priority2030^
leaders are made, not born

Human Capital
Multidisciplinary
Research Center

UNESCO Chair
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Society and Values

Blurring Boundaries between Virtual and Real Worlds

The National Research University Higher School of Economics Institute for Statistical Studies and Economics of Knowledge (HSE ISSEK) presents the results of a human capital trends study. The study methodology included big data mining using the HSE ISSEK-developed iFORA system, expert sessions, and a Delphi survey of more than 400 leading international and Russian scientists specialising in human capital.

The project is being implemented by the World-Class Human Capital Multidisciplinary Research Centre and the UNESCO Futures Studies Chair (UNESCO Futures Literacy Chairs network). A complete list of trends is available in a unique open-access database at https://ncmu.hse.ru/chelpoten_trends.

This trendletter is based on data obtained from issek.hse.ru, alliedmarketresearch.com, cvent.com, and springer.com.

The Trend's Structure

- **Development of augmented and virtual reality technologies**
- **Virtual reality activities affecting offline behaviour**
- **Emergence of virtual personalities**
- **Disruption of normal social communication, changing nature of social relations**

Technological advances allow companies to increase the involvement of users interested not so much in the actual product or service as in the associated experience. The pandemic has given a new impetus to the growth of the virtual experience economy. A particularly striking example is the use of virtual reality (VR) and augmented reality (AR) technologies in the entertainment industry, to integrate VR/AR elements into live performances (or even replace the latter). Virtual reality technologies provide an experience as powerful as the real thing, but much are easier to scale up. Virtual offices are becoming increasingly popular, along with telemedicine practices. The focus on human-centric design and the use of behavioural economics, social psychology, and neurobiology approaches in combination with VR, AR, and MR (Mixed Reality) technologies will boost the growth of virtual tourism.

Virtuality is increasingly penetrating the material world, with metaverses emerging in the digital environment, where social interactions and economic activities similar to those that exist in reality are taking place. For example, digital art objects are created, which have no physical analogues but are still sold and bought. The terms of transactions enforced in the real world by legislation, are supported by blockchain and non-fungible token (NFT) technologies in the digital environment, though their legal status is only beginning to be defined.

Technology companies now create user experiences and see modern technology as a means to attract new users and strengthen their loyalty by offering a wider range of opportunities. Fashion, gaming, and film brands are moving into metaverses, followed by consumers.

The strengthening of the links between the virtual and real worlds is accompanied by the emergence of new social communication participants. Interactions in the digital environment is mediated by virtual assistants; users "try on" digital images, while characters that exist only in the virtual environment become full-fledged, independent communication actors. Virtual artists' and "influencers'" profiles created using artificial intelligence and machine learning tools are gaining millions of subscribers already, helping brands expand their customer base.

The negative consequences of the digital world's greater impact on real life include internet addiction and an overabundance of information, which provoke anxieties, deviant behaviour, and social maladjustment in various forms. Since the number of interpersonal interactions in the online environment is lower than offline, one's sense of belonging is also less pronounced. This affects family and inter-generational relationships.

Key Estimates

1 trillion USD

The global virtual events market will reach 1 trillion USD in 2031 (306 billion USD in 2021)

13%

The global virtual events market's compound annual growth rate may reach 13% in 2022-2031

The Trend's Characteristics

Impact on human capital[1]

1 | 2 | **3**

Weak signal[2]

The emergence of metaverses

Strongest manifestation period

2026–2030 гг.

Wild card[3]

The disappearance of boundaries between virtual and real worlds

Effect of COVID-19 pandemic

Strengthened the trend

Consequences of the wild card event actually taking place

The division of society into those who live in the virtual world and those remaining in the real one

Presence in Russia

Comparable with the global level

[1] 1 – weak, 2 – medium, 3 – strong.
[2] Weak signals are insignificant (rarely mentioned or discussed) events which indicate the trend may radically change in the future.
[3] Wild cards" are difficult-to-predict events which, if they do happen, can significantly affect the trend.

Drivers and Barriers

Drivers

- Development of virtual and augmented reality technologies
- Improved performance and smaller size of personal devices
- Proliferation of next-generation communication technologies
- Growth of the experience economy
- Demand for a new communication environment

Barriers

- Growing cybercrime threats
- Low level of the public's digital and information literacy
- Persistently high technology costs
- Restrictions on the use of virtual reality devices

Trend Effects

Opportunities

- Improved quality of education
- Greater student engagement through the use of VR, AR, and MR technologies
- Application of virtual and augmented reality technologies in medical rehabilitation

Threats

- Specific features of online communication create unique threats, from cyberbullying to targeted phishing, "deepfakes", personal data disclosure and discrediting campaigns
- Information which, if made public, could be used to cause harm by finding its way into the digital environment