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Research Paper

Consumer behavior in the metaverse: the future of digital commerce and virtual economies

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ABSTRACT

As a result, the metaverse, which is a virtual, 3D persistent environment that merges augmented reality (AR), virtual reality (VR), blockchain technology and digital commerce, has become a new frontier for digital commerce and virtual economies. This paper performs a systematic literature review to analyze the changes in consumer behavior in a metaverse-supported commercial context, and to map out to which psychological, technological and economic factors contribute to the purchase intention, brand engagement and value co-creation in virtual worlds. The review combines results of 20 peer-reviewed and recognized literature and industry articles published in the last four years (2022–2026) from the domains of marketing, information systems, blockchain, and tourism. Analysis shows that the variables of telepresence, interactivity, vividness and enjoyment are correlated with the consumer's immersion, and that avatar realism and identification have a significant impact on the emotional attachment and purchase behavior of the consumer. The ownership architecture facilitated by blockchain technology, especially the recently developed non-fungible token (NFT), is found to challenge the principles of digital scarcity, ownership and trust in virtual marketplaces, while significant issues such as regulatory fragmentation, platform interoperability and consumer protection remain unresolved. The study proposes a conceptual framework to connect the technological stimuli, psychological state and behavioral outcomes related to purchase in the metaverse, further accompanied by comparative overview of the major commerce enabled metaverse platforms and synthesis of the main drivers and barriers highlighted from the literature. Results indicate that brands which have been successful in virtual economies take a proactive approach to engagement that transcends novelty related engagement and encourages true social interaction, trust and perceived value. The paper concludes that, for digital commerce in the future, the key requirement will be to have interoperable, secure and consumer-centric virtual ecosystems, and provides directions for future empirical research, such as cross-cultural validation and longitudinal studies of consumer engagement in the metaverse over time.

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1. INTRODUCTION

In the last decade, the gap between physical and digital commerce has been slowly and surely blurring, but the metaverse is a new step – and one that is qualitative. A general definition of metaverse is a persistent, interoperable network of real-time rendered 3D virtual worlds, where users interact via digital avatars, collaborate, socialize, play and transact [1]. This is in contrast to previous versions of e-commerce, which have been based on two-dimensional interactions, like webpages and mobile applications, metaverse-based commerce is also known as "v-commerce" and immerses the consumer into the shopping environment itself, making the distinction between browsing, experiencing and buying less obvious. Businesses from all corners of the world are starting to venture into the virtual storefronts, virtual fashions, virtual real estate and tokenized collectibles, which means the metaverse is more than just a speculative idea from science fiction it's a real, albeit still-evolving, commercial space.

It's time to learn a new language and understand how to get customers to buy into this new environment. Online consumer behavior models are generally based on one-way, screen-mediated communication, while the metaverse adds new factors to the mix, such as avatar embodiment, the feeling of being present in the virtual world, the ability to interact with other users, and the sense of being associated with a brand, along with ownership of digital products via blockchain. [2] Another area that has been identified as a difference between the real and virtual worlds is consumer emotional and cognitive processing of metaverse shopping experience versus traditional e-commerce, and how this will impact on attention, trust and decision making during the shopping process [3]. Meanwhile, the advent of non-fungible tokens (NFTs) and in-world economies that are denominated in cryptocurrencies have created entirely new risk and reward models for consumers separate from, but at the same time in the middle of, traditional digital payment behaviors.

Although the metaverse has become increasingly commercial in its relevance, studies regarding consumer behavior in this context are still fragmented and dispersed across journals in marketing, information systems, tourism, and blockchain, and are lacking in efforts to draw together and provide a framework to the multiple findings [1]. This division makes it hard for researchers, platform architects and marketer to find an effective idea of which concepts are most reliable, which results are consistent in different contexts, etc., as well as where and what is researchable yet unexplored. On this topic, the present paper adapts a structured review and thematic synthesis of the last few years' literature focusing on consumer behavior in the metaverse, and in particular, on digital commerce and virtual economies.

This study aims to synthesize the main theoretical frameworks used to understand consumer behavior in the metaverse, such as the Technology Acceptance Model, Stimulus-Organism-Response model, and avatar/identity-based theories, to better understand the various factors driving consumer behavior in virtual environments; to analyze how blockchain-based ownership mechanisms, specifically NFTs, are changing the ways in which people perceive value, scarcity, and trust in metaverse platforms; and to propose an integrative conceptual model of metaverse platforms that connects technological stimuli, psychological responses, and behavioral outcomes, which can inform future empirical studies and practical platform and brand strategy. The rest of this paper is organized as follows: The related works on the Metaverse economic, Metaverse commerce, and consumer psychology in virtual economy are discussed in

Section 2. The method used to review is detailed in Section 3. The results of the synthesis are presented and the proposed conceptual model is discussed and its implications in theory and management are presented in Section 4. The paper ends with limitations and suggestions for further research in Section 5.

The importance of this investigation goes beyond being an academic question. Retailers, financial service providers and tourism operators are already making marketing investments in metaverse-related activities, but with no robust evidence of whether metaverse designs will lead to consumer trust and purchasing. An organization that builds a novel, but poorly interoperable, virtual presence (such as a website) could get a short-term surge of visitors based on novelty, but lack the set of conditions (telepresence, social presence, verifiable ownership) that is linked to continued engagement from the literature. This paper seeks to synthesize the evidence available to a single, cross-disciplinary perspective, for the benefit of researchers and practitioners alike, in order to offer a clearer picture of the extent of knowledge gained, its areas of controversy and the most promising avenues for further inquiry and investment.

2. RELATED WORK

We summarize the current knowledge into four strands, namely: (i) the metaverse as a business environment, (ii) theoretical concepts of consumer behavior within immersive environments, (iii) avatar and digital identity, and (iv) virtual economies under the umbrella of blockchain technology.

2.1 Conceptualizing the Metaverse and Digital Commerce

The term metaverse has been applied differently in the industry and academia, from the very narrow and specific definition of these social platforms to larger definitions that include any virtual space that uses an avatar. One of the most mentioned multidisciplinary perspectives is offered by [1] who consider the metaverse as a dynamic ecosystem, not a specific platform, that is influenced by technology, society, and governance. In a commercial context, the model of electronic commerce is continued in another manifestation into the spatial, embodied that is, in a virtual store, where the user's avatar will walk, try on virtual clothes, and interact with virtual salespeople or artificial intelligence-supported non-player characters. [3] propose that this shift changes the way that brands, advertising and services are designed, requiring a new approach to branding, advertising and service delivery as immersive ecosystem design problems, rather than traditional communication. Likewise, [4] suggest that metaverse marketing needs a new conceptual language because some metrics from traditional marketing, like “website usability” or “CTR”, are not easily translatable to the rubrics of spatial, socially guided transactions [5].

Such a spatial re-imagining of commerce also brings implications to the study of consumers' journeys. The journey used to be linear in conventional ecommerce, where users search for products, then browse through the product pages before reaching the check-out. The journey was linear in the traditional ecommerce, where users would find products via search, then browse through the product pages before reaching the checkout area. This differs from what has been observed in an ordinary e-commerce site, as the same consumer would react emotionally and cognitively differently to the same product and price in two different contexts: the metaverse and the real world. The metaverse would not simply be a reimagining of the same shopping experience as an existing e-commerce platform; rather, it would probably affect the shopping experience itself, as, for instance, a consumer might react emotionally and cognitively differently in the met aversive context than in a traditional e-commerce website. Similarly, users argue that social interaction – with other consumers, brand representatives or fake users – is also a characteristic and novel aspect of metaverse commerce that has not been addressed by current e-commerce theories (cf. [6]). This holds true, but further evidence of this novelty is provided by this paper's dedicated theoretical synthesis.

2.2 Theoretical Foundations of Consumer Behavior in Immersive Environments

There are two main theories that are repeatedly found in the literature. The first is the Technology Acceptance Model (TAM) where the constructs that are included are perceived usefulness and ease of use. In the context of the metaverse, [7] used TAM to predict the intention of university students to use the

metaverse technology, with perceived usefulness still being the main explanation to predict the intention of the users. In their controlled lab experiment, [8] have shown that perceived enjoyment has a significant impact on using VR, while PUE decreases as AR use experiences increase, counter-intuitively, suggesting that PUE is still relevant even in increasingly technologically complex retail environments and showing that the relationship between experiences using AR and purchase intention is mediated between PUE and PEOU in AR-based online shopping in [9].

The second prominent model is the Stimulus-Organism-Response (S-O-R) model which has been adapted to explaining the influence of environmental stimuli (S) in virtual retail environments, on internal psychological factors, including telepresence and enjoyment (O), which in turn affect attitudinal and behavioral response (R). In an extensive structural equation modeling meta-analysis of 412 effect sizes from over 39,000 participants, [10] conclude that interactivity and vividness are strong predictors of telepresence, whereas enjoyment, and not its attendant concept, flow, is the key mediator between telepresence and consumer attitude towards the metaverse. Importantly, their moderation analysis indicates that the effects of these are not uniformly strong across the contexts of the retail space or the age groups of consumers, highlighting the fact that the metaverse consumer experience is not the same across contexts and age groups.

In particular, there are several studies that warn about applying these frameworks to all metaverse scenarios. [8] also show that the effects of AR and VR are asymmetric: VR reliably boosts enjoyment, but when hardware and/or interface qualities vary, AR can reduce the perceived ease of use. Expanding upon this finding, the evidence for the telepresence-to-attitude pathway is found to be strong but is contingent upon the type of immersive technology the consumer is using to enter the environment (specialized, like VR headset, or more generic, like projector), as does the strength of the S-O-R pathway, as derived from the meta-analytic evidence of Bruce and Rea [10].

2.3 Avatars, Digital Identity, and Social Presence

One of the key aspects of metaverse commerce is that consumers engage with commerce in the form of an avatar, which brings psychology to e-commerce that isn't there in the “real world.” Through the mediating variables of psychological distance and social presence, [11] also prove that avatar realism enhances user–avatar relationship and heightens the intention to use the avatar, which effect is mediated by user familiarity with the platform. On this topic, [12] investigate how "embodied" avatars enable consumers to experiment with identities that have direct implications to their brand engagement as they could search for brands and products that support the identity they are shaping through their avatar. [13] take this a step further; to examine how avatar identification and self-presence relate to emotional closeness to brands experienced by these two generational groups in virtual spaces, and how this emotional closeness relates to purchase intention. To this end, [14] demonstrate that the creation of social and psychological attachment, which can be conceived as mechanisms through consumers' perspective, is just as important as the novelty of metaverses in order to sustain their involvement in virtual commerce in the long run.

The metaverse is also in use in the tourism and hospitality industry, with user-centric experiences being developed using the framework of virtual destinations and experiences. [15] propose a behavioural mapping framework of tourism-related metaverse usability through the application of attribution theory, and [16] find that an integrated approach of uses-and-gratifications and attachment theory is crucial to understand consumers' motives for their continued engagement with tourism-related metaverse marketing content, which is generally considered hedonic and identity-related rather than utilitarian.

2.4 Virtual Economies, Blockchain, and Non-Fungible Tokens

The second one is about the economic framework that supports the metaverse. In this detailed survey, [17] explains how blockchain technology can be used to assert a verifiable provenance in the form of non-fungible tokens (NFTs) that enable the purchase, sale and trade of virtual real estate, avatars, and in-world creations with cryptographic guarantees of their origin. While pointing out that the NFT market is rapidly evolving and can create unpredictable challenges of value and speculative risk for consumers that

current consumer protection laws are not prepared to resolve, [18] argue that NFTs are challenging the way people view digital ownership, as markets for virtual goods that were scarce a decade ago start entering the picture. [19] explore the possibilities of the metaverse for financial service providers, including crypto assets and decentralized finance, but also the current uncertainty of the regulatory position.

Lastly, there has been a new direction of research in service to explore the construction of trust in metaverse commerce. In a sample of users of metaverse commerce, aesthetic appeal, layout and functionality, and perceived financial security are all factors in consumer trust, which then supports value co-creation between platform, brand and consumer [20]. This is relevant to the present review because it brings environmental and technological stimuli as mentioned in Section 2.2 into the economic and trust-related outcomes highlighted in this subsection, thus further validating the need to consider an integrative conceptual model.

These economic considerations have direct consumer trust and protection aspects as well. The laws and regulations generally applicable to consumer transactions, such as the warranty regime, mediation, arbitrations, and data-privacy regulations, do not neatly apply to virtual-goods blockchain ownership, as virtual economies frequently span multiple jurisdictions [18], [19]. Concurrently, this ambiguity brings a unique consumer-behavior perspective of perceived risk into the AR/VR acceptance literature [8], [9] analytic undertakings that mainly focus on technological and social risks. It is thus necessary for consumers to assess the credibility of the immersive experience as well as the credibility of the economic and legal underpinnings that underpin their transaction with it the two evaluations that have only recently been subject of sustained scholarly study.

2.5 Research Gap

The examined literature coalesces on a set of constructs that appear over and over again, such as interactivity, vividness, avatar realism, telepresence, enjoyment and trust, as key elements of the metaverse realm and its consumer behavior, and gradually address the ownership of the metaverse as a novel characteristic of virtual economies based on blockchain. To date, however, most research is based on an analysis of these constructs separately, in the case of one platform type, or in one country (usually Jordan, South Korea, China or Western Europe), and few have sought to merge the psychological and the economic worlds in a single explanatory framework applicable across platform types and geographies. The present paper addresses these strands by melding them together into a holistic conceptual model and by providing a comparative, cross-platform perspective of the current landscape of digital commerce using a metaverse context.

3. METHODOLOGY

The research method chosen for this study is systematic literature review, which is suitable for synthesizing the knowledge as a whole related to the topic and results in a wide variety of methods and disciplines. The reviewing was conducted in 3 phases – (i) Search and Identification, (ii) Screening and Selection, (iii) Thematic Synthesis.

Academic databases and publishers' platforms such as those indexed in Scopus, listed in Web of Science, Wiley Online Library, Emerald Insight, ScienceDirect, MDPI, IEEE Xplore, Taylor & Francis Online, Frontiers, preprint servers arXiv were searched using combinations of the terms "metaverse," "consumer behavior," "digital commerce," "virtual economy," "avatar," "NFT," "blockchain", and "virtual reality shopping." By narrowing down the timeframe, from 2022 to 2026, when academic research on metaverse commerce has grown more active in the wake of the industry's resurgence of interest in metaverse technologies, this study provides a more recent perspective and analysis.

In screening and selection, the sources were checked based on their thematic fit (either the main focus was directly on consumer behaviour, digital commerce or virtual economies in contexts of metaverse/immersive technologies) and on their methodology (these were either peer-reviewed journal articles, meta-analysis or a carefully conducted survey with stated methodology) and on being up to date. Table 1 summarizes the list of twenty sources included after applying these criteria, with thematic coverage

of the marketing, information systems, tourism and blockchain-related sources. Figure 2 (Section 4) indicates the year of the publication of the sources examined; as can be seen, the overwhelming majority of the sources were published between 2023 and 2025, which reflects the current academic interest in the topic.

During the thematic synthesis phase, the sources were coded based on four main components: (a) the theoretical frameworks used, (b) the main construct(s) investigated, (c) type of metaverse platform or context examined, and (d) behavioral or economic outcomes reported. These codes were then translated into the four thematic clusters explored in Section 2: conceptualization of the metaverse, theoretical foundations of consumer behaviour, avatars and identity, and virtual economies, from which was drawn an integrative conceptual model that is presented in Section 4. It is a qualitative theory building approach that is appropriate for a young field of study, such as the field of Family Systems Therapy, where there is a limited amount of directly comparable quantitative study results, and is a method by which the present paper can make a contribution in a form other than a summary of single studies results, namely a synthesis of concepts across fields of study.

An obvious limitation of this type of review is the fact that it is a methodological one. Thematic synthesis involves some degree of interpretive judgment as the constructs from the different disciplines are mapped to one another because of the wide variety of disciplines represented in the reviewed literature that do not always use the same terms or measurement approaches for concepts (e.g., the concept of 'immersion' is measured differently in the tourism-marketing literature [15], [16] than in the technology-acceptance literature [7], [8]). Furthermore, since the field is dynamic, some of the studies that may have been relevant at the time of the present review were published very recently, or were not yet included in the data bases searched. These restrictions are in line with the general constraints of literature reviews as systematic studies of research in rapidly evolving research fields and addressed, where possible, in cross referenced constructs between the studies and by explicitly marking theoretical areas of uncertainty in Section 2.5.

Table 1. Thematic Classification of Existing Literature on the Metaverse and Digital Commerce

Thematic Cluster	Representative Sources	Key Focus
Conceptualizing the metaverse & digital commerce	[1], [3], [4], [5], [6]	Definitional foundations; marketing research agenda for immersive commerce
Technology acceptance & S-O-R mechanisms	[7], [8], [9], [10]	TAM constructs; telepresence, vividness, enjoyment as drivers of attitude
Avatars, identity & social presence	[11], [12], [13], [14]	Avatar realism, identification, self-presence and their behavioral effects
Virtual economies, blockchain & NFTs	[15], [16]	Digital ownership, tokenized assets, financial-service implications
Trust, services cape & value co-creation	[17], [18], [19], [20]	Environmental cues, brand strategy, and trust-based co-creation

4. RESULTS AND DISCUSSION

The five thematic clusters identified in the synthesis along with representational examples and the key focus of each are summarized below in Table 1. The literature groups reasonably cohesively into themes of technology-acceptance (S-O-R), conceptual, psychological, identity-related, and trust-related themes, and there are useful interconnections between and across the themes; for example, the avatar identification research [11] draws directly on the telepresence and social-present constructs developed in the literature of technology-acceptance and S-O-R [8], [10].

4.1 Comparative Overview of Metaverse Commerce Platforms

In order to put the conceptual synthesis into perspective, five of the most talked-about metaverse platforms that have commerce capabilities, or are developing them, are showcased in Table 2 below. Although Second Life is in the middle of the blockchain-based ownership boom, it has hosted a long-running virtual-goods marketplace internally for almost 20 years previously [3]. A second difference lies between the centralized (Roblox, Horizon Worlds) and decentralized (Decentraland, The Sandbox) platforms and the fact that digital goods are issued and controlled by the platform operator vs. being recorded on-chain and, in principle, transferable between platforms. The platform heterogeneity has a direct impact on user behavior: consumers might be more inclined to invest and fret over claiming ownership of products built on decentralized platforms while consumers might be more interested in their social and entertainment value because they can be better on boarded, and have fewer technical hurdles, on centralized platforms [18].

Table 2. Comparative Overview of Major Metaverse Commerce Platforms

Platform	Ownership Model	Primary Medium of Exchange	Notable Commerce Activity
Roblox	Centralized (platform-issued items)	Robux (in-platform currency)	Branded experiences; user-generated merchandise
Decentraland	Decentralized (blockchain-based)	MANA (cryptocurrency)	Virtual real estate sales; brand-owned virtual stores
The Sandbox	Decentralized (blockchain-based)	SAND (cryptocurrency)	Tokenized land parcels; gamified brand activations
Second Life	Centralized, with an internal marketplace	Linden Dollars	Long-running user-to-user virtual goods economy
Horizon Worlds	Centralized (platform-issued items)	In-app currency	Social VR spaces with emerging retail integrations

4.2 An Integrative Conceptual Model of Metaverse Consumer Behavior

Based on this Stimulus-Organism-Response logic that was found to be prevailing in the literature reviewed [10], the Figure 1 shows an integrative conceptual model which unites three sets of constructs. The first type of stimulus-level variables reflects the technological and design characteristics of the metaverse platform, such as interactivity, vividness, realism of avatars, and the presence of mechanisms for ownership in the metaverse through blockchain technology [1], [11], [17]. Second, organism-level variables base these stimuli on an internal psychological state – namely telepresence, social presence, enjoyment, and trust [10], [14], [20] that arises within the organism. Third, response-level variables are those which reflect the behavioral consequences of the theoretical and managerial interest, namely: attitude towards the platform/brand, purchase intention, brand loyalty and value co-creation [9], [20]. Four moderating variables identified in the reviewed studies (consumer age, prior technology experience, retail environment (fully browser-based or fully immersive), and cultural orientation) that the meta-analytic evidence in [10] demonstrates can meaningfully strengthen or weaken the stimulus-to-response pathway, were also included in the model.

This model differs from previous, single study models in two ways. First, it explicitly takes ownership as a stimulus-level variable, rather than treating this as a separate economic phenomenon, which is in keeping with the results indicating that ownership affects one's perceived value, as well as trust, in a manner similar to that of more traditional experiential level variables [18], [20]. Second, the model synthesizes the stimuli related to the avatar and the platform within a common framework, which can help explain the inconsistent effect sizes reported by some studies that focus solely on either the technology acceptance or the avatar psychology. Both types of stimuli seem to operate in parallel and interact; this has not been studied extensively in an empirical sense, yet this is still a possibility.

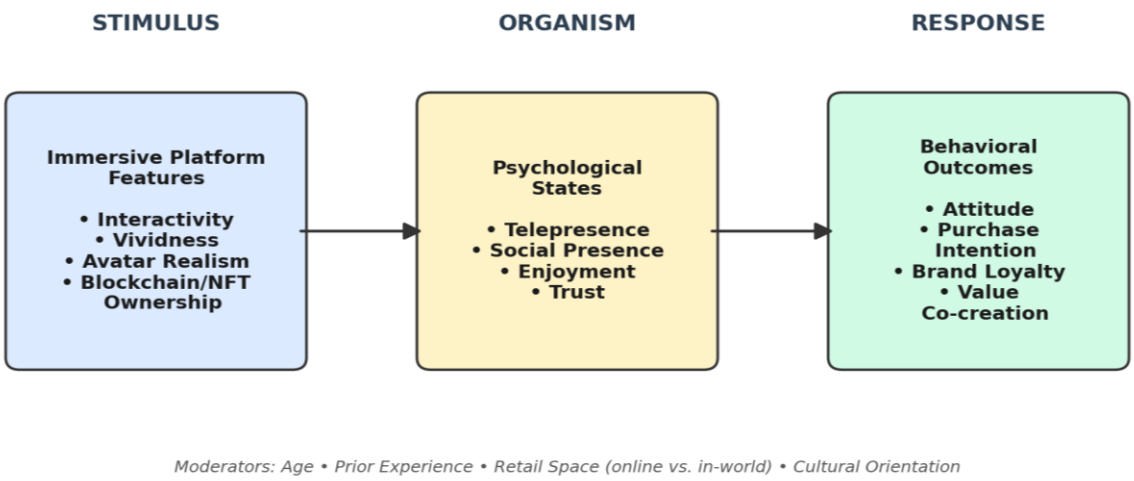


Figure 1. Conceptual S-O-R Model of Consumer Behavior in the Metaverse

4.3 Drivers and Barriers of Metaverse Commerce Adoption

Table 3 brings together the main drivers and hindrances to the metaverse commerce adoption from the reviewed literature, grouped into four categories: psychological/experiential, technological, economic/ownership and trust/governance. As is illustrated in Table 3, the barriers are not mostly rooted in the lack of compelling drivers in fact the psychological or technological drivers are well-documented but in unresolved friction in the other two drivers (economic and governance). While the remaining technological hurdle of AR and VR hardware, if it were one, may be resolved in the near future, the regulatory uncertainty of what constitutes an asset and what constitutes a virtual transaction, both aspects of the tokenization of assets, are obstacles that prove much more difficult to persuade attorneys to overcome than the actual technological difficulties.

Table 3. Key Drivers and Barriers of Metaverse Commerce Adoption

Category	Key Drivers	Key Barriers
Psychological / Experiential	Telepresence, enjoyment, avatar realism, social presence	Lower perceived ease of use for some AR/VR formats
Technological	Interactivity, vividness, platform interoperability	Fragmented platforms; inconsistent hardware requirements
Economic / Ownership	Verifiable digital ownership via NFTs; scarcity-based value	Valuation volatility; speculative risk
Trust & Governance	Servicescape-driven trust; financial security perceptions	Regulatory fragmentation; cross-border consumer protection gaps

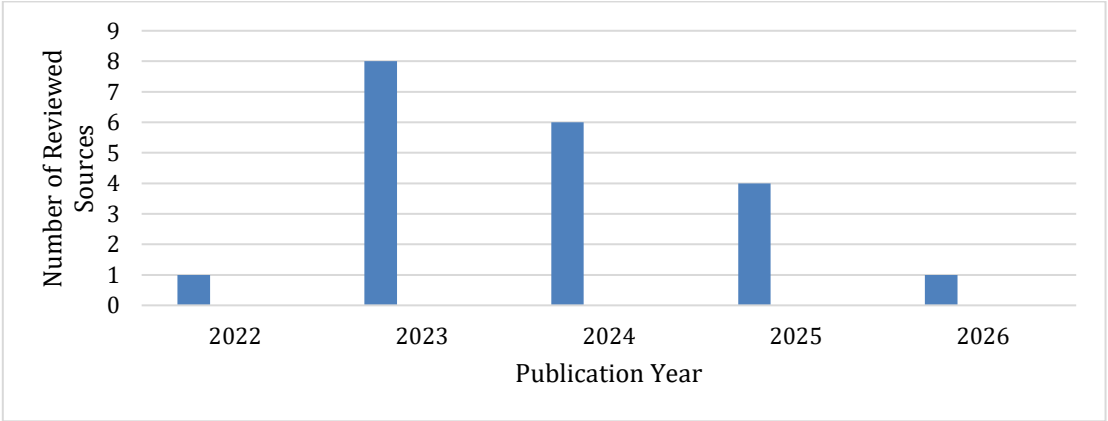


Figure 2. Distribution of Reviewed Sources by Publication Year (2022–2026)

4.4 Discussion

Based on the synthesis, three generalizations are drawn. In line with the technology-acceptance and S-O-R literatures, enjoyment and telepresence become the strongest drivers of positive consumer attitudes toward metaverse commerce, and these are not merely novelties in and of themselves, but their presence is found to relate to positive consumer attitudes to metaverse commerce [8], [10]. That means strategies that are just about the latest graphics or hardware are not necessarily going to be more successful than those that are built around more socially rich and engaging experiences. Second, adding more and more customization and options for avatar expression seems to be a different, and growing, "pathway" of behavior, which means brands who wish to develop long-term relationships with metaverse consumers, should invest in a more significant avenue for avatar customization and expression not just as a "proxy" for navigation [11], [12], [13]. Third, the availability of blockchain-based ownership is also changing consumer expectations of value and scarcity in positive (improved trust, investment attractiveness) and negative (speculative exposure, regulatory risk) ways, which presents a challenge for platforms and brands in the decentralized virtual economies to meet while simultaneously communicating the benefits of ownership [17], [18], [19].

Overall, these results contribute to the argument put forward by [20] that trust is a key mediating process linking environmental and ownership-related stimuli to value co-creation outcomes. The platforms and brands identified as best able to provide immersive, fun experiences, identity affirming avatars, and clear and trustworthy ownership and governance models appear best poised to transform the curiosity of novelty into ongoing engagement and the creation of commercial value.

4.5 Managerial Implications

To practitioners, the synthesis means some concrete recommendations. Towards that end, the brands transitioning into the metaverse need to be wary of relying on simply copying the technological wonder of the game, and instead look to elements which have been clearly shown to have the greatest positive impact on brand attitudes, which include interactivity (emotions are triggered through how a brand responds to the actions of the player) and socially rich interaction opportunities (emotions are driven by the need to interact with others within the game), as well as avatar systems that allow for genuine brand expression, rather than superficial cosmetic alterations alone [10], [11], [12]. Second, those companies that will be operating in decentralized, blockchain-based environments should be mindful of transparent communication of what a tokenized asset does versus what it does not. Ambiguity in this regard seems to increase perceived risk for increased perceived value [18], [19]. Third, we suggest that the platform operators (centralized and decentralized) should consider the services cape elements like aesthetic coherence, navigational functionality, and financial-security safeguards as essential platform trust infrastructure, rather than just a part of the design, since they have been shown to contribute to value co-creation [20].

Lastly, as age and prior technology experience were found to moderate the relationship between brand and technology adoption [10] in the meta-analytical evidence, brands must be wary of using a single approach that works for all their consumers and may need to consider onboarding segments based on consumers' experience with immersive technologies.

5. CONCLUSION

The aim of this paper was to stitch together the inconsistent body of literature on consumers' behavior in the metaverse and to suggest a conceptual framework that brings together all three elements, namely technological stimuli, psychological states and behavioral outcomes in a virtual commercial setting. Twenty peer-reviewed and industry-recognized sources published from 2022 to 2026 were reviewed, with interactivity, vividness, avatar realism, telepresence, enjoyment and trust all being consistently helpful predictors of favorable consumer attitudes and purchase intentions in the metaverse, and blockchain-enabled ownership structures like non-fungible tokens actively redefining thoughts around digital scarcity and value in virtual economies.

By bringing psychological, avatar-identity and blockchain-economic constructs together, which have been studied in isolation, into one Stimulus-Organism-Response-based framework, and by identifying age, prior experience, retail space and cultural orientation as variables to be explored further in empirical research, the proposed conceptual model adds to theory. Managers would benefit from the findings in the sense that they emphasize the need for the platform designers and brands to focus on real-world fun and self-expression with user-driven avatars, rather than creating novelties, and for them to be investing in a clear ownership, clear governance and a clear set of rules that would increase consumer trust in the decentralized virtual economies.

In addition to its immediate practical recommendations, this paper also has a broader theoretical implication because previously there was no single existing framework which was sufficient to explain consumer behavior in the metaverse. These concepts and theories surrounding technology-acceptance, avatar- and identity-based theories, and blockchain-economic theories explain why consumers initially adopt and actively use immersive commerce, why some consumers establish strong bonds to specific platforms and brands within that commerce, and how value, scarcity and risk are perceived once consumers enter the realm of ownership. While the integrative model in Figure 1 tries to capture these three explanatory layers together, they are clearly not in competition to be the sole explanation of the metaverse consumer journey as these three explanatory layers are not mutually exclusive; they provide a fuller account of the metaverse consumer journey than what could be offered in previous studies that relied on a single view of the consumer journey.

There are some limitations to this study. Not being a primary empirical study, it is valid only insofar as studies of the references chosen for its content; some of the studies are cross-sectional survey studies, or studies of only one country (most often, Jordan, South Korea, China and Western European countries). Future studies are recommended to explore and test the proposed conceptual framework cross-culturally; to conduct longitudinal studies, given the novelty of the concept; and to compare centralized and decentralized ownership model and their differential effect on consumer trust and purchase behavior. In order to keep the metaverse evolving from an experimental technology to a proven way to conduct digital transactions, ongoing interdisciplinary research will be critical to helping virtual economies grow healthy and viable with meaningful impact on customers.

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Author Contributions Statement

Name of Author	C	M	So	Va	Fo	I	R	D	O	E	Vi	Su	P	Fu
Sanjana Amarjeet	✓	✓	✓	✓		✓		✓	✓	✓	✓			

C : **C**onceptualization
M : **M**ethodology
So : **So**ftware
Va : **Va**lidation
Fo : **Fo**rmal analysis
I : **I**nvestigation
R : **R**esources
D : **D**ata Curation
O : Writing - **O**riginal Draft
E : Writing - Review & **E**diting
Vi : **Vi**sualization
Su : **Su**pervision
P : **P**roject administration
Fu : **Fu**nding acquisition

Conflict of Interest Statement

The authors declare that there are no conflicts of interest regarding the publication of this paper.

Informed Consent

All participants were informed about the purpose of the study and their voluntary consent was obtained prior to data collection.

Ethical Approval

Not applicable.

Data Availability

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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