



Embracing falsity through the metaverse: The case of synthetic customer experiences



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Abstract The metaverse has been heralded as a next frontier for fueling strategic business opportunities. At the same time, recent months have witnessed explosive volatility in the market potential of proposed metaverse offerings. As a result, businesses are struggling to set a meaningful strategic course through an uncharted and rapidly changing landscape. We argue that the success of developing and scaling the metaverse as a vibrant new business ecosystem is largely dependent on the understanding that it is a unified and immersive reality where the physical and synthetic customer experiences seamlessly converge. For this to work, businesses and their customers need to be able to suspend their disbelief that synthetic elements are inherently false. We therefore consider the metaverse as a differentiated experience by exploring the promise and perils of falsity. We discuss how businesses can strategically embrace falsity by harnessing its intended—as well as mitigating its unintended—consequences, as they maneuver through major technological challenges in capturing customer value. We offer a diverse set of examples that illustrate how these strategies translate into managerial actions to competitively succeed in this new reality.

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1. The metaverse: Is this for real?

Facebook's latest rebranding to Meta has set the business world abuzz with talk of the metaverse as the next stage in the evolution of an ecosystem for new products, services, and emerging synthetic customer experiences. At the same time, there is widespread confusion about what the metaverse actually is and what opportunities it offers businesses. Recent market reports reveal that businesses and their customers struggle to come to terms with the metaverse; conceptual confusion is rife, obscured by legacy effects of previously heralded metaverses (Lacey & Jackson, 2022; Proulx, 2021). As a result, many businesses are predicating their strategies on a narrow interpretation of the metaverse as a virtual mirror world to physical reality, akin to Linden Lab's *Second Life*. In the early 2000s, *Second Life* offered an online world for users to interact through avatars and to create and exchange digital artifacts or goods (Kaplan & Haenlein, 2009). Despite enthusiastic uptake in some sectors—including paramedic training, banking, and education—*Second Life* did not quite reach the mainstream, and its user numbers eventually dwindled. Because it offered synchronous and persistent experiences to highly customizable digital avatars, *Second Life* is often seen as a protometaverse (Ball, 2020). Yet its scope and scale are narrower than today's emerging concept of the metaverse. While *Second Life* is a 3D virtual space on a 2D screen premised on the creation of a different reality, the metaverse and its underpinning, newly emergent technologies offer the possibility of a truly immersive experience that transcends a single virtual space and connects the physical with the virtual.

Cornerstones of the metaverse—such as cryptocurrencies, digital collectibles (e.g., nonfungible tokens, or NFTs), blockchain, and reality enhancing technologies (e.g., augmented reality, or AR; virtual reality, or VR; and neuroenhanced reality, or NeR)—help us to demystify the idea of the metaverse and to separate the reality from the hype. AR, VR, and NeR are particularly crucial technologies that progressively extend a user's view of physical reality, for instance by altering their appearance (e.g., via a digital-only garment with AR overlays); by immersing them into real or fantasy-based environments to meet friends, colleagues, or strangers (e.g., through spatial VR); or by generating a sense of touch within their brain when they interact with a digital object (e.g., through a neural implant; Hilken et al., 2022). These technologies can be—and are—used separately outside of the

metaverse, but the metaverse offers an opportunity to use them in a scalable and networked environment that can accommodate many customers and that offers customers a service with more sustainable content and social meaning (Park & Kim, 2022). While the metaverse is presented as “the biggest opportunity for the modern business since the creation of the internet” (Charlton, 2022), its success will depend on the acceptance of the claims that the virtual and physical are sensorily similar and that the metaverse thus represents a genuine reality in which users can socialize, work, and play. In other words, customers will need to suspend their disbelief and abandon the notion that synthetic experiences are inherently “false” to prevent discounting the value of a technology-enhanced reality (Hilken et al., 2017).

In traditional conceptualizations of falsity, which is a neglected area of research, falsity is most often defined from a dichotomous perspective—that is, as the extent to which something is not true (Scharp, 2010). Conceptualizing falsity as something that lacks attributes, rather than by defining its attributes, poses a significant obstacle to achieving firm and customer value in the metaverse. As such, businesses need to understand not only what the metaverse is but also how the concept of falsity plays out in this new reality. In this article, we shed light on these issues and offer a fresh look at falsity by arguing that in the metaverse, falsity needs to be embraced as a business strategy. We begin by discussing what the metaverse is and how it gives rise to synthetic customer experiences. We then reflect on falsity in the metaverse and on the need to move away from the traditional view of falsity that assumes only physical experiences are real, arguing that firms should instead shift their strategizing for the metaverse toward actively designing synthetic customer experiences to provide value. In this context, we discuss the potential for both positive and negative impacts of falsity for consumers and businesses, and we provide corresponding guidelines for managing synthetic customer experiences through embracing falsity at a strategic level.

2. The metaverse: A new kind of experience

The term “metaverse”—coined by Neal Stephenson in his 1992 science-fiction novel *Snow Crash* to refer to a dystopian virtual world where avatars can interact—made the list of top 10 words for the year 2021 (Collins Dictionary, 2021).

Despite increased media, corporate, and public interest, and despite the general agreement that the metaverse will transform how people shop, work, socialize, and seek entertainment, no common definition exists as to what the metaverse is (Kim, 2021; Lee et al., 2021). Some pundits limit the metaverse to a “shared online space that incorporates 3D graphics, either on-screen or in virtual reality” (Sparkes, 2021), while others see it more broadly as a network of 3D virtual worlds that is interoperable, massively scaled, and experienced synchronously (Ball, 2021; Kim, 2021). Emerging definitions describe the metaverse as “a new Internet application” (Ning et al., 2021, p. 12), and still others envision it as the next-generation internet (Duan et al., 2021) or as a successor to the internet—that is, as Web 3.0, or the spatial web—that will feel to users as though they are living within it rather than having to actively access it (Ball, 2021; Zuckerberg, 2021). One of the most comprehensive definitions of the metaverse has been offered by Ball (2021), who suggests that the metaverse is:

A massively scaled and interoperable network of real-time rendered 3D virtual worlds which can be experienced synchronously and persistently by an effectively unlimited number of users with an individual sense of presence, and with continuity of data, such as identity, history, entitlements, objects, communications, and payments.

In light of rapid developments in reality-enhancing technologies (i.e., AR, VR, and NeR) that support the metaverse, we can extend Ball’s (2021) definition with regard to an overlooked aspect—namely, that the metaverse will not take place inside one or more locked virtual worlds but rather will permeate every aspect of everyday life, seamlessly blending digital and physical realities and dissolving perceptions of the traditional dichotomy between purportedly real (i.e., physical) and false (i.e., synthetic) experiences. Accordingly, we propose that the metaverse is an ecosystem of interconnected, shared digital and physical environments that can be experienced synchronously, persistently, and interoperably, and in which physical and technology-enhanced realities are seamlessly combined.

Instead of framing the metaverse as an alternative reality or as a virtual space that one enters and exits, as is the case with *Second Life* (see Kaplan & Haenlein, 2009), our definition implies that in the metaverse, physical and digital worlds converge to form a new, fundamentally enhanced experience of reality. In this new reality, value is

predicated on developing *synthetic customer experiences* (SCx)—that is, natural or physical customer experiences (PCx) extended through technology (Robinett, 1992) so as to enhance customers’ cognitive, emotional, behavioral, sensorial, and social responses (Lemon & Verhoef, 2016). An example of an SCx is when a customer responds to an AR hologram of a piece of furniture placed in their physical environment. Another example is a customer smelling the scent of bread through a computer-brain interface that is integrated in their VR headset. SCx holds unique implications for the development of new virtual products, collecting new types of consumer data, and deploying innovative forms of payment and financial transactions. While this article focuses on SCx brought about by current VR, AR, and NeR capabilities,¹ the metaverse is a more complex network of physical and technological assets (Park & Kim, 2022). The reality-enhancing technologies are, however, important for the customer-facing aspect of SCx in the metaverse. As such, VR, AR, and NeR do not make or compose the metaverse but rather each of them represents a potential way to experience it (Ball, 2021). Accordingly, these technologies can and should be used concurrently—and in an integrated way—to bring about and shape a diversity of rich and novel SCx. For example, using AR and NeR as access points, some metaverse experiences will have a particularly strong physical reality component.

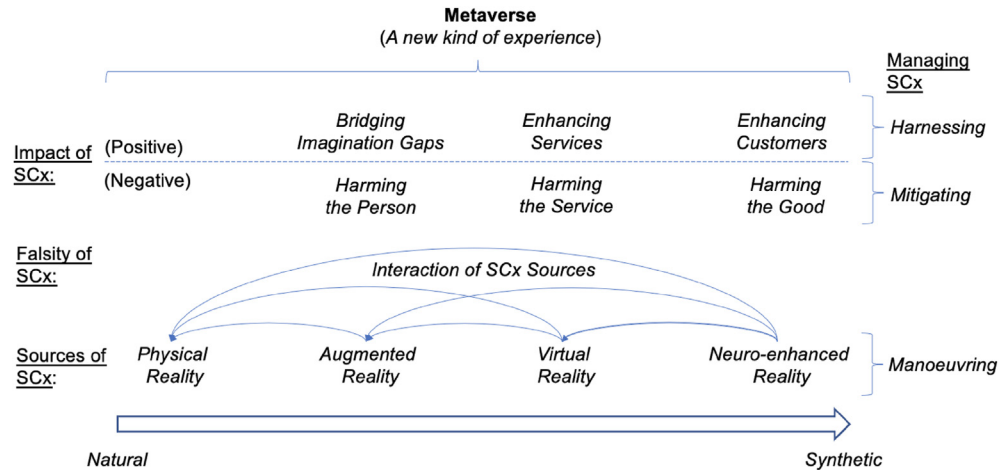
As the integration of PCx and SCx results in the metaverse, from the customer’s perspective, so do the boundaries between the real and the fake. Thus, traditional dichotomous views of falsity as being not true and of reality as being true are inherently challenged. Indeed, as synthetic experiences—underpinned by AR, VR, and NeR—become progressively more vivid (and even approach the resolution of physical sensations), customers may become unable to distinguish between organically and technologically simulated experiences.

3. Falsity in the metaverse: A reflection

Our concept of the metaverse elevates SCx to a strategic role in how businesses interact with their customers in this new reality. Specifically, as the focus of customer interaction shifts toward greater reliance on synthetic sources of customer experience through AR, VR, and ultimately NeR (see Figure 1), critical questions are raised in relation

¹ For an overview of other underpinning technologies, see Ning et al. (2021).

Figure 1. Metaverse: A new kind of experience that embraces falsity



how stakeholders—including customers, managers, and regulators—should view SCx in the metaverse. For instance, when basic service functions rely on a customer’s access to SCx, such as pricing information displayed using AR in physical stores (Canales, 2021) or sales assistants connecting from distant locations in the form of holographic avatars, SCx takes on an essential role in the customer’s life within the metaverse. Yet the notion of SCx as essential to customers’ lives is still controversial. The controversy is highlighted by a recently publicized incident involving a female beta tester in Meta’s VR platform who shared her experience of virtual groping (Sparks, 2021). While SCx can be psychologically real to the person immersed in the metaverse, it is often discounted by outside observers because no physical activity takes place. Such discounting of SCx stems from traditional views of falsity, which assume that only physical experiences (i.e., those derived using unaided biological senses like sight, hearing, touch, taste, and smell) are real (Ross & Ward, 1996) and that any form of SCx is imaginary, inconsequential, and therefore not true. This discounting perspective arises from an interaction between sources of SCx that allows an observer to, for instance, judge VR experiences from the point of view of physical reality.

But the traditional view of falsity is inherently problematic and potentially counterproductive to businesses trying to succeed in the metaverse. The problem with the traditional perspective of falsity is its denial of the embedded and persistent nature of SCx for those customers immersed in the metaverse. A customer who adopts an alternate identity using an AR face filter (e.g., to become a Queen of Hearts character instead of their usual physical self) likely integrates the qualities of this

avatar into their persona and uses those qualities to achieve goals and objectives in the metaverse otherwise not possible in the referenced physical reality. A brand that naively considers this alternative persona—and its related goals and objectives—as false fails to appreciate the customer centricity of SCx, wherein digital object relationships acquire meaning from the customer’s perspective (Wolfendale, 2007). Accordingly, brands that disregard the customer-centric view of SCx risk destabilizing customer-brand relationships in the metaverse (Molesworth et al., 2016). This means that the traditional view of falsity fails to recognize the primary role of SCx, which actually empowers customers into new types of behaviors, preferences, and values (see Figure 1). Accordingly, a more nuanced perspective on falsity for managers, customers, and regulators is one that acknowledges the *empowering* role of SCx toward fundamentally novel ways of interacting and expression. Businesses that recognize this potential to empower customers can unlock unique opportunities for value creation in the metaverse, and those that do not risk alienating customers and destabilizing customer-brand relationships.

4. Synthetic experience in the metaverse: The promise and perils

The nuanced view of falsity acknowledges new opportunities, but also novel risks, for customers and companies engaging in the metaverse. As Figure 1 and the sections that follow illustrate, SCx can help to bridge imagination gaps and enhance services and people by harnessing falsity. At the same time, SCx has the potential to harm the

person, service, or products and must be mitigated to limit adverse effects.

4.1. Positive impacts of falsity

Fostering customer empowerment is one of the positive consequences of the nuanced view of falsity in the metaverse. That is, harnessing SCx to help customers more easily achieve their goals and objectives in the metaverse empowers them, creating value in the process. Harnessing falsity to drive such value creation in the metaverse relies on various reality-enhancing technologies.

In the context of AR, for example, using holograms allows customers holographic trial (product preview or virtual try-on) when the physical product is absent. Such an experience helps the customer imagine how a product or service would look in a specific room (e.g., furniture, wall-paint, interior design) or when worn by the customer (e.g., cosmetics, eyewear, new haircuts). For example, companies such as IKEA allow customers to view, using a mobile computing device, digital holograms of furniture or interior design products in their own homes, fulfilling the need of the customer for contextual information when making product decisions. Previous research has shown that while customers acknowledge these holograms are missing sensory attributes such as tactile information about the materials (e.g., the feeling of the wood of a desk or of the textile of a couch), holographic trial significantly increases customers' comfort when making purchase decisions, promotes higher willingness to pay, and encourages positive word of mouth about a retailer (Heller et al., 2019a, 2019b). Similarly, products or services that require the customer to assess how the product would look and feel when worn are often offered for virtual try-on. While in the physical setting the customer would usually go to a retailer to try on a pair of glasses or sample a new color of a lipstick, AR offers an SCx without the costs of traveling to a store. Similarly, with AR face filters, customers can accelerate information processing by trying an almost unlimited number of makeup options in a short span of time, with the ease of a finger press, receiving immediate feedback from physically distant peers as they share their virtual try-on looks over the digital network.

VR—the technology most often associated with the metaverse in the popular press—provides novel opportunities to harness falsity in services such as education, business communication, or even after-sales services (in business-to-consumer as well as business-to-business contexts). This is in contrast to established online solutions. For

example, universities offer online classes using video conferencing that typically results in “Zoom fatigue,” lowered engagement, and decreased learning outcomes (Ramachandran, 2021). Instead, through the embrace of SCx, education in VR can not only replicate lecture halls and even laboratories but also enhance the educational experience by adding falsity—for example, by digitally highlighting parts of the body during an anatomy lecture, by animating the inner workings of a cell in a biology presentation, or by transporting students into the Amazon rainforest to experience its beauty and its rapid destruction during a geography lecture—all of which can be achieved with students and teachers separated physically by thousands of miles. As another example, some companies that shifted to remote working find lower levels of employee engagement and reduced levels of effort and productivity (Wang et al., 2021). As the current costs of VR devices continue to decline, providing employees with VR-capable headsets may be cheaper than providing each employee with an average smartphone. Yet VR headsets open new opportunities for immersive engagement that can simulate presence and interactivity between employees and foster collaboration as people navigate through virtual spaces in which they cocreate (Tham et al., 2018).

Currently, NeR is the least developed of these reality-enhancing technologies; however, it affords the highest potential for reality enhancement and for harnessing of falsity, as it directly interfaces with the human brain. While AR and VR typically require users to interact with external interfaces such as tablets, smartphones, or smart glasses, NeR bypasses this intermediary stage and allows direct experience. NeR also has the potential to enhance sensory experience by supplementing any missing information from AR or VR interactions (e.g., what an AR hologram's texture will feel like, what the atmosphere and scent at a restaurant will be; Hilken et al., 2022), and it can create hyperreal SCx by stimulating pleasure centers in the brain (e.g., to accompany the smell of freshly baked bread). Such potential for falsity enhances the customer experience and, if done ethically, enriches the customer's life, creating value from SCx in the process. For instance, research has shown that although customers can form feelings of ownership toward AR holograms (Carrozzi et al., 2019), they are always aware that these are only visually projected on the screen of their smartphone or tablet. In contrast, because NeR bypasses these sensory stages of perception, it makes communication with digital content seamless (e.g., imagining trying various products

instead of scrolling through products on a screen) or even substitutes the need for sensory perception (e.g., VR environments that directly feed a full, multisensory experience, including visual, audio, touch, and smell sensations, to the brain) to the extent that it becomes virtually impossible to distinguish between SCx and physical reality. This holds significant potential to overcoming the current limitations that AR and VR face.

4.2. Negative impacts of falsity

Falsity in the metaverse cuts both ways: while it can be harnessed to enrich customer experience and to create value, there is equally a potential for harm that managers must be aware of when transitioning into the metaverse. Depending on the context, it is crucial for managers to understand when and how falsity can result in negative consequences for the consumer and subsequently the business.

For example, while primarily linked to hedonic experiences, AR face filters on social media platforms have been repeatedly flagged as potentially harmful, especially for teenagers and young adolescents. The “beauty filters” that customers can use to digitally augment their faces, often referred to as distortion filters because they allow customers to change features of their faces (e.g., by enlarging lips or eyes), have been heavily criticized in the past few years. In 2019, Facebook banned distortion filters in light of public debate about potential harm to users’ self-image and the resulting behaviors that can spill over from the virtual realm into the physical world, which have caused physical harm (Seargeant & Tagg, 2019). Research has demonstrated that such behaviors can harm customers and reduce their well-being, for example, by decreasing self-compassion (Javornik et al., 2021). The rising awareness about body dysmorphia and of filters that allow customers to mark up their faces, as a cosmetic surgeon would², highlights the potential dark side of AR when approaching the metaverse (Ryan-Mosley, 2021).

Similarly, VR allows customers to fully replace their own looks using virtual avatars that interact in virtual environments. Foreshadowing potential harm in the metaverse, Virtual Human Interaction Lab founder and Stanford University communications professor Jeremy Bailenson pointed out in 2016 that “VR feels real, but there are no rules and

consequences” (Bailenson, 2016). As on current social media platforms, the metaverse seems to invite behavior such as trolling and bullying, as the negative consequences can be avoided through the relative anonymity of false avatars or fake names linked to a customer’s profile. Apart from causing tremendous social harms, such behavior also harms the service experience in the metaverse, highlighting the need for managers to prepare for service recovery that goes beyond what is known about traditional PCx.

Last, NeR raises vast ethical considerations and an unprecedented risk for deception or manipulation, which users might have limited or no opportunity to counteract (Wexler & Thibault, 2019). For instance, marketers could neurally overstate the actual reality of their offerings. In providing SCx of missing sensory inputs (e.g., the scent at a tropical vacation resort), the resulting falsity could be used to deceive rather than ethically to enrich customers’ well-being. NeR could add sensorily deceptive information to both physical and digital products, nudging or even directly influencing customers to buy products that have limited value outside of NeR. In the long run, this could result in customers investing a disproportionate amount of their income into the metaverse, while potentially reducing their spending in physical settings that are beneficial to their physical well-being (e.g., doctors’ visits, health insurance, pension investments).

5. Embracing falsity: Managing the synthetic customer experience

Embracing falsity in the metaverse is an approach managers can take to position their brands in a world dominated by SCx. A business strategy predicated on embracing falsity requires that firms (1) harness the value-creating aspects of falsity, (2) mitigate its negative consequences, and (3) maneuver through the technical challenges within the metaverse to achieve meaningfully rich and consistent SCx. In Table 1, we suggest managerial actions that can capture value for each of the requirements of a falsity-embracing strategy, and we provide examples of current and future developments to support those actions.

5.1. Harnessing falsity

When harnessing falsity to improve business and customer outcomes, there are three key pathways to capturing value in the metaverse. The first is harnessing falsity via *reality precision*. Managers

² “FixMe” was an app that was banned from Facebook and Instagram in 2019.

Table 1. Managerial actions to embrace falsity in the metaverse

Strategy	Value capture/value generation strategies	Examples of managerial actions
Harnessing falsity	<ul style="list-style-type: none"> • Providing reality precision • Market making • Enriching customer understanding 	<ul style="list-style-type: none"> • Creating offerings that intentionally differ in the level of reality enhancement (e.g., from high- to low-fidelity offerings, where people need to pay more for high-fidelity ones). • Developing metaverse products/services that provide an engaging SCx and not SCx that attempts to imitate PCx. • Segmenting users based on their reality preferences. • Developing segmentation strategies for nonhuman avatars. • Exploring new business models enabled by the decentralized metaverse (e.g., the play-to-earn model, where user participation is rewarded with NFTs or cryptocurrencies). • Conducting metnography (metaverse ethnography) to better understand expectations of metaverse customers and the indicators/metrics of quality SCx. • Understanding customers through metaphors, games, and enlivened brand concepts, such as by evaluating the interactions between the customer and an animated brand avatar.
Mitigating falsity	<ul style="list-style-type: none"> • Managing false expectations about and of metaverse customers • Setting the rules of play within communities • Acknowledging the boundaries of falsity 	<ul style="list-style-type: none"> • Marketing materials presenting SCx as an experience that cannot be false. • Not overstating the experience of physical sensations (e.g., how something will smell or feel) in advertising. • Providing clear labels that content/experience has been reality enhanced. • Using falsity as a tool to ensure responsible user behavior (e.g., providing less vivid SCx to users who intentionally misbehave). • Mitigating user misbehavior by developing a system in which an aggregation of peer-to-peer and system-collected multisensory data points is used to evaluate and rank users on their appropriate/responsible conduct. • Identifying the products/categories in which falsity should not be fully embraced owing to negative societal consequences.

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Table 1 (continued)

Strategy	Value capture/value generation strategies	Examples of managerial actions
Maneuvering through technical challenges	<ul style="list-style-type: none"> • Building interoperable systems • Supporting identity protection and integration • Building trust in the system 	<ul style="list-style-type: none"> • Building a metaverse marketplace (exchange) where users will be able to meaningfully trade their digital assets. • Managing data in a way that does not violate people's reasonable expectations about how data is collected, stored, and used. • Providing clear indicators of the trustworthiness of a particular place within the metaverse. • Developing mechanisms that help customers to stay in touch with physical reality.

want to ensure that synthetic experiences are perceived as real, or as consistent within a reality, irrespective of what that reality may be. The precision with which the synthetic experience is consistent with a version of reality allows the customer to explore the metaverse for its own benefit and will enable businesses to charge for realness. For example, if a VR educational experience of sitting in a university lecture hall is interactive, authentic, easy to use, and engaging, value can be captured by businesses because the synthetic educational experience comes without the costs of the physical experience (e.g., commuting to university, relocating if the university is far from home) and scales more efficiently through offers that are more difficult to bring about in the physical world (e.g., students and educators from all over the world can interact). Similarly, if a digital piece of art in AR or VR is equally realistic across realities (including the physical reality), and if ownership is regulated (e.g., via NFTs), value can be captured by digitally replacing objects and making them appear (or even feel and smell) like a physical (or even digital) counterpart. This is not, however, to say that the goal of harnessing falsity is to emulate the physical experience.

Second, acknowledging the *market making* of falsity in the metaverse allows businesses to develop new service experiences and offerings. SCx offers experiences that cannot be practiced in the physical world—for example, a VR visit to Mars, or a VR time travel to experience a location or an event in the past. Falsity is harnessed by developing new synthetic service experiences and by expanding to new markets. In addition, businesses will be able to expand their brands in the metaverse to further support their market-making activities when harnessing falsity. For example, brands could allow all their customers to virtually tour their production lines or supply chains so as to connect further with their customers, to enhance transparency, and to focus on responsible sourcing.

Third, being an advanced and new form of on-line connectedness, the metaverse allows for data collection that revolutionizes data availability as we currently know it and will therefore *enrich customer understanding*. Designed for customers not only to play but also to work, chat, shop, or work out, the metaverse affords a wide array of additional data points and novel data types. Interactive holograms of products allow businesses to track voice commands or hand gestures of customers. The latest VR glasses have built-in facial tracking that allows companies to track facial

responses to ads or other stimuli. The data go beyond traditional online metrics—such as views, clicks, and conversions—and expand into the realms of live tracking of movements and of emotional expressions. For example, imagine a VR store with a knowledgeable shopkeeper who is there to help customers by engaging them in conversation. The shopkeeper gets to know customers' personal needs, preferences, goals, and interests. Then, with the customers' permission, the retailer uses that data to provide a more personalized experience with the brand. The promise of a fully decentralized metaverse is that consumers will own their data and other assets and will decide where to share them as well as have a chance to accrue monetary value from them.

5.2. Mitigating falsity

To deliver good synthetic experiences and thereby capture value in the metaverse, managers, policy makers, and customers must manage falsity in its multiple facets. By taking an active approach toward mitigating the negative effects of falsity, managers will build trust in their brands and in this new type of brand experience and diminish the potential financial, physical, and psychological harms to customers that could arise out of unmanaged falsity.

First, companies doing business in the metaverse should *avoid contributing toward false expectations and false beliefs about and of customers*. For instance, while some managers might assume that customers will not be prepared to pay the full price for a digital version of a product or a service (Westerman, 2022), the recent example of a digital-only Gucci bag being sold on Roblox for US \$4,115 suggests that some customers might actually be prepared to pay more for virtual goods than for their physical alternatives. After all, such objects do not physically degrade, although guarding against digital obsolescence is more complex. To develop successful strategies for the metaverse, managers will need to reconsider the potentially false assumptions about what customers want and expect from brands in the metaverse. At the same time, managers play a crucial role in influencing how SCx is described to customers. SCx should not be communicated as an experience that cannot be false. Indeed, communications strategies may also need to embrace a dynamic approach that acknowledges continuous changes to consumer knowledge and to the ever-evolving reality as technology develops. That said, managers should be cautious not to contribute—intentionally or

otherwise—to false and unrealistic customer expectations by issuing hype-filled marketing communications that overpromise and underdeliver on SCx.

Not all falsity is created by the brands, however. Managers in the metaverse need a strategy and a toolkit to tackle a plethora of falsity-related customer misbehaviors whereby customers act in ways that deprive the company, its employees, or other customers of safety, resources, image, or an otherwise successful customer experience (Fombelle et al., 2019). Examples of misbehavior include making counterfeit synthetic replicas of physical products; using deepfakes to impersonate another avatar, an employee, or a famous person; or guiding and controlling the movement of an immersed user without their knowledge (Casey et al., 2021). While not all misbehaviors in the metaverse are new, many come with added complexity and the potential for an amplified impact. Owing to these very real consequences, managers need to *set the rules of play within their respective metaverse communities*. Considering the decentralized nature of these communities (see Duan et al., 2021), the rules should be cocreated with the community and enacted by a mix of technological tools (e.g., blockchain-based identity verification, algorithmically-powered fake news detection) and human-based support. The vastness of the metaverse and the richness of its data will likely lead to the development of new safety tools (e.g., spatial protection of avatars) and punishments that will be underpinned by the peer- and system-provided data that enable continuous evaluation of avatars' behavior across multiple dimensions (e.g., voice, movement).

Finally, to generate value and to mitigate against the potential damages wrought within the metaverse, managers need to *acknowledge the boundaries of falsity*. In some instances, falsity should be designed out from the metaverse. For instance, some products, services, and ideas might be too sensitive to appear in the context of the metaverse (e.g., recreating a real-world war in real time) or could lead to negative societal consequences (e.g., the possibility of excluding people of different races from our view in the metaverse would lead to a distorted and less inclusive society). When designing their metaverse solutions, managers need to be aware of the potential unintended consequences of their products. On the other hand, while SCx can afford sensory experiences similar to PCx, this does not mean that these two types of experiences are interchangeable. For instance, during the pandemic, first-year students felt that their

university experience could not be replicated online, as the sense of community was harmed by the lack of physical presence. Any metaverse strategy should therefore consider how physically and technologically enhanced realities should be meaningfully integrated and complementary of one another.

5.3. Maneuvering through technical challenges

Several practical challenges impinge upon the capacity of firms to capture and generate value through harnessing and mitigating falsity in the metaverse. To ensure that customers can seamlessly travel between digital and physical spaces, *the metaverse will have to be built in an interoperable way*. Neither the challenge nor the necessity of achieving interoperability can be understated. The interoperable framework for identity and property will, for instance, allow users to be consistent in different metaverse spaces and to move digital assets from one space to another. While such possibilities will pose additional challenges for brands in ensuring consistent omniversal and omnichannel customer experiences, they will also create value by creating personalized versions of the metaverse.

Users' ability to traverse the metaverse *poses challenges for identity protection and integration*. Key questions remain as to what elements will make up a user's identity in the metaverse and how users, when needed, will prove their identities. This challenge fuels the development of new verification methods, such as biometric authentication techniques that rely on hand and body motions. In addition to authentication issues, brands will need to rethink their segmentation and targeting efforts (e.g., development of personas) to capture the possibility of metaverse users having separate or hybrid representations, revealing different identity attributes in different contexts (Sawers, 2022).

Finally, to encourage users to join the metaverse, firms will need to *build trust in the system*, convincing individual and business users that metaverse applications are not just safe to use but worthy of use. Toward this aim, managers should continue developing AR and VR technologies that will afford a realistic immersion (i.e., SCx) with minimal side effects such as disorientation or dizziness. In ensuring the trustworthiness of the metaverse, managers should build customer awareness about the secure technologies powering the metaverse (e.g., blockchain), use technological tools to build trustworthiness

throughout the customer journey (e.g., during long, immersive experiences, users could be reminded to take breaks to keep them in touch with the physical world), and empower users to make informed decisions on their own. Trusted metaverses will be built through the joint efforts of firms, customers, and regulators who recognize that the key to generating and capturing value in the metaverse lies in embracing falsity in all its glory.

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