V. V. Trinchin[1], D.V. Saevets[2]

[1]*School of Business of BSU, Minsk, Belarus*
[2]*International Sakharov Environmental Institute BSU, Minsk, Belarus*
Scientific supervisor – M. V. Lesnichenko-Rogovskaya,
Candidate of Pedagogical Sciences, Associate Professor

USING THE METAVERSE
AND VR/AR IN MARKETING: TRENDS AND INNOVATIONS OF 2024

The relevance of exploring marketing within the ambit of the metaverse and technologies like Virtual Reality (VR) and Augmented Reality (AR) is underscored by their burgeoning impact on consumer preferences and business models. These technologies offer novel avenues for engaging consumers, crafting personalized experiences, and branding in innovative ways. This study aims to unearth prevailing trends and the potential of VR/AR and the metaverse in marketing strategies. The objectives are to delineate the primary trends in the application of VR/AR technologies and to examine case studies that demonstrate successful integration of these technologies into marketing campaigns. To accomplish the research objectives, the methodology encompasses a literature review focusing on VR/AR marketing applications, in-depth analysis of case studies highlighting successful marketing initiatives, and interviews with technology and marketing experts. This multifaceted approach ensures a comprehensive understanding of the current landscape and future prospects of marketing.

Keywords: metaverse, Virtual Reality (VR), Augmented Reality (AR), marketing, trends, innovations, consumer engagement, immersive experiences, digital twin, predictive maintenance, customer journey, brand loyalty, personalized experiences, virtual showrooms, hardware advancements, AI integration, digital assets, 3D modeling, operational optimization, LLC "SpecEuroTech"

The widespread adoption of VR and AR is being driven by advancements in both hardware and software technologies. Leading hardware devices include VR headsets like Oculus Rift, HTC Vive, and PlayStation VR, which offer users fully immersive experiences [4]. AR devices allow digital content to blend seamlessly with the real world, enabling users to interact with both simultaneously.

On the software side, development platforms like Unity and Unreal Engine provide the tools to create highly detailed and interactive virtual environments. These platforms allow brands to build immersive marketing experiences that enhance customer engagement, such as virtual showrooms, product demos, or branded virtual worlds. Moreover, platforms like Decentraland and VRChat have emerged as pioneers in creating decentralized virtual spaces where social interactions, commerce, and branding can occur in parallel [2].

Impact on Digital Marketing Strategies of VR/AR technologies are reshaping the landscape of digital marketing, offering immersive experiences that go beyond traditional media. Brands are leveraging the metaverse to create more engaging and interactive content, allowing consumers to experience products in new ways.

VR and AR technologies enable brands to immerse consumers in their world, offering interactive experiences that foster deeper emotional connections. For example, luxury brands have hosted virtual fashion shows, and automotive companies allow users to virtually test-drive cars. These experiences help consumers engage with brands on a more personal level [3].

Virtual stores, powered by VR/AR, offer consumers the ability to browse, try, and purchase products in a virtual environment. This form of personalized shopping reduces uncertainty in purchasing decisions, providing users with a more informed and interactive experience. For example,

IKEA's AR app allows customers to visualize furniture in their homes before making a purchase, enhancing both engagement and satisfaction [5].

Traditional advertising models are evolving with the integration of VR/AR technologies. Advertisers are experimenting with new formats, such as product placements within virtual worlds or interactive virtual billboards. These new forms of advertising, deeply integrated into the virtual environment, provide a less intrusive yet highly effective means of reaching consumers.

The use of VR/AR in marketing presents notable advantages:

• One of the most significant benefits of using VR/AR in marketing is the ability to create immersive, interactive experiences that captivate audiences. Unlike traditional 2D advertisements, VR/AR environments engage multiple senses, making the experience more memorable and impactful.

• Through VR/AR, brands can offer highly personalized experiences.

Consumers can interact with products in ways that are tailored to their individual preferences and environments, leading to stronger emotional connections and increased brand loyalty [5].

• The integration of VR/AR allows brands to rethink the traditional customer journey. Rather than merely observing a product, consumers can now experience it, which can significantly influence their purchasing decisions. This shift helps companies stand out in an increasingly competitive marketplace.

The future of marketing within the metaverse and using VR/AR technologies is filled with potential [2]. As these technologies continue to develop, the hardware becomes lighter, more affordable, and easier to use. VR/AR technologies will likely become more widespread. Innovations like standalone VR headsets and AR-integrated glasses will make these experiences more accessible to a broader audience. It is already known that artificial intelligence will play a key role in personalizing VR/AR experiences in real-time. From customizing virtual environments to offering AI-driven customer service avatars, the integration of AI will enhance the immersive quality of these experiences. Non-fungible tokens (NFTs) and digital assets are becoming increasingly important within the metaverse. Big brands, and in future smaller ones, will leverage these technologies to create exclusive digital goods and experiences, driving new forms of consumer engagement and loyalty.

Case study: LLC "SpecEuroTech's" use of 3D models of machinery [8].
Plan:
1. Define what is the aim of the study.
2. equipment used to make 3D scans.
3. scanning process and data collection.
4. analysis.

1) The purpose of this study is to analyze LLC SpecEuroTech's strategic use of 3D modeling in its marketing approach as an exclusive dealer of LGCE road construction and special equipment in Belarus. By being the first in the region to implement 3D models of heavy machinery, SpecEuroTech is using advanced visualization to transform product marketing. The study seeks to explore how 3D modeling enhances product demonstrations, customer engagement, and brand differentiation. Additionally, it examines the ways this technology is leveraged to communicate product quality and innovation, positioning SpecEuroTech as a leader in an increasingly digital market.

2) To create detailed and high-quality 3D models, the company utilized an advanced laser called REVOPOINT POP2 with scanning technology and photogrammetry capabilities. This specialized equipment was chosen for its ability to accurately capture the intricate details and dimensions of the excavator, generating a high-resolution digital model. The use of this equipment underscores the company's commitment to quality and precision, enabling the creation of a 3D represen-

tation that serves as a compelling and interactive marketing tool. By offering clients the chance to experience an accurate digital twin of the equipment, this approach provides a unique marketing advantage and customers integration.

3) The 3D scanning process at LLC SpecEuroTech was meticulously planned to ensure precision in capturing the excavator's full structure and functionality. The scanning began with the calibration of high-resolution laser scanners positioned strategically around the machinery, ensuring a 360-degree perspective. The equipment's advanced photogrammetry capabilities allowed for accurate mapping of complex geometries and textural details, which are critical for creating an immersive digital twin. More than 700 pictures were taken from various angles to create a seamless and detailed model, capturing both the exterior and, where possible, internal components that are essential for demonstrating functionality. The raw data from these scans was then carefully collected, organized, and documented to prepare for further processing and analysis (Figure).

3D scan of an Excavator

4) After the scanning phase, the data underwent a rigorous analysis and refinement process using specialized 3D modeling software. This process allowed for the correction of any scanning errors, alignment of multi-angle scans, and fine-tuning of textures to ensure a realistic, high-fidelity model. The resulting 3D model was an exact digital replica of the excavator, which serves as a valuable marketing asset. The model was designed to be both visually impressive and informative, allowing customers to interact with the digital twin in ways that highlight the equipment's quality, durability, and technical specifications. This model can be integrated into various marketing channels, such as virtual showrooms, online configurators, and augmented reality (AR) applications, offering a differentiated and highly engaging customer experience.

To conclude, the exploration of marketing within the metaverse and the integration of VR/AR technologies reveal a transformative shift in how brands engage with consumers. As demonstrated in the case of LLC SpecEuroTech, the utilization of 3D modeling not only enhances product demonstrations but also fosters deeper emotional connections with customers. The research

highlights that immersive experiences offered by VR and AR go beyond traditional advertising, creating interactive environments where consumers can fully experience and understand products.

The future of marketing in this context is promising, characterized by rapid technological advancements and the increasing accessibility of VR/AR tools. As hardware continues to evolve towards more lightweight and user-friendly designs, a wider audience will likely embrace these immersive experiences. Moreover, the integration of artificial intelligence will enhance the personalization of interactions, tailoring virtual environments to individual consumer preferences. With the growing importance of digital assets such as NFTs within the metaverse, brands will explore new avenues for engagement and loyalty, creating exclusive experiences that resonate with consumers.

In summary, the potential of VR/AR and the metaverse in marketing is vast, driving innovation in customer engagement and brand differentiation. As these technologies mature, businesses that adapt and leverage these trends will likely find themselves at the forefront of the evolving marketing landscape.

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