
R E S E A R C H A R T I C L E S

VR, NFT, Metaverse... How digital innovations affect the development of marketing and PR communications

Dmytro Oltarzhevskyi^{(a)*}, Olha Oltarzhevska^(b)

^(a) Doctor of Social Communications, Professor,
Educational and Scientific Institute of Journalism,
Taras Shevchenko National University of Kyiv
<https://orcid.org/0000-0002-9816-303X>
Email: oltarzhevskyi@knu.ua

^(b) Master of Strategic Communications
Educational and Scientific Institute of Journalism,
Taras Shevchenko National University of Kyiv
<https://orcid.org/0000-0003-3868-5597>
Email: oltarzhe11@gmail.com

*Corresponding author's email: oltarzhevskyi@knu.ua

<https://doi.org/10.17721/CIMC.2023.33.26-33>

UDC 004:339.138:659.127

ARTICLE INFO

Received: 12 January 2023
Accepted: 28 March 2023
Published: 30 June 2023

KEYWORDS

communications,
marketing,
metaverse,
NFT,
public relations,
virtual reality

ABSTRACT

This study aims to determine innovative global trends in communications and their impact on the development of the marketing and PR industry. For this, we applied trend analysis, one of the modern forecasting methods, which is based on the examination of secondary sources and news publications and allows the identification of weak information signals from various markets based on the mention of digital innovations. Innovative tools guide companies to construct a new reality for stakeholders, improve interaction methods with stakeholders, and form their favorable corporate image and brand positioning. We identified six trends that will impact the development of communications in the coming decades: *machine learning*; *big data*; *virtual reality technologies*; *digital gamification*; *blockchain and NFT*; *migration to the metaverse*. We concluded that these digital innovations would enrich the promotion toolkit, form a new socio-communication dimension, and produce a creative and meaningful context. In particular, we conclude that VR technologies will encourage further penetration of advertising and PR into the field of integrated virtual communications. Gamification will become more and more deeply rooted in all areas of marketing and PR activities, diversify interaction with stakeholders, and increase its effectiveness thanks to novelty, emotionality, and user involvement. Finally, NFT will become a symbol of innovation from the image perspective and a thematic platform for stakeholder communications. The article also outlines the features of marketing and PR in the metaverse.

Citation: Oltarzhevskyi, D., & Oltarzhevskaya, O. (2023). VR, NFT, Metaverse... How digital innovations affect the development of marketing and PR communications. *Current Issues of Mass Communication*, 33, 26–33. <https://doi.org/10.17721/CIMC.2023.33.26-33>

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РЕЗЮМЕ

Мета цього дослідження – визначити глобальні інноваційні тенденції у комунікаціях та їхній вплив на розвиток маркетингових і PR-комунікацій. Задля цього застосовано один із сучасних методів прогнозування – аналіз трендів, що ґрунтуються на вивченні вторинних джерел та новинних публікацій і дає змогу виявити слабкі інформаційні сигнали з різних ринків, спираючись на згадування про цифрові інновації, завдяки яким компанії конструкують нову реальність для стейхолдерів, уdosконалюють способи взаємодії з ними, формують власний сприятливий корпоративний імідж і позицювання брендів. Автори дослідження виокремили шість трендів, які матимуть вплив на розвиток комунікацій у найближчі десятиріччя: *машинне навчання; big data; технології віртуальної реальності; цифрова гейміфікація; блокчайн та NFT; мігрування у метавсесвіт*. Зроблено висновок, що ці цифрові інновації збагачуватимуть інструментарій просування, а також формуватимуть новий соціокомунікаційний вимір і креативно-смисловий контекст. Зокрема стверджується, що VR-технології заохочуватимуть подальше проникнення реклами й PR у сферу інтегрованих віртуальних комунікацій. Гейміфікація дедалі глибше вкорінюватиметься в усі напрямки маркетингової та PR-діяльності, урізноманітнюватиме взаємодію зі стейхолдерами, збільшуватиме її результативність завдяки новизні, емоційності, залученості користувачів. NFT ставатимуть символом інновацій в іміджевому ракурсі. Також у статті окреслено можливості та особливості маркетингу та PR у метавсесвіті.

КЛЮЧОВІ СЛОВА: комунікації, маркетинг, метавсесвіт, NFT, паблік рілейшнз, віртуальна реальність.

Introduction

“Virtual reality: When what does not really exist is stronger than what does,” noted the respected Ukrainian scholar Pocheptsov (2021). In the conditions of the contemporary digital society, this statement acquires extraordinary depth. Innovations related to the digital area and virtual reality technologies give rise to new ways of data exchange, communication, perception, and knowledge of reality. They direct, inspire, become the meaning of development, and reveal unprecedented opportunities and threats.

Innovative digital technologies’ impact on society’s behavioral models is at the center of researchers’ attention. In 2004, the Scientific American Journal published an article on the Internet of Things, which demonstrated how artificial intelligence could change the human environment by eliminating routine problems through automation (Gershenfeld, Krikorian, & Cohen, 2004). Since then, innovative technologies have taken a giant step forward. They help improve the world and transform its paradigm, changing the usual way of life.

Innovative trends in communications can be detected with the help of weak information signals from different markets. They reflect revolutionary digital solutions due to which corporations construct a new reality for consumers and other stakeholder groups, improve ways of interacting with them, and use the attractive power of innovation in shaping the corporate image and brand positioning. Researchers say communications prospects are linked to concepts such as artificial intelligence, machine learning, the Internet of Things, big data analysis, mobile applications, cloud computing, augmented and virtual reality, blockchain, and much more (Troise &

Camilleri, 2021). Therefore, this study aims to determine the main global innovative trends in communications and characterize their impact on developing marketing and PR technologies.

Theoretical background

Forming a theoretical justification for the impact of innovations on communications, scholars in Ukraine and worldwide study the principles, features, and prospects of using artificial intelligence, virtual reality, blockchain, NFT, and metaverse technologies in various practice areas.

Chinese investigators believe that interaction with AR/VR (augmented reality and virtual reality – authors' note) can be considered a process of tricking the brain, so developers should pay more attention to forming a believable virtual experience (Tan, Xu, Li, & Chen, 2022). Due to the involvement of the full senses, the illusion of the real world is created, and a user becomes an integral part of the interaction. Furthermore, the development of affordable portable devices, such as head-mounted displays, which can integrate various interaction methods and free users' hands, should revive their use and improve human-computer interaction, which will generally affect the convenience and quality of such communications.

Martyniuk and Korolyov (2020) analyzed the current state of virtual marketing technologies and the transformational processes in the virtual reality environment. Observing innovations at Facebook, Lego, Adidas, Nike, Wayfair, and IKEA, they concluded that the desire to innovate to improve business performance and attract investment is the reason for using VR in such fields.

Researchers from the University of Duisburg-Essen conducted an expert survey and found that NFT (non-fungible token) is most actively used in the art sector (Gonserkewitz, Karger, & Jagals, 2022). At the same time, they expand the field of application of this innovation in business, communications, and intellectual property protection. Bao and Roubaud emphasized that blockchain and cryptocurrency generally are relatively well-studied, but NFTs are still in the shadows and not fully covered (2022). They are convinced that NFTs are at the crossroads of several fields, requiring researchers to have specific knowledge and understanding of how many domains function. In order to better understand the progress in this area and create a solid foundation for further exploration, the authors analyzed the state of NFT research, focusing on economic and financial aspects.

The environment that combines virtual reality and other digital innovations is the metaverse. Laeeq, a computer technology expert, suggests that more companies will “get on the metaverse train” because this innovation will eliminate the problem of geography in the context of business interaction (2022). Representatives of the J. P. Morgan Corporation investigated the topic “Opportunities in the metaverse: How businesses can explore the metaverse and navigate the hype vs. reality,” involving 18 companies with experience using this digital space (Moy & Gadgil, 2022). The main conclusion was that developing virtual experiences assists people in creating communities based on similar values and authentically expressing themselves. Moreover, the combination of technological, social, and economic possibilities makes this technology engaging.

Other authors emphasize that the transition to physical and virtual integration consists of three stages: digital doubles, digital natives, and the metaverse (Lee et al., 2021). Thus, an immersive future with a metaverse requires both developing technologies and creating an ecosystem because it must connect permanent, general, parallel, and three-dimensional virtual spaces united into a single universe. This paper also identifies innovation research's fundamental challenges and design to shape the “future in the future.”

Method

This research uses trend analysis, one of the modern forecasting methods, which combines a systematic approach, the study of cause-and-effect relationships, extrapolation, and rational and intuitive prediction. At the same time, the trends in digital innovations are considered in the context of developing marketing and PR activities, making it possible to determine its state in the

long term schematically. In this way, macro trends show changes in communication methods and audience behavior, imprinting business and social development.

Trend analysis as a research method in communications can be based on various data sources. For example, Elving used a set of publications from a scholarly journal (2010); Raupp and van Ruler (2006) utilized dissertations on a selected topic. In addition, trend analysis can be founded on statistical data of industry competition (Oltarzhevskyi & Todorova, 2019) or surveys of the communication field representatives (Adi, 2019). As part of the presented study, trend analysis was conducted based on secondary sources and news publications of 2020-2022.

Results and Discussion

The development of digital technologies at the beginning of the 21st century opened a second wind for communications, increasing their intensity, interactivity, and variety of content. Thanks to this, organizations integrated into the social media space and began to turn into digital media holdings with developed communication channels. In addition, the rise in popularity of mobile devices and competition in the field of mobile applications have also enriched the arsenal of the marketing and PR industry, enabling companies to stay connected with their stakeholders online 24/7.

One of the apparent trends in current communications is *machine learning*. This concept was proposed by Arthur Samuel, who defined it as “a field of research that allows computers to learn without explicit programming” (Turner, 2019, p. 71). Currently, chatbots, special programs that reproduce human communication with users based on the recognition of keywords and pre-developed scenarios, are built on this technology. In communications with consumers, using chatbots increases the speed of interaction and helps to be constantly in touch with them.

Another powerful marketing tool is *big data* analysis. Artificial intelligence technologies make it possible to determine a user's preferences based on likes and comments on social media and to create his/her psychological portrait. Researchers are convinced that the analytics of search engines and social media is another opportunity to manage public opinion, connected with the growing importance of big data, which is increasingly considered a critical business asset (Fitzpatrick & Weissman, 2021). In general, the collection and processing of personal data take the study of the consumer experience to a new level. This means that communicators can use big data to understand their stakeholders and competitors better and thus optimize their performance (Wiencierz & Röttger, 2019).

Artificial intelligence and machine learning technologies have created a new era of neural networks capable of massively producing communication content. E.g., at the end of 2022, ChatGPT, a chatbot developed by the OpenAI laboratory, which creates and structures texts, was presented. Likewise, Midjourney, which can generate illustrations, works on similar principles. With the advent of such tools, the duration and cost of content creation have been reduced many times, and this will undoubtedly have a profound effect on the development of the communication industry soon.

Virtual reality technologies that imitate the physical environment introduce objects, and the presence of a person into it, involving his sensory experience with the help of special computer programs, 3D images, and devices (smart glasses, helmets, holographic projectors, tactile gloves) opened a new level in the evolution of the marketing and PR industry. If VR technologies immerse us entirely into a simulated artificial environment, then AR partially complements the real picture with virtual objects and superimposes new images and effects.

An example of augmented reality is the IKEA Place mobile application, which in 2018 made a breakthrough in the online sales market (IKEA, 2018). With its help, users can film their home and insert furniture into the image to see how it fits into the interior. Due to similar programs, companies conduct test drives of cars and offer customers to live in the future, yet-to-be-built

house. Such innovative instruments give consumers an unusual experience, fuel interest in communication, and increase the likelihood of purchasing a product or service.

In our eyes, VR technologies are transforming the approaches to event management as one of the areas of marketing and public relations. Online tours, digital exhibitions, virtual presentations - all these formats are already used in stakeholder communications. Furthermore, photo zones with augmented reality, three-dimensional holographic images, aroma generators, and other inventions enable the achievement of the wow effect and the feeling of presence and enhance the emotional perception of a marketing or PR event.

In the 2020s, *gamification* crystallized as the newest trend in communications. Due to the COVID-19 pandemic, people have been isolated within four walls, so the need for VR technologies has deepened. According to experts, at this time, the use of computer games in the United States increased by 75% (Lynn, 2020). As they suggest, due to the improvement of technologies, games have become media platforms that unite, allow self-expression and are rooted in actual events. As a result, billions of users play, collaborate and create in these virtual spaces. Thus, gaming technologies and the communication worlds created with their help can be used to promote relevant goods and services among gamer audiences by integrating branded content and product placement.

Another innovative global trend was the use of *NFTs*. This acronym is recognized as the “word of the year 2021”. It means “a unique digital certificate registered in the blockchain used to record the ownership of works of art or collectibles” (Collins English Dictionary, 2021). In 2021, Fortnow and QuHarrison published a paper describing the specifics and process of creating NFTs (2021). In fact, NFT is a piece of code in which data about the owner and the object are encrypted: who bought it, when, and for what amount. Its protection against counterfeiting is the same as that of cryptocurrencies. The difference is that cryptocurrency is identical to virtual coins, while NFT is a unique asset with no analogs (digital image, audio, video). One of the most famous digital artifacts was the first tweet of Jack Dorsey, the founder of Twitter, which was sold at auction for almost \$3 million. Its buyer noted that years later, people will realize the true value of this tweet, just like the Mona Lisa paintings (Benveniste, 2021).

A sample of the use of NFT in integrated communications is the campaign of the brewing corporation Anheuser-Busch InBev. In 2021 it released the “Budweiser Heritage Collection,” which consisted of 1,936 unique digital designs of beer cans released at different times. A set of NFTs worth almost \$1 million was sold out in less than an hour (Ab Inbev, 2021). However, the company received an even greater profit for its image, building communication with stakeholders on the brand’s rich history and, at the same time, its innovation.

Because NFTs create an exclusivity effect, they can be a valuable tool for building brand communities. For example, unique tokens can approve the right of access to closed clubs, limited product collections, individual discounts, and everything associated with additional privileges or boost the status and worth of the brand. Likewise, NFTs can be an additional driver in implementing social responsibility programs. E.g., the Anheuser-Busch InBev mentioned above and its Stella Artois brand digitized a unique fried chicken recipe, auctioned it off, and the proceeds went to support restaurants on the brink of bankruptcy due to the COVID-19 pandemic (Sanchez, 2021).

Innovative trends in communications are undoubtedly related to the transition of human life into the *metaverse*. In the novel “Snow Crash” by the American writer Neal Stephenson, this concept is depicted as a parallel reality where people escape from reality using digital avatars, special glasses, and headphones (1992). Metaverse is a collaborative virtual space, a set of three-dimensional worlds that will duplicate almost all domains of physical human existence in the future. This phenomenon merges the possibilities of augmented and virtual reality, artificial intelligence with blockchain, and an alternative digital reality where people can perform most of the things they do in their daily lives (Barrett, 2021). On the other hand, the metaverse is a virtual

online world where avatars of real people can communicate with each other, play, work, and interact (Robbins, 2022).

The prototype of the metaverse was the game Minecraft, assembled in 2011, which allows users to construct virtual buildings and 3D cities from different blocks. From the moment of launch until 2021, Minecraft gathered 141 million active players worldwide (Clement, 2021). This is more than the total population of Great Britain and France! Moreover, shared interests gave birth to a communication cluster of Minecrafters who form groups in social networks and wiki resources, discussing achievements and ways of completing game tasks.

In October 2021, Facebook founder Mark Zuckerberg presented Meta, a “social technology company” focused on creating an artificial digital world that should fundamentally change our communication and lifestyle (Meta, 2021). Imagine a person who spends 24 hours in front of a computer without leaving the online space. He (she) finds everything he (she) needs for life in the digital world. A typical citizen of the metaverse works in the remote access mode that is already routine to us and receives payment for the work performed in cryptocurrency. In addition, they can be used to buy intangible values that provide satisfaction from ownership and personal status. These can be virtual properties of land, apartments, or other digital real estate registered on the blockchain or rights to own collections of paintings as NFTs. Of course, promoting such specific assets requires adapting marketing and PR strategies to the rules and needs of the metaverse and considering the specificity and segmentation of target audiences formed around new virtual interests.

Conclusions

This study confirmed that the development of digital innovations would not only enrich the toolkit of marketing and PR but will also form a new socio-communication dimension and a creative and meaningful context, which require professionals to have expanded competencies and responsibility for the future of society. Moreover, it also leads to the emergence of new forms of integrated communications related to such hybrid industries as, for example, digital marketing, e-sports, the cryptocurrency market, etc., in which billions of dollars are circulated, and whole armies of programmers, target specialists, designers, and content managers are involved.

According to the study results, we singled out six main trends that will impact the development of communication technologies in the coming decades: *machine learning; big data; virtual reality technologies; digital gamification; blockchain and NFT; migration to the metaverse*.

Thus, machine learning and working with big data using artificial intelligence will liberate professionals from algorithmic communications and routine processes of analyzing the behavioral habits of audiences, which will contribute to the intensity and purposefulness of communications. The next step in this path is to reduce human participation in generating communication content. The expansion of VR technologies will stimulate the further penetration of advertising and PR into the field of integrated virtual communications, which will offer new formats of digital content that will boost the influence and recognition of brands, provide psychological immersion of audiences through the use of virtual images, and change the perception of reality. Gamification will become more and more deeply rooted in all areas of marketing and PR activities, diversify interaction with stakeholders, and increase its effectiveness thanks to novelty, emotionality, and user involvement. NFTs do not so much pretend to be communication tools as they are a source of a fundamentally new type of digital content. Simultaneously, they become a symbol of innovation in terms of image and a relevant thematic reason for communication with interested parties in any field.

The process of metauniverse formation requires separate prospective studies. However, despite the blurred boundaries of this phenomenon, the inconsistency of views on the boundaries of virtual and real, the imperfection of technology, and the uncertainty of the consequences of the migration of society into this semi-fantastic world, it unites more and more supporters world-

wide. It becomes a shell for communications of a new level, with which future generations of professionals will have to work in marketing and PR.

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