Visibility – defined as achieving at least 50,000 cumulative views, likes, and/or shares across platforms and/or coverage in at least two major media outlets. Social media analytics tools and media monitoring services were used to quantify this metric.
- (b) The Central Use of Virtual Influencers – the campaign had to feature a virtual influencer as a core advocate, not merely as a supporting element.
- (c) Social issue Focus – campaigns were required to have a clear emphasis on a macro-social issue – specifically, gender equity, environmental sustainability, or mental health.
- (d) Platform Diversity – preference was given to campaigns spanning multiple digital platforms (e.g., Instagram, TikTok, VR/Metaverse environments) to capture cross-platform dynamics.
- (e) Recency – only campaigns launched within the past two years were considered to ensure contemporary relevance.

To maximize thematic breadth and comparative value, the final selection was intentionally stratified to cover three distinct social issues: sustainability, gender equity, and mental health. After applying these criteria, three campaigns – EcoNext, SheCodes, and Mindful Moments – were selected as the most suitable for in-depth analysis. This process is summarized in Table 1.

Data collection and analysis

Data for each case were collected from campaign videos, social media posts, press releases, and user-generated content such as comments and shares. Thematic analysis followed Braun and Clarke's (2006) six-step process, guided by the Transformative

Table 1. Rationale for case selection.

Campaign Name	Platform(s)	Social Issue Focus	Rationale for Selection
EcoNext	TikTok, Metaverse	Sustainability	High Engagement, Innovative Gamification
SheCodes	Instagram, VR	Gender Equity	Cross-platform Narrative, Technology-driven Storytelling
Mindful Moments	Metaverse	Mental Health	Real-time Interaction, Strong Appeal to Youth Audience

Advertising Research (TAR) framework. Codes were developed inductively (emerging from the data) and deductively (informed by theory and research questions). Coding reliability was ensured through double-coding by two researchers and iterative team discussions. The main coding categories included innovation, inclusivity, sustainability messaging, mental health discourse, authenticity, and audience engagement.

Semi-structured interviews

The second strand comprised semi-structured interviews with twelve key informants, including advertising professionals, campaign managers, and developers with direct experience designing and implementing virtual influencer campaigns (Irvine, Drew, and Sainsbury 2013). Participants were recruited through industry associations and professional networks to ensure relevant expertise and diversity of perspectives. Each interview lasted between 60 and 90 minutes and was conducted via secure video conferencing. The interview protocol explored the rationale for using virtual influencers, perceived benefits and challenges, strategies for fostering authenticity and engagement, and ethical considerations encountered during campaign development. All interviews were audio-recorded with participant consent and transcribed verbatim. Thematic coding was performed using NVivo software, with codes through iterative team discussions to ensure reliability and analytic depth (Allsop et al. 2022). Coding consistency was maintained through iterative team discussions and periodic cross-checking.

Focus groups

The third strand of the methodology involved organizing three focus groups, each comprising six to eight participants (Prior 2018). Focus group participants were purposefully sampled to reflect diversity in age (18–55 years), gender, ethnicity, and digital literacy. Recruitment was conducted via online advertisements and community outreach, with screening to ensure prior exposure to virtual influencer campaigns in the metaverse. The rationale for conducting three groups was to achieve data saturation and ensure a range of perspectives across demographic variables. Each session, which lasted between 90 and 120 minutes, was moderated by a trained facilitator using a semi-structured discussion guide. Topics included participants' perceptions of virtual influencers, experiences with metaverse-based advertising, and attitudes toward inclusivity, authenticity, and social impact. All sessions were video-recorded and transcribed. Comparative thematic analysis was then used to identify similarities and differences in perceptions across demographic groups, particularly how virtual influencers shaped feelings of representation and engagement (Braun and Clarke 2023).

Institutional analysis

An institutional analysis was also conducted to contextualize these findings within the broader advertising ecosystem (Bingham 2023). This analysis closely examined industry policy documents, platform governance statements, and ethical guidelines by advertising regulatory bodies. The analysis mapped stakeholder interactions and decision-making processes using

the TAR micro-meso-macro framework, providing insight into how institutional norms and policies influence the deployment and reception of virtual influencers in metaverse campaigns.

Methodological rigor and triangulation

Throughout the research process, several strategies were implemented to ensure methodological rigor. Triangulation was achieved by integrating multiple qualitative methods – case studies, interviews, focus groups, and institutional analysis – thereby enhancing the credibility and robustness of the findings (Meydan and Akkaş 2024). For example, themes identified in campaign analysis were cross-checked against interview insights and focus group responses; notably, the theme of ‘authenticity’ emerged independently across all three data sources, reinforcing its centrality to the research questions. The research team maintained reflexive journals, documenting assumptions, positionality, and potential biases, and regularly debriefed to discuss emerging insights and methodological challenges. An audit trail was established, with detailed records for all stages of the research process, including transparency and replicability.

Ethical considerations

Ethical considerations were prioritized at every stage: the study received an institutional ethics approach, informed consent was obtained from all participants, and data were anonymized to protect confidentiality (Reid et al. 2018). Participants were also informed of their right to withdraw from the study without penalty.

Results

Innovation in advertising practices

Descriptive findings

The thematic analysis of case studies, interviews, and focus groups identified four major innovations in the use of virtual influencers within metaverse advertising campaigns: hyper-personalization, cross-platform narrative building, real-time interaction, and the gamification of social causes. These themes were consistently observed across all three campaigns, mentioned by the interviewees, and discussed in the focus groups (see Table 2).

Table 2. Innovation themes observation.

Innovation Theme	Campaigns Observed	Interviewees Mentioned	Focus Group Discussed
Hyper-personalization	3/3	11/12	3/3
Cross-platform Narrative	3/3	10/12	3/3
Real-time Interaction	3/3	9/12	2/3
Gamification of Social Causes	2/3	8/12	2/3

Hyper-personalization

Data shows that hyper-personalization is a defining feature of successful virtual influencer campaigns. Brands leveraged the flexibility of virtual influencers to tailor messages to specific audiences rapidly. For example, in the EcoNext campaign, the virtual influencer Ava Green was programmed to address environmental issues in ways that resonated with different demographic groups. One campaign manager explained, 'With Ava, we can instantly modify her appearance, language, and tone to connect with teens on TikTok or with professionals on LinkedIn. This kind of customization is not possible with human influencers at scale'. Focus group participants also noticed this adaptability, with one participant commenting, 'It is like she knows what matters to me. When I saw her talk about plastic waste in my city, it felt personal and made me pay more attention'. While personalization is a well-established trend in digital marketing (Bozkurt, Uğursoy, and Meral 2024), our findings show that virtual influencers enable an unprecedented speed and granularity of message adaptation, including real-time changes to identify features (e.g., language, appearance, pronouns) that are not feasible with human influencers.

Cross-platform narrative building

Our analysis found that virtual influences frequently appeared across multiple digital spaces, creating cohesive and immersive storylines. In the SheCodes campaign, the virtual influencer Maya seamlessly transitioned between Instagram, VR coding workshops, and metaverse events, maintaining a consistent narrative about women in technology. An advertising professional in the campaign noted, 'Maya's story did not just live on one channel. We designed her journey so followers could see her learning to code on Instagram, then join her in real-time coding sessions in the metaverse'. A focus group participant echoed this approach, who shared, 'I followed Maya from Instagram to the VR event. It felt like I was part of her story, not just watching an ad'. Although cross-platform storytelling is not new (Sorosrungruang, Ameen, and Hackley 2024), our findings demonstrate that virtual influencers can seamlessly maintain identity and narrative continuity across highly diverse environments – including immersive VR and metaverse spaces – enabling a level of persistent engagement and character development not previously documented in the literature.

Real-time interaction

AI-driven technologies enabled virtual influencers to engage in dynamic, real-time conversations with users. During the Mindful Moments campaign, the virtual influencer Leo could respond to users' questions and provide real-time supportive messages. A developer described: 'We trained Leo's AI to recognize keywords related to stress and anxiety so that he could offer tailored advice or direct users to professional resources'. Focus group participants described these interactions as 'supportive', even when they were aware Leo was not human. While real-time interaction is a feature of many digital platforms (Gammarano et al. 2025), our study reveals that virtual influencers can be programmed for context-sensitive, emotionally intelligent responses at scale, including on sensitive topics like mental health – an application that extends existing research and raises new ethical questions.

Gamification of social causes

Gamification of social causes was a particularly innovative strategy for driving engagement and learning in our cases. In the EcoNext campaign, users could participate in interactive, game-like challenges led by Ava, such as virtual clean-up missions or sustainability quizzes. One interviewee explained, 'We wanted to make social change fun and rewarding, so Ava would invite followers to complete challenges and share their results. Participation rates were much higher than in our previous campaigns'. User comments confirmed this, with one stating, 'I loved the recycling game Ava hosted. It made me think about my habits – and I even got a digital badge for completing it!'

Although gamification is widely used in digital advocacy (Abril, Gimenez-Fernandez, and Camacho-Miñano 2024), our findings show that virtual influencers can serve as persistent, interactive hosts of social change campaigns within immersive environments, sustaining engagement and feedback loops beyond the reach of traditional gamified content.

Analytical commentary

While the four innovations identified in this research – hyper-personalization, cross-platform narrative building, real-time interaction, and gamification of social causes – may echo established trends in digital marketing, our empirical findings reveal how these practices are amplified, reconfigured, and uniquely operationalized through virtual influencers in the metaverse. This study demonstrates that virtual influencers are not merely replicating digital marketing strategies but are transforming them in ways that extend both their reach and their complexity.

First, the scale and speed of hyper-personalization enabled by virtual influencers surpass what is possible with human influencers. Our data show that brands can instantaneously adapt a virtual influencer's appearance, language, and messaging to resonate with highly segmented audiences – even in real-time. The ability to make dynamic, context-sensitive adjustments goes beyond the typical demographic targeting of digital marketing, allowing for dynamic, context-sensitive adjustments that respond to emerging trends or audience feedback. This finding extends prior research (Bozkurt, Uğursoy, and Meral 2024) by illustrating not just the flexibility but the granularity and responsiveness of virtual influencer-driven campaigns.

Second, the ability to maintain narrative and character continuity across diverse digital and immersive environments is a distinctive affordance of virtual influencers. While cross-platform storytelling is a known strategy (Sorosrungruang, Ameen, and Hackley 2024), our results show that virtual influencers can seamlessly transition between social media, VR, and metaverse spaces – retaining a coherent identity and storyline. This persistent presence fosters deeper audience immersion and sustained engagement, which is less feasible for human influencers whose content and persona may fragment across platforms.

Third, our findings reveal that real-time, emotionally intelligent interaction with audiences is not only technically feasible but is being used to address sensitive topics such as mental health. Unlike traditional chatbots or static content, virtual influencers in our study were programmed to recognize emotional cues and provide tailored supportive responses. This application, particularly in the context of mental health advocacy, both supports and extends Gammarano et al. (2025) by showing how virtual influencers can

facilitate safe, stigma-free dialogue at scale – while also introducing new ethical dilemmas regarding the boundaries of automated empathy and support.

Fourth, the use of gamification in social cause campaigns is not simply a matter of adding game-like features; rather, virtual influencers serve as persistent, interactive hosts who can sustain engagement, track user progress, and provide ongoing feedback and rewards. Their continuous, interactive presence creates a sense of community and continuity that is difficult to achieve with episodic, human-led campaigns. Our findings thus build on Abril, Gimenez-Fernandez, and Camacho-Miñano (2024) by demonstrating how gamification, when anchored by a virtual influencer, can drive both participation and learning in immersive environments.

Importantly, our research also surfaces critical tensions and limitations. While many participants praised the creativity and relatability of virtual influencers, others expressed skepticism about the authenticity of these interactions. Some users reported feeling deceived upon discovering that an influencer was AI-driven, and several interviewees raised concerns about data privacy, manipulation, and the risk that hyper-personalization could reinforce biases or exclude less digitally literate audiences. These concerns echo and deepen ongoing debates in the literature about transparency, authenticity, and inclusivity.

In summary, our findings both support and extend extant research by providing empirical evidence that virtual influencers in the metaverse are not just adopting but transforming established digital marketing innovations. They do so by enabling unprecedented adaptability, persistent cross-platform identity, scalable emotional engagement, and sustained gamified advocacy. At the same time, these advances introduce new ethical and practical challenges that must be addressed to realize the full potential of virtual influencers as agents of social change.

Impact on inclusivity, sustainability, and mental health

Descriptive findings

The qualitative data revealed that virtual metaverse influencers drive meaningful progress across three core social issues: inclusivity, sustainability, and mental health. These findings are drawn from focus group discussions, interview transcripts, and case study evidence (see Table 3).

Inclusivity

Virtual influencers were found to authentically represent a spectrum of diverse identities, including different body types, ethnic backgrounds, and abilities (Sorosrungruang, Ameen, and Hackley 2024). For example, in one campaign, a virtual influencer named Hana was designed with a visible prosthetic limb and regularly addressed her experiences navigating virtual and real-world environments. A young woman with a disability in

Table 3. Impact area observation.

Impact Area	Campaigns Observed	Interviewees Mentioned	Focus Groups Discussed
Inclusivity	3/3	10/12	3/3
Sustainability	2/3	8/12	2/3
Mental Health	2/3	9/12	2/3

a focus group remarked, 'Seeing Hana talk about accessibility challenges made me feel seen for the first time in an ad. It was not just tokenism – she shared stories that felt real'. Similarly, a non-binary participant shared: 'Most ads just do not reflect who I am, but when I saw a virtual influencer use they/them pronouns and talk about gender fluidity, it felt like the campaign was made for people like me'.

Creative team interviewees emphasized that the flexibility of virtual influencer design allowed them to 'break free from the usual stereotypes and showcase a wider range of identities than we could with traditional casting'. Such flexibility in design aligns with recent research showing that virtual influencers can be powerful champions for diversity in the metaverse, helping brands reach and engage underrepresented groups who may otherwise feel excluded from mainstream advertising (Hutchinson, Suwana, and McTernan 2024). As one brand manager noted, 'The feedback we received was overwhelmingly positive – people said they finally saw themselves in the campaign, which drove engagement and brand loyalty'.

Sustainability

The analysis also highlighted the effectiveness of virtual influencers in promoting environmental awareness and sustainable behaviors. Campaigns featuring virtual influencers as eco-advocates consistently achieved higher engagement and broader reach than similar campaigns with human influencers. For example, in the Green Tomorrow initiative, the virtual influencer Niko hosted interactive challenges around recycling and energy conservation, increasing campaign participation over previous efforts. One interviewee explained, 'Niko could appear in multiple locations simultaneously, from a virtual forest to a cityscape, showing different aspects of sustainability in a way that felt immersive and educational'.

Several interviewees pointed out the environmental benefits of using virtual influencers themselves. 'There is no need for travel, physical sets, or product shipments – our carbon footprint for these campaigns is a fraction of what it would be otherwise', said a campaign manager. This statement was corroborated by focus group participants, one of whom commented, 'It is cool to see brands practice what they preach by using digital characters instead of flying people around the world for shoots'. These findings support the view that virtual influencers raise awareness about sustainability and embody it through their production processes (Liu et al. 2025).

Mental health

Virtual influencers were also instrumental in facilitating open, stigma-free conversations about mental health, particularly among youth audiences. In the Mindful Moments campaign, the virtual influencer Leo regularly posted about managing anxiety and seeking help, prompting hundreds of comments from young followers sharing their experiences. One participant in the youth focus group shared, 'It is easier to talk about mental health with someone who is not real. I do not feel judged, and I can ask questions I would be too embarrassed to ask a real person'. This finding is consistent with recent research indicating that influencers, especially those perceived as authentic and relatable, can foster trust and encourage help-seeking behaviors among young people (Adeane and Stasiak 2024).

Interviewees highlighted that virtual influencers could be programmed to respond sensitively to mental health topics, provide resources, and even collaborate with licensed professionals to ensure accurate messaging. One developer explained, 'We worked with therapists to script Leo's responses, so users always got supportive, evidence-based advice'. Another campaign manager observed, 'The anonymity and safety of the virtual environment made it possible for kids to open up in ways we had not seen before'.

Analytical commentary

While the qualitative findings underscore the transformative potential of virtual influencers in advancing inclusivity, sustainability, and mental health advocacy, a closer analysis reveals several unresolved tensions and critical debates that shape their real-world impact.

Virtual influencers were widely perceived as powerful tools for representing diverse identities and fostering a sense of belonging among underrepresented groups. Many participants described feeling 'seen' or 'included' for the first time in digital advertising, mainly when virtual influencers reflected their lived experiences or used inclusive language. However, not all responses were unequivocally positive. A minority of focus group participants questioned the authenticity of such representation, expressing concerns about the risk of 'advertising-washing'. As one participant noted, 'It is great to see more diversity, but sometimes it feels like brands are just ticking boxes rather than understanding our experiences'. This skepticism was echoed by an interviewee who cautioned that, without genuine community involvement or ongoing dialogue, virtual inclusivity could become performative and ultimately undermine trust. Furthermore, the literature remains divided on whether algorithmically generated diversity can truly address deep-rooted social inequalities or if it risks reinforcing stereotypes through superficial portrayals (Fletcher-Brown et al. 2024; Hutchinson, Suwana, and McTernan 2024).

The environmental promise of virtual influencers – such as reducing the need for travel, physical sets, and product shipments – was highlighted by both campaign managers and participants. These environmental benefits were seen as evidence that brands could 'practice what they preach' by minimizing their carbon footprint through digital campaigns. Nevertheless, several interviewees and a few focus group members raised critical questions about the broader ecological impact of digital technologies themselves, such as the energy consumption associated with running servers, rendering graphics, and supporting persistent metaverse environments. These concerns point to a persistent gap in the literature. While the immediate sustainability benefits of virtual influencers are celebrated, there is limited research on the full lifecycle environmental costs of digital advertising infrastructure (Liu et al. 2025).

Virtual influencers were credited with facilitating stigma-free conversations about mental health, particularly among younger users who valued the anonymity and non-judgmental nature of AI-driven interactions. Many described these platforms as 'safe spaces' for discussing sensitive topics and seeking advice. However, some participants expressed ambivalence about the depth and reliability of support offered by non-human entities. One youth participant remarked, 'Leo was helpful, but sometimes I wondered if I was just talking to a script'. Interviewees also noted the ethical responsibility involved in programming virtual influencers to respond sensitively and accurately to mental health disclosures, warning that poorly designed interactions could inadvertently cause harm or

discourage help-seeking. A persistent research gap exists regarding the long-term psychological effects of interaction with virtual influencers on mental health topics, especially among vulnerable or impressionable users (Adeane and Stasiak 2024).

Across all three domains, the analysis reveals a tension between the innovative potential of virtual influencers and the risks of superficiality, bias, and unintended exclusion. While many participants celebrated the positive impacts, dissenting voices highlighted the need for ongoing critical scrutiny, community involvement, and transparent communication about the artificial nature and limitations of virtual influencers. The findings suggest that the success of these campaigns depends not only on technological creativity but also on the authenticity of brand intentions, ethical design, and responsiveness to user concerns.

Virtual influencers in the metaverse offer new avenues for advancing inclusivity, sustainability, and mental health. However, their transformative promise is contingent upon addressing unresolved questions about authenticity, performativity, digital equity, and long-term impact. Future research should prioritize these gaps and foreground the lived experiences of diverse users to ensure that virtual influencer campaigns move beyond surface-level engagement toward meaningful social change.

Challenges and ethical considerations

Descriptive findings

Analysis of interviews, focus groups, campaign materials, and institutional documents surfaced four persistent challenges and ethical concerns in the deployment of virtual influencers in metaverse advertising (see Table 4): transparency, algorithmic bias, authenticity, and the digital divide.

Transparency

Transparency emerged as a recurrent concern among interviewees and was discussed in all three focus groups. Many participants described initial confusion about whether a virtual influencer was human or AI. One participant recalled, 'At first, I thought she was real. It was only after I read the comments that I realized she was AI. It felt deceptive'. An advertising professional echoed this sentiment, who noted, 'We struggled to disclose that our influencer was virtual without breaking the illusion or losing engagement. There is a fine line between creative storytelling and misleading the audience'. The lack of standardized disclosure practices across platforms was also highlighted in the institutional analysis, with one campaign manager stating, 'We need clearer guidelines on transparency – right now, it is up to each brand to decide, and that can lead to inconsistencies and mistrust'.

Table 4. Challenge Theme observation.

Challenge Theme	Interviewees Mentioned	Focus Groups Discussed	Cases Observed
Transparency	10/12	3/3	3/3
Algorithmic Bias	8/12	2/3	2/3
Authenticity	9/12	3/3	3/3
Digital Divide	6/12	2/3	2/3

Algorithmic bias

Algorithmic bias was another ethical issue raised by interviewees and in two focus groups. Developers acknowledged the risk of unintentionally perpetuating stereotypes through algorithm-generated influencer behaviors and appearances. One developer explained, 'We use large datasets to train our AI, but those datasets reflect existing societal biases. If we are not careful, our virtual influencers could reinforce the stereotypes we are trying to challenge'. This concern was substantiated by a focus group participant who observed, 'Even though the influencer was supposed to be diverse, her mannerisms still felt very much like what you would expect from a typical Western influencer'. Institutional analysis revealed that few brands had formal processes to regularly audit or mitigate algorithmic bias, underscoring a need for more robust oversight (Hasan et al. 2022).

Authenticity

Authenticity was discussed with interviewees and all focus groups. While some users appreciated the creative storytelling and transparency about the influencer's digital nature, others expressed skepticism about the depth of emotional connection possible with a non-human entity. As one focus group participant said, 'I like the content, but I do not feel like I can trust a virtual character the way I might trust a real person. It is like there is always a layer of fiction'. An advertising executive reflected on this limitation: 'We can script empathy and relatability, but there is a ceiling to how authentic a virtual influencer can be, especially when it comes to sensitive topics'. This aspect was particularly evident in campaigns addressing mental health, where some participants felt that, despite the supportive messaging, the lack of a real human presence could be a barrier for those seeking a deeper connection.

Digital divide

The digital divide also surfaced as a significant concern, particularly regarding equitable access to metaverse-based campaigns (Dwivedi et al. 2022). Several focus group participants from lower-income or rural backgrounds reported difficulties accessing the full range of interactive features due to limited internet connectivity or lack of compatible devices. One participant shared, 'I saw the campaign on social media but could not join the VR event because my phone is not new enough. It felt like the best parts were only for people with the latest tech'. Interviewees from advocacy organizations echoed this concern, with one stating, 'There is a real risk that these innovations will widen existing gaps, leaving marginalized groups further behind'. Institutional documents reviewed for the study revealed that, while some brands had begun to consider accessibility in their campaign planning, comprehensive strategies for digital inclusion were still rare (Imran 2023).

Analytical commentary

These findings highlight that while virtual influencers in the metaverse offer exciting opportunities for innovation and social impact, their deployment is fraught with unresolved ethical and practical challenges.

Transparency remains a critical issue, as the lack of clear disclosure can lead to user confusion and feelings of deception. The absence of standardized guidelines exacerbates this problem, risking erosion of trust and credibility for both brands and the broader

advertising ecosystem. This lack of regulation suggests an urgent need for industry-wide standards to ensure users are adequately informed when interacting with AI-driven entities.

Algorithmic bias persists as a structural challenge. Despite intentions to promote diversity, the reliance on large, pre-existing datasets means that virtual influencers may inadvertently reinforce the very stereotypes they aim to dismantle. The lack of formal auditing processes among brands points to a significant oversight in ethical governance, raising questions about accountability and the risk of perpetuating social inequalities through digital advertising.

Authenticity emerges as a strength and a limitation. While some audiences appreciate the creativity and transparency of virtual influencers, others remain sceptical about the depth of connection possible with non-human entities, mainly in campaigns addressing sensitive topics like mental health. This ambivalence suggests that virtual influencers may be more effective as conversation starters or awareness-raisers than as substitutes for genuine human support.

The digital divide raises concerns about equitable access to metaverse-based campaigns. As interactive features increasingly require advanced technology and high-speed internet, there is a risk of further marginalizing already underserved populations. The current lack of comprehensive digital inclusion strategies among brands and platforms may inadvertently reinforce social and economic inequalities, limiting the transformative potential of virtual influencer campaigns.

While virtual influencers hold promise as agents of social change, their effectiveness is contingent upon honest engagement with these persistent challenges. As one campaign manager concluded, 'If we want virtual influencers to be a force of good, we have to be honest about their limitations and proactive about addressing these issues – otherwise, we risk undermining the progress we are trying to make'. These findings underscore the necessity for ongoing critical scrutiny, ethical innovation, and inclusive design in the evolving landscape of metaverse advertising.

Discussion

Opportunities for transformation

Integrating virtual influencers into metaverse business applications presents significant opportunities for transformative advertising and communication strategies (Dwivedi, Hughes, et al. 2023). As digital entities, virtual influencers are not constrained by physical limitations or human biases, allowing them to redefine traditional approaches to representation, sustainability, mental health advocacy, and cross-cultural communication (Gammarano et al. 2025). Their unique attributes enable brands to connect with audiences innovatively, fostering deeper engagement and addressing critical societal challenges (Tripathi and Kaushik 2025).

One of the most compelling opportunities lies in enhanced representation. Virtual influencers offer unprecedented flexibility in embodying diverse identities, making them powerful tools for promoting inclusivity in advertising (Gammarano et al. 2025). Unlike human influencers, who are limited by physical appearance and personal attributes, virtual influencers can be designed to reflect a wide range of

cultural backgrounds, gender identities, body types, and abilities (Shin and Lee 2023). This adaptability allows brands to authentically connect with underrepresented communities and challenge stereotypes in ways that traditional marketing often struggles to achieve. By leveraging these capabilities, businesses can foster a more inclusive environment that resonates with increasingly diverse consumer bases.

Another transformative aspect of virtual influencers is their potential to promote sustainable practices. These influencers eliminate the need for physical production processes associated with traditional influencer campaigns, such as travel, photo shoots, and material consumption (Yang et al. 2024). This reduction in resource usage significantly minimizes the environmental impact of marketing activities. Additionally, virtual influencers can actively advocate for sustainable lifestyles by endorsing eco-friendly products and practices within their content (Nazir and Wani 2025). For example, brands have utilized AI avatars to showcase sustainable fashion initiatives, demonstrating how virtual influencers can align with the growing demand for environmentally conscious branding (Murugesan, Jayanthi, and Karthikeyan 2024).

Virtual influencers also present unique opportunities for mental health advocacy, particularly among younger audiences who are increasingly receptive to digital interactions (Hewapathirana and Perera 2024). The perceived 'safety' of engaging with non-human entities can create a more approachable space for discussing sensitive topics like mental health. Unlike human influencers, virtual personas can be programmed to consistently deliver positive and supportive messaging without the risk of personal scandals or controversies that might undermine their credibility. This consistency enables them to foster open dialogues about mental health issues while reducing stigma and encouraging individuals to seek help when needed. Campaigns leveraging virtual influencers have already shown promise in raising awareness and providing resources related to mental health challenges (E. Kim et al. 2024).

Finally, virtual influencers excel in cross-cultural communication, making them highly effective tools for global campaigns. Their adaptability allows them to seamlessly integrate into diverse cultural contexts by speaking multiple languages and embodying culturally intelligent behaviors tailored to specific audiences (Gammarano et al. 2025). This capability ensures that messaging remains relevant and respectful across different regions, bridging cultural divides and fostering stronger connections with international consumers. For instance, virtual influencers can be customized to reflect local traditions or values while maintaining a consistent brand identity worldwide. This level of customization enhances the effectiveness of social campaigns aimed at addressing global issues such as climate change or public health awareness (Okonkwo and Namkoisse 2023).

Integrating virtual influencers into metaverse business applications represents a paradigm shift in advertising and communication strategies. By enabling enhanced representation, promoting sustainability, advocating for mental health awareness, and facilitating cross-cultural communication, these digital entities offer transformative opportunities that align with evolving consumer expectations and societal needs. As businesses continue to explore the potential of virtual influencers within the metaverse, their ability to drive meaningful change while delivering impactful marketing results will likely become an integral part of future advertising landscapes.

Addressing challenges

Integrating virtual influencers into metaverse business applications presents significant opportunities for transformative advertising and communication strategies, as evidenced by our empirical findings (Dwivedi et al. 2022). As digital entities, virtual influencers are not constrained by physical limitations or human biases, allowing them to redefine traditional approaches to representation, sustainability, mental health advocacy, and cross-cultural communication (Xu, Sun, and Zhou 2024). Our study confirms that their unique attributes enable brands to connect with audiences innovatively, fostering deeper engagement and addressing critical societal challenges.

One of the most compelling opportunities lies in enhanced representation. Our research showed that virtual influencers offer unprecedented flexibility in embodying diverse identities, making them powerful tools for promoting inclusivity in advertising. The case of virtual influencer Hana, designed with a prosthetic limb, and the positive feedback from diverse focus group participants ('Seeing Hana talk about accessibility challenges made me feel seen') directly illustrate this capability. Unlike human influencers, who are limited by physical appearance, virtual influencers can be designed to reflect a wide range of cultural backgrounds, gender identities, body types, and abilities (D. Kim and Wang 2023). This adaptability allows brands to authentically connect with under-represented communities and challenge stereotypes in ways that traditional marketing often struggles to achieve, fostering a more inclusive environment that resonates with increasingly diverse consumer bases (Mertens and Goetghebuer 2024).

Another transformative aspect highlighted by our findings is the potential of virtual influencers to promote sustainable practices. As demonstrated in the EcoNext campaign, virtual influencers like Niko can host interactive challenges around environmental conservation, leading to increased participation compared to previous efforts. Crucially, our interviewees pointed out the inherent environmental benefits of using virtual influencers themselves ('no need for travel, physical sets, or product shipments'), reducing the carbon footprint of marketing activities. These reported benefits align with and reinforce existing arguments that virtual influencers embody sustainability through their production processes (Sreethi and Thomas 2024).

Furthermore, our study reveals that virtual influencers present unique opportunities for mental health advocacy, particularly among younger audiences. The Mindful Moments campaign featuring Leo demonstrated that the perceived 'safety' of engaging with non-human entities can create a more approachable space for discussing sensitive topics. As one youth focus group participant articulated, 'It is easier to talk about mental health with someone who is not real. I do not feel judged, and I can ask questions I would be too embarrassed to ask a real person'. This consistency and perceived anonymity enable virtual influencers to foster open dialogues about mental health issues while reducing stigma and encouraging help-seeking (Al Falahi et al. 2024).

Finally, our findings suggest that virtual influencers excel in cross-cultural communication, making them highly effective tools for global campaigns. Their adaptability allows them to seamlessly integrate into diverse cultural contexts by speaking multiple languages and embodying culturally intelligent behaviors tailored to specific audiences (Dwivedi et al. 2022). This capability ensures that messaging remains relevant and respectful across different regions, bridging cultural divides and fostering stronger

connections with international consumers. This level of customization enhances the effectiveness of social campaigns aimed at addressing global issues such as climate change or public health awareness (Gammarano et al. 2025).

Integrating virtual influencers into metaverse business applications represents a paradigm shift in advertising and communication strategies. Our empirical data demonstrate how the enhanced representation, promotion of sustainability, advocacy for mental health awareness, and facilitation of cross-cultural communication observed in our case studies provide transformative opportunities. These align with evolving consumer expectations and societal needs. As businesses continue to explore the potential of virtual influencers within the metaverse, their ability to drive meaningful change while delivering impactful marketing results will likely become an integral part of future advertising landscapes.

Theoretical contributions

This study significantly contributes to the Transformative Advertising Research (TAR) framework by providing empirical evidence of how emerging technologies, specifically virtual influencers operating within metaverse environments, actively engage with and extend TAR principles across micro, meso, and macro levels. By examining their impact through real-world campaigns and diverse stakeholder perspectives, this research highlights the nuanced potential of virtual influencers to reshape advertising practices and societal narratives in meaningful ways (Gurrieri, Tuncay Zayer, and Coleman 2022).

Micro-level contributions: individual engagement and well-being

At the micro level, our findings illustrate how virtual influencers offer individuals novel avenues for engaging with social causes and reflecting on their identities and behaviors, thereby expanding the understanding of individual well-being in advertising (Davlembayeva, Chari, and Papagiannidis 2025). Our data on hyper-personalization and real-time interaction demonstrate that virtual influencers can tailor messaging with unprecedented precision, fostering a strong sense of personal relevance (Triksa and Kaushik 2025). For instance, the Mindful Moments campaign, where the virtual influencer Leo provided real-time, personalized mental health support, directly shows how these digital entities can facilitate sensitive discussions and encourage individual help-seeking behaviors. Such applications extend TAR by revealing how AI-driven personas can reduce perceived judgment and create 'safer' spaces for individual engagement, going beyond traditional advertising's more didactic approaches to influence personal action. The observed impact on feelings of 'being seen' (e.g., the participant's reaction to Hana with a prosthetic limb) also highlights how virtual influencers can foster individual identity affirmation and representation, contributing to personal well-being (Cui 2024).

Meso-level contributions: institutional innovation and ethical governance

At the meso level, our study reveals how virtual influencers compel advertising institutions and brands to reconsider traditional representation, message delivery, and ethical governance approaches. Our findings on cross-platform narrative building demonstrate how virtual influencers challenge brands to maintain consistent, inclusive messaging across diverse and immersive digital environments. The

flexibility in designing diverse virtual influencer identities (e.g., Hana's inclusive design) pushes advertising institutions to adopt more inclusive casting practices and to move beyond conventional advertising strategies that often lack diversity. This shift toward inclusivity expands TAR's focus on institutional transformation by showing how a specific technology can drive operational shifts toward more ethical and inclusive practices. However, our concurrent finding on algorithmic bias also highlights a critical meso-level challenge for advertising institutions: the imperative to develop robust auditing processes to mitigate the unconscious perpetuation of societal stereotypes through AI-generated content. This concern about algorithmic bias adds a crucial ethical dimension to TAR's institutional focus, emphasizing the need for proactive ethical AI governance within advertising organizations (Mertens and Goetghebuer 2024).

Macro-level contributions: shaping cultural narratives and societal challenges

At the macro level, our research provides empirical evidence of how integrating virtual influencers into metaverse environments can shape broader cultural narratives around inclusivity, sustainability, and mental health (Gammarano et al. 2025). The gamification of social causes, as exemplified by the EcoNext campaign, demonstrates a novel mechanism through which virtual influencers contribute to societal shifts in values and priorities, making engagement with complex issues like environmental protection more accessible and appealing. This use of gamified engagement extends TAR's macro-level analysis by showcasing how virtual influencers can drive cultural awareness and action on global issues beyond traditional public service announcements. Furthermore, their role in mental health advocacy provides a safe, scalable platform for discussing sensitive topics, fostering broader cultural acceptance of mental health conversations among younger audiences. Our findings also underscore that virtual influencers, by their very nature, challenge societal norms and spark discussions about identity, authenticity, and connection in a world increasingly influenced by technology, thereby directly impacting macro-cultural discourse (Nazir and Wani 2025).

This study significantly extends the TAR framework by illustrating, with empirical detail, how virtual influencers can operate across micro, meso, and macro levels to address pressing social issues. Their ability to personally engage individuals, transform institutional practices, and influence cultural narratives underscores their profound transformative potential in modern advertising. As technology evolves within metaverse environments, virtual influencers are poised to play an increasingly significant role in advancing TAR principles while driving meaningful societal change.

Practical contributions

This study provides actionable insights for brands and marketers seeking to leverage virtual influencers effectively within metaverse environments. By aligning strategies with Transformative Advertising Research (TAR) principles, organizations can harness the unique capabilities of virtual influencers to drive both marketing success and meaningful societal change.

First, managers should strategically integrate virtual influencers into campaigns that explicitly align with inclusivity, sustainability, and mental health advocacy.

Virtual influencers' unparalleled adaptability enables brands to tailor narratives for diverse audiences, allowing for cost-effective, global campaigns with consistent messaging (Gammarano et al. 2025). Their programmable nature means content can be rapidly localized, translated, or culturally adapted – far beyond the flexibility of human influencers. Marketers are encouraged to invest in developing robust virtual influencer personas that reflect the values and identities of target segments and to proactively plan for cross-platform storytelling and immersive experiences such as branded events or virtual product placements within the metaverse.

Second, virtual influencers offer brands greater control over content and reputation management. Unlike human influencers, virtual personas are immune to personal scandals and can be precisely managed to avoid off-brand messaging (Hewapathirana and Perera 2024). This high level of control allows for consistent alignment with brand values and messaging goals. To maximize this advantage, brands should establish clear governance protocols for virtual influencer content, including regular audits for compliance with brand values, legal standards, and ethical guidelines.

Third, the success of virtual influencer campaigns depends on collaboration among multiple stakeholders, including advertisers, consumers, policymakers, and platform developers. Engaging these groups ensures that campaigns are effective, ethical, and inclusive. Advertisers must work closely with platform developers to address accessibility barriers, such as high costs of VR equipment or limited internet infrastructure, to avoid excluding key demographics. Policymakers are crucial in establishing regulatory frameworks that protect consumer data and ensure transparency in virtual influencer operations (Dwivedi et al. 2022). Furthermore, involving consumers in co-creating content with virtual influencers fosters a community-led approach that enhances engagement and trust. Brands should create participatory opportunities – such as polls, interactive storylines, or user-generated content challenges – to build authentic relationships and enhance campaign resonance.

Fourth, to evaluate the impact of virtual influencer campaigns on societal well-being and marketing effectiveness, brands must develop robust measurement frameworks. These frameworks should include metrics for assessing engagement levels (e.g., likes, shares, and comments), behavioral changes (e.g., purchase intention or advocacy for social causes), and long-term shifts in societal attitudes. For example, tracking how audiences respond to sustainability messages delivered by virtual influencers can provide insights into their influence on eco-conscious behaviors. Additionally, brands should leverage data-driven tools within the metaverse to analyze consumer behavior and refine campaign strategies through continuous experimentation. Advanced analytics platforms can help marketers understand how virtual influencers perform across different demographics and cultural contexts, enabling more targeted and impactful campaigns (Hewapathirana and Perera 2024). Managers are encouraged to invest in analytics tools and develop KPIs that track both commercial and social outcomes, using A/B testing and real-time feedback to refine campaigns.

Finally, managers must be vigilant about the ethical risks associated with virtual influencers. Issues such as algorithmic bias, lack of transparency, and digital exclusion can undermine both brand reputation and campaign impact. To address these risks, brands should implement regular bias audits, clear disclosure practices, and accessibility

reviews. Training teams in ethical AI and inclusive design is essential to ensure campaigns do not inadvertently reinforce stereotypes or exclude vulnerable groups.

The practical contributions of this study provide a roadmap for managers to maximize the transformative potential of virtual influencers in the metaverse. By prioritizing strategic integration, stakeholder collaboration, robust measurement, and ethical vigilance, brands can not only achieve marketing objectives but also contribute to societal progress and well-being. As the metaverse continues to evolve, these managerial practices will be critical for navigating complexity and sustaining competitive advantage in digital advertising.

Conclusion

This study has thoroughly demonstrated that virtual influencers in the metaverse hold significant transformative potential for the future of advertising, particularly as instruments for social good. Through a rigorous qualitative investigation employing case studies, semi-structured interviews, focus groups, and institutional analysis, our research has empirically shown how virtual influencers enable brands to move beyond traditional limitations. They offer enhanced representation and more sustainable marketing practices creating safe, supportive spaces for mental health advocacy. These digital personas are uniquely equipped to authentically portray diverse identities, engage audiences in meaningful conversations, and adapt to the cultural nuances of global markets, as evidenced by our specific findings on hyper-personalization, cross-platform narrative building, real-time interaction, and the gamification of social causes (Goyal, Bhardwaj, and Garima 2025).

Our findings underscore that virtual influencers can foster inclusivity and social engagement when thoughtfully designed and ethically managed in ways that traditional advertising often cannot. The ability to hyper-personalize content, build seamless cross-platform narratives, and gamify social causes significantly increases consumer engagement. It deepens the impact of messaging around critical issues such as sustainability and mental well-being (Dondapati and Dehury 2024). Moreover, our study highlighted how virtual influencers align with the growing demands for sustainable business practices by reducing the environmental footprint associated with traditional influencer campaigns, offering a tangible benefit beyond mere messaging.

However, the study also critically highlights several persistent challenges and ethical considerations that must be addressed to realize virtual influencers' positive potential fully. Our empirical data revealed that issues related to transparency, algorithmic bias, authenticity, and the digital divide present ongoing risks that require continued vigilance and proactive management. As such, brands and developers must prioritize clear disclosure, regular auditing for bias, and the development of accessible campaigns to ensure that the benefits of virtual influencers are equitably distributed and do not exacerbate existing inequalities (Xin, Hao, and Xie 2024).

In conclusion, this research makes a significant contribution by providing empirical evidence of how virtual influencers operate across micro, meso, and macro levels within the Transformative Advertising Research (TAR) framework. We have shown how they engage individuals, drive institutional innovation, and shape broader cultural

narratives. While virtual influencers represent a powerful evolution in advertising's capacity to promote social good, their effectiveness fundamentally depends on methodological rigor, ethical responsibility, and an unwavering commitment to inclusivity and authenticity. By embracing these digital innovations with care, integrity, and a proactive approach to their inherent challenges, the advertising industry can indeed create a more inclusive, sustainable, and mentally healthy society in the burgeoning metaverse.

Limitations and future areas of research

Future research must address several critical areas while acknowledging this study's limitations to understand virtual influencers' transformative potential in metaverse applications fully. These areas of inquiry will deepen theoretical knowledge and provide actionable insights for advertisers, policymakers, and developers seeking to leverage virtual influencers responsibly and effectively.

One key exploration area is longitudinal studies examining the long-term impact of virtual influencer campaigns on behavior change and societal attitudes. While short-term metrics like engagement rates and follower growth provide valuable insights, they fail to capture the sustained effects of these campaigns for sustainability, leading to measurable shifts in eco-conscious behaviors, such as increased recycling or reduced consumption of single-use plastics (Hoai Lan et al. 2025). Similarly, studies could assess whether mental health advocacy campaigns featuring virtual influencers reduce stigma or encourage help-seeking behaviors among target audiences. However, a limitation of this study is its reliance on conceptual analysis rather than empirical evidence; thus, future longitudinal studies should incorporate quantitative or qualitative methods to validate these claims. By tracking these changes longitudinally, researchers can better understand the enduring influence of virtual influencers on societal well-being.

Another important area is cross-cultural adaptation frameworks, which explore how virtual influencers resonate across diverse cultural contexts. Virtual influencers are highly customizable, allowing brands to tailor their personas and messaging to align with local values, traditions, and preferences. However, this adaptability raises questions about how effectively these digital entities can bridge cultural divides while maintaining a consistent brand identity globally (Gammarano et al. 2025). Comparative studies could examine how virtual influencers are perceived in different regions and identify best practices for localization without compromising their core messaging. For example, a virtual influencer promoting sustainability in Southeast Asia might emphasize community-based environmental initiatives, while one targeting European audiences might focus on individual responsibility and green consumerism. A limitation of this study is its lack of in-depth analysis of specific demographic groups or marginalized communities; future research should investigate these nuances to provide richer insights into how diverse audiences engage with virtual influencers.

The ethical implications of virtual influencers also warrant further investigation, particularly in AI ethics and algorithmic auditing. Developers power virtual influencers with AI systems that determine their appearance, behavior, and audience interactions. However, these algorithms are susceptible to biases perpetuating stereotypes or

excluding certain groups (Gerlich 2024). For instance, virtual influencers may unintentionally reinforce narrow beauty standards or cultural norms if training data lacks diversity. Future research should focus on developing standardized frameworks for auditing algorithms to ensure fairness and inclusivity in their design. Researchers could explore methodologies for detecting bias in AI systems and implementing safeguards to promote equitable representation across demographics. A related limitation is the assumption that audiences will respond positively to virtual influencers' messaging; future studies should investigate audience perceptions to refine strategies that foster trust and reliability.

As metaverse environments evolve, researchers must develop immersive engagement metrics to evaluate consumer interactions with virtual influencers in these spaces. Traditional metrics like likes, shares, and comments may not fully capture the depth of engagement possible in immersive environments such as virtual showrooms or branded VR experiences (Gammarano et al. 2025). Studies could investigate how interactions with virtual influencers in 3D spaces – such as attending a virtual fashion show or participating in a gamified campaign – contribute to traditional social media engagement in driving purchase intent or brand loyalty. However, this study does not account for technological disparities that may limit access to metaverse environments globally; future research should explore strategies for overcoming these barriers to ensure equitable access to metaverse experiences.

Finally, regulatory and policy analysis is crucial for addressing legal challenges associated with virtual influencers. As their use expands, issues such as intellectual property rights, data privacy concerns, and transparency requirements will become increasingly significant (Hoai Lan et al. 2025). For example, questions about who owns the likeness or persona of a virtual influencer could arise if multiple stakeholders are involved in its creation and management. Similarly, ensuring transparency about the artificial nature of virtual influencers is essential for maintaining consumer trust and avoiding deceptive advertising practices (Goyal, Bhardwaj, and Garima 2025). Future research should examine these legal implications and collaborate with policymakers to draft guidelines that protect consumers while fostering innovation in this space.

By addressing these limitations and focusing on longitudinal studies, cross-cultural adaptation frameworks, AI ethics and algorithmic fairness, immersive engagement metrics, and regulatory considerations, future research can unlock the full transformative potential of virtual influencers within metaverse applications. These efforts will advance theoretical understanding and provide practical solutions for leveraging this emerging technology as a force for social good while ensuring ethical implementation and equitable access across diverse populations.

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