

Exploring Metaverse: A Virtual Ecosystem from Management Perspective

Malay Kumar Mohanty¹, Amiya Kumar Mohapatra², Pradeepta Kumar Samanta³ and Gautam Agrawal^{4*}

¹Former Professor & Head, GM College and Dean, Faculty of Commerce and Management, Sambalpur University, Sambalpur, Odisha. E-mail: dr.malaykumarmohanty@gmail.com

²Professor, Jaipuria Institute of Management, Indore, Madhya Pradesh. E-mail: amiyaeco125@gmail.com

³Sr. Associate Professor, NICMAR Business School, NICMAR University, Pune, Maharashtra. E-mail: samanta.pk@gmail.com

⁴Assistant Professor, FOSTIIMA Business School, New Delhi. E-mail: gautamag@gmail.com

*Corresponding Author

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Abstract: An interconnected digital ecosystem, seamlessly blending the virtual and physical worlds, is termed as ‘metaverse’. The metaverse offers unlimited virtual space to participants such as corporates and individuals, to explore and design their experiences. The present study showcases the potential of the metaverse to enhance the operations in retail, hospitality & tourism, and entertainment industries etc. The study posits that adoption of metaverse in these industries will alter the consumer decision-making journey, and their subsequent behavior. Corporate leaders by mapping this virtual space, where consumers have their digital doppelganger or avatars representing their digital persona, can reach the consumer across geographies. The study highlights that immersive experiences offered by the metaverse will be the essence of higher customer involvement, leading to value co-creation and seamless exchange of value. The final section of the study provides a perspective on the emerging issues and challenges in the form of privacy, security, racism, and digital hatred in the metaverse world.

1. Introduction

The term metaverse combines ‘meta’ and ‘verse’. It transcends the physical universe and takes the user on a virtual reality-based journey. The term ‘metaverse’ was first introduced in 1992 in Neal Stephenson’s *Snow Crash*. In its first iteration, the metaverse was presented as a virtual reality (VR) dark planet approachable through the internet and augmented reality (AR) via virtual self or digital avatars. In simpler terms, Snow Crash posited that an alternative world exists in the digital realm, operating parallel to the real world.

The previously fictional concept of the metaverse has gradually become a legitimate consideration for different management domains, besides other applications. The trigger date for immersion of the virtual world in the physical world was 10 March 2021, when the sandbox gaming platform Roblox mentioned the concept of the ‘metaverse’ in its prospectus. Roblox asserted the eight essential characteristics of the metaverse: Identity, friends, immersive, anywhere, low friction, variety, content economy, and safety.

As per certain estimates, the metaverse-driven market will be worth USD 814.2 billion in the next five years, with a CAGR of 43.8 percent during 2023-28. Simultaneously, the Google search and analysis of Google Trends showcase increasing searches for the word ‘metaverse’ (EuPortal, 2022). Taking advantage of the increasing popularity, on 28 October 2021, Facebook transitioned to Meta. The transition was a historical event and not merely a rebranding exercise. The transition to metaverse represents a paradigm shift from the traditional online experiences to interactive, virtual and augmented reality environments in the new age of customer experience design.

However, the metaverse concept is still shrouded in ambiguity in the public and corporates’ perception. There have been different interpretations of the still-emerging phenomena. Firstly, it has been described as a single, universal virtual world with the ‘residents’ living their *second life* as digital avatars as part of a community. Secondly, popular virtual worlds and games like *Minecraft*, and *Fortnite*, Web3 variants: *Decentraland* and *Sandbox* are examples of the varied metaverse, each unique in its positioning, value proposition, and the ‘residents’.

Contrarily, a few researchers and developers decouple the metaverse from VR and AR. Park and Kim (2022) posit that “the metaverse does not necessarily use AR and VR technologies. Even if the platform does not support VR and AR, it can be a metaverse application”. However, this view contradicts the foundation of the immersive nature of the metaverse. In the absence of VR, AR & associated MR; the metaverse will lose the ability to merge physical and digital worlds, thus rendering it ineffective. As per the authors, this assertion ignores the primary USP of integration, immersion, and perceived presence by the user, which is fundamental to the concept of the metaverse.

The above contradictory conceptualizations have led the authors to assert that the metaverse is still an under-studied phenomenon lacking a universal conceptualization. Globally, there has been increasing interest in the metaverse due to an enhanced focus on developing community, socializing, new avenues of entertainment, showcasing creativity through various mediums, and the potential to amalgamate them into a financially viable business model. Accordingly, the study proposes to reflect on the emergence of the metaverse and its impact on marketing management for various industries.

2. Conceptualizing Metaverse

Gursoy *et al.*, (2022) well-defined metaverse as “a collective, persistent, and interactive parallel reality created by synthesizing all virtual worlds to form a universe that individuals can seamlessly traverse. People can inhabit the metaverse using their digital avatars and experience the virtual world in multiple forms, including augmented reality, VR, and mixed reality”.

The metaverse can be envisaged as a series of inter-connected virtual worlds, a network of 3D worlds, where users interact with content, objects, environments, and each other through virtual and augmented reality interfaces. In this parallel universe to the real world, people live their digital lives (Figure 2). People can communicate with one another in this virtual environment using their avatars.

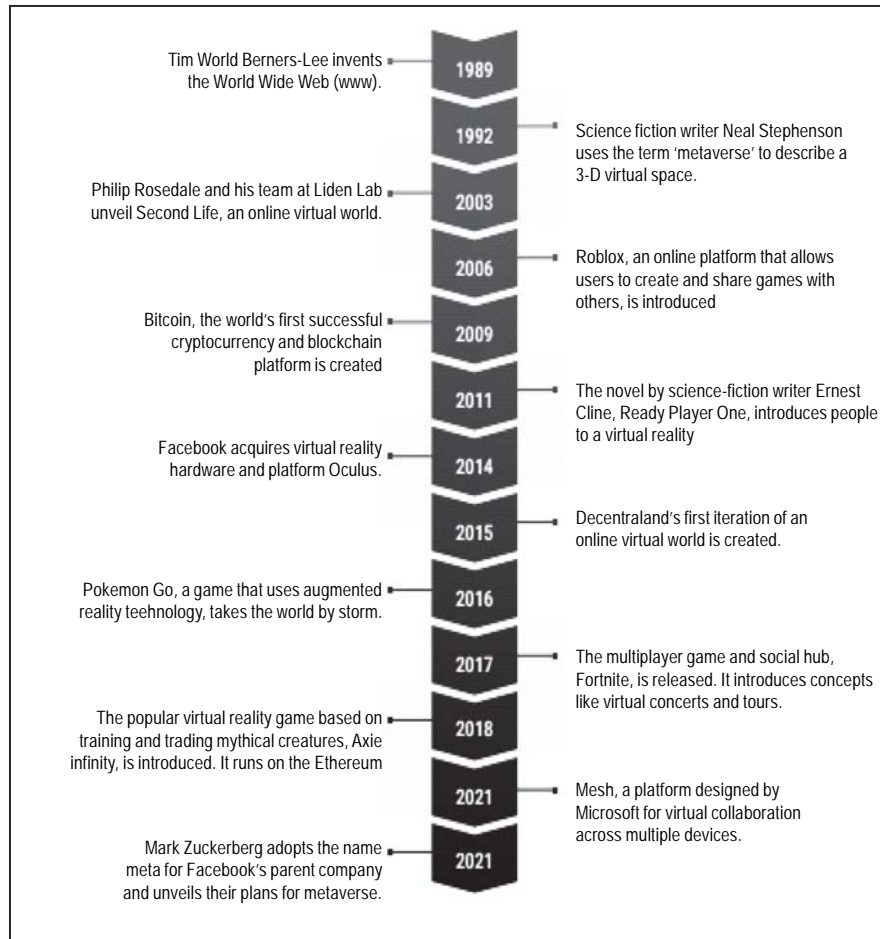


Figure 1: Evolution of Metaverse

Source: <https://www.cnbc.tv/18.com/technology/explained-the-history-of-metaverse-12015212.htm>

Virtual reality (VR) and augmented reality (AR) are becoming ever more popular, and metaverses are swiftly advancing on the internet.

2.1. Value Co-creation in Metaverse

Organizations across industries, sectors, and domains are configuring and shaping the metaverse in conformity with their requirements. Initially, these organizations are exploring the new digital ecosystem to understand value creation opportunities, with the objective of creating a viable business model through the exchange of value.

The extant value co-creation literature showcased the importance of customer involvement and adapting the product, process, and communication as per their choices. The value co-creation concept

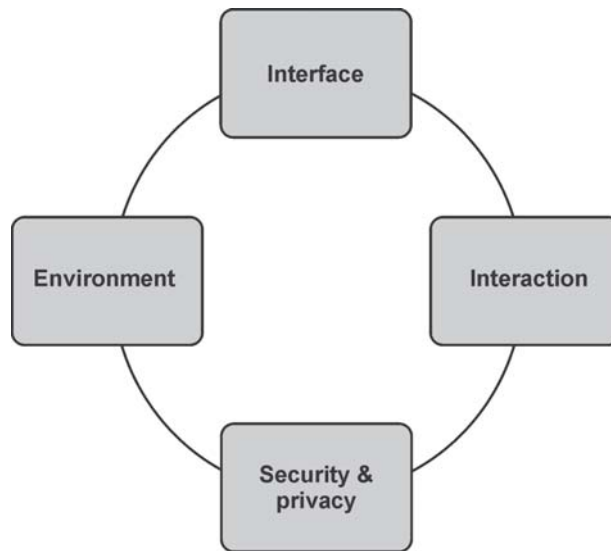


Figure 2: The Conceptualization of Metaverse

Source: Kim, 2021.

emphasizes the significance of immersive experiences for multiple stakeholders in the value-creation process (Rubio *et al.*, 2020). Thus, in recognizing customers' specific needs and choices, organizations should involve the consumers in the co-creation process since they are important stakeholders (Buhalis and Foerste, 2015) of the organization. Replicating the assertion in the emerging metaverse ecosystem, the authors posit that in order to facilitate the encompassing experience and value creation in the digital ecosystem, necessary technologies - AR, VR, XR, and 3D-besides others must be developed, tested, and implemented, thereby enabling the multiple stakeholders to engage in the value co-creation process (Rubio *et al.*, 2020). Hence, we posit that the advancement of technologies is an essential enabler for an immersive metaverse experience.

The aforesaid value creation opportunities are being explored by platform players; developers and creators that contribute resources, content, immersive layers, and the requisite hardware; companies and retail brands interacting with users in the virtual world, build destinations on virtual lands (e.g., Nova Scotia 360°), establish retail shops, education (e.g., Hermitage Museum) and training purpose, or even create their customized built worlds (e.g., Yas Island, Abu Dhabi); and infrastructure and services enterprises (e.g., South Korea) that set design standards, facilitate transactions through digital currencies, and enable blockchain-based smart contracts.

Businesses that already use the metaverse could gain enduring competitive advantages. Business leaders should take a strategic position by defining metaverse goals and the role they wish to perform; testing, learning, and adopting; and preparing to scale; by identifying critical capabilities and integrating the metaverse into their operational model. They ought to think about using the metaverse themselves. By becoming meta-users, they can understand the developments in customer experience.

In present times, customer experience (CX) is increasingly becoming technology-mediated. Organizations are deploying various technological tools for an enhanced CX (Anshu *et al.*, 2022). An example can be seen in the hospitality industry, where Buhalis (2022) states that hotels are using social media analytics in conjunction with AI to drive customer engagement and understanding of customer behavior across different market segments and in different decision-making stages. This allows hospitality organizations to customize their message and services to customers based on the customers' data (Tomczyk *et al.*, 2022).

2.2. Financial Aspects of Investing in Metaverse

The user adoption data on metaverse looks promising. However, these are early development stages of metaverse. The development of the metaverse ecosystem is in progress. While the gaming segment acted as a catalyst for adopting emerging metaverse, hyper-personalized, gamified learning and training, communal activities and UX-based interactions, and expansion of digital (remote) manufacturing and operations are likely domains to expand the metaverse adaption and acceptability in different consumer segments.

Meta (formerly Facebook) has spent billions of dollars on developing the mixed reality infrastructure. However, the company's Q3 2022 financials show that Meta's revenue was down 49% annually at US\$ 285 million. Simultaneously, the expenses were US\$ 4.0 billion - due to employee-related costs and technology development expenses. This has resulted in Reality Labs- the exclusive Metaverse division losing over US\$ 9.4 billion in the first nine months of 2022. This excessive spending on the futuristic iteration of the internet has alarmed the financial stakeholders of the firm.

In comparison, a segment of analysts believes that Meta's investments are conducive to the more significant metaverse movement. Angel investors, market visionaries, private equity (PE), start-ups, renowned brands, and large technological businesses are all attempting to take advantage of the evolution of metaverse. In the first five months of 2022, the VC and PE funds had already spent more than US\$ 120 billion in the metaverse. This invested amount is more than twice as much as the total of US\$ 57 billion invested in 2021. Meanwhile, Microsoft has announced a plan to acquire Activision for US \$69 billion (Table 1).

Table 1: The Top 3 Tech Investors in Metaverse

<i>S. No.</i>	<i>Company</i>	<i>Investment in US\$ (approx.)</i>
1	Microsoft	68.7 billion
2	Meta	10 billion
3	Alphabet	1.1 billion

Source: Compiled by Authors

The data enumerates that technology companies are the most prominent advocates and investors in the metaverse ecosystem. The industries driving the adoption of the metaverse also want to commit a sizable portion of their digital investment budgets in this sector. There are numerous

reasons for investors growing interest in the metaverse. The initial reason was the technological progress enabling the conceptualization, ideation and creation of first versions of metaverse. Later on, the analysts realized the adoption of metaverse by gaming enthusiasts (with online games like Fortnite counting millions of active players on their platforms) will have a domino effect on other spheres of multiple industries too. Further, the growing Generation Z population provides demographic tailwinds to the adoption of metaverse. Further, the market leaders are confident that the metaverse offers them a unique platform to engage their stakeholders (including consumers) constructively.

The confidence of companies is derived from the fact that organizations in every domain willingly participate in developing the metaverse ecosystem. Instances in the form of Accenture creating a digital headquarter to stimulate team(s) collaboration, South Korea is planning a 'Metaverse Seoul' – a full-service virtual world where the residents could perform touristic and administrative city-related activities, media and entertainment organizations like Disney, food chains like Wendy's, Donald's, entertainers like Daler Mehendi and even professional teams like the Atlanta Braves are exploring metaverse to engage with their consumers and/or audience.

Similarly, the seamless experience metaverse offers have enticed brands like LVMH, Gucci, Prada, Nike to explore the metaverse for business opportunities. The fact that The Dematerialized, a virtual luxury showroom sold out its entire stock of 1212 digital sweaters (US\$137 per piece) within three hours of its launch, highlights the evolving consumer behavior. The present-day consumer is equally conscious of his digital avatar personality and seeks to maintain equality between his physical and digital persona. Hence, it can be asserted that firms are increasingly considering metaverse for their brand positioning and marketing-related activities. Accordingly, they are planning their budgeting with additional emphasis on metaverse-related activities.

2.3. User-Consumer-Company Interactions for Metaverse Development

The previous research has unequivocally established that in order to transform users into consumers, companies need to connect with their consumers regularly. The latter is not just a recipient of one-way corporate communication but an active and vital participant in the entire communication cycle. The widespread adoption of social media has enabled consumers to transform from passive content receivers to active information seekers. The conventional consumer decision-making model has progressively made way for a technology-enabled-enhanced consumer decision-making model. Consumers are increasingly making purchase decisions based on online reviews, feedback, star ratings, and videos by past customers. They are influenced and, in turn, influence prospective consumers by sharing their opinions on different social media platforms. This e-WoM has a direct consequence for the businesses, either in a positive manner or detrimental to the businesses' interest. As Rihova *et al.*, (2018) asserted, the spread of interactive technology across market segments has engaged consumers as active participants in business operations.

Metaverse has been identified as the next level of immersive-disruptive technology (Gursoy *et al.*, 2022) after social media. The foundation of metaverse- seamlessly integrating the physical and virtual worlds can revolutionize the communication-interaction between organizations and consumers by enabling the co-creation of transformational experiences and values across industries (Buhalis and Karatay, 2022).

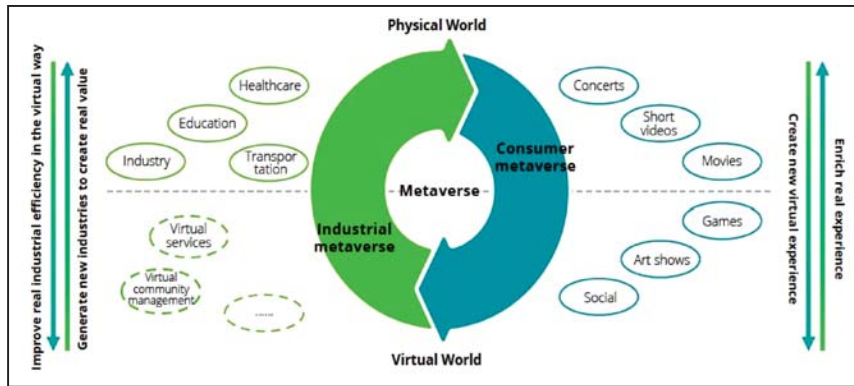


Figure 3: Consumer Interface in Metaverse

Source: Deloitte Research and Analysis

2.4. Metaverse Application in Industries

The success of metaverse is predicated on the businesses' ability to be available 24X7 to their clients. The absence of time zones and ability to seamlessly shift between the real and virtual worlds is an essential characteristic. If the participants could socialize in a uniform manner, irrespective of the medium, it will allow them to exchange value across digital platforms. The industries need to take cognizance of the changing consumer behaviour towards digitalization-led transactions. The organizations should encourage design and development of interoperable, customizable, and context-aware hyper connected virtual environments, wherein they can co-create customer satisfying experiences. Specific consumer-based industries require a constant consumer engagement. This is primarily true for the industries where service aspects outweigh the product utility. In the subsequent section, we analyze four such industries from the perspective of the metaverse (Figure 4).

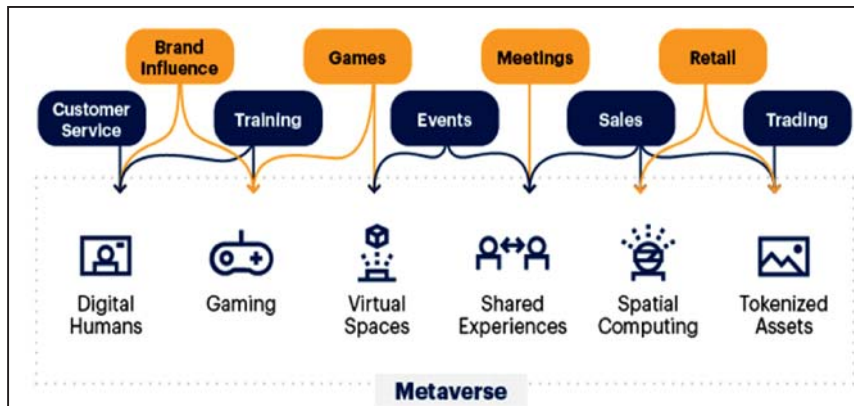


Figure 4: Opportunities in Metaverse

Source: Gartner (2022)

3. Metaverse in Select Industries

3.1. Retail Industry

Jennifer (2019) estimates that by 2025, 30% of global economic activity will be through digital platforms. A digital platform economy opens an opportunity for organizations to exchange value with their consumers without geographical boundaries. The essence of evolving retail industry is the utilitarian exchange of value due to purchasing products and/or services from peer-to-peer and/or professional sellers. In this endeavor, organizations can co-create value with their stakeholders (consumers) by performing economic activities facilitated by cryptocurrency and NFT.

3.2. Digital Marketing

In digital marketing, the metaverse ecosystem enhances the quality and nature of interactions with present and potential consumers. The consumers can virtually test drive the car, check the product characteristics before ordering, and experience its utility. Several retail brands have already incorporated metaverse in their marketing strategies. Nike recently launched virtual sneakers and apparel to be worn by digital avatars for the metaverse ecosystem (Sengupta, 2021). Through this offering, Nike earned US\$3.1 million in sales in seven minutes.

3.3. Hospitality & Tourism Industry

In the post-pandemic ‘new normal’, the hospitality industry can mitigate certain negative narratives by implementing immersive technologies like MR. This will allow them to achieve “a very realistic augmentation of the real world, ideally so realistic that a user can no longer distinguish virtual content from physical objects. MR usually requires special hardware (i.e., smart glasses) where the lenses are replaced by transparent screens and contain multiple sensors to track the user’s environment” (Rauschnabel, 2022). Hence, a technology-illusive implementation can lead to transformative experiences. The MR-based metaverse experience is being experimented with by a few of the leading museums, like Louvre.

Furthermore, the hospitality industry faces the constant challenge of meeting and exceeding burgeoning client expectations. The client expects a seamless booking process, unique experiences, and personalized attention. Today’s travellers are majorly tech-savvy, and the implementation of metaverse by hospitality organizations could define the guest experience.

The accommodation search is the first step toward prospective clients’ experience in the hospitality industry. Implementing a metaverse ecosystem can allow them to walk through the suggested room, enjoy the 360° perspective, and visualize the room amenities, décor, and other essentials. The potential clients in their digital avatars can have a first-hand immersive experience of hotel rooms, which conventional 2D images cannot provide. Thus, the hotel can transcend geographical boundaries and communicate directly with global travellers.

3.4. Entertainment Industry

The effectiveness of the metaverse can be understood by taking an example of a cinematic experience. Over the last few decades, the advancement of technology and the popularity of 3D versions of

movies like Avatar, Matrix, Avengers, etc., have encouraged cinema directors to increasingly incorporate 3D features in their films. Before the popularity of 3D movies and post that too, the viewers are passive participants only during the duration of the film. While the directors, scriptwriters, and actors try their best to communicate and stimulate audiences' emotions, the same is not at the live-theater levels. The performances at live theatre allow the audiences to enjoy a higher level of immersion since all their sensory faculties are in a closer relationship with the actors.

Live shows in the metaverse by performers like Ariana Grande, Justin Bieber, The Chain-smokers, besides others allow the audiences to become part of the experience from their gadgets because, in the metaverse, experiences of digital and physical nature are inseparable and undistinguishable from the environment in which they occur. Thus, the entertainment industry and media can benefit from the realistic augmentation of the natural world, allowing the performer to transcend the limitations of venue capacity, distances, permissions, and statutory licenses.

4. Technology and Innovation of Metaverse

As enumerated in the above section, metaverse is a virtual platform that enables its users (corporates and consumers) to interact mutually by using their digital avatars. The fundamental technology to achieve this is Mixed Reality (MR). However, metaverse integrates other technologies through ambient intelligence to bridge the digital and physical universes, thus, facilitating its 'residents' to combine resources and holistic experiences across different spectrums of reality (Buhalis, 2019). The rapid ICT advancement has allowed developers to ideate and seamlessly introduce digital realities in the physical world of the users. Metaverse provides three-dimensional (3D) illusive experiences allowing for social interaction in blended living (Buhalis and Karatay, 2022).

Metaverse is emerging as "a parallel reality where humans can work, play, and communicate" (Gursoy *et al.*, 2022). Metaverse ecosystem can be described as a platform integrating 3D projection technology with enhanced Augmented Reality (AR) and VR into MR (Rauschnabel *et al.*, 2022). Metaverse is designed to provide seamless experiences by transferring residents/visitors between the physical and digital environments. Virtual engagement provides several multisensory immersive experiences. Thereby enabling the organizations to transcend geographical limitations. Virtual Reality (VR) headsets allow users to experience virtual 3D environments from across the globe within the comfort of their homes or workplace. Through their self-created digital avatars, the users interact with other users in virtual surroundings. This virtual environment is conceptualized and designed on powerful technology platforms and enhanced computational capabilities available to today's developers. In addition to the VR experience, metaverse can provide a near-life-like experience by engaging multiple senses of the individual. Analyzing sensory feedback generated by sight, hearing, smell, taste, and touch is crucial for marketing firms.

5. Issues and Challenges in Metaverse Ecosystem Adoption

The digital ecosystem i.e. metaverse poses challenges for organizations, employees, business leaders, developers, UX designers, CX designers, content creators, marketers and even the consumers. The present employees lack the requisite technical skills to fully understand the contours of metaverse. The business leaders and their marketing teams too need to reorient their vision and strategies to

accommodate this emerging phenomenon. This will require an extensive reskilling on both executive and higher management levels.

The societal implications of an unregulated metaverse cannot be overlooked. A regulatory framework wherein the stakeholders including the statutory authorities should together define an actionable roadmap leading to an ethical, safe, and inclusive metaverse experience. This will require for regulations to be framed around data, security, laws of land, ethical behaviour, penalties in case of non-compliance, mental wellbeing, physical safety, equity and fairness among the participants.

Additionally, research has highlighted significant causes of concern relating to ethics, data security, regulation, and psychological impact on vulnerable community members. Already the metaverse users are complaining about offensive and undesirable behaviors in the form of data exploitation, sexualization of avatar interactions, addiction to simulated reality, and privacy issues. In their recent report, researchers of The Centre for Countering Digital Hate (CCDH) found that users were “exposed to abusive behavior every seven minutes and this included instances of bullying, presentation of graphical sexual content, racism, threats of violence, and grooming of minors”.

6. Conclusion

The initial advantages of the metaverse are already accruing to the first-mover companies. As visible in earlier technological advancement stages, the early adopters gain a comprehensive competitive advantage which the other firms seek to mimic. The metaverse has the potential to impact all the domains of management—from HR to marketing, operations, and supply chain & logistics. Presently, business leaders should examine its potential applications, its effectiveness in domains, its boundaries, if any, and how the metaverse could be a precursor to the new world predicated on digitalization.

In its limited scope, the present study examined the evolving concept of the metaverse and its purported influence on management across industries. The authors posit that for the metaverse to gain acceptance, it is imperative that organizations have a clear strategy for all the domains of management. They should strategize and design the application of metaverse for each business vertical. As evidenced earlier in the study, businesses across a spectrum ranging from technology companies, private equity (PE) funds, established retail brands, hospitality industry venture capitalists, and start-ups are making efforts to capitalize on the opportunities offered by the advent of the metaverse.

Hence, we can conclude that the metaverse interconnects the virtual and real world and has the potential to disrupt the existing management principles across domains and industries. It offers immense opportunities in social, economic, and cultural spheres for organizations and facilitates value co-creation and higher order attainment.

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