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Marketing in the Metaverse: Conceptual understanding, framework, and research agenda

Kevin Giang Barrera [a], Denish Shah [b,*]

[a] Department of Marketing at J. Mack Robinson College of Business, Georgia State University in Atlanta, USA
[b] Barbara & Elmer Sunday Professor and Associate Professor of Marketing, Founding Director of Social Media Intelligence Lab, and Executive Director of Marketing RoundTable at J. Mack Robinson College of Business, Georgia State University in Atlanta, USA

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ABSTRACT

A hyper-connected digital universe referred to as the '*metaverse*' bears the promise of fundamentally changing how consumers, brands, and firms will transact and interact in a seamlessly interconnected space of virtual realities. The potential of the metaverse is being accelerated by the increasing tendency of (i) consumers engaging and transacting in virtual spaces and (ii) firms investing millions of dollars in developing metaverse-related technologies. However, given the rapid evolution, there is a lack of clear understanding of the current scope of the metaverse and the consequent implications for marketing practice and research. This study integrates the findings from an extensive literature review of multiple disciplines and expert viewpoints of industry leaders to propose a definition and an organizing framework for the emergent metaverse. Subsequently, the authors discuss how metaverse-induced changes contribute to novel implications for marketing practice and propose a research agenda to guide future academic studies and marketing initiatives.

1. Introduction

Consumer habits are fundamentally changing and increasingly gravitating to consumption in the digital realm (Shah & Murthi, 2021). For example, consumers worldwide indicate that they find it easier to interact with brands through online channels (Wunderman Thompson Intelligence, 2021; Elmasry et al., 2022). Concurrently, we are witnessing a steep increase in firms' investments in platforms that support digital environments (Holmes, 2021). Together, these factors are highly conducive and contribute to a hyper-connected digital universe referred to as the '*metaverse*', bearing the promise to evolve into a seamlessly interconnected space of virtual realities that will fundamentally change the way consumers, brands, and firms transact and interact. Many believe that the metaverse has the potential of transforming business and social life on a level comparable to the Internet (Bobier et al., 2022; Elmasry et al., 2022; Foutty & Bechte, 2022; Hackl, 2021; Morino, 2022; Sullivan, 2021).

The term '*metaverse*' was first introduced in 1992 in Neal Stephenson's literary work, *Snow Crash* (Stephenson, 1992), and was presented as a black spherical planet accessible to users through terminals with integrated virtual reality capabilities and where users could appear as avatars (The Economist, 2020). Three decades later, the fictional notion of the metaverse has steadily evolved into a real business consideration for marketing, among other applications.

Several large technology firms such as Facebook (now renamed Meta), Microsoft, and Nvidia Corporation are investing millions of dollars in building a digital universe consistent with the notion of the metaverse (Cross, 2021; Kelly, 2021; Bosworth & Clegg, 2021; Iversen et al., 2021). Similarly, retail brands such as Nike, Puma, Gap, Clarks, Tommy Hilfiger, Gucci (Cameron, 2021; Morris, 2021; Silberstein, 2022), entertainment brands like Disney (Faughnder, 2022), fast-food chain brands such as Wendy's, Chipotle, Panera and McDonald's (Meisenzahl, 2022), and even professional sports teams like the Atlanta Braves (Dixon, 2022) have begun to explore opportunities to engage with consumers in the 'metaverse'.

Furthermore, governments and firms are also engaging in service and enterprise-level metaverse initiatives. For example, Accenture recently created a digital headquarter to stimulate workforce collaboration (Roach, 2021), Anheuser-Busch InBev created "digital twins" of its brewing and supply chain operations synchronized with its physical facilities (George, 2021), defense tech companies and the U.S. military are experimenting with more realistic proto-metaverse flight simulation

* Corresponding author at: Georgia State University, J. Mack Robinson College of Business - Department of Marketing, 13th Floor, Suite 1341, 35 Broad St NW, Atlanta, GA 30303, USA.
E-mail address: shah@gsu.edu (D. Shah).

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practices (Knight, 2022), and the government of Seoul announced its plan to launch 'Metaverse Seoul' – a full-service virtual world in which residents could perform touristic and administrative city-related activities (Lee, 2021). Not surprisingly, every major business consulting firm, including Deloitte, Accenture, Bain Consulting, Boston Consulting Group, Gartner, and Forrester, has underscored the importance of the 'metaverse' within the context of future business growth opportunities. According to Citi, the metaverse presents a $13 Trillion revenue opportunity by 2030 (Denton, 2022).

The increased global attention (Google Trends, 2022) and rapid adoption of the metaverse in the marketplace beg the question: *What is the metaverse* and *how can we determine its scope?* It turns out that business executives and professionals provide different answers when asked to define the metaverse (Sullivan, 2021). While one school of thought believes that we are already experiencing the metaverse, another believes that the metaverse is still under development (Hackl, 2021). Furthermore, the extant academic literature characterizes the metaverse from both narrow (e.g., single virtual worlds) and broad (e.g., a hyperconnected and interoperable shared digital space blending physical and virtual realities) perspectives (e.g., Wright et al., 2008; Lee et al., 2021; Duan et al., 2021). In sum, there is a general lack of consensus and considerable ambiguity related to what the metaverse is and its scope. The lack of a unified view has also urged marketing researchers to trigger a call to action for marketing-related research in this digital space, including scientifical exploration to add clarity and boundaries to the metaverse conceptualization (Kim, 2021; Taylor, 2022). Moreover, Dwivedi et al. (2022) acknowledge the emerging nature of metaverse-related scholarly work and take a multi-perspective approach of compiling diverse views of the metaverse from more than 40 scholars.

In this study, we seek to address the following research questions: (a) What is the metaverse? (b) How has its definition, role, and scope evolved over time? (c) How can marketers design and develop consumer experiences in the metaverse? (d) What are the implications for future marketing academic research? Taking an evidence-based approach, we address these questions by conducting a systematic review of the literature and recent developments from the marketplace to compile a comprehensive understanding of the metaverse and its implications within the context of marketing. We contribute to extant research by proposing a novel organizing framework, a characterization of possible consumer experiences in the metaverse, and an agenda for future academic research. The proposed framework can also enable practitioners to develop new marketing initiatives and consumer experiences in the metaverse.

The rest of the study is organized as follows. First, we present academic literature in technology-related fields (i.e., computer science, information systems) and secondary data (i.e., popular press, company news, consulting reports), including the viewpoints of 78 business professionals regarding the role and scope of the metaverse and potential business cases. We then compare different perspectives of the metaverse conceptualization, identify common grounds, and present the evolution and current scope of the modern metaverse. Second, we conduct a systematic literature review of 164 marketing-focused, and metaverse-associated academic articles to synthesize relevant knowledge from extant research. We then integrate our findings from technological conceptualizations, market-based secondary data, and marketing-focused metaverse related literature to propose a definition and an organizing framework for marketing in the metaverse. Third, we apply a resource-based theoretical approach to the metaverse and discuss possible approaches a firm can take when launching its marketing activities and/or designing consumer experiences in the metaverse. Finally, we develop a research agenda for marketing in the metaverse. We conclude with a summary of key contributions and future considerations. Overall, to the best of our knowledge, this is one of the first major attempts to understand and contextualize the modern metaverse within the realm of marketing.

2. Understanding the current scope of the metaverse

2.1. Tracing the evolution

In the 90 s, the term metaverse appeared in the computer science literature concerning the developments of interactive worlds, real-time autonomous agents, and virtual-human research. Herein, the metaverse was regarded as a quasi-physical and virtual reality world or cyber-planet in which participants were represented as avatars (Perlin & Goldberg, 1996; Allbeck & Badler, 1998). This view is consistent with the metaverse concept in early fictional literary works (e.g., Stephenson, 1992) as well as that of Davis et al. (2009), who defined the metaverses as "immersive three-dimensional virtual worlds in which people interact as avatars with each other and with software agents…" (p. 90). Later, and still approaching the metaverse with a single world perspective but incorporating augmented realities as important digital interactions, Wright et al. (2008) acknowledged the scalable and social characterization of the metaverse and defined it as "an extensive 3D networked virtual world capable of supporting a large number of people simultaneously for social interaction" (p. 263).

In contrast to the single-world perspective, later definitions of the metaverse introduced the aspect of interconnectedness. For example, Frey et al. (2008) described the metaverse as "a system of numerous, interconnected virtual and typically user-generated worlds (or Metaworlds) all accessible through a single-user interface". Dionisio et al. (2013) define the metaverse as "an integrated network of 3D virtual worlds" (p. 2) and propose that it is characterized by *immersive realism*, *ubiquity*, *interoperability,* and *scalability*. This line of thought preserves the purely virtual aspect of the metaverse in the conceptualization but argues for a broader context in which many purely virtual worlds are integrated or interconnected.

More recent definitions support the interconnectedness aspect (referred to in some cases as interoperability), but in line with Wright et al.'s (2008) argument for a new class of augmented reality interactions, they incorporate the notion that the metaverse is not purely virtual. In other words, more updated definitions argue that the metaverse converges the physical and virtual realities. For example, Duan et al. (2021) define the metaverse as "an evolving virtual world with unlimited scalability and interoperability" in which "real-time 3D rendering-related technologies like VR/AR are regarded as the main interaction interface" (p. 156). Similarly, Lee et al. (2021) conceptualize the metaverse as "a virtual environment blending physical and digital, facilitated by the convergence between the Internet and Web technologies, and Extended Reality (XR)" (p. 1).

In sum, the conceptualization and scope of the metaverse have fundamentally evolved in three important ways: (i) it has grown from a narrow single-world perspective to a broader perspective in which multiple (virtual) worlds are interconnected, (ii) it has shifted from a purely virtual characterization to incorporate a blended reality perspective that comprises experiences along the XR spectrum (i.e., virtual reality (VR), augmented reality (AR), and mixed reality (MR)), and the convergence of many other technologies, and (iii) it acknowledges and highlights the immersive and socially interactive aspects of its environment. Table 1 summarizes the evolution of the concept of the metaverse in extant literature.

In Fig. 1, we illustrate the timeline of some major events that have contributed to the evolution of the metaverse. The timeline begins from the 1980s when the Internet first came into existence and underscores some major milestone years such as: 1992 - when the term 'metaverse' was first coined; 2002 – which marked the birth of the 'digital twins' concept; 2009 and 2014 – when the concept of Blockchain and NFTs (non-funginble tokens) respectively were formally implemented in the marketplace to recent years where large technology firms such as Microsoft and Meta have announced big initiatives directed at further development (and hence evolution) of the metaverse. Please see Fig. 1 for more details.

Table 1
Evolution of the Metaverse Concept over the years.

Illustrative Study	Scope	Metaverse Definition
Perlin & Goldberg (1996)	Single Virtual World (Narrow + Purely virtual)	"a future version of the Internet which appears to its participants as a quasi − physical world. Participants are represented by fully articulate human figures, or avatars. Body movements of avatars are computed automatically by the system"
Allbeck & Badler (1998)	Single Virtual World (Narrow + Purely virtual)	"a virtual reality world envisioned as a large cyber-planet. It contains homes, corporate headquarters, nightclubs, and virtually every other type of building found in reality and some that are not. Individuals from around the world materialize on this cyber-planet, and are represented there by avatars"
Wright et al. (2008)	Single Virtual World converging the physical and virtual realities (Narrow + Blended reality)	"an extensive 3D networked virtual world capable of supporting a large number of people simultaneously for social interaction" "implies the interaction of real people with the virtual environments and agents including avatars with increasing levels of immersion and presence""the word metaverse (Meta -Universe) suggests the emergence of a new class of augmented social interaction which we term 'augmented duality'"
Frey et al. (2008)	Interoperable virtual worlds (Broad + Purely virtual)	"a system of numerous, interconnected virtual and typically user-generated worlds (or Metaworlds) all accessible through a single-user interface"
Davis et al. (2009)	Single Virtual Worlds (Narrow + Purely Virtual)	"immersive three-dimensional virtual worlds in which people interact as avatars with each other and with software agents, using the metaphor of the real world but without its physical limitations"
Dionisio et al. (2013)	Interoperable virtual worlds (Broad + Purely virtual)	"an integrated network of 3D virtual worlds"
Duan et al. (2021)	Interoperable convergence of the physical and virtual worlds (Broad + Blended reality)	"an evolving virtual world with unlimited scalability and interoperability" "real-time 3D rendering-related technologies like VR/AR are regarded as the main interaction interface."
Lee et al. (2021)	Interoperable convergence of the physical and virtual worlds (Broad + Blended reality)	"a virtual environment blending physical and digital, facilitated by the convergence between the Internet and Web technologies, and Extended Reality (XR)… all individual users own their respective avatars, in analogy to the user's physical self, to experience an alternate life in a virtuality that is a metaphor of the user's real worlds"

Notes: VWs = Virtual Worlds; VR = Virtual Reality; AR = Augmented Reality, XR = Extended Reality.

2.2. Systematic review of literature

Given our research objectives, we performed a systematic review of articles related to the notion of the metaverse and related technologies within the realm of marketing. We followed the well-established guidelines and best practices from extant research (e.g., Littell et al., 2008; Palmatier et al., 2018). Further, we included in our analysis relevant articles from domains outside of marketing, as broad-domain reviews help assure that all relevant past contributions are fully taken into consideration (Hulland, 2020). As the number and type of articles can vary depending on the search technique (Jalali & Wohlin, 2012), we collected our final sample using a multi-technique approach, including database search and backward snowballing (Webster & Watson, 2002; Wohlin, 2014). In essence, we used a two-step search process using different Boolean combinations of keywords in four electronic academic databases (i.e., Google Scholar, Business Source Complete, Academic Search Complete, and Science Direct) to search for articles published between 1992 and 2022. Specifically, we used the initial Boolean combination of "metaverse AND marketing" to identify the initial set of relevant studies. Subsequently, we broadened our search to incorporate emerging or related components of the metaverse. That is, we performed a more comprehensive search of the extant literature by including the Boolean combination "(virtual reality OR augmented reality OR mixed reality OR augmented virtuality OR immersive OR immersion) AND (marketing)". See Fig. 2.

We found relatively limited literature on this topic. Therefore, we did not restrict our keyword search to only the title and abstract of the paper. Rather, we allowed our search logic to scan the entire body of the article text. Next, we employed a systematic depuration process to remove articles that were heavily focused on the practice of education (e.g., *Marketing Education Review*, *Journal of Marketing Education*), or published in journals having a low impact factor (i.e., impact factor < 3.00), following the methodological approaches employed in recent work (e.g., Miao et al., 2021). After the depuration process, our final sample comprised 164 articles. Please refer to Table WA-1 in the Web Appendix for the complete list of articles.

We categorized each article based on the marketing area and the scope of the metaverse discussed in the respective study. We also extracted the contextual setting and the main focal variables involved in the empirical studies (if any). Virtual worlds emerged as a dominant context among metaverse-associated marketing-related research (e.g., Kaplan & Haenlein, 2009; Messinger et al., 2009), while marketing areas such as consumer research (e.g., Catterall & Maclaran, 2002; Domina et al., 2012; Belk, 2013; Hinsch et al., 2020), branding and advertising (e.g., Jin & Bolebruch, 2009; Hyun & O'Keefe, 2012; Huang et al., 2016; van Kerrebroeck et al., 2017) and retailing (e.g., Pantano & Servidio, 2012; Poncin & Mimoun, 2014; Scholz & Duffy, 2018; Rauschnabel et al. 2019) emerged as salient areas in past studies. Majority of the articles related to consumption in virtual worlds used *Second Life* (a centralized virtual world launched in 2003) as their contextual setting (e.g., Kaplan & Haenlein, 2009; Messinger et al., 2009; Animesh et al., 2011; Nah et al., 2011). Further, our investigation of VR and AR in marketing-related research revealed that past studies focused on how interactive media technology enabled consumers to experience immersion (e.g., Cagnina & Poian, 2009; Schnack et al., 2019a; Hoyer et al., 2020; Wedel & Zhang, 2020) and telepresence (e.g., Animesh et al., 2011; Tussyadiah et al., 2018; Bogicevic et al., 2019; Loureiro et al., 2019), and its subsequent impact on consumers' perceived value (e.g., Yaoyuneyong et al., 2016; Barnes & Mattson, 2011; He et al., 2018), attitudes (e.g., Suh & Lee; 2005; Jin & Bolebruch. 2009; van Kerrebroeck et al., 2017; Rauschnabel et al., 2019), and behavioral intentions (Huang et al., 2016; Park & Yoo, 2020; Qin et al., 2021; Willems et al., 2019). Please refer Table WA-2 in the Web Appendix for a more complete list of marketing studies related to the notion of the metaverse.

In sum, metaverse-related studies in the context of marketing may be broadly categorized into three research streams. The first stream comprises relatively old research papers that analyze the early versions of virtual environments (e.g., *Second Life*) which may be regarded (by few) as preliminary versions of the modern metaverse (e.g., Bonsu & Darmody, 2008; Papagiannidis et al., 2008; Kaplan & Haenlein, 2009; Kohler et al., 2009; Tikkanen et al., 2009; Domina et al., 2012). The second stream mainly focuses on singular or specific technological elements of the metaverse, such as virtual reality (e.g., Hyun & O'Keefe, 2012; Cowan & Ketron, 2019a; Kang et al., 2020; Loureiro et al., 2019; Pantano & Servidio, 2012; Papagiannidis et al., 2013), or augmented reality (e.g., Poncin & Mimoun, 2014; Javornik, 2016; Parise et al.,

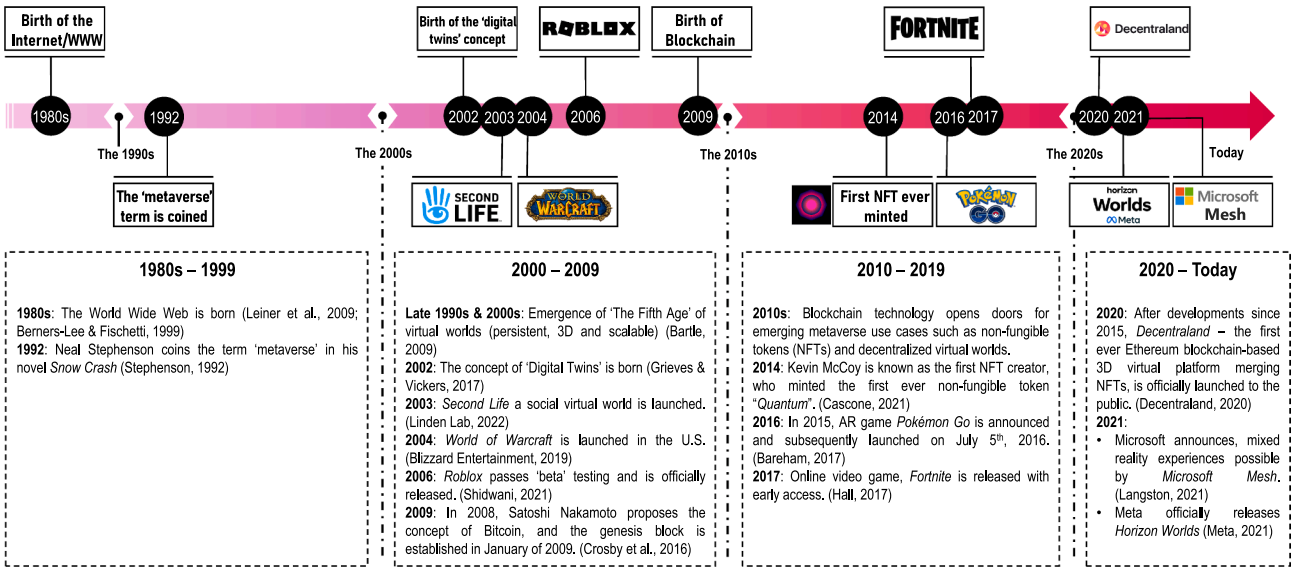


Fig. 1. Timeline of some major events that have contributed to the evolution of the metaverse. (See above-mentioned references for further information.)

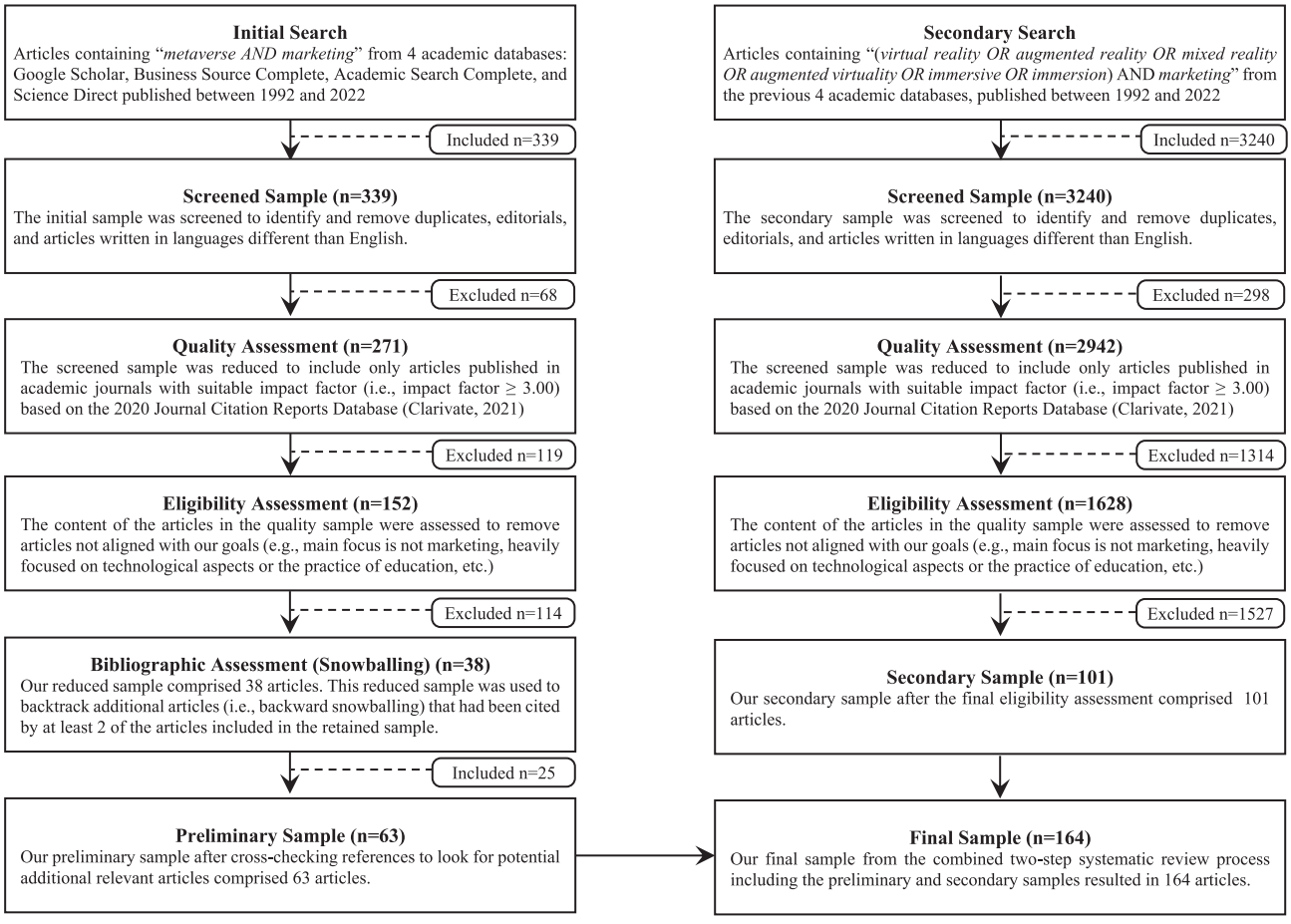


Fig. 2. Systematic Literature Review Process (See above-mentioned references for further information.).

2016; Scholz & Smith, 2016; Scholz & Duffy, 2018; Rauschnabel et al., 2019). These studies do not attempt to understand the broad scope of the metaverse by taking into consideration the full gamut of major technological blocks that drive the metaverse as we know today. The third stream relates to recent efforts to acknowledge the transformative and experiential potential of the emerging metaverse (e.g., Belk et al., 2022; Dwivedi et al., 2022; Golf-Papez et al., 2022; Gursoy et al., 2022). In essence, our review of extant research indicates the need to understand the rapidly evolving metaverse from a more holistic standpoint and hence its implications for marketers and academic researchers.

2.3. Technological building Blocks

To get a more holistic view of the metaverse, we review literature from technology-based journals and find that the architecture of the modern metaverse emerges from the convergence of multiple technological building blocks (Duan et al., 2021; Lee et al., 2021; Wang et al., 2022; Elmasry et al., 2022). We identify and briefly discuss the following major technological blocks: (a) Networks, (b) Computing, (c) 3D Modeling, (d) Internet of things or IOT, (e) AI or Artificial Intelligence, (f) Blockchain, (g) XR or Extended Reality, and (h) Interface devices.

2.3.1. Networks

Networks refers to the current and future mobile communication systems such as 5G that allow pervasive network access to the metaverse (Lee et al., 2021). The networks help remove the limitations of time and space to communicate and transfer information (Lin & Lee, 2021), and facilitate scalable and ubiquitous services to its users, making possible remote and real-time persistent connections between the augmented and the virtual worlds of the metaverse (Wang et al., 2022).

2.3.2. Computing

Computing refers to the main computer programs, computation instructions, and algorithms that provide the core computational power of the metaverse architecture. The large-scaled multimedia systems of the metaverse typically incur huge computational costs (Duan et al., 2021) to service demanding functions such as visual rendering, data synchronization, motion tracking, and capturing, among others (Ball, 2021). Wearable and mobile devices (commonly used to access the metaverse) lack the required computational power. Therefore, edge and cloud computing power play a critical role in supporting the timely processing and system responses of the relevant metaverse application (Lee et al., 2021).

2.3.3. 3D Modeling

3D Modeling refers to the technologies involved in the process of generating three-dimensional virtual and visually interactive representations on a computer (Remondino & Sabry, 2006). It includes tools to draw in 3D, and computer vision techniques to build 3D reconstitutions of users' environment, body, pose, location, and orientation (Lee et al., 2021). Further, 3D modeling supports 3D reconstruction approaches to help achieve *Digital Twins* – digital clones of physical objects and systems with high fidelity and consciousness (Duan et al., 2021), that enable precise mirroring of physical entities in the virtual form (Wang et al., 2022). Moreover, 3D modeling plays an important role in facilitating user-generated content through virtual assets creation (Duan et al., 2021). In sum, 3D modeling enables design of the environment and objects in the metaverse to offer users a real lifelike experience.

2.3.4. Internet of things (IoT)

The Internet of Things is defined as "an open and comprehensive network of intelligent objects that have the capacity to auto-organize, share information, data and resources, reacting and acting in face of situations and changes in the environment" (Madakam et al., 2015, p. 165). Such network of smart objects embedded with sensors can serve as extensions of the human senses to help communicate and transfer information between the real and virtual world through objects (Wang et al., 2022) and blended metaverse environments (Lee et al., 2021).

2.3.5. Artificial intelligence (AI)

Artificial Intelligence relates to technologies that enable machines to learn, think and behave like humans do (De Bruyn et al., 2020). Such capabilities have reached a stage where computers can predict by learning and recognizing patterns from data and perform repetitive tasks (Jeon et al., 2021). In the metaverse, AI plays a role in achieving digital twins by automatically replicating actions of the virtual world in the real world. Further, AI allows the introduction of computer agents (i.e., characters not controlled by players/users) that learn and adjust behavior based on the interaction experience with users, and autonomous avatars (Lee et al., 2021).

2.3.6. Blockchains

Blockchains can be described as peer-to-peer decentralized databases or ledgers in which data is stored in blocks, which are shared by all network nodes (users), monitored by every-one, and owned and controlled by no one (Swan 2015; Shah & Shay, 2019). The decentralized recording system is difficult to fool or control. Thus, blockchains' key features, such as decentralization, persistency, anonymity, and auditability (Zheng et al., 2017), are ideal for processes such as identification, registration, distribution, transfer, and tracking of digital assets (Çağlıyangil et al., 2020).

In the metaverse, blockchains can help support massive storage, sharing, and privacy of data, in a decentralized, secure, and interoperable fashion (Lee et al., 2021). Furthermore, blockchains have revolutionized the digital assets' market by allowing the development of NFTs – records of ownership of non-interchangeable digital media (e.g., digital artwork or music) stored in blockchain-based smart contracts (Chohan & Paschen, 2021), that preserve a single, and unique identity. Thus, virtual assets can be securely programmed, transferred, and traded, and their ownership tracked within the virtual environment of the metaverse (Wang et al., 2021; Ante, 2021; Nadini et al., 2021; Popescu, 2021). NFTs may boost the development of the metaverse by encouraging the development of digital marketplaces, as major brands such Dolce & Gabbana, Coca-Cola, Adidas, and Nike are getting into the NFT mix, fostering the consumption and trading of virtual possessions.

2.3.7. Extended reality (XR)

Extended Reality is an inclusive term that comprises all interactive media immersive technologies in the Reality-Virtuality continuum (i.e., virtual reality, and mixed realities such as augmented reality and augmented virtuality) (Kailas & Tiwari, 2021). XR plays a vital role in defining the Metaverse environment. It leverages the 3D real-time rendering capabilities to enhance realism by producing immersive user experiences along the augmented reality to virtual reality continuum (Milgram & Kishino, 1994). For example, virtual reality helps immerse users in virtual environments in the form of avatars, augmented reality can help enhance the physical world surroundings with computer-generated virtual contents, and augmented virtuality allows objects of the physical world to perform actions in the virtual world (Lee et al., 2021).

2.3.8. Interface Devices

Interface devices enable consumers and firms to access, interact, and have an identity in the metaverse. Interface devices' degree of technological embodiment can range from stationary (more distal) to bodily integrated (more proximal). Given the ability of interface devices to enhance a user's sensorial perception, they play a role in determining the type of immersive experience of the users (Flávian et al., 2019). The most popular interface devices currently being used to access metaverse-like experiences involve stationary (e.g., desktop web), portable (e.g., smartphones), and wearable devices such as head-mounted displays (HMDs), including VR headsets (e.g., *Oculus Quest*, *HTC Vive Series*), and AR smart glasses (e.g., *HoloLens*, *MagicLeap*). Recent developmental work in extended reality interface devices involves haptic cue-related applications that communicate a sense of touch (Lee et al., 2021, Wang et al., 2022; Elmasry et al., 2022), smell (Melo et al. 2020; Cornelio et al., 2021), and motor movements that may be transferred from the users to avatars in the virtual environment in real time (Lee et al., 2021).

Avatars are the physical user's virtual-self representation in the virtual space, which can take any form (depending on the type of metaverse environment) and play a relevant role in the formation of the social structure of virtual communities (Book, 2004). Past research

suggests that avatars are part of a user's identity and extended self, which can be seen as a representation of their ideal, possible, or aspirational selves (Belk, 2013). Hence, avatars' actions play an important role in communicating inputs received from interface devices and can enable firms to better understand virtual consumers.

In sum, each block or a combination of the technological building blocks discussed in this section may enable a firm to design their metaverse experiences (Lee et al., 2021; Duan et al., 2021) and hence develop a unique virtual environment where users can collaborate, cocreate, communicate, and/or consume content and digital assets (CBInsights, 2022; Ball, 2021).

2.4. Practitioners' View

To further enrich our understanding of the metaverse, we collected data from reliable secondary sources (e.g., popular press, company news, consulting reports, etc.) to evaluate how leading practitioners of firms from different industries described the metaverse. We collected our sources using a purposive sampling approach. More specifically, we used the terms 'definition' and 'metaverse' and performed a Google search to identify potential sources to be included, and selected articles with viewpoints about the metaverse (e.g., Agustin, 2021; Bobier et al., 2022; Hackl, 2021; Sullivan, 2021; Wunderman Thompson Intelligence, 2021). Furthermore, we made sure that top leading companies related to the development of the metaverse had been included (e.g., *Meta*, *Microsoft*, *Nvidia*, *Unity*). If some of the leading companies were not available in our initial sources, we purposefully searched for commentaries and opinions regarding the metaverse views from the respective CEOs and leading executives in company news, annual reports, and general press articles.

Overall, we analyzed the view of the metaverse of seventy-eight senior business professionals comprising founders, cofounders, C-level executives, and directors of different functional areas such as strategy, product development, technology, creativity, customer experience, etc. The sample of business professionals were drawn from a diverse set of companies including (but not limited to) large technology firms (e.g., *Microsoft*, *Google*), software and game development firms (e.g., *Epic Games*, *Nvidia*, *Unity, Roblox*, *Decentraland*), technology manufacturers (e.g., *Sony Electronics*), social media platforms (e.g., *Snap Inc*, *Meta* (Facebook)), startups (e.g., *Magic Leap*), and professional business services and consulting firms (e.g., *Accenture, PwC*, *Deloitte*, *McKinsey*). The complete list of 78 practitioner viewpoints can be found in Table WA-3 of the Web Appendix.

We conducted a thematic analysis of our practitioners' viewpoints data by implementing established procedures (Braun & Clarke, 2006) and identified major themes related to the understanding of the metaverse and its emergence, how consumers would access and experience the metaverse, and the potential implications of those interactions. We identified the following major themes: (i) evolution of the Internet, (ii) technological convergence, (iii) metaverse features, (iv) multidevice accessibility, (v) convergence of alternate realities, (vi) multisensory immersivity, (vii) virtual reembodiment, (viii) self-expression and digital ownership, (ix) user-driven cocreation, and (x) universal social interaction.

We cross-check and validate the themes by applying Krippendorff's alpha (or, Kalpha), a popular and generalized reliability measure that may be employed in content analysis studies regardless of the number of coders, levels of measurement, sample sizes, and presence or absence of missing data (Hayes & Krippendorff, 2007). We calculated Kalpha by analyzing the 112 statements from 78 practitioners. The two independent coders calculated the interrater reliability on the identified themes following the procedure recommended by extant research (De Swert, 2012). Our analysis yielded a Kalpha value of 0.84, which is higher than the suggested threshold level (>0.80), indicating sufficient reliability. Table 2 presents a representative sample of practitioner statements and illustrates how they relate to the corresponding themes. For the complete list of practitioner statements employed in the content analysis, please refer to Table WA-4 of the Web Appendix.

The ten themes extracted from the content analysis (in this section) help summarize practitioners' views of the metaverse and enable us to synthesize the findings from the literature review to develop a definition, organizing framework, and research agenda for the metaverse and its implications for marketing in the subsequent sections.

3. Definition and conceptual framework

3.1. Defining the metaverse

A review of metaverse-related academic research work across different disciplines coupled with content analysis of metaverse related view of 78 practitioners indicate a general lack of consensus on the precise scope or definition of the metaverse. Therefore, we analyze the data collected from the broad-wide domain literature (see Tables 1 and Table WA-1 in the Web Appendix) and secondary sources (see Table WA-3 in the Web Appendix) to identify areas of convergence across the different data sources (Stavros & Westberg, 2009). We find three factors that can help us generalize the way the current metaverse is perceived.

First, there is a general agreement amongst researchers and practitioners that the metaverse is a technology-mediated network (Hoffman and Novak 1996) that manifests itself as a 3D version of the Internet (Hackl, 2021; Sullivan, 2021; Bobier et al., 2022; Foutty & Bechte, 2022; Morino, 2022). Therefore, the technological blocks (see section 2.3) are integral components of the metaverse (Lee et al., 2021; Duan et al., 2021; Sullivan, 2021; Morino, 2022).

Second, as discussed earlier, several definitions of the metaverse in the extant literature, as well as practitioners, refer to the blending of physical components in the virtual environment as one of the most generalizable manifestations of the metaverse. Therefore, the metaverse is best represented as an environment that lies along the continuum of extended reality rather than a purely virtual world.

Third, the experience of users is the key to any metaverse application (Bronstein, 2021; Shaw, 2021; Foutty & Bechte, 2022). A review of metaverse applications indicates that majority of the metaverse use cases today are standalone or centralized applications (Herrman & Browning, 2021). These applications offer a wide range of experience to its users based on the underlying technological blocks and the interface devices used to access and interact within the virtual environments (Magoon et al., 2021; Seo, 2021; Eckert et al., 2022; Bergen, 2021; Morino, 2022). The possible range of experiences in the metaverse may be implemented on the basis of the following three fundamental design dimensions: (i) the level of immersiveness, (ii) the degree of fidelity between the virtual environment and the real world, and (iii) the level of sociability permissible amongst the users.

Drawing upon the aforementioned discussions, we formally define the metaverse as *a technology-mediated network of scalable and potentially interoperable extended reality environments merging the physical and virtual realities to provide experiences characterized by their level of immersiveness, environmental fidelity, and sociability*.

3.2. Organizing Framework

We present an organizing framework of the modern metaverse as shown in Fig. 3. We refer to the metaverse as 'modern' to acknowledge the systematic evolution of the metaverse over the years (as discussed in Table 1) and distinguish it from pure virtual worlds of the past (such as *Second Life*).

The proposed framework integrates all of our earlier discussions and organizes the major components of the metaverse in a visual form. Specifically, we represent the major technological building blocks of the metaverse as the outer ring of the organizing framework. It helps define the basic foundational architecture of the metaverse. The interface devices in the middle concentric ring represent how users may access and

Table 2
Emerging Concepts and Themes from the Practitioners' Views of the metaverse.

Practitioner Viewpoint Sample Statements	Emerging Concepts	Emerging Themes	Brief Description of Theme
"…This vision of the internet is rapidly gaining traction as a platform for a ***wide variety of human interactions***…" (Executive Chair of the Board and Chief Futurist, *Deloitte*) "…It will be ***inherently social***; you'll be able to ***hang out with friends, collaborate with colleagues***, learn, shop and create – among other things…" (VP of Metaverse, *Meta Platforms Inc*) "…everything and ***every-one can communicate and interact seamlessly***…In the metaverse, unlimited users and businesses can ***explore, create, socialize, and participate in a wide variety of communities***…" (Vice President and General Manager of XR and Metaverse, *Qualcomm*) "…***people can come together*** within millions of 3D ***experiences to learn, work, play, create, and socialize. Fostering a rich community*** built on ***shared experiences*** is central to this vision…" (Chief Product Officer, *Roblox Corporation*) "…a computer-generated simulation of a 3D space where ***users can interact***… it needs to have ***presence (social presence)***… it needs to be ***shared*** (***multiple people will need to be able to interact*** in the metaverse)." (CEO, *Together Labs*)	'connecting people' 'virtual human interactions' 'socialization' 'collaborative space' 'shared community' 'social presence' 'collective presence'	Universal social interaction	User experiences in the metaverse will be characterized by global human connectivity, social interactivity and collaboration
"…how does the ***virtual*** come off the screen and ***be baked into the fabric of reality***…it's really about ***virtual and physical sharing the same space***…" (Founder & CEO, *Aglet*) "…a form of ***digital*** interaction where connected, ***virtual experiences simulate those of the physical world***. Unlimited reality ***integrates digital and physical*** experiences…" (Executive Chair of the Board & Chief Futurist, *Deloitte*) "We imagine the metaverse as ***reality made better***, a ***world infused with magic, stories, and functionality*** at the ***intersection of the digital and physical*** world" (CEO, *Niantic*) "…an ever-present spatial internet complete with personalized digital experiences that ***spans the physical and virtual worlds***… ***a virtual presence that mirrors aspects of real life*** …" (Vice President & General Manager of XR and Metaverse, *Qualcomm*) "***Reality will exist on a spectrum ranging from physical to virtual (VR)***, but a significant chunk of our time will be spent ***somewhere between those extremes, in some form of augmented reality (AR)***…" (Cofounder & Executive Chairman, *Animoca Brands*) "…The vision of ***bridging physical and digital realities*** is about inhabiting an interface…the metaverse, together with our physical locations, forms a ***spatial continuum***…" (Senior Associate, *CallisonRTKL*)	'virtual/physical common space' 'physical world simulations' 'digital/physical integration' 'real world and virtual world bridge' 'real to fantasy mixed realities'	Convergence of alternate realities	The metaverse enables the emergence of new experiences based on the virtualization of entities and spaces and characterized by the blending of the physical and digital realms and the mix of fantasy and reality
"…***immersive interactions*** that move people beyond the glass screens on traditional devices…" (Executive Chair of the Board & Chief Futurist, *Deloitte*) "…The metaverse aims to bridge this gap by creating a tactile, ***sensorially immersive experience*** that delivers the ***feeling of being present*** without requiring physical presence. In effect, we will not just be on the internet, we will be in it" (Head of Digital & Emerging Technology, *Ernst & Young*) "..an effectively infinite space in which humans can do everything we do in physical space but in a ***multisensory stimulation***." (Founder & CEO, *Redding Futures*) "…It's all pointing toward a more ***immersive entertainment experience*** that engages all ***senses***…" (Deputy President, *Sony Electronics*)	'immersive interactions' 'sensorial experiences' 'immersive experiences' 'multisensory stimulation'	Multisensory immersivity	User experiences in the metaverse will be multisensorial, interactive, and immersive
"people interact… through ***digital representations of themselves*** or ***avatars***…" (Global Chief Technology Officer, *Ernst & Young*) "…I prefer to think of the metaverse as simply ***bringing our bodies into the internet***" (Cofounder & CEO, *Limina Immersive*) "…many content creators use technologies like motion capture to ***turn themselves into an anime character*** in the virtual world…" (CEO, *Bilibili Inc*) "…experiences they acquire…new ways of *owning* ***their identity***…" (CEO, *Bumble Inc*) "…A world where we no longer notice a distinction between our **digital avatars** and our ***physical selves***…" (Experiential Producer, *AMP Creative*)	'avatars' 'digital representations' 'identities' 'avatar/physical-self integration'	Virtual reembodiment	Users could experience the metaverse through the reembodiment of their physical selves in different forms of virtual representations
"…***Virtual idols*** can engage with their audience in detailed 3D environment…" (CEO, *Agora Inc*)	'virtualization of people' 'self-expression'	Self-expression and digital ownership	Reembodiment of human selves in the virtual space enables new ways of self-expression and ownership of digital belongings

(*continued on next page*)

Table 2 (*continued*)

Practitioner Viewpoint Sample Statements	Emerging Concepts	Emerging Themes	Brief Description of Theme
"…In the classic metaverse, ***digital users with personalized avatars*** can share experiences and engage in ***self-expression*** in a virtual world…" (Global Partners, *Bain & Company*) '…will be about ***digital ownership*** within an open, decentralized environment. The Metaverse is the distant evolution of Web3…" (CEO, *Coinbase*) "…where your ***physical persona and your digital persona become a unified reality***. What happens in one affects the other and vice versa…" (Founder & CEO, *Streamline Media Group*)	'digital bodies' 'digital ownership'		
"…I look at it as the ***next phase of the consumer internet***…Where we're going now is this '***web 3***.' Now it's about a ***spatial web***…" (Founder and CEO, *Aglet*) "…Enthusiasts see the metaverse as the ***next generation of the internet***…" (Global Managing Director and Partners, *Boston Consulting Group*) ""…fully connected three-dimensional ***visualization of the Internet***…" (Cofounder & CEO, *Surreal*) "…as the ***Internet becomes more 3D, more real-time, more interactive***…" (CEO, *Unity Technologies*)	'future of the internet' 'next phase' 'web 3′ 'spatial internet' '3D internet'	Evolution of the Internet	The metaverse is understood as the next generation of the Internet characterized by 3D and increased real-time interactivity
"…we will come together in all the ways imaginable with ***technology***. With ***augmented reality and virtual reality***. Synchronously, asynchronously, with ***digital twins***…" (Cofounder, *Learning Paths*) "…an idea that ***ties many technologies and content together*** so no one company can develop technologies and build up content ecosystem for metaverse alone…" (CEO, *Bilibili Inc*) "…oncoming metaverse is ***enabled by software and hardware*** but the most critical leap is our belief in that shared illusion as a space… We ***interact now via computers and phones*** with a metaverse but this lacks the useful cognitive dissonance of accessing the real in the digital and vice versa compared to ***immersion in VR and persistence of the digital in the real world via AR***…" (CEO, *Xyris Interactive Design*)	'interactive technologies' 'augmented reality' 'virtual reality' 'digital twins' 'software and hardware'	Technological convergence	The metaverse emerges from the convergence of many different technologies
"…A world where ***smart lenses and BCI devices*** enable us to be surrounded by information…" (Experiential Producer, *AMP Creative*) "…The metaverse ***isn't just VR***! Those spaces will ***connect to AR glasses and to 2D spaces like Instagram***…" (VP of Metaverse, *Meta Platforms Inc*) "…we have seen an accelerating trend of ***real-time engagement in extended reality*** environment, creating the infrastructure of Metaverses…" (CEO, *Agora Inc*)	'several technological layers' 'interface devices'	Multidevice accessibility	Users will be able to access and experience the metaverse through several interface devices and interactive technologies
"…a series of ***decentralized***, ***interconnected*** virtual worlds with a fully functioning economy where people can do just about anything they can do in the physical world…" (CEO, *Coinbase*) "…there will be a real ***sense of continuity*** where the things you buy are always available to you…" (VP of Metaverse, *Meta Platforms Inc*) "…Now for me, ***the word metaverse is plural***…We don't think that one company will represent the metaverse… ***we believe in interoperability and in an open Internet***…" (CEO, *Unity Technologies*) "…the creation of ***a persistent virtual world***, in which consumers are able to ***hop between different virtual experiences***…" (Head of Gaming and e-Sports, *Wunderman Thompson*) "…it needs to be ***persistent*** (when users come back there's some ***sort of continuity and not a reboot***)…" (CEO, *Together Labs*) "…we're entering a new chapter with modalities that can amplify or deepen connection, and these are going to be critical for ***allowing people everywhere to access***…" (Cofounder & CEO, *Future*)	'decentralization' 'interconnected reality' 'sense of continuity' 'interoperability' 'persistence' 'seamless transitions' 'global access from everywhere'	Features of the metaverse space	The metaverse is expected to feature ubiquity, decentralization, persistency, interconnectedness and interoperability
"We'll be living in the metaverse when 2D ***user-generated content***, videos and chat evolve to become 3D ***player-generated experiences***…" (CEO, *Nowhere*) "…this means new engagement, participation and ***creator models***… through the communities they build, the virtual goods…" (CEO, *Bumble Inc*) ""…each person feels compelled to ***customize their avatar*** and space…" (Founder, *Roomkey VR*)	'user/player generated' 'create' 'customization'	User-driven cocreation	Experiences in the metaverse are engaging, involving and participative, allowing users to co-create.

Notes: VP = Vice-president; CEO = Chief Executive Officer; VR = Virtual Reality; AR = Augmented Reality.

experience the metaverse environment. The inner most concentric ring of the framework represents the metaverse environment where users can interact. The user experience in the metaverse environment may be determined by the extent to which it offers immersiveness, environmental fidelity, and sociability. We discuss these three attributes of the metaverse and how they affect the consumer experience in more detail in the subsequent sections.

4. Implications for marketing practice and research

4.1. Designing consumer experiences

Given that one of the core objectives of almost all metaverse applications is enhancing user experience, it makes sense to look at metaverse marketing applications through the lens of 'consumer experience' rather than technology. This helps widen the range of business models and use

Fig. 3. The Metaverse: An Organizing Framework.
Note: AI = Artificial Intelligence; IOT = Internet of Things; XR = Extended Reality.

cases that support or will support individuals and companies in creating, marketing and selling new products, goods, and services. We discuss how marketers can treat immersiveness, sociability, and environmental fidelity as levers to design consumer experiences in the metaverse.

4.1.1. *Immersiveness*

Past research regards immersiveness as an objective and quantifiable description of the degree of immersion that any particular system provides (Slater & Wilbur, 1997). The degree of immersion is typically determined by the underlying technology of the system.

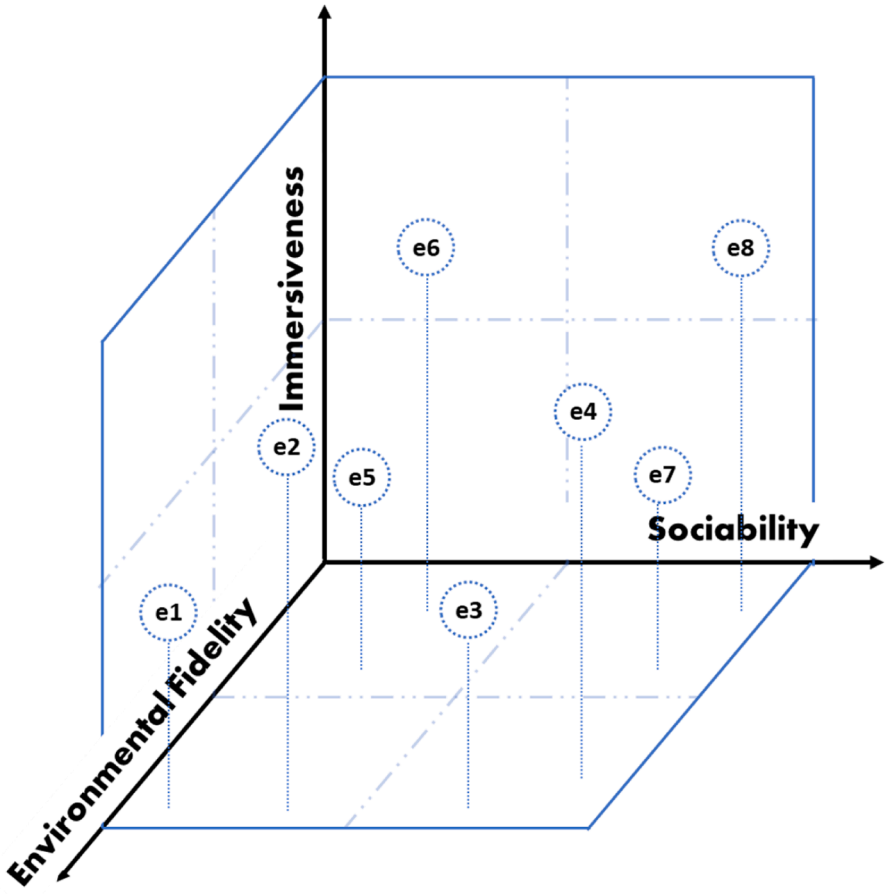
Given that the interactions in the metaverse rely on new interactive media technologies (such as extended reality), the range of possible experiences can vary based on the level of virtuality. That is, the level of combination of virtual elements with real-world elements that may be experienced by a user through immersion or telepresence (Javornik, 2016; Lister et al., 2008; Steuer, 1992). As proposed by Steuer (1992), media characteristics such as vividness (i.e., representational richness) and interactivity (i.e., systems capability to allow users to modify form and content in the mediated environment) lead users to experience telepresence (i.e., users' experience of being present in the environment), and thus feel immersed in the virtual (or virtually enhanced) environment (Animesh et al., 2011; Willems et al., 2019; Kang et al., 2020; Barhorst et al., 2021; Nikhashemi et al., 2021; Lee et al.; 2022).

Relying on Wirth et al.'s (2007) telepresence formation process based on self-location (i.e., the sensation of being physically situated in a spatial environment) and perceived possibilities to act (i.e., perceiving actions possible in the mediated space), Cummings and Bailenson (2016) operationalize immersiveness as telepresence-inducing factors related to systems configurations and specifications, rather than the characteristics of the mediated content. Similarly, the level of technological embodiment of extended realities also plays a role in users' level of immersion (Flávian et al., 2019). For instance, current metaverse-like 3D virtual world platforms can be accessed via PCs (e.g., *Decentraland*[1]), both PCs and mobile devices (e.g., *The Sandbox*[2]), or through fully immersive VR clients (e.g., *Somnium Space*[3]), thereby, offering different levels of immersiveness depending on the degree of technological embodiment. Thus, in the context of our study, we regard *immersiveness* as a dimension of experience, where technology-related factors may manipulate the degree (i.e., low to high) of telepresence. In the context of marketing, immersion mediated by telepresence, has been known to positively affect consumers' perceived value, attitudes, and behavioral intentions (Jin & Bolebruch, 2009; Mäntymäki & Salo, 2013; Animesh et al., 2011; Nah et al., 2011; Hyun & O'Keefe, 2012; Poncin & Mimoun, 2014; van Kerrebroeck et al., 2017; Tussyadiah et al., 2018; Harz et al., 2022; Kinzinger et al., 2022).

4.1.2. *Sociability*

Sociability can be regarded as a firm-induced factor aiming to offer and enhance collective interaction among users (e.g., sharing, collaborating, co-creating). We draw on computer science literature that has analyzed the sociability of computer-supported collaborative

[1] https://decentraland.org/.
[2] https://www.sandbox.game/en/.
[3] https://somniumspace.com/.



Experience	Immersiveness	Environmental Fidelity	Sociability
e1	Low	High	Low
e2	High	High	Low
e3	Low	High	High
e4	High	High	High
e5	Low	Low	Low
e6	High	Low	Low
e7	Low	Low	High
e8	High	Low	High

Fig. 4. Possible consumer experiences in the metaverse.

environments (e.g., Kreijns et al., 2007) and formally define sociability as the extent to which a metaverse environment is perceived to be capable of facilitating a social space for enabling social presence.

Social presence in extended reality environments has been identified as an important feature to stimulate consumers' perceived benefits and its consequences on consumer attitudes and intentions (Animesh et al., 2011; Ying et al., 2021). For instance, De Regt et al. (2021) find that ad branded experiences in VR can trigger higher levels of social presence and hence positively contribute to brand engagement and advocacy. Similarly, Scholz and Smith (2016) argue that user-user engagement in AR experiences can be achieved by increased sociability. Further, social presence in massive virtual environments, as those expected in the metaverse, allow for experiences ranging from lower to higher levels of social interaction. Such experiences can be designed to hinder or foster social interaction and subsequent effects such as sharing, collaboration, and co-creation (Bonsu & Darmody, 2008). For example, in the context of user-generated content, Daugherty et al. (2008) find that social functions motivate consumers to perform activities that are important and relevant to others in the online communities. Furthermore, creativity and co-creation have been proposed to induce consumer outcomes, especially for highly-involved consumers (Cowan & Ketron, 2019b).

In sum, sociability is an important dimension for firms to consider while designing the attributes of their metaverse experiences. The degree of sociability may be set along a continuum ranging from low to high based on the marketing objective(s) of the respective firm.

4.1.3. Environmental Fidelity

We draw on the simulations and games literature (Alexander et al., 2005) to formally define environmental fidelity as the extent to which the metaverse environment (including self-representations) emulates the real world physically and functionally. Thus, it may be regarded as a contextual factor of both persona and its surroundings.

Past marketing literature related to fully simulated virtual worlds (e.g., *Second Life*) suggests that consumers have different goals when entering and engaging in shopping activities in metaverse-like environments, including exploration, self-expression, socialization, escapism and entertainment (Hassouneh & Brengman, 2011, 2015; Jung & Pawlowski, 2014). Similarly, Zhou et al. (2011) find that users of virtual world environments have functional, experiential, and social motivations to engage in virtual spaces and that users' individual differences can impact the type of activities users may choose to engage in.

In the context of VR and AR advertisement, Sung (2021) and Ying et al. (2021) report that hedonic factors such as escapism and entertainment have positive effects on influencing future users' intentions. For example, consumers with escapism goals are typically motivated to avoid aspects of daily life that can be perceived as boring and routinary (Sung, 2021), while consumers with functional goals are motivated to engage in relatively more rational, task-oriented and daily activities such as buying products, learning, or earning money (Zhou et al., 2011). Moreover, users of more real-life-like worlds are highly involved and motivated to seek social relationships, while users in fantasy worlds tend to seek achievement or engage in manipulation of others (Melancon, 2011). Real-life-like experiences can also be contingent upon whether users can keep or change their physical self-representation and identity in the metaverse environments. More specifically, digital re-embodiment through avatars (i.e., the users' digital representation) plays a role in how users identify themselves in virtual environments, and they can reembody more self-alike avatars or fantasy-based avatars, and employ anonymous and pseudonymous identities, to the extent of having a completely different identity (Belk, 2013).

Given that task-related goals can be achieved with more or less ease depending on the type of contextual surroundings as well as the user's motivations, marketers can regard environmental fidelity as an important criterion to effectively design goal-congruent metaverse experiences.

In summary, our proposed three dimensions of *immersiveness, sociability,* and *environmental fidelity may be* represented as three axes of continua along which marketers can design or position consumer experiences in the metaverse, as depicted in Figure 4. The markers e1 through e8 in Figure 4 represent the possible range of consumer experiences in the metaverse by employing different levels of immersiveness, sociability, and environmental fidelity.

5. Research agenda

The metaverse presents several implications for marketing practices. To provide structure to our discussion, we take a firm perspective and apply a resource-based theory approach (Kozlenkova et al., 2014), to identify opportunities and challenges of the metaverse environment for firms' marketing capabilities and processes. Past research has identified marketing capabilities such as knowledge of customers and competitors (i.e., market intelligence), new product development, firms' skills in segmenting and target marketing, and the formulation of the marketing mix (i.e., the 4Ps) (Day, 2011; Song et al., 2007). Given that firms' marketing capabilities can transform resources into outputs based on marketing mix strategies (Yu et al., 2014; Vorhies & Morgan, 2003), meaningful managerial implications can be derived by approaching the metaverse digital environment with a resource-based perspective.

We review the different concepts and themes of the metaverse that emerged as a result of our content analysis of practitioners' viewpoints (see Table 2) and identify the systematic changes it introduces to the business and marketing practices. We list the major metaverse-induced changes as *(a) hyperdata availability* (e.g., Lee et al., 2021; Reed Smith, 2021) *(b) virtualization* (e.g., Duan et al., 2021; Caulfield, 2021), *(c) hyperconnectedness* (e.g., Lee et al., 2021; Hackl, 2021), *(d) hyper-gathering* (e.g., Dionisio et al., 2013; Wunderman Thompson Intelligence, 2021; Bronstein, 2021), *(e) virtual/physical blending* (e.g., Sullivan, 2021; Elmasry et al., 2022), *(f) identity reembodiment* (e.g., Belk, 2013; Wunderman Thompson Intelligence, 2021), *and (g) new ownership, privacy and societal challenges* (e.g., Reed Smith, 2021; Kapoor & Yaghoubi, 2021; Marr, 2022). Each of these metaverse-induced changes are critical to acknowledge and understand because they contribute to novel marketing implications as detailed in Table 3.

We find that the metaverse-induced changes motivate several new substantive questions that may be addressed by future academic research. We organize these questions into the following focal research areas: (i) Intelligence (ii) Innovation (iii) Communication (iv) Experience (v) Consumer Behavior, and (vi) Policy Formulation as depicted in Table 4. A detailed discussion follows.

5.1. Intelligence

Marketing intelligence regards firms' ability to gather, analyze and disseminate internal and external data associated with customers, products, competitors, and markets, with the end goal of driving marketing-related decisions (Tan & Ahmed, 1999; Huster, 2005; Dam et al., 2019). Typical marketing intelligence online data sources involve online surveys, log data from competitors' e-commerce websites (e.g., sale ranks, list price, customer ratings, etc.), customers' online search behaviors and sentiments acquired through Internet Protocol cookies, server logs, and social media (Dam et al., 2019). Hyperconnected worlds, such as the one driven by the ubiquity, scalability and potential interoperability of the metaverse space (Dionisio et al., 2013), are contextualized by the proliferation of networks of users, diversity of interface connected devices, and continuous spatial–temporal accessibility that allow real-time capturing of unprecedented levels of data at a scale (Swaminathan et al., 2020). Moreover, based on an information-processing perspective, past research suggests that digital technologies have both, positive and negative implications for the generation, dissemination and responsiveness to market intelligence (Kohli, 2017). In the metaverse, the amount of data is large, diverse and can be collected over time and in real time. In fact, in the metaverse there is information about anything and everything in the physical world (e.g., an area, a shop, or a product) and knowledge about the user (e.g., the user's schedule, location, habits, and interests), which can be collected virtually in real-time through devices into the physical environment (Reed Smith, 2021).

Past research in virtual worlds has recognized the importance of virtual environments for conducting market research and market testing (Messinger et al. 2009; Kaplan & Haenlein 2009) using techniques such as immersive netnography to investigate metaverse experiences (Kozinets, 2022). Similarly, recent assessments of virtual reality applications highlight the high potential of automated virtual environments and head-mounted displays for conducting marketing research (Cowan and Ketron, 2019a). In the context of product intelligence, metaverse experiences can be used to collect data regarding consumer preferences when they customize their virtual assets, such as avatars and virtual objects. For example, *Hyundai Mobility Adventure*[4] in *Roblox* offers a virtual space in which users (represented as avatars) can perform different activities such as visiting a dealership, driving, buying, selling, and even customizing virtual representations of real-world Hyundai vehicles. Such personalization tasks performed by users can yield rich data-driven insights about product preferences. Furthermore, such platforms also provide options to link the users' metaverse platform account with his/

[4] https://www.roblox.com/games/7280776979/Hyundai-Mobility-Adventure.

Table 3
How Metaverse-induced changes contribute to novel implications for marketing practice.

Metaverse-induced changes	Rationale	Examples and/or use-cases	Implications for Marketing Practice
Hyperdata availability	The metaverse environment contributes to a rich and diverse data environment	• Proliferated network of users Diversity of connected devices Real-time data capturing Low risk environment for market testingNew types of data from virtual entities (e.g., avatars) and interface devices (e.g., headsets, haptic devices, motion trackers)	New opportunities and challenges for the generation, dissemination and responsiveness to marketing intelligence
Virtualization	The metaverse environment emerges from the digitization of physical entities (e.g., subjects, objects, and spaces)	• Realistic and high-fidelity 3D representations of objects and spaces Real-time update of digital content High responsiveness to consumer reactions	New opportunities to innovate as users create, collaborate and co-create.
Hypergathering	The metaverse environment offers a virtual space for multiple users to gather and interact	Suitable environment for need identification, idea generation, and market launch Participatory user involvement	
Hyperconnectedness	The metaverse may be characterized as a hyperconnected network of users, devices and platforms with potential interoperability	• Accelerated dissemination of information Virtualization of brand related elementsInteractive ways to present marketing content (e.g., 'gamevertising') Direct-to-consumer engagement through avatar representations	New ways and channels to generate and disseminate firm/brand related communications and marketing content
Virtual/Physical blending	The metaverse allows for a vast range of simulated, augmented and multidimensional (e.g., cognitive, social, emotional, sensorial) experiences	• Realistic and Immersive experiences Enhanced interface devices with multisensorial input/output Ability to alternate levels of immersiveness, environmental fidelity and sociability	Novel ways to provide hedonic, utilitarian and social values to consumers
Identity reembodiment	The metaverse allows for consumers to 'reembody' in avatars and engage in consumption of virtual goods.	• Consumption of virtual goodsVirtual assets – consumers relationships (e.g., ownership, attachment, disposal, scarcity) Consumers-avatars relationships Direct-to-avatar business models	Different forms of consumers' identities and novel ways to self-express along with heterogeneous goals and motivations.
New ownership, privacy, and societal challenges	The metaverse environment presents unique economic, social and legal challenges.	• Potential anonymity of users Globally diversified user base Algorithmic biasesHypercollection of private data (e.g., biometrics)	New policies may be required to make the metaverse an inclusive, equitable and fair space

her existing e-mail and social media accounts, thereby making it feasible to associate behavior in virtual environments with real consumers through market intelligence.

The metaverse offers new opportunities to collect newer forms of data through interface devices like headsets, goggles, handheld controllers, and haptic devices such as wristbands and smart gloves (Lee et al., 2021; Wang et al., 2022). For example, through computer vision technology, most XR devices can locate the position of the user and capture rich information about users' activities and physical surroundings. Similarly, multi-sensorial data captured from interface devices in conjunction with machine learning techniques can help identify users' actions and emotions in real-time (Lee et al., 2021). As new and diverse forms of data can be collected from a data-rich metaverse ecosystem, understanding what type of data to prioritize, when to collect, and how to analyze it are issues that would need to be addressed by future research. Furthermore, how to integrate new forms of data available in metaverse environments in marketing intelligence processes and systems requires further investigation.

5.2. Innovation

Innovation has been researched in the academic literature from three different perspectives: a mindset, a process, and an outcome (Kahn, 2018). In this study, we regard innovation as an outcome, which according to Kahn (2018) emphasizes output, such as the introduction of new products and services (i.e., product innovation, which can be incremental or radical), new changes in methodologies or processes seeking efficiency (i.e., process innovation), or new ways to engage and communicate with customers and consumers (i.e., marketing innovation). Given the digital and hyperconnected nature of the metaverse ecosystem, we highlight two main contextual factors that make the metaverse an appropriate space to foster innovation: *virtualization* and *hypergathering*.

Virtualization refers to creating 3D digital models of real products from the physical world. Subsequently, users' reactions to the virtualized world and objects may be analyzed thereby presenting opportunities for several marketing applications. For example, past literature has recognized how 3D modeling in conjunction with interactive media applications can help marketers in need identification, concept design, test, and market launch (Kohler et al., 2009; Loureiro et al., 2019).

Virtualization also makes possible the generation of large-scale high-fidelity duplicate models of physical entities (i.e., digital twins) and hence serves as virtual testing grounds (Lee et al., 2021). Digital twins applications are more prominent in the manufacturing sector to simulate and map physical production processes. Further studies are needed to understand its potential for marketing applications. For example, B2B interactions on metaverse spaces such as shared digital twins raise questions such as to what extent can metaverse environments improve customer relationships and innovation practices?

Collaboration emerges in the metaverse as a consequence of its ubiquitous scalability. Past research suggests that hyperconnected environments are known to exhibit faster dissemination of information, more customer control over brand-centered communications, augmented firm-customer touchpoints, and opportunities for brand co-creation (Swaminathan et al., 2020). Thus, collaborative virtual and mixed reality environments allow users to collaborate and create content as part of their exploration and self-expression experience. For instance, past research has unveiled co-creation capabilities emerging

Table 4
Marketing in the metaverse: An agenda for future research.

Focal Research Area	Metaverse-induced changes	Research Questions
Intelligence	Hyperdata availability	• How to meaningfully blend data and insights from the metaverse and other traditional channels/environment (such as physical stores, online web presence, social media interactions, etc.)? • What current and new methods can be used in the metaverse environments for conducting market research? • What current and new methods can be used in the metaverse environments for conducting market research? • Whether and to what extent consumer behavior data from the virtual environment of the metaverse relates to consumer behavior data from the real/physical world? • Whether and to what extent consumer behavior data from the virtual environment of the metaverse relates to consumer behavior data from the real/physical world?
Innovation	Virtualization	• What type of new products or extensions of real-world product are more suitable for fantasy-based (vs reality-based) environments? • How and for what type of products/services should firms implement digital twin strategies?
	Hypergathering	• How can firms leverage different technological building blocks of the metaverse to develop innovative metaverse environments for their potential as well as existing customers? • What is the role of co-creation practices and customization in updating customers' brand-related expectations and product adoption? • How should brands collaborate and co-create in metaverse environments (e.g., virtual goods, NFTs, co-experiences) to increase consumers engagement? • What will be the role of content creators and influencers in the metaverse?
Communication	Hyperconnectedness	• How can brands effectively leverage the metaverse to generate brand awareness and engagement? • What new KPIs could emerge with the evolution of the metaverse and how to link them with the traditional real-world KPIs? • How to meaningfully personalize marketing communications in metaverse environments?What types of brand elements (e.g., logos, characters, jingles, slogans, etc.) are more appropriate to achieve brand recall, recommendation and purchase in metaverse environments and should they be updated for ecological congruence? • How should firms integrate metaverse marketing efforts in the marketing communication mix and overall omnichannel strategy? • How should companies advertise in the metaverse? How to link offline and digital advertising efforts with advertising in the metaverse? • How can gamification be leveraged in marketing activities? What type of marketing communication could benefit more from being gamified in the metaverse?
Experience	Virtual/Physical Blending	• What is the role of device type (e.g., visual, haptic, auditive) and enhanced level of immersion in shaping consumer experiences? • How can machine learning (or artificial intelligence) algorithms be leveraged to enhance consumer experience in the metaverse? • How can metaverse experiences be designed to overcome perceived technological complexity and facilitate adoption? • How can sociability be balanced in metaverse experiences to manage consumers heterogeneity and maximize both the individual-level and communal experiences? • Does metaverse experience type (utilitarian vs. hedonic) and realworld closeness interplay with product and industry category in shaping consumers attitudes and behaviors?
Consumer Behavior	Identity 'reembodiment'	• Does the choice of an avatar (similar to self vs. fantasy) play any role in influencing consumer behavior? • What is the effect of consumer-avatar conflicting cues (e.g., gender identity, age) in shaping consumption choices? And does it matter if the product virtual vs. physical? • What is the role of product type (virtual vs. physical) and contextual congruence in maximizing purchase behavior? • How does consumer attachment, self-concept and disposal compare between virtual and physical possessions? • How do consumers respond to metaverse marketing offers, promotions, sales, etc. compared to physical offerings? And are there any boundary conditions?
Policy Formulation	Ownership, Privacy and Societal Challenges	• What type of data are firms able to capture from the metaverse ecosystem and what policies can be implemented to achieve a fair balance between personalization and data privacy? • To what extent will metaverse consumers be willing to tradeoff personal data for free or discounted product and service benefits? • In the event of an interoperable metaverse, who will own the user data? What new data collection and storage policies may be necessary to collect, store, and manage large volume of data from the metaverse and keep it safe. • What new laws may be required to be in place to assure full 'propertizing' effects in virtual possessions (i.e., NFTs)? • How to prevent fraud, eliminate copyright infringement and guarantee the integrity of digital environments for consumers in the metaverse? • What type of strategies and policies should be implemented by service providers and brands to make the metaverse a safe place for consumers?

from consumer-controlled collaborative social virtual environments (Bonsu & Darmody, 2008). Consequently, marketers should actively consider co-creating with users in such virtual environments (Hansen, 2009). Gadalla et al. (2013) conclude that metaverse retailing environments are participatory and consumers co-create the service experience to fulfill their goals of self-expression, identity and social interaction. Moreover, Cowan and Ketron (2019b) note that users serve as co-producers of virtual environment experiences, which enhances their motivation and engagement.

In sum, there is tremendous scope for future research to better understand how co-creation practices in extended reality environments can play a role in affecting consumers' expectations and adoption of co-created products in the physical world. Contrary to traditional consumer interactions in the physical world that mainly focus on consumption, interactions in the metaverse world will shift the focus to the creation and collaboration aspects of the consumers as well.

5.3. Communication

Integrated marketing communication relates to the process of nurturing profitable relationships with consumers and other stakeholders by leveraging the firm's communication mix (Gurău, 2008). Given the rapid dissemination of information in hyperconnected environments, the metaverse space provides additional promising channels

for brands to communicate their offerings and value proposition, as well as many possibilities to foster customer engagement. For instance, brands can use virtual possessions (e.g., NFTs) to maintain contact and connect emotionally with consumers, establish virtual showrooms and stores within virtual worlds to communicate their product offerings, use in-game brand advertising (i.e., gamevertising) to have virtual presence and engage with their consumers (Wunderman Thompson Intelligence, 2021).

Past research has found positive effects of new interactive media presentation modes such as VR/AR (vs traditional media) on consumers' responses (Hyun & O'Keefe, 2012; Yaoyuneyong et al., 2016; van Kerrebroeck et al., 2017; Bogicevic et al., 2021; Griffin et al., 2022), and more recently, in the context of luxury brands, researchers have proposed that brand equity can be built through augmented reality applications that enhance the brand experience along the customer journey (Javornik et al., 2021). Kaplan and Haenlein (2009) argue that a virtual environment, such as virtual worlds, presents opportunities for advertising and offering virtual products. Messinger et al. (2009) underscore the possibility for brands to create public relations and buzz media, and Hansen (2009) contends that advertised brands (in virtual environments) develop meanings and serve as a means for consumers' self-expression and status.

However, the majority of past related studies have looked at consumers' attitudes and intentions (e.g., Suh & Lee, 2005; Poncin & Mimoun, 2014; Yaoyuneyong et al., 2016; Rauschnabel et al., 2019). Fewer studies have measured final outcomes and actual conversion (e.g., Jäger & Weber, 2020; Hilken et al., 2022). Some researchers have found mixed effects about the effectiveness of extended reality environments such as 3D virtual worlds on brand equity and argue that while a positive effect is mediated through sense of telepresence and enjoyment, negative effects could be explained by reduced attentional focus (Nah et al., 2011). Similarly, extant research suggests that conventional marketing practices may not work in unique environments as the ones in the metaverse (Tikkanen et al., 2009).

Despite the lack of clarity on the expected outcomes, several firms are experimenting in the metaverse space. For example, retail brands such as Puma, Gap, Clarks, Tommy Hilfiger, Gucci and Nike have launched fantasy-based virtual experiences inside Roblox that include branded avatar skins and minigames (Silberstein, 2022). Hence, there is a managerial need for research to assess the role of metaverse experiences in brand-related marketing constructs (e.g., brand awareness, brand recall, brand coolness, etc.), and its subsequent impact on building brand-consumer relationships. In the context of brand online communities, past research has found interaction effects of personalized content and pictorial representation (avatar vs logo) on satisfaction with the community, brand recommendation, and brand purchase (Steinmann et al., 2015). New studies are needed to analyze novel relationships within the context of the metaverse environment.

5.4. Experience

As opposed to the traditional marketing approach focused on features and functional benefits, experiential marketing treats customers as rational and emotional animals that sense, feel, think, act, and relate (Schmitt, 1999). In this regard, experiences can be engineered with performance-related (i.e., functional/utilitarian) or context-based (i.e., hedonic) cues (Carbone & Haeckel, 1994). As previously discussed, users could access metaverse environments through multiple interface devices, experience contextual scenarios with different levels of closeness to the real world, varying degrees of sociability, and achieve different levels of telepresence. All of these aspects of the metaverse interaction drive users to perceive different degrees of hedonic and utilitarian values. In other words, metaverse experiences allow brands to elicit unique consumer responses by inducing different physical, social, emotional, and cognitive states during consumer-firm metaverse encounters.

Related work on interactive media in the past has argued that 3D virtual environments can enhance seamless real-like consumer experiences but note that consumer-related factors (e.g., perceived technological complexity) can shape how the experience is perceived (Bourlakis et al., 2009). Further, Papagiannidis et al. (2013) find that more vivid, stimulating, and authentic (realistic) experiences have positive effects on users' engagement and subsequently on users' enjoyment, satisfaction, and purchase intentions. Piyathasanan et al. (2015) explore a comprehensive approach by including both the individual-level and the communal experience and find positive effects of experience in perceived social and economic values and consequently in attitudinal loyalty in both the virtual and real worlds.

Overall, past work involving experiential marketing has mainly focused on studying the effect of media representation type (e.g., interactive media such as AR/VR vs traditional media such as 3D video or images) on consumers' attitudes and intentions (Bogicevic et al., 2019; Willems, et al., 2019; Yung et al., 2021; Bogicevic et al., 2021), and paid less attention to study cue-specific interventions of the experience design. Similarly, studies assessing how different device-related multisensorial cues impact the consumer experience in the context of marketing are limited. Given the fact that metaverse experiences can be designed to trigger different levels of immersiveness, sociability, and environmental fidelity, it will be important to understand the role of experience-design cues on consumer responses and behaviors, and subsequent firm performance and other economic and social outcomes.

5.5. Consumer Behavior

Digital environments present new ways for consumer self-expression and self-identity (Belk, 2013). As the metaverse space offers marketers novel ways to engage and interact with consumers, consumer-related behaviors, responses and implications offer opportunities for further research. For instance, the continuous presence of a brand or brand-related content in metaverse environments motivates the need to better understand consumers' motivations and goals to engage in such extended reality spaces and the consequent implications for direct-to-avatar[5] business models. Avatars are controlled sources of the consumers' identity (Bélisle & Bodur, 2010; Belk, 2013). In fact, Belk (2013) proposes the concept of user 'reembodiment' as a major change in the extended-self theory induced by the emergence of digital worlds. Bélisle and Bodur (2010) identify a list of avatar-based visual cues that can be correlated with more positive or negative personality perceptions; they find, however, that while some users are successfully able to communicate accurate intended personalities through avatar visual cues, some others fail to do so.

Further investigation of user-avatar relationships is required to understand behaviors in virtual consumption contexts. More specifically, the expected rise in the usage of virtual self-representations (i.e., avatars) in metaverse environments demands a deeper understanding of the psychological processes underlying the user-avatar relationship dyad, and its implications on virtual consumption. As a consequence, several interesting research topics arise. For example, understanding how conflicting identity cues between users and their avatars shape consumers' attitudes and behaviors when interacting in metaverse environments. Similarly, it may be worthwhile to investigate how current stereotyped-identity consumption theories may need to be updated based on dissonant user-avatar representations.

In the context of virtual possessions, reassessment of consumer behavior constructs such as ownership, attachment, scarcity, and disposal of assets would warrant research investigation given the novel technological capabilities of the modern metaverse. For example, certification provided by NFTs opens doors to further study concepts such

[5] In the metaverse, the direct-to-avatar business model is analogous to the direct-to-consumer business model in the physical world.

as virtual scarcity (Lehdonvirta et al., 2009; Chohan & Paschen, 2021), and consequences for consumers' willingness to pay. Further, consumers' motivations to engage in buying behaviors of highly-priced NFTs (Kay, 2021; van Boom, 2022) remain unclear (Hofstetter et al., 2022), and new ways of property and ownership centered around virtual properties could emerge (Belk et al., 2022). Moreover, attachment and detachment processes related to these virtual possessions may fundamentally differ from extant consumer behavior theories associated with physical goods.

5.6. Policy Formulation

The metaverse presents unique economic, social and legal challenging environments. For example, socially-driven issues, such as user diversity and inclusion, user addiction, and cyberbullying, arise as potential issues within the virtual environment of the metaverse. Given the hyperconnected nature of the metaverse, a globally diversified base of users is expected to access the metaverse. Moreover, as some metaverse environments are managed by artificial intelligence algorithms, their inherent sensitivity to algorithmic biases could induce excessive personalization and unfair content (Lee et al., 2021). Similarly, as previously discussed, the diversity of hyperconnected interface devices and technological embodiment of the metaverse environment will allow firms to capture multiple types of personal data. The collection of hyper-personal data may be perceived as intrusive by consumers (e.g., biometrics and health data). Thus, future academic research needs to investigate policies required to account for data privacy, inclusiveness, equity, and fairness.

Metaverse experiences, especially those designed based on gaming approaches, are prone to induce user addiction. The World Health Organization (WHO) has recognized gaming addiction as a diagnosable clinical disorder (Cemiloglu et al., 2022). Past research related to Internet-based gaming disorders has identified factors such as game reward, self-esteem compensation, and social acceptance gains as the underlying factors (King & Delfabbro, 2014). Marketers may need to incorporate practices and countermeasures to prevent and mitigate patterns of excessive usage or consumption of the metaverse. Furthermore, metaverse environments may be vulnerable to cyberbullying and virtual misconducts such as sexual assault and harassment, homophobic and racial slurs, and gun violence exposure to users' avatars (Soon, 2022). These issues present unique challenges and require firms to put the requisite checkpoints in the form of guidelines, features, and policies related to their metaverse experiences.

On the legal front, the potential emergence of an interoperable and ubiquitous digital space contributes to unique issues such as intellectual property rights and ownership of digital assets (Raczynski, 2021; Kapoor & Yaghoubi, 2021; Reed Smith, 2021). For example, intellectual property challenges involve copyrights and trademarks protection (Reed Smith, 2021), and ownership rights of user-generated virtual goods, content, and property (Ondrejka, 2004) that may need to be protected across different virtual platforms.

In sum, the metaverse is posed to induce a broad array of changes, including (but not limited to) hyperdata availability, virtualization of physical assets, and identity reembodiment. We map the major metaverse-induced changes to six research areas as summarized in Table 4. Collectively, these research areas bear substantive implications for reimagining the marketing practices of firms and rethinking their marketing capabilities.

6. Conclusion

This study takes on a systematic conceptual review approach (Palmatier et al., 2018; Hulland, 2020) to conceptualize the modern view of the metaverse within the marketing context. We emphasize three contributions.

First, this research explored the academic literature beyond the frontiers of marketing to understand past research efforts studying the metaverse conceptualization (Table 1) and uncovers an evolution of perspectives from a narrow (metaverse as a single virtual world) to a modern broader approach (metaverse as a hyperconnected and shared network of virtual and mixed reality environments). Furthermore, it holistically characterizes the metaverse by describing its features and technological building blocks. This helps marketers and marketing researchers to better understand the unique elements and implications of the metaverse ecosystem for marketing practice and research.

Second, we offer a synthesis of extant metaverse related knowledge with marketing focus (Tables WA-1 and Table WA-2) and integrate it with technology-focused literature (Table 1) and secondary data on business practitioners' views (Table WA-3) to identify emerging themes and implications of the metaverse (Table 2 and Table WA-4) provide an organizing framework (Fig. 3) and possible consumer experiences in the metaverse (Figure 4). Although, past research has studied some aspects of the metaverse such as virtual worlds and extended reality, it is limited in scope or outdated. Our study offers unique insights by integrating past research with the broader view of the modern metaverse and related implications and applications for marketing practice (Table 3).

Third, our evidence-based research develops a marketing-focused research agenda based on the systematic changes brought by the metaverse and offers recommendations for future research to advance marketing knowledge within this novel digital environment (Table 4). We provide research questions to guide marketing researchers when exploring distinct marketing practice approaches. Furthermore, we also include guidelines for future metaverse research related to consumer behavior and policy formulation phenomena.

Although our research sheds light on a theory of metaverse marketing, we acknowledge some limitations. First, our search of articles in the systematic literature review involved past academic work including a narrow scope (i.e., Boolean queries using keywords such as "metaverse", "virtual reality", "augmented reality", "immersion", etc.). Thus, the base literature for our analysis does not consider academic work that uses another lexicon. For example, a broader approach would have included keywords to other technological building blocks and elements of the metaverse ecosystem (e.g., Blockchain, NFTs, avatars, etc.). We purposefully restricted the search to keywords related to new media interactivity technologies as the main drivers of experience. Secondly, in order to achieve relevance and quality in our literature search, we applied stringent filtering criteria (i.e., articles with impact factor $>$ 3.00). Nevertheless, we are confident that our search results were able to capture the relevant literature for our study. Finally, we acknowledge that the metaverse is still emerging. Consequently, our proposed framework as well as the current scope of the metaverse may change with future technological innovations and breakthroughs.

In conclusion, considering the broad range of applications possible in the metaverse, the different objectives and approaches of firms' metaverse marketing strategies, and the growing opportunities and challenges, we see tremendous scope for academic research. We hope that this study will help researchers to gain a better understanding of the emergent scope of the modern metaverse and motivate them to pursue knowledge discovery in this new, exciting, and fast emerging area.

CRediT authorship contribution statement

Kevin Giang Barerra: Writing - original draft, Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Visualization. **Denish Shah:** Writing – review & editing, Validation, Supervision, Conceptualization, Project administration.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Kevin P. Giang Barrera is a researcher at the Social Media Intelligence Lab and a doctoral student in the Marketing Department at the J. Mack Robinson College of Business, Georgia State University (GSU). He holds a Master's degree in Marketing from Georgia State University, graduating at the top of his class. He also holds a Master's degree in Business Administration from Fundação Getulio Vargas (FGV), Brazil. Before joining the doctoral program, Kevin worked in product engineering, new product development and program management in Venezuela and in Brazil. His research interests focus on the impact of technology in marketing, digital and social media marketing, innovation, and customer experience. ORCID: https://orcid.org/0000-0002-2609-1401

Dr. Denish Shah is the Barbara and Elmer Sunday Professor and Associate Professor of Marketing, Director of the Social Media Intelligence Lab, and Director of the Marketing RoundTable at Georgia State University. His research focuses on issues pertaining to linking marketing to the financial performance of firms and/or consumer well-being. His research has been published in the Journal of Marketing Research, Harvard Business Review, Marketing Science, Journal of Marketing, Sloan Management Review and several other outlets. Dr. Shah's research has been a finalist or winner of seven best paper awards and three dissertation-based awards. He is a 2015 MSI Young Scholar, 2018 recipient of Vardarajan Early Career award for outstanding contribution to Marketing Strategy and recipient of six teaching excellence awards.