

Media representation of the technologies of the fourth industrial revolution: Russian business media practice (2017-2021)¹

Tatiana Frolova²,

Daniil Ilchenko,

Elizaveta Striga

Lomonosov Moscow State University, Russia

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Abstract

The article studies specific topical and thematic features of representation of technology innovations in 2017-2021 in Russian leading business print and online magazines: *Expert*, *Profile*, *Inc. Russia*, and *Sekret Firmy*. The study showed that information technologies are the main topic of scientific and technological discourse in business media. Moreover, the emphasis is on artificial intelligence technology, blockchain and distributed ledger technology, and cybersecurity. The authors of online business magazines mostly focus on the representation of achievements, challenges, and future development of the IT industry. In addition to the IT sector, print business media also cover other high-tech areas, including those traditionally developed in Russia: space technologies, developments in energy generation, storage and transmission, and advanced materials and innovations in the agro-industrial complex. This approach appears to be more consistent with the objectives of scientific and technological development of the economy and social sphere.

Keywords

Business media, business journalism, media representation, digital economy, technology innovation, scientific and technological development.

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² **Corresponding author:**

Tatiana Frolova, Lomonosov Moscow State University, Russia.

Email: t_frolova@bk.ru

Introduction

Artificial intelligence, the Internet of Things, virtual and augmented reality, bio- and neurotechnologies – these and other technology innovations are rapidly reshaping the economy and social sphere. The ongoing changes are fundamental, which allows researchers to speculate about the beginning of the Fourth Industrial Revolution, the implementation of the so-called Industry 4.0. (Schwab, 2022a, 2022b). The development of key areas of the new technological revolution comes under the close scrutiny of the corporate sector and is the top priority of government policy in developed and developing countries, including the Russian Federation (Development of Selected High-Tech Areas, 2022).

Interestingly, the authors of the Industry 4.0 concept point out that the indicator of progress today is not so much the achievements and rate of scientific and technological development as the measure of acceptance of technology innovations by society. To a large extent, the solution to the problem involves efforts by the media as the main channel for making society aware of scientific and technological advances and challenges (Latov, & Latova, 2018). By shaping public opinion, mass media can impact decision-making in the innovation policy of the state (Waldherr, 2012, Nordfors, 2004a; 2004b; Gureeva et al, 2021; de Albuquerque, 2023) and the development of knowledge-intensive sectors of the economy, such as medicine (Haider, 2004) or the nuclear industry (Gamson, 1989).

Business media have a special role in this process. As part of the information infrastructure of the economy, business mass media reflect the innovation processes taking place in the economy and affect their evolution. By reporting on new developments and technology trends and analyzing the introduction and implementation of innovations, business media help businesses to overcome barriers to innovation development, including the lack of knowledge about new technology and markets for high-tech commodities (Vlasova, & Fridlyanova, 2022). The level of attention paid by business media editors to certain technology innovations suggests how relevant they are to the economy.

In addition to entrepreneurs, the target audience of business media includes investors, politicians, officials, scientists, and engineers willing to commercialize their developments, i. e. the main subjects of the national innovation system (Kudina, 2018: 174). Thus, business media can contribute to the innovation-driven growth of the economy, first of all, through the creation of an effective system of communication between the key innovation actors: academia, businesses, and governments³.

³ State Program “Scientific and Technological Development of the Russian Federation”. URL: <http://government.ru/docs/36310/>

How efficiently do business media perform this function? What is the content of the scientific and technological discourse of business media? Which areas of global and national technological development attract more attention from business journalists, and which areas are undeservedly ignored? Answers to these and other questions are of interest not only to theoreticians and applied researchers of the media sphere but also to innovation policy experts (Ilchenko, & Frolova, 2021). Yet, there are very few media studies on these issues.

Literature review

The authors of most papers focus on studying the media representation of certain technology areas, such as synthetic biology (Wang, & Du, 2023), carbon capture, utilization and storage technology (Jiang et al., 2022), or energy technologies in general (Ter vinen, 2014). The subject of research is often news stories published in print and online general interest media (Dempster et al., 2022; Strooban et al., 2019; Weaver et al., 2009; Anisimov et al., 2023); their content is frequently analyzed using custom software (Groves et al., 2016). There is virtually no research on analytical journalistic materials published in business media.

Few papers by Russian researchers are devoted to the study of media discourse on innovations and technology park development based on a long list of mass media, including individual business publications (Toganova et al., 2016; Latov, & Latova, 2018). The results show a steady increase in the number of publications about new technology, especially in the areas actively supported by government programs (e.g. nanotechnology). However, the analysis of media texts revealed that technology innovations are not associated clearly enough with changes in public life, and the media discourse about technology parks is dominated by publications about promotional events (conferences, forums, etc.); however, there are few texts about the key areas of technology innovation studies and their expected results.

The international media discourse on innovation was studied in the articles by Gromova (Gromova, 2021a, 2021b) based on translated materials posted on the InoSMI website, including publications of foreign business media. Notably, most of the publications reviewed by Gromova were of the analytical genres, which made it possible to trace quite clearly the characteristics of innovations under study: life cycle stages, main actors, type of innovations, extent, etc. The author proposes to further investigate social, economic, and political trends in the field of media discourse on innovations, which form an innovative culture and, consequently, an innovative type of thinking in society, contributing to its development.

We believe that the lack of research into the scientific and technological discourse in business media stems from the lack of tools for studying this complex issue. In order to tackle this problem, we developed a methodology for studying science and technology-related topics in business media by the example of studying functional, topical/thematic, and genre features of analytical publications about technology innovations (Ilchenko, & Frolova, 2021). It is assumed that such publications deal with science and technology issues in the most in-depth and versatile way since the analytic character and high quality of journalistic examination of topics distinguish business media from other types of mass media (Vyrkovsky, 2009), and technology innovations drive the Fourth Industrial Revolution (Schwab, 2022a).

This approach formed the backbone of the research project “Technological Innovations as an Object of Journalistic Analysis in Business Media”. During the first stage of the project, we studied the topical and thematic characteristics of publications about new technologies in the leading Russian business journals *Expert*, *Profile*, and *Forbes Russia* in 2017-2021 (Frolova et al., 2022a, 2022b; Ilchenko, 2022).

The results of the study show a steady increase in the number of analytical publications on innovations during this period and their diverse content. It should be noted that the majority of such publications appeared in sections devoted to the development of private and financial sectors, major events, challenges, and trends in the business and social spheres, rather than in specialized science and technology sections, such as *Innovations* or *Science and Technology*. Non-specialized sections also drove the growth of the share of innovation-related materials in business magazines, which can be explained by the unprecedented influence of the new technological revolution on social and political processes, the economy and business, which results in an increasingly important role of the science and technology aspect in the journalistic analysis of the business sphere (Frolova et al., 2022a).

The study of thematic features of publications on new technologies allowed us to determine the main areas of science and technology development of the economy and society analyzed in the publications of business magazines, identify current technology trends neglected by journalists, rank the economy sectors covered in the context of their technological development, and monitor several other parameters, such as the life cycle stages and geography of innovations, etc. (Frolova et al., 2022b; Ilchenko, 2022).

The logical continuation of the research project appears to be the study of the practice of media representation of technology innovations in the business

media operating exclusively online. The relevance of the study is determined by the generally higher demand for online media in the modern audience than for print media. In addition, the operation in the digital space, knowledge, and direct use of information technologies, which open up new opportunities for collecting, analyzing, presenting, and distributing content, can influence the thematic and genre preferences of online business media authors who create analytical publications about new technologies.

The main purpose of the article is to explore the topical and thematic features of the representation of technology innovations in the leading Russian print and online business magazines. The research hypothesis is as follows: the editors of business magazines focus more on the development, firstly, of information technology (IT), which is the foundation of the Fourth Industrial Revolution, and secondly, on innovations in high-tech spheres traditionally developed in the Russian Federation, such as energy, materials science, space industry, agro-industrial complex, etc.

Methodology

The subject of the study was the content of the leading Russian business media outlets: Sekret Firmy⁴ and Inc. Russia⁵ online magazines and Expert and Profile printed weekly magazines. We chose these magazines because they are popular among the audience and have similar typological features.

All four media outlets produce journalistic content addressing cross-cutting topics dedicated to the development of the business sphere and have similar circulation and audience coverage. For example, Inc. Russia, the Russian version of the American business magazine Inc., positions itself as “a legendary magazine about entrepreneurship. We focus on small and medium-sized businesses, advanced technologies, and the people behind it all”⁶. The magazine’s website is visited by 1.1 million unique users each month⁷.

The About section on the website of Sekret Firmy (secretmag.ru) says that it is “a magazine about business, economics, finance and high technologies that promote the development of economy and business in Russia and in the world.” The outreach of the website is 1.1 million unique readers per month.

⁴ <https://secretmag.ru/>

⁵ <https://incrussia.ru/>

⁶ Inc. Russia mediakit data for 2021.

⁷ Here and elsewhere, the data on the audience coverage of the media outlets’ websites is given for November 2023; the data was obtained using the SimilarWeb service (www.similarweb.com).

Profile is a weekly printed business magazine that “publishes original articles on the widest range of topics from politics, economics, business and finance, public, social and cultural life.” The circulation is 92 thousand copies⁸. The magazine’s website, www.profile.ru, is visited by 861.8 thousand users per month.

The editorial board of Expert magazine presents itself as “a weekly that deeply and professionally studies economics, business, and socio-political processes. Expert does not limit itself to figures and facts, but gives readers plenty of reliable information, presenting trends, analytics, forecasts, and ratings, describing the state of industries, and publishing interviews with key business figures”. The circulation is 92 thousand copies⁹. The current website traffic is 929.5 thousand unique users.

The period of the study covered the years 2017-2021. This time frame was chosen deliberately to cover a relatively stable period of the country’s development: from the approval of the Strategy of Scientific and Technological Development of the Russian Federation (approved by Presidential Decree No. 642 of December 1, 2016) to the beginning of the Special Military Operation in Ukraine in February 2022.

During the content analysis of the business media, we selected journalistic publications that met two main criteria. The *first criterion* is related to the publication genre. The sample included journalistic texts characterized by the analytical way of reflecting reality, which does not only describe events, problems, and phenomena but also substantiates, evaluates, and forecasts them, and in some cases formulates an action program (Tertychnyy, 2013). With this criterion in mind, the selection of publications was based on the list of the main analytical genre forms used in business magazines: expert interviews, recommendations, forecasts, comments, reviews, ratings, opinion columns, case studies, news features (or trend articles), and analytical articles (Vyrkovsky (ed.), 2012: 599-628). Additionally, different approaches to the identification and description of analytical genres in mass media were taken into account: both earlier publications (Kroychik, 2004; Lazutina, & Raspopova, 2012; Tertychnyy, 2014) and more recent studies of the genre structure of online media (Kolesnichenko, 2018, 2019, 2022).

The *second criterion* reflected the subject limits of the publications: the development, implementation, application, regulation, or future use of technology innovations, which are represented in industry and services by

⁸ Profile mediakit data for 2020.

⁹ Expert mediakit data for 2020.

two types – product and process innovations (Innovation Management, 2019). Product innovation is the development and introduction of technologically new or significantly improved goods and services. It can include new uses or combinations of existing knowledge and technology. Product innovations include new goods and services, significant improvements in the functional or user characteristics of existing goods and services, new uses, and new design. Process innovation is the implementation of technologically new or significantly improved production methods, including product delivery methods. Process innovations include new or significantly improved production methods; new delivery methods; new or significantly improved methods for the creation and provision of services.

To identify the topics of technology innovations in the publications of business mass media, we relied on a wide range of theoretical research on the issues of innovative development of both global and national Russian economy (Development of Selected High-Tech Areas, 2022; Dezhina, & Ponomarev, 2020; Innovative Economy, 2019; Oganessian et al., 2018; Maslennikov, 2017; New Technological Revolution, 2017; Ponomarev, & Dezhina, 2016; Glazyev et al., 2014, etc.). As a result, we compiled a model list of 15 high-tech areas that match both key science and technology areas of development of the Russian Federation (The Concept of Technological Development of the Russian Federation Until 2030, 2023¹⁰) and global innovation trends of the Fourth Industrial Revolution (Schwab, 2022a). This term was coined by Schwab, the founder of the World Economic Forum. The Fourth Industrial Revolution is a new stage of human development. It is based on the three previous industrial revolutions and driven by the growing availability of the latest, primarily information technologies, as well as the convergence of digital, physical, and biological systems (Balatsky, 2019).

Below is the model list of 15 high-tech areas covered by this study:

- New computing technology
- New industrial and system software
- Blockchain and distributed ledger technology
- The Internet of Things
- Cybersecurity technology
- Artificial intelligence technology
- Robotics

¹⁰ The Concept of Technological Development of the Russian Federation Until 2030 // Decree of the RF Government No. 1315-r of May 20, 2023. URL: <http://government.ru/docs/48570/>

- Unmanned vehicles
- Technologies of new materials and substances
- Biotechnology and medicine
- Neurotechnology
- Virtual and augmented reality
- Energy generation, storage and transmission technology
- Modern and future mobile communication networks
- Space technology.

While we selected publications from the print business media, we analyzed all issues of Profile (198) and Expert (223) (421 issues in total). We used the Integrum information retrieval system of mass media monitoring and analysis to select publications from the online business media. The system indexes the materials and contains full-text archives of over 12,000 sources, including Sekret Firmy and Inc. Russia. The system generated a sample of 10,113 publications (4,111 from Sekret Firmy and 6,022 from Inc. Russia) that contained keywords ‘tekhnolog*’ (‘technolog*’) or ‘innovats*’ (‘innovat*’). We excluded publications that did not meet the two criteria described above from the sample. In addition, we analyzed the sections of Sekret Firmy and Inc. Russia online magazines for the period under study that could contain the publications we were interested in: Technology and Stories sections in Sekret Firmy magazine and Invent, Fly, and Understand sections in Inc. Russia magazine.

The final sample consisted of 1,033 publications of analytical genres about technology innovations corresponding to the fifteen key areas: 292 publications from Inc. Russia, 135 publications from Sekret Firmy, 416 publications from Expert, and 190 publications from Profile (Table 1). We included publications focusing specifically on novel solutions¹¹ and publications with an explicit science and technology narrative¹². The latter category of texts includes, in particular, publications on knowledge-intensive business development, which, in addition to an overview of the technology (either

¹¹ Tselykh, A. Govorit kak Putin, chikhat kak Sobchak. Kak rossiyskaya neyroset uchitsya klonirovat golosa [Speak Like Putin, Sneeze Like Sobchak. How a Russian Neuron Network Learns to Clone Voices]. Sekret Firmy, November 21, 2019. URL: <https://secretmag.ru/enciklopediya/poyas-i-put.htm>

¹² Albert-Deitch, C. Slezhka za pokupatelyami: kak magaziny povyshayut svoju pribyl s pomoshchyu novykh tekhnologiy [Shopper Watching: How Stores Are Boosting Their Profits with New Technologies]. Inc. Russia, May 15, 2017. URL: <https://incrussia.ru/understand/slezhka-za-pokupatelyami-kak-magaziny-povyshayut-svoyu-pribyl-s-pomoshchyu-novykh-tekhnologiy/>

developed or used), refer to companies' development strategies and financial performance¹³.

Table 1

Priority topics in the scientific and technological discourse of business magazines in 2017-2021

Mass media outlet // High-tech area	Inc. Russia (abs.)	Sekret Firmy (abs.)	Expert (abs.)	Profile (abs.)	Σ (abs.)	% of pub.
Artificial intelligence	71	38	50	17	76	17.0
Biotechnology and health	40	20	75	26	161	15.6
Energy generation, storage and transmission technology	12	3	71	32	118	11.4
Blockchain and distributed ledger technology	46	13	35	8	102	9.9
Cybersecurity technology	11	17	27	18	73	7.1
New computing technology	18	6	38	8	70	6.8
Space technology	8	5	21	27	61	5.9
Technologies of new materials and substances	14	3	35	9	61	5.9
Unmanned vehicles	14	4	19	13	50	4.8
Robotics	12	4	16	11	43	4.2
Virtual and augmented reality	23	8	2	3	36	3.5
The Internet of Things	12	6	6	12	36	3.5
Industrial and system software	4	6	15	1	26	2.5
Modern and future mobile communication networks	3	1	5	4	13	1.3
Neurotechnology	4	1	1	1	7	0.7
Σ	292	135	416	190	1033	100

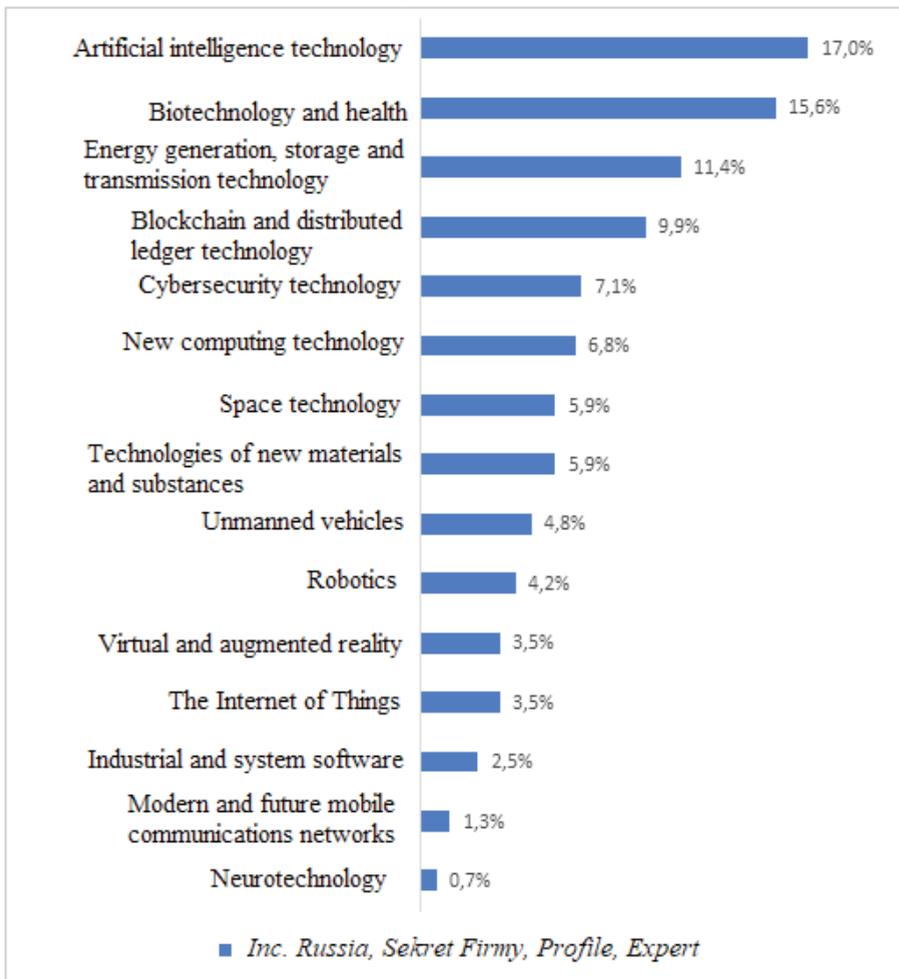
¹³ Sample publication: Suvorova, N. RCML: razrabotchiki iz Permi pereobuchayut promyshlennykh robotov (i planiruyut zavoevat mir) [RCML: Developers from Perm Retrain Industrial Robots (and Plan to Conquer the World)]. Inc. Russia, September 6, 2017. URL: <https://incrussia.ru/concoct/rcml-razrabotchiki-iz-permi-pereobuchayut-promyshlennykh-robotov-i-planiruyut-zavoevat-mir/>

Results

Digitalization of the economy and business processes is the main topic of scientific and technological discourse in the business media (*Figure 1*). In this respect, artificial intelligence (AI) solutions are the key driver of the development of information technology. This area not only ranks first among the high-tech areas but also largely determines the development of other technology trends presented in analytical publications of business media, including unmanned vehicles, robotics, virtual and augmented reality, and the Internet of Things.

Figure 1

Rating of priority topics in the scientific and technological discourse of business magazines in 2017-2021



In addition to AI solutions, the top five leading high-tech areas include technologies also related to the information industry, such as blockchain and distributed ledger technology and cybersecurity technology, which ensure the stability of the digital economy infrastructure. Besides, information technologies in many ways shape the development of other high-tech areas featuring on the pages of business magazines (Table). There is a remarkable share of publications on mobile health (mHealth) and other IT implementation practices in medicine (MedTech), cloud technology and algorithms for big data collection and analysis, and additive technologies.

Table 2

Top-ten high-tech areas and technology innovations driving these areas (%)¹⁴

High-tech areas		% of pub.	Technology innovations
Artificial intelligence technology		52	Recommender and intelligent decision support systems
		26	Computer vision and facial recognition technology
		21	Natural language processing, speech recognition and synthesis (chatbots and voice assistants)
		2	Other
Biotechnology and health	Medicine and health	25	Medical technology (MedTech) and mobile health (mHealth)
		24	Advanced drug development
		14	Health-related genetic technology
		6	Life extension technology
	16	Other	
	Biotechnology in agribusiness	7	Cultured meat/protein
		3	Genetically modified organisms (GMO)
5		Other biotechnology in agribusiness	

¹⁴ The table shows the conventional names of the groups of technology innovations that are the subject of at least five analytical publications over the entire study period of 2017-2021 (one text per year on average). Otherwise, innovations were grouped under “Other”.

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Energy generation, storage and transmission technology	51	Battery energy storage systems for electric vehicles (41%) and other purposes (10%)
	25	Renewable energy sources
	13	Hydrogen fuel cells
	6	Nuclear power and fuel energy industry
	5	Smartgrids
Blockchain and distributed ledger technology	61	Blockchain in the financial sector, cryptocurrencies
	20	Non-financial applications of distributed ledger technology (in logistics, utilities, law, etc.)
	9	NFT in creative industries
	10	Other
Cybersecurity technology	91	Personal data protection and cybersecurity of various industries (banking sector, medicine, energy, etc.)
	9	Digital piracy and malicious software
New computing technology	46	Microelectronics
	43	Cloud technology and algorithms for big data collection and analysis
	9	Quantum computers and computing
	2	Other
Space technology	30	Achievements and challenges in the development of the Russian space industry
	25	Private space industry
	18	Lunar and Mars programs of leading spacefaring nations
	10	Geo-information and satellite communication systems
	10	Space research
	7	Other

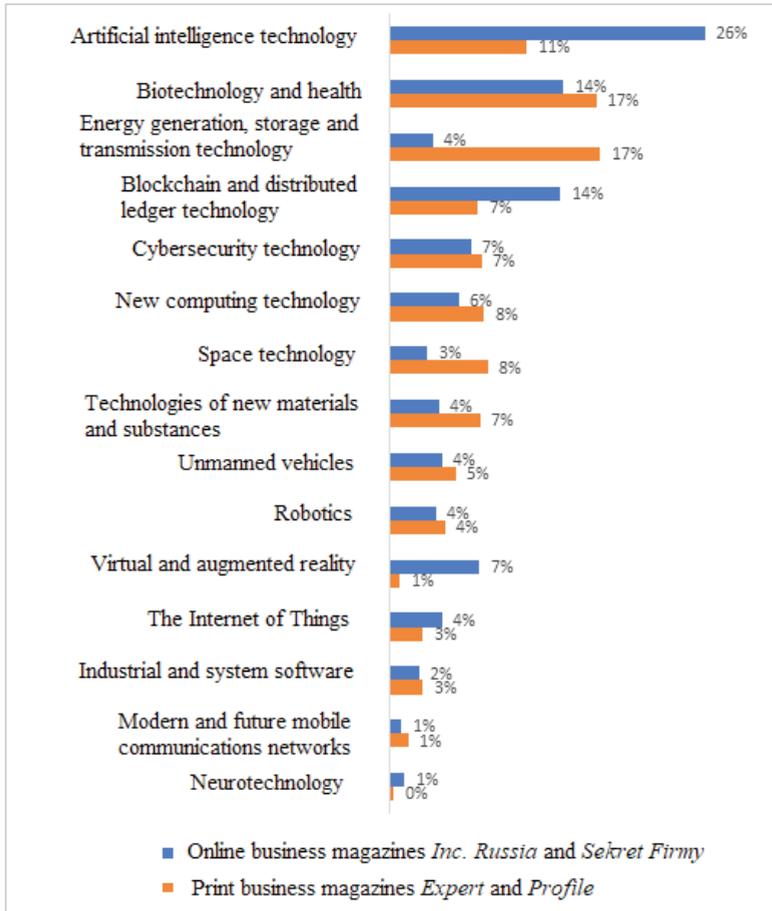
Technologies of new materials and substances	33	Additive technology (3D printing)
	23	Polymer composites
	15	Rare and rare-earth metals
	13	Nanomaterials (graphene and nanotubes)
	16	Other
Unmanned vehicles	58	Self-driving cars
	36	Unmanned aerial vehicles
	6	Other
Robotics	78	Industrial robots
	12	Exoskeletons
	10	Other (household and combat robots)

Other global technology trends are also gaining more attention from business mass media. For example, energy generation, storage and transmission technologies are primarily represented by publications on the development of electric vehicles and green energy. Innovations in medicine are mostly driven by the achievements in the pharmaceutical industry and genetics. It is worth noting that some rapidly developing global high-tech areas such as virtual and augmented reality, modern and future mobile networks (5G and 6G), and neurotechnology (brain-computer interfaces) feature in less than 4% of the analytical publications of business media, which may correlate with the level of development of these areas in the Russian economy, science, and technology. Industrial and system software, a critical area for the development of the digital economy that clearly depends on foreign suppliers, features only in 2.5% of the publications.

Biotechnology and Health ranks second in the science and technology thematic rating of both print and online business media. Apart from that, the practice of representing innovations in business print and online magazines differs significantly (*Figure 2*). The online magazines have a much greater focus on the development of the IT industry. The share of publications on AI, blockchain and distributed ledger technologies in online media is twice as high as in print media, while the share of publications on virtual and augmented reality is almost seven times higher than in print media.

Figure 2

Comparative analysis of the scientific and technological discourse
of print and online business magazines in 2017-2021



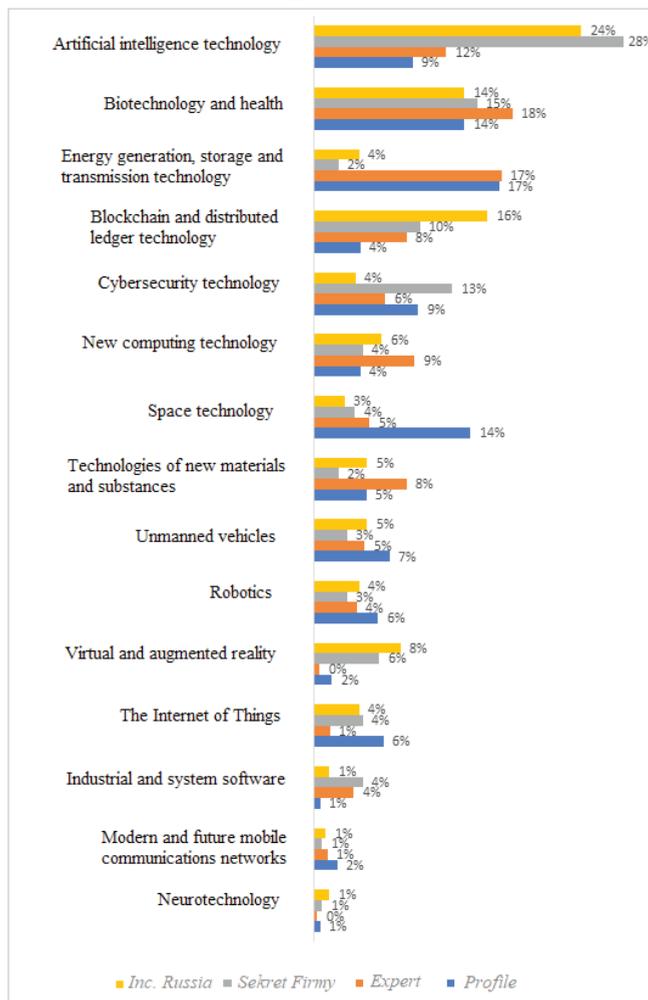
The print magazines are more “conservative”: they pay more attention to the high-tech areas historically more established and traditionally developed in the Russian Federation, such as energy, space, and materials science.

Priority topics of the media outlets under study exemplify the specific nature of the scientific and technological discourse of print and online business media (Figure 3). In addition to the topics of artificial intelligence and virtual and augmented reality clearly dominating the online magazines, publications on blockchain and distributed ledger technologies dominate in *Inc. Russia* magazine, whereas publications on cybersecurity technologies are predominant in *Sekret Firmy* magazine. Along with a large number of publications on energy

generation, storage and transmission technologies, the print business magazines cover the topic of space technology development (in *Profile* magazine) and technologies of new materials and substances (in *Expert* magazine) in much more detail. Moreover, a greater focus on the achievements and challenges in the development of the Russian agro-industrial complex and microelectronics results in a higher share of publications about new computing technology and biotechnology in *Expert* magazine.

Figure 3

Specific nature of topics in the scientific and technological discourse of business magazines in 2017-2021



In general, the online business magazines demonstrate a thematic bias in favor of information technology and feature a relatively small volume of publications analyzing other areas and issues critical to the innovative development of the national economy and social sphere, primarily related to the Russian manufacturing sector, which depends on imported components and equipment, including those vital for research and development. In this respect, the practice of print business magazines, with a more balanced thematic range representing technology innovations, seems to be more effective and relevant to the goals and objectives of science and technology development of the Russian Federation.

Conclusion and discussion

The first part of the research hypothesis was confirmed. Information technology is the main topic of the scientific and technological discourse of business media. The emphasis is on the development of artificial intelligence technology and the implementation of recommender and intelligent decision support systems, computer vision, natural language processing, speech recognition and synthesis technologies in business processes, production, and everyday life. There is a remarkable share of publications on AI-based technologies, such as unmanned vehicles, robotics, virtual and augmented reality, and the Internet of Things. Cybersecurity, blockchain, and distributed ledger technologies are also among the top five high-tech areas most often covered in the publications. In addition, digital technology in many ways shapes the development of other high-tech areas featuring on the pages of business magazines, for example, medicine and advanced materials.

The second part of the hypothesis was only partially confirmed. The high-tech areas traditionally developed in Russia's economy, science, and technology are mainly represented in the publications of print business media. For example, space technology receives extensive coverage in *Profile* magazine, while *Expert* magazine focuses more on innovations in the agro-industrial complex and technologies of new materials and substances. Energy generation, storage and transmission technology is the priority topic for both periodicals. However, it is worth noting that the content of these areas is based mostly on global technology trends rather than the specifics of innovative development of the national economy. For example, energy generation, storage and transmission technologies are represented by the publications about the development of electric vehicles (41%) and about renewable energy sources (25%). A mere 6% of the publications focus on innovations in the nuclear power and fuel energy industry, which Russian engineers and scientists are famous for.

The scientific and technological discourse of the online business magazines is devoted mostly to the development of information technologies. Artificial intelligence, blockchain and distributed ledger technology, virtual and augmented reality – the share of online publications about these technologies is several times higher than that of print publications. The exception is biotechnology and health, where the share of publications in the print and online magazines is approximately the same, but again, the authors of the online magazines put a greater emphasis on the use of IT in medicine and mobile health than, for example, on biotechnology in agribusiness (the ratio of publications is 43% to 8% for the online media and 14% to 19% for the print media). Analytical publications about the achievements, problems, and prospects of other areas, besides IT, which are important for the innovative development of the economy and are primarily related to the manufacturing sector, are found on the pages of the online magazines under study in a significantly smaller number than in the print business magazines. In general, a more balanced (in terms of topics) practice of representation of technology innovations in the print business magazines appears to be more effective and relevant to the goals of science and technology development of the economy and social sphere.

What causes the thematic bias in favor of information technology in online business media is the subject of another study. It is possible that the specific features of digital journalism play a part here because, for digital journalism, it is essential to have knowledge of information technologies, which makes IT topics more congenial and understandable for representation.

In our opinion, one of the promising areas for further research is the study of functional and genre features of the scientific and technological discourse of online business media, which will allow us to answer the question of what purpose and in what genre forms journalistic content about innovations is delivered to the target audience.

References

Afanasyeva, A. et al. (2012). *Delovaya zhurnalistika* [Business Journalism]. In Vyrkovsky, A. (ed.). Moscow: MediaMir.

Anisimov, I., Vyrkovsky, A., Zuykina, K., Razumova, D., & Trishchenko, N. (2023). Domestic scientific media discourse in academic journals: Structural analysis. *World of Media. Journal of Russian Media and Journalism Studies*, 2, pp. 64–85. DOI: 10.30547/worldofmedia.2.2023.4

Balatsky, E. (2019). Globalnye vyzovy chetvertoy promyshlennoy revolyutsii [Global challenges of the Fourth Industrial Revolution]. *Terra Economicus*, 17(2), pp. 6–22. DOI: 10.23683/2073-6606-2019-17-2-6-22

De Albuquerque, A. (2023). Towards a multipolar communication international scholarship? *World of Media. Journal of Russian Media and Journalism Studies*, 1, pp. 5–18. DOI: 10.30547/worldofmedia.1.2023.1

Dempster, G., Sutherland, G., & Keogh, L. (2022). Scientific research in news media: a case study of misrepresentation, sensationalism and harmful recommendations. *Journal of Science Communication*, 21. DOI: 10.22323/2.21010206

Dezhina, I., & Ponomarev, A. (2020). Ot nauki k tekhnologiyam: novye trendy gosudarstvennoy politiki [From science to technology: new trends in government policy]. *Innovations*, 10, pp. 30–40. DOI: 10.26310/2071-3010.2020.264.10.004

Frolova, T., Ilchenko, D., & Striga, E. (2022a). Representation of scientific and technological innovation in Russian business journals: quantitative analysis (2017-2021). *Scientific and Technical Information Processing*, 49(3), pp. 159–165. DOI: 10.3103/S0147688222030030

Frolova, T., Ilchenko, D., & Striga, E. (2022b). Science and technology agenda of Russian business magazines: Topical and thematic analysis (2017-2021). *World of Media. Journal of Russian Media and Journalism Studies*, 4, pp. 24–45. DOI: 10.30547/worldofmedia.4.2022.2

Gamson, W. A., & Modigliani, A. (1989). Media discourse and public opinion on nuclear power: A constructionist approach. *American Journal of Sociology*, 95(1), pp. 1–37.

Glazyev, S., Dementyev, V., & Sukhinin, I. (2014). *Strategicheskie predposylki modernizatsii i innovatsionnogo razvitiya rossiyskoy ekonomiki* [Strategic Prerequisites for Modernization and Innovative Development of the Russian Economy]. Monograph. Moscow: State University of Management.

Gromova, T. (2021a). Stadii zhiznennogo tsikla innovatsiy v mezhdunarodnom mediadiskurse (na primere izdaniya “InoSMI”) [Stages of the life cycle of innovations in international media discourse (using the example of InoSMI)]. *Theoretical and Practical Issues of Journalism*, 10(1), pp. 174–190. DOI: 10.17150/2308-6203.2021.10(1).174-190

Gromova, T. (2021b). Kharakteristika innovatsiy v mezhdunarodnom mediadiskurse [Characterization of innovations in international media discourse]. *Vestnik Moskovskogo Universiteta. Seriya 10. Zhurnalistika*, 6, pp. 116–138. DOI: 10.30547/vestnik.journ.6.2021.116139

Groves, T., Figuerola, C. G., & Quintanilla, M. Á. (2016). Ten years of science news: A longitudinal analysis of scientific culture in the Spanish digital press. *Public Understanding of Science*, 25(6), pp. 691–705. DOI: 10.1177/0963662515576864

Gureeva, A., Dunas, D., & Muronets, O. (2021). Government and youth communications in social media: Theoretical basics and Russian practice. *World of Media. Journal of Russian Media and Journalism Studies*, 1, pp. 42–63. DOI: 10.30547/worldofmedia.1.2021.2

Haider, M., & Kreps, G. L. (2004). Forty years of diffusion of innovations: Utility and value in public health. *Journal of Health Communication*, 9(1), pp. 3–11.

Ilchenko, D. (2022). Tematika tekhnologicheskogo razvitiya ekonomiki v rossiyskikh delovykh zhurnalakh v 2017-2021 gg. [Topics of technological development of the economy in Russian business magazines in 2017-2021]. *Vestnik Moskovskogo Universiteta. Seriya 10. Zhurnalistika*, 6, pp. 109–129. DOI: 10.30547/vestnik.journ.6.2022.109129

Ilchenko, D., & Frolova, T. (2021). Tekhnologicheskie innovatsii kak obyekt zhurnalistskogo analiza v delovykh SMI [Technological innovation as an object of journalistic analysis in the business media]. *MediaAlmanah*, 5, pp. 54–64. DOI: 10.30547/mediaalmanah.5.2021.5464

Jiang, K., Ashworth, P., Zhang, S., & Hu, G. (2022). Print media representations of carbon capture utilization and storage (CCUS) technology in China. *Renewable and Sustainable Energy Reviews*, 155(7565):111938. DOI: 10.1016/j.rser.2021.111938

Kolesnichenko, A. (2019). Vostrebovannost zhanrov zhurnalistskikh tekstov auditoriey onlainovykh SMI [Demand for journalistic text genres by the online media audience]. *Vestnik Moskovskogo Universiteta. Seriya 10. Zhurnalistika*, 3, pp. 3–22. DOI: 10.30547/vestnik.journ.3.2019.322

Kolesnichenko, A. (2018). Vostrebovannost zhanrov zhurnalistskikh tekstov v onlainovykh SMI [Demand for journalistic text genres in online media]. *Vestnik Moskovskogo Universiteta. Seriya 10. Zhurnalistika*, 1, pp. 26–42. DOI: 10.30547/vestnik.journ.1.2018.2642

Kolesnichenko, A. (2022). Tipologiya multimediynykh longridov [Typology of multimedia longreads]. *Vestnik Moskovskogo Universiteta. Seriya 10. Zhurnalistika*, 4, pp. 3–20. DOI: 10.30547/vestnik.journ.4.2022.320

Kroychik, L. (2004). *Sistema zhurnalistskikh zhanrov. Osnovy tvorcheskoy deyatel'nosti zhurnalista: Uchebnik* [The System of Journalistic Genres. Fundamentals of Journalist's Creative Activity: Textbook]. Moscow: Aspekt Press.

Kudina, M. (2018). *Innovatsionnaya ekonomika: Uchebnik* [Innovative Economy: Textbook]. Moscow: Moscow University Publishers.

Kudina, M., & Sazhina, M. (2019). *Innovatsionnaya ekonomika: nauchno-metodicheskoe posobie* [Innovative Economy: Scientific and Methodological Guide]. Moscow: FORUM Publishers: INFRA-M.

Latov, Yu., & Latova, N. (2018). Rossiyskaya tekhnologicheskaya innovatika v otechestvennykh SMI (na primere tekhnoparkov) [Russian technological innovation in the domestic media (the case of technology parks)]. *Universe of Russia*, 27(4), pp. 141–162. DOI: 10.17323/1811-038X-2018-27-4-141-162

Lazutina, G., & Raspopova, S. (2012). *Zhanry zhurnalistskogo tvorchestva: Uchebnoe posobie dlya studentov vuzov* [Genres of Journalistic Creativity: Textbook for University Students]. Moscow: Aspekt Press.

Maltseva, S. (2019). *Innovatsionnyy menedzhment: Uchebnik dlya akademicheskogo bakalavriata* [Innovation Management: Textbook for Academic Bachelors]. Moscow: Yurayt Publishers.

Maslennikov, M. (2017). Tekhnologicheskie innovatsii i ikh vliyanie na ekonomiku [Technological innovations and their impact on the economy]. *Economy of Region*, 13(4), pp. 1221–1235. DOI: 10.17059/2017-4-20

Nordfors, D. (2004a). The concept of innovation journalism and a programme for developing it. *Innovation Journalism*, 1(1), pp. 1–12.

Nordfors, D. (2004b). The role of journalism in innovation systems. *Innovation Journalism*, 1(7), pp. 1–18.

Novaya tekhnologicheskaya revolyutsiya: vyzovy i vozmozhnosti dlya Rossii [New Technological Revolution: Challenges and Opportunities for Russia] (2017). Expert analytical report. Moscow: Center for Strategic Research.

Oganesyan, T., Styryn, E., Abdrakhmanova, G. et al. (2018). *Tsifrovaya ekonomika: globalnye trendy i praktika rossiyskogo biznesa* [Digital Economy: Global Trends and Russian Business Practice]. Analytical report. Moscow: National Research University Higher School of Economics.

Ponomarev, A., & Dezhina, I. (2016). Podkhody k formirovaniyu prioritetov tekhnologicheskogo razvitiya Rossii [Approaches to the formulation of Russia's technological priorities]. *Foresight*, 10 (1), pp. 7–15. DOI: 10.17323/1995-459X.2016.1.7.15

Razvitie otdelnykh vysokotekhnologichnykh napravleniy. Belaya kniga [Development of Selected High-Tech Areas. White Paper] (2022). Moscow: Higher School of Economics Publishers.

Schwab, K. (2022a). *Tekhnologii chetyortoy promyshlennoy revolyutsii* [Technologies of the Fourth Industrial Revolution]. Moscow: Eksmo.

Schwab, K. (2022b). *Chetyortaya promyshlennaya revolyutsiya* [The Fourth Industrial Revolution]. Moscow: Eksmo.

Stroobant, J., Van Den Bogaert, S., & Raeymaeckers, K. (2018). When medicine meets media: How health news is co-produced between health and media professionals. *Journalism Studies*, 20(13), pp. 1828–1845. DOI: 10.1080/1461670X.2018.1539344

Teräväinen, T. (2014). Representations of energy policy and technology in British and Finnish newspaper media: A comparative perspective. *Public Understanding of Science*, 23(3), pp. 299–315. DOI: 10.1177/0963662511409122

Tertychnyy, A. (2013). *Analiticheskaya zhurnalistika* [Analytical Journalism]. University textbook. Moscow: Aspekt Press.

Tertychnyy, A. (2014) *Zhanry periodicheskoy pechati* [Genres of the Periodical Press]. University textbook. Moscow: Aspekt Press.

Toganova, N., Tikhomirov, I., Kamenskaya, M., & Khramoin, I. (2016). Tekhnologii i innovatsii v rossiyskikh SMI [Technology and innovation in Russian mass media]. *Innovations*, 10(216), pp. 110–118.

Vlasova, V., & Fridlyanova, S. (2022). Chto meshaet rossiyskomu biznesu razvivat innovatsii? [What prevents Russian business from developing innovations?] *HSE ISSEK working paper series “Science, Technology and Innovation”*. URL: <https://issek.hse.ru/news/707347228.html>

Vyrkovsky, A. (2009). *Delovye zhurnaly SShA i Rossii: proshloe i nastoyashchee* [U.S. and Russian Business Magazines: Past and Present]. In Vartanova, E. (ed.). Moscow: MediaMir.

Waldherr, A. (2012). The mass media as actors in innovation systems. In: Bauer, J., Lang, A., Schneider, V. (eds). *Innovation Policy and Governance in High-Tech Industries*. Springer, Berlin, Heidelberg.

Wang, M., & Du, L. (2023). Media representations of synthetic biology in China. *Trends in Biotechnology*. DOI: 10.1016/j.tibtech.2023.06.002.

Weaver, D., Lively, E., & Bimber, B. (2009). Searching for a frame: News media tell the story of technological progress, risk, and regulation. *Science Communication*, 31(2), pp. 139–166. DOI: 10.1177/1075547009340345