



The future of metaverse marketing: Opportunities and challenges

Yashovadhan Raizada¹, Sakshi Sharma²

¹Department of Commerce, Indira Gandhi National Open University, Delhi, India

²Assistant Professor, Department of Commerce, School of Open Learning, University of Delhi, Delhi, India

Abstract

Meta-verse is now going to redefine the frontiers of digital marketing. Thus, bringing in a paradigm shift which promises an unprecedented number of opportunities in consumer engagements, all new experiences and new age revenue models. We deep dive in the transformative potential with meta-verse marketing with scrutiny on the pathway within which enterprises have to harness virtual realm for deepening customer connection. Our inquiry has the insights of contemporary and works of scholar, real-world as well as the industry experts and the seasoned perspective from thought leaders with a proper examination of technological underpinning, ethical dilemmas and strategic motives forming the meta-verses' integration within the marketing practices now. We illuminate critical hurdles accompanying the said evolution; issues like accessibility, sanctity while using this data and its privacy issues arising and the problems with the legal structure and complexity of measuring the performances within this digital domain per say. This analysis underscore necessity with agile marketing frameworks, steadfast adherences of regulatory mandates, cultivations of consumers' confidences for this meta-verse ecosystems and other such issues. Advancing these collective understandings of digital marketing and there in their next and subsequent horizon. This work hopes to deliver some sort of actionable guidance with those firms which are trying to venture into a dynamic and the uncharted terrain, into the meta-verse, whilst ensuring that they thrive amidst its boundless and abundant possibilities.

Keywords: Meta-verse, opportunities, challenges, meta-ecosystem, meta-system

Introduction

There has been a fundamentally transformed way in which many a business engages with consumers with the quickly evolving digital technology that has led to significant growth of not only larger companies but smaller enterprise as well (Foroudi, Gupta, Nazarian, & Duda, 2017) [7]. The increasing use of social media has extended to integrate AI based models in business strategies that has changed the B2C communication mechanism (Tourani, 2022) [23]. The advancement of meta-verse has unified digital presence of business by seamlessly integrating augmented reality (AR), virtual reality (VR) and the expanse of the web into a shared and immersive experience (Hushain *et al.*, 2024) [10]. When a company incorporate both the AR and VR, they are set imbibe XR technology (Arya *et al.*, 2024) [3]. Meta-verse comprises of use of avatars, virtual 3D world and interoperability (Kumar, 2024) [11]. Zaki *et al.*, (2024) [27] further extend the meta-verse components to virtual influencer and store, non-fungible tokens (NFTs) and gamification. The adaptation of meta-verse brings the customer closer to brand, making them more loyal and affiliated to the brand (Zaki *et al.*, 2024) [27]. However, there is an argument about the timing of companies adapting to Meta. According to Gauttier, Simouri & Milliat (2024) [8], majority of the leaders, considers that company should take the first mover advantage by adapting to Meta. Meta enhances the overall customers experience by providing them with real-world experience and enhanced interaction (Abumalloh *et al.*, 2023) [2]. Through meta-verse brands are benefited by enhanced goodwill by creating positive perception about the brand (Rosário, Lopes, & Rosário, 2023) [17]. Brands can increase customer's perception quality, loyalty and engagement by offering XR product, avatars, gamification and NFTs (Arya *et al.*, 2024) [3]. One

of the primary reasons for the increase could be enhanced enjoyment level of customer however, Wongkitrungrueng & Suprawan, (2024) [26] notes that enjoyment doesn't assure purchase but is a first step to engage them with the brand. Nadeem, Ashraf & Shahid (2025) [15] suggest that behavioural reasoning theory plays a vital role in how customer respond to meta-verse technology. The authors states that a customer is prone to affiliate more with meta-verse brands predominantly due to playfulness, to escape bad experiences in real world, to engage socially. Companies can be establishing the virtual storefronts and to orchestrating events within this metaverse. This thus enables customers to navigate as well as acquire the product inside of a totally immersive digital paradigm. (Rani & Singh, 2023; Luong *et al.*, 2024) [14, 16]. The key components of metaverse actually includes engaged experiences, virtual goods and non-tangible services, avatars and virtual stores and events. These environments allow user to interact in a fully integrated space and to enhancing user commitment (Kumar, 2024; Hushain *et al.*, 2024) [10, 11] and ensure interactions across the different virtual spaces and maintaining continuities of user experiences (Kumar, 2024) [11].

Once the idea of meta-verse was a pure sci-fi fantasy but today, it's no longer a distant dream; it's a living, breathing reality, fueled by cutting-edge technology and bold investments from some of the sharpest players in the game. Many Metaverse platforms have emerged including Roblox, Meta-Facebook, Instagram, Whatsapp, sandbox and Decentraland (Arya *et al.*, 2024) [3] that are thriving the meta-ecosystem. Schöbel & Leimeister, (2023) [18] defines meta-ecosystem is the point at which physical and real world intersect which subsumes various platforms and devices.

Despite the various advantages of meta-verse, the authors have been debating over the challenges that it brings for the marketers. Firstly, investment cost is very high leaving the larger companies reaping the benefit of Meta compared to smaller companies (Foroudi, Gupta, Nazarian, & Duda, 2017) ^[7]. Secondly, even the companies developing meta-system by spending heavily doesn't assure them about the conversion potential customers into actual customer (Nadeem, Ashraf & Shahid, 2025) ^[15]. Braguez *et al.*, (2023) ^[5] notes that in education sector meta-verse should be used complement the learning but should not be completely replaced. Seeing the two contrasting views on meta-verse our study aims to study the opportunities and challenges of meta-verse for the marketers and the way it is redefining the industries. This brings to our objective:

- To identify the opportunities and challenges
- To explore the application of meta-verse across different Industries
- To identify theme for future trends in meta-verse marketing

Methodology

In this investigation we have embraced a review methodology to meticulously dissect the burgeoning scholarship surrounding the future of the metaverse marketing. Our journey commences with articulation of precise research questions to explore the opportunities, obstacles, trends and emergent trajectories within this dynamic domain. We set strict rules for what to include and exclude. We favoured peer-reviewed articles, insightful case studies, and trusted industry reports from 2017 to 2025. This helps to keep the discussion both relevant and strong. Process for our data extraction hones in on those pivotal themes laying the groundwork for deeper scrutiny. We have sifted through the selected works through thematic analysis. Thus, this synthesis weaves all together comprehensive to draw attention to the present landscape of meta-verse marketing. These results in a lucid and cohesive narrative. It maps the current terrain and charts a course for its evolution for a vital contribution to the marketer's arsenal in navigating this virtual frontier.

Opportunities in the Meta-Verse Marketing

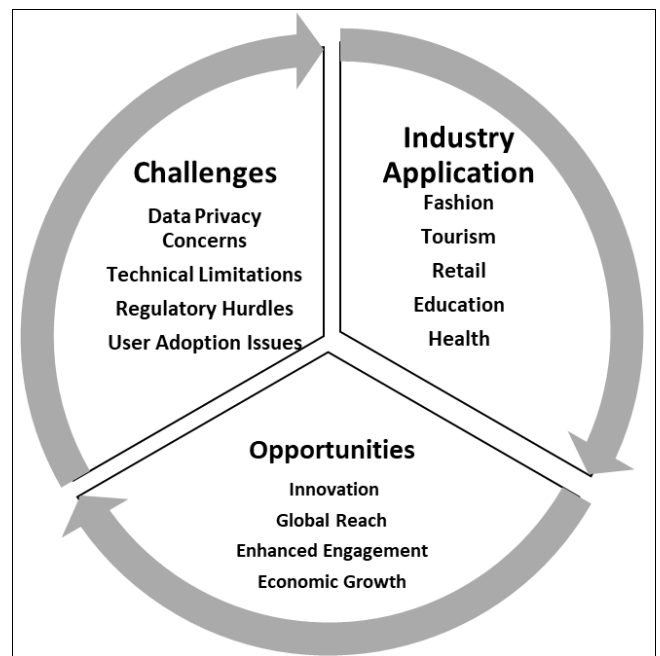
1. Personalization in the Consumers Experiences:

Metaverse is this incredible space where brands can build experiences that feel personal and pull you right in which we couldn't even dream of a decade ago. With data analytics and AI in the mix, companies can tweak every virtual moment to match what you like, how you act, even what you've been eyeballing online (Hushain *et al.*, 2024; Rosário, Lopes, & Rosário, 2023) ^[10, 17]. Imagine a virtual showroom that shifts on the fly; showing you gear based on what you have bought or checked out before; it's smart, it's seamless and its why people end up loving a brand and sticking with it for the long term.

2. The Innovation and the Advertising: The metaverse is absolutely changing the game for advertising with its creativity and people involvement in ways we have never seen before. (Zaki *et al.*, 2024) ^[27]. Imagine brands throwing virtual events like product drops or concerts where anyone anywhere can connect in live

and feel connected. Then there are interactive product demos by which ways people can tinker around with virtual versions of things. It helps to mix brand vibes with gamified ideas like treasure hunts or challenges that dish out rewards. It is next-level engagement which grabs attention and sticks in people's minds. (Hushain *et al.*, 2024; Arya *et al.*, 2024) ^[3, 10].

3. Enhancement of the Brand Equity: Now this meta-verse is giving brands some powerful new ways to build up their strength and feel that potential deep in their structures. With things like NFTs brands can hand out these unique digital treasures which makes persons feel special and driving up that sense of value. Then there is gamification, branded games or virtual goodies to get people hooked and feeling good about a brand. (Zaki *et al.*, 2024; Arya *et al.*, 2024) ^[3, 27] Virtual influencers along with digital characters reach out to young tech-savvy masses in a way which helps brands to shine as market leaders in this new digital world.



Challenges in the Meta-Verse Marketing

1. Privacy Concerns for individuals:

Meta-verse is built on excavating and consolidating a ton of user data to make everything feel personal. This leads to people starting to wonder about what is happening with their information and if and how they are being tracked and used. (Hushain *et al.*, 2024) ^[10] If brands don't lay out clear rules on data and lock it down tightly they will be risking that trust they have worked so hard to build. A slip-up like a breach could tank their reputation fast. They have got to tackle these privacy worries head-on and it is the only way to keep users confident and stay on the right side of the rules that are developed everywhere. (Nadeem, Ashraf & Shahid, 2025) ^[15].

2. Technology and its Infrastructure:

Let's talk about what it takes to pull off those smooth, immersive metaverse experiences. It's all about having the right tech backbone and it has to be big and scalable. We need lightning-fast internet, good computing power and

neural networks with almost no lags to keep everything humming in real-time. The trouble is that not every place or person has that kind of setup, so one ends up with this gap where some loggers get the full experience whilst the others are stuck on the side-lines. Building out these platforms tends not to be cheap. VR headsets and killer software is a hefty lift and smaller brands usually find themselves priced out. The real hurdle to get meta-verse marketing to take off everywhere is a reachable rock-solid infrastructure. (Hushain *et al.*, 2024; Rani & Singh, 2023)^[10, 16].

3. **Users and their Engagement:** Grasping the forces that propel or impede user engagement within the metaverse is foundational to market strategies which truly resonate. Whilst the allure of novel virtual experiences may captivate some; others might perceive them as daunting or disconnected from their needs (Nadeem, Ashraf & Shahid, 2025)^[15]. A divergence rooted in factors like intuitive interface design, seamless navigation and/or tangible worth for digital encounters. The sight of user exhaustion or apathy towards virtual realm saturated with overt commercialism. For brands the imperative lies in artfully balancing captivating content along with restraint. Aggressive tactics to nurture sustained interest and authentic participation in this evolving landscape is important.
4. **The Ethical and the Social Concerns:** There is a whole new can of ethical worms like exploitation, addiction and exclusion which is to be considered. Take gamification and rewards for instance: they are incredible for pulling people in but they could hook younger users in a way which would be difficult to remove from and could be a real worry. Then there is the inclusivity piece wherein if the design doesn't work for people with disabilities, we are cutting out entire groups which won't be feasible in the long run. Brands have to tread carefully to make sure their marketing does not just chase the shiny new thing and stays responsible to open the door for everybody. (Fan *et al.*, 2024; Nadeem, Ashraf & Shahid, 2025)^[6, 15]
5. **Measurement along with Return on Investment:** Assessing the potency of meta-verse marketing endeavours poses a formidable obstacle as conventional yardsticks like click-through rates or impressions fall way short of encapsulating the actual depth of immersive experiences (Wang *et al.*, 2022)^[24]. Brands must forge innovative performance measures that reflect the nuances of user engagement. The emotional echoes of virtual interactions and the enduring allegiance to a brand within these digital realms is of vital acknowledgement (Luong *et al.*, 2024)^[14]. Articulating a compelling return on investment (ROI) and rationalizing the financial outlay for metaverse initiatives becomes an elusive task without such key metrics in place.
6. **Regulatory Uncertainty:** The metaverse is kind of a wild west right now where there is not much regulation and that leaves brands in a tricky spot to figure things out as they go along. Attributes like intellectual property, who owns virtual domains, and what's okay

in advertisements is still up in the air and shifting all the time. Take NFTs and digital goods, for instance, both decent ideas, but it is a mess of questions about copyright and who really owns what. Brands have to step on smart through this fuzzy legal zone while also dodging risks and keeping an eye on rules that will show up down the road. (Fan *et al.* 2024)^[6]

Applications of meta-verse marketing across different Industries

1. **Fashion:** Brands are jumping into the metaverse with these amazing VR stores and digital showcases with a whole new way to pull people in and build up what a brand actually stands for. (Zaki *et al.*, 2024)^[27] Think virtual fashion shows, NFT outfits, digital records and avatars you can tweak howsoever you want and letting brands stretch way beyond just brick-and-mortar spots (Luong *et al.*, 2024)^[14]. Big luxury names and everyday labels alike are mixing and amalgamating augmented reality and blockchain to do virtual try-ons. They drop exclusive digital gear and tell stories that stick with you forging tighter bonds with customers in ways we are just starting to see.
 - **Tourism and Hospitality:** The metaverse offers new ways to promote destinations and services through virtual reality (VR) experiences (Kumar, Dhiraj & Hassan, 2023; Sivarethinamohan, 2023, July)^[13, 20]. Travel agencies, hotels, and tourism boards are adopting metaverse platforms to provide potential travelers with immersive previews of destinations, interactive guided tours and virtual hotel walkthroughs. AR-enhanced navigation, gamified tourism experiences, shopping scale and digital replicas of heritage sites further enhance engagement. This is to influence travelers' booking decisions and some hospitality brands are also exploring virtual concierge services and metaverse-hosted events to elevate customer experiences.
2. **Retail:** Virtual retail environments provide novel shopping experiences eliminating the basis of differentiation in on site and on-line shops (Bansal, Qalati, & Chakir, 2023; Nadeem, Ashraf & Shahid, 2025)^[4, 15]. Metaverse-based stores enable consumers to browse and purchase products in 3D spaces to interact with digital sales assistants and experience AR try-ons before making purchases. Retailers use digital twins of their stores to experiment with product placements, analyze consumer behavior and create limited-edition digital assets such as NFTs to drive engagement and exclusivity. The metaverse also supports social shopping, where users can shop with friends in shared virtual spaces, enhancing the online retail experience.
3. **Education:** Virtual learning environments (VLEs) enhance education by providing immersive platforms that boost learner engagement through interactive simulations and training, bridging theoretical knowledge and practical application. These platforms enable students to engage in realistic scenarios, fostering deeper understanding and retention of subject matter. VLEs facilitate collaborative learning, promoting teamwork and communication skills among learners. (Tlili *et al.*, 2022)^[22].

Table 1: Industry wide Meta-verse technology

Industry	Meta-verse tools
Fashion	VR stores, virtual fashion shows, NFT outfits, virtual try-ons, avatars
Tourism and hospitality	Interactive guiding tour, virtual hotel walkthrough, immersive preview of destination, virtual concierge services
Retail	interact with digital sales assistants, chatbots, 3D spaces for browsing product
Education	Virtual learning space, google classroom, google meet, online assignment, kahoot- quiz games
Manufacturing	Simulation training
Healthcare	Medical training, patient monitoring

Source: Authors analysis

- 1. Manufacturing:** In the manufacturing sector, simulation-based training is employed for employee instruction and safety drills to effectively reduce costs and enhance outcomes. These simulations provide immersive, real-life experiences, enabling workers to acquire both technical and non-technical skills in a controlled environment, thereby improving performance and safety. (Rapanotti & Hall, 2010).
- 2. Healthcare:** Digital twins are revolutionizing healthcare by enhancing medical training and patient monitoring. These digital twins, the virtual copies of real people, are a game-changer for doctors and nurses, letting them practice tricky procedures on virtual patients without putting anyone in danger. (Wiederhold, 2022) [25] It's a safe way to sharpen their skills, and on top of that, they are utilising wearable gadgets to track human health live, so as to step in early and tailor care right to what each person needs.

Future implication of our research

- 1. Consumer Behaviour:** This is poised to significantly reshape consumer behaviour and alter how individuals interact with brands to make purchasing decisions and engage with digital environments (Sritong, Sawangproh & Teangsompong, 2024) [21]. As virtual spaces become more immersive and consumer expectations are to shift toward hyper-personalized experiences with real-time brand interactions and seamless integration between the physical and digital realms. The shift necessitates development of innovative marketing strategies tailor made to the general meta-verse-driven consumer engagement such as: all the AI-powered recommendation systems, gamified loyalty programs, immersive storytelling. Businesses have to refine their approach to digital branding, virtual influencers, NFT-based loyalty incentives and others to enhance consumer retention and conversions. (Kumar *et al.*, 2025) [12]
- 2. Technological Advancements:** The continuous evolution of metaverse-related technologies like virtual realities (VR), Internet of Things (IoT) augmented virtual reality (AR), artificial intelligences (AI) and the blockchain technologies will significantly expand the capabilities and applications of metaverse marketing in the coming future (Hushain *et al.*, 2024; Sharma & Mahindru, 2024) [10, 19]. Future advancements in haptic feedback and spatial computing along with AI-generated contents will further enhance the realism and

interactivity of virtual experiences. It allows brands to create more engaging and persuasive marketing campaigns. Blockchain innovations, such as smart contracts and decentralized autonomous organizations (DAOs) will enable secure, transparent, authentic and user-driven marketing ecosystems. It fosters a greater consumer trust and participations. These technologies have become more accessible and affordable to businesses across industries. They adopt metaverse marketing strategies to revolutionize digital commerce and brands' consumer interactions.

- 3. Global Research and Development:** The rapid growth of metaverse research and investment in leading economies such as China, the USA, the South Korea and India underscores a global shift toward the adoption of metaverse marketing (Kumar, 2024; Arya *et al.*, 2024) [3, 11]. Governments, technology firms, academic institutions and businesses in these countries are actively exploring metaverse applications. Developing regulatory frameworks and investing in infrastructure to support virtual economies is key to this outcome. The big push into research and development with the tremendous R&D is showing us the metaverse is going to be significant in digital marketing, and it is going to make the future less ominous through innovation and standardisation (Arya *et al.*, 2024) [3]. Businesses must stay informed about emerging policies, technological breakthroughs, and evolving consumer trends to maintain a competitive edge in the global digital marketplace.
- 4. Regulatory and Ethical Considerations:** As metaverse marketing picks up steam, regulators around the globe are going to have to step up and tackle the big legal and ethical stuff; think data privacy, who owns what in the digital world while also keeping consumers safe. (Zhuk, 2024) [28] We are talking about sorting out how clear virtual advertisements need to be, who really owns those digital components and who is cracking down on non-transparent marketing tricks which means new rules are coming about. Companies putting their money into the metaverse will need to keep up with this shifting rulebook. Proper ethical standards will make sure everyone is playing fair whilst still winning over customers and their trust.
- 5. Economic and Market Expansion:** Businesses can capitalize on metaverse commerce by integrating token-based transactions with virtual real estate development and in-game brand collaborations (Kumar, 2024) [11]. As and when the metaverse market expands and companies that adopt early and strategically position themselves within these virtual environments may gain long-term competitive advantages. It is that the metaverse holds vast potential to spawn novel digitized economies whereby brands can peddle in merchandise online through digital media.
- 6. Workforce Transformation and Digital Skills:** The onset of metaverse marketing necessitates a shift in workforce capabilities. Professionals are required to develop expertise in virtual content creation, AI-driven consumer analytics, blockchain integration and XR

(Extended Reality) technologies. Organizations need to invest in digital upskilling programs to prepare marketing teams for the metaverse-driven landscape. The demand for metaverse specific skills increases and new job roles such as "Metaverse Marketing Strategist" and "Virtual Experience Designer" are likely to emerge. (Arya *et al.*, 2024)^[3]

7. Sustainability and its Environmental Impact:

Although the metaverse offers innovative marketing solutions it also raises a few concerns about environmental footprint. This could be in terms of energy consumption from blockchain networks' data centres and extended reality technologies. Future developments have to focus on enhancing the sustainability of metaverse infrastructure (Anshari *et al.*, 2022)^[11]. Energy efficient computing, green blockchain protocols, carbon neutrality and realistic virtual experiences are the need of the hour. Businesses who embrace metaverse marketing need to balance technological advancements along with environmental responsibility to align with global sustainability goals (SDGs).

Conclusion

Metaverse marketing, in conclusion, would revolutionize the terms of brand-consumer dynamics. It will lead to a varied, immersive, interactive, and personalised experience that will reshape the essence of engagement and consolidate the brand allegiance. AR, VR and AI will together change how businesses will interact with current and potential customers of them. This transformation will elevate their advertising skills and refine and redefine the customer journey. This in turn will help to deliver better data driven experiences aligning with individual tastes and preferences (Kumar, 2024)^[11].

With its immense potential, metaverse marketing also has challenges organization has to navigate. Things like data privacy, cybersecurity, regulatory compliance and digital inclusivity are concerns which will require careful consideration. Then high cost of infrastructure developments, technology accessibility and need for specialized digital skills pose barrier to widespread adoptions (Hushain *et al.*, 2024; Rosário, Lopes & Rosário, 2023)^[10, 17].

When more industries embrace virtual commerce, holistic commerce, interactive storytelling and gamified brand experiences, consumer behaviour begins to evolve. This drives demand for hyper-personalized and immersive marketing solutions. Companies that adopt early and strategically integrate metaverse elements into their digital ecosystems will likely gain a competitive edge and will develop stronger brand consumer relationship and unlock new revenue stream (Zaki *et al.*, 2024)^[27].

References

1. Anshari M, Syafrudin M, Fitriyani NL, Razzaq A. Ethical responsibility and sustainability (ERS) development in a metaverse business model. *Sustainability*,2022;14(23):15805.
2. Abumalloh RA, Nilashi M, Ooi KB, Wei-Han G, Cham TH, Dwivedi YK, Hughes L. The adoption of metaverse in the retail industry and its impact on sustainable competitive advantage: moderating impact of sustainability commitment. *Ann Oper Res*, 2023, 1-42.
3. Arya V, Sambyal R, Sharma A, Dwivedi YK. Brands are calling your AVATAR in Metaverse—A study to explore XR-based gamification marketing activities & consumer-based brand equity in virtual world. *J Consum Behav*,2024;23(2):556-85.
4. Bansal R, Qalati SA, Chakir A, editors. *Influencer Marketing Applications Within the Metaverse*. IGI Global, 2023.
5. Braguez J, Braguez M, Moreira S, Filipe C. The possibilities of changes in learning experiences with Metaverse. *Procedia Comput Sci*,2023:219:504-11.
6. Fan S, Yecies B, Zhou ZI, Shen J. Challenges and opportunities for the web 3.0 metaverse turn in education. *IEEE Trans Learn Technol*, 2024.
7. Foroudi P, Gupta S, Nazarian A, Duda M. Digital technology and marketing management capability: achieving growth in SMEs. *Qual Mark Res Int J*,2017;20(2):230-46.
8. Gauttier S, Simouri W, Milliat A. When to enter the metaverse: business leaders offer perspectives. *J Bus Strategy*,2024;45(1):2-9.
9. Gupta P, Mishra V, Sahu AA, Jindal P. *Metaverse Marketing: A Guide to Reaching the Next Generation of Consumers*. In: *Review of Technologies and Disruptive Business Strategies*. Emerald Publishing Limited, 2024, 97-113.
10. Hushain J, Kant K, Parihar S, Jain M, Parashar A. *The Rise of the Metaverse: A Paradigm Shift in Marketing*. In: *Finance and Law in the Metaverse World*. Springer, Cham, 2024, 335-44.
11. Kumar H. Virtual worlds, real opportunities: A review of marketing in the metaverse. *Acta Psychol*,2024;250:104517.
12. Kumar R, Aneja P, Jadaun R, Kiran PN, Saxena N, Saxena S, *et al.* *Metaverse marketing: a review and future research agenda*. *Inf Discov Deliv*, 2025.
13. Kumar S, Dhiraj A, Hassan SCC. *Metaverse and cultural marketing in hospitality and tourism*. In: *Cultural Marketing and Metaverse for Consumer Engagement*. IGI Global, 2023, 224-33.
14. Luong VH, Tarquini A, Anadol Y, Klaus P, Manthiou A. Is digital fashion the future of the metaverse? Insights from YouTube comments. *J Retail Consum Serv*,2024;79:103780.
15. Nadeem W, Ashraf AR, Shahid S. What drives metaverse retail environments (non) usage? A behavioral reasoning theory perspective. *Technol Forecast Soc Change*,2025;212:123945.
16. Rani K, Singh S. *Metaverse: An innovative platform for digital marketing*. In: *Cultural Marketing and Metaverse for Consumer Engagement*. IGI Global, 2023, 215-23.
17. Rosário AT, Lopes PR, Rosário FS. *Metaverse in marketing: Challenges and opportunities*. In: *Handbook of Research on AI-Based Technologies and Applications in the Era of the Metaverse*, 2023, 204-27.
18. Schöbel SM, Leimeister JM. *Metaverse platform ecosystems*. *Electron Mark*,2023;33(1):12.
19. Sharma P, Mahindru B. *Exploring the Metaverse: Future Pathway for Digital Marketing*. In: *New Business Frontiers in the Metaverse*. IGI Global, 2024, 209-17.

20. Sivarethinamohan R. Exploring the transformation of digital tourism: trends, impacts, and future prospects. In: 2023 International Conference on Digital Applications, Transformation & Economy (ICDATE). IEEE, 2023, 260-6.
21. Sritong C, Sawangproh W, Teangsompong T. Unveiling the adoption of metaverse technology in Bangkok metropolitan areas: a UTAUT2 perspective with social media marketing and consumer engagement. *PLoS One*,2024;19(6):e0304496.
22. Tlili A, Huang R, Shehata B, Liu D, Zhao J, Metwally AHS, *et al.* Is Metaverse in education a blessing or a curse: a combined content and bibliometric analysis. *Smart Learn Environ*,2022;9(1):1-31.
23. Tourani N. Thriving in a shifting landscape: Role of social media in support of business strategy. *Asia Pac Manag Rev*,2022;27(4):276-81.
24. Wang Y, Su Z, Zhang N, Xing R, Liu D, Luan TH, Shen X. A survey on metaverse: Fundamentals, security, and privacy. *IEEE Commun Surv Tutor*,2022;25(1):319-52.
25. Wiederhold BK. Metaverse games: Game changer for healthcare? *Cyberpsychol Behav Soc Netw*,2022;25(5):267-9.
26. Wongkitrungrueng A, Suprawan L. Metaverse meets branding: examining consumer responses to immersive brand experiences. *Int J Hum Comput Interact*,2024;40(11):2905-24.
27. Zaki Y, Wu MS, Hamdan A, Alsharabi H. A Conceptual Framework for Metaverse Marketing Strategies in the Fashion Industry: Exploring the Role of Brand Experience and Brand Equity. In: *Opportunities and Risks in AI for Business Development: Volume 1*. Springer Nature Switzerland, 2024, 311-21.
28. Zhuk A. Ethical implications of AI in the Metaverse. *AI Ethics*, 2024, 1-12.