Representation of Scientific and Technological Innovation in Russian Business Journals: Quantitative Analysis (2017–2021)

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Abstract—The article presents the results of the analysis of the presence of scientific and technological issues in the leading business journals of the Russian media market: Expert, Profile, and Forbes Russia. The object of the research to analyze texts of this thematic profile in these journals. A steady increase in absolute values and the share of such publications in the content of business media for the period 2017–2021 has been detected. The main site of concentration and growth driver are rubrics for which the scientific and technological agenda is not profile. This testifies to the unprecedented impact of the new technological revolution on socio-political, the economic, and business process. This study identified the increasing role of scientific and technological factors in the journalistic analysis of the business sphere.

Keywords: scientific and technological development, technological innovations, analytical journalism, business journalism, business media

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INTRODUCTION

Technological innovation, understood as the process of developing, implementing, and distributing new or significantly improved processes, goods, or services ensures growth, competitiveness and independence in modern economies [1, 2]—this is the initial methodological position of our study. The classical path of innovation begins with scientific discovery and ends with the launch of a product that is attractive to the consumer and commercially viable [3]. In public policy, the most important tasks include the tasks of scientific and technological development, along with the creation of an infrastructure that ensures the commercialization of ideas and the effective transfer of technologies from science to industry [4]. An important role in this is played by mass media.

Mass media is the main channel for informing society of scientific and technological achievements and challenges [5]. The influence of mass media on the mindset of mass audiences in discussing issues of scientific and technological development is especially effective, as this topic lies outside the life experience of most readers, who therefore mainly receive information from mass media and are deprived of the opportunity to correct it based on personal impressions [6]. As a result, mass media are able to influence decision-making in the field of state innovation policy [7], the development of knowledge-intensive sectors of the economy, such as medicine [8] or nuclear industry [9].

Business media form the highest-quality media group. As it is an important element in the economic infrastructure and performs its main function of providing useful information and ensuring communication between participants in business processes, business journalism incorporates the main subjects of the relevant national system in this area in discussing topical issues of innovation policy, namely, entrepreneurs, civil servants, investors, representatives of civil society, and scientists and engineers interested in the commercialization of their developments [8]. Business media thus constitute a tool for solving problems of the scientific and technological development of Russia, first of all, by “supporting all stages of the ‘life cycle’ of knowledge through the formation of an effective communication system in the field of science, technology and innovation, increasing the receptivity of the economy and society to innovation, creating the conditions for the development of science-intensive business” [10].

Taking into account the ability of business media to simultaneously reflect processes taking place in the economy and influence them, understanding how the scientific and technological agenda of the Russian business media is formed and its potential impact is not only important for practitioners and theorists in
the media sphere but also for specialists in the analysis, development, and implementation of innovation and science and technology policy [11].

However, perspectives on scientific and technological issues in the content of business media are almost entirely neglected. A small number of publications have been devoted to the study of the media discourse on innovative development and its individual areas, based on the analysis of a wide range of mass media, including individual business media. Thus, the studies [6, 12] revealed a steady increase in the number of publications on technological innovations and analyzed the topics of these publications as well as the relationships between technologies and the socio-economic factors reflected in them. However, the decision of the authors of these works to include in the general sample the publications that are completely different in their intended purpose (for example, the mass newspaper Moskovsky Komsomolets and the business weekly Expert), as well as considering brief news reports on an equal basis with voluminous publications of analytical genres does not seem quite correct. In our opinion, taking into account the specifics of the genres of texts, as well as the types and classes of media, would make it possible to clarify the results obtained and correct the conclusions.

A promising area in the study of the scientific and technological agenda of business media is the study of analytical journalistic publications and their coverage of technological innovations. Increased analyticity and, as a consequence, high-quality of journalistic study of topics constitute the main difference between business media and other types of mass media [13]. It is in such publications that business journalism reaches professional heights and can fully implement its social function. As a result, the consideration of scientific and technological issues in such materials is deeper and more versatile than in those of other genre groups, revealing previously unknown features.

The journal format of mass media is the most typical for analytical publications. In this paper, we studied three leading business journals available in the domestic media market: the monthly Forbes Russia and the weeklies Expert and Profile—to quantitatively analyze the reflection of scientific and technological issues in business journals using the example of analytical journalistic publications on technological innovations. The specific objectives of the study are as follows: identifying the number of journal issues and the volume of journal pages over the course of the past five years, determining the share of analytical publications on a given topic, finding and evaluating the location of (headings) in the content of journals, comparing results in journal practices, and designating research perspectives. Performing these tasks allowed us to draw conclusions about the development of scientific and technical innovations in the domestic media space and, in the future, moving on to a more detailed study of the media image of technological innovation in the business media.

### METHODOLOGY AND INTERMEDIATE RESULTS OF THE RESEARCH

The chronological scope of the study was 2017–2021. During this period, all copies of Forbes Russia, Profile, and Expert were analyzed: this was a total of 481 issues, of which 60 issues were Forbes Russia, 198 were Profile, and 4223 issues were Expert. Table 1 presents statistics for the studied journals in the period under investigation.

The size of each issue of the journal, including the total number of pages, was recorded, which made it possible to calculate the average share of the volume of analytical publications on technological innovations in the content of the studied journals. Table 2 presents data on the total number of pages, which gives a more complete picture of the volume of publications in all issues (numbers) of the journals for the study period.

Tables 1 and 2 show a drop in the number of issues and volumes of journal issues published in 2020–2021, explained by the negative impact of the coronavirus pandemic on the print media market. This factor was taken into account when calculating the share of reflection of scientific and technological issues in the content of the studied media.

Analysis of the content of all issues of the studied business journals for 2017–2021 resulted in selecting the articles that met two main criteria. The first selection criterion records the compliance of the publication with the genre of the edition—the sample included texts of analytical genres of journalism used in business media: expert interview, recommendation, forecast, commentary, review, rating, author’s opinion.

### Table 1. Number of issues of the studied journals for 2017–2021 (abs.)

| Journal       | Year |
|---------------|------|
|               | 2017 | 2018 | 2019 | 2020 | 2021 | total |
| Forbes Russia | 12   | 12   | 12   | 12   | 12   | 60    |
| Profile       | 47   | 47   | 47   | 31   | 26   | 198   |
| Expert        | 46   | 45   | 44   | 43   | 45   | 223   |
| Total         | 105  | 104  | 103  | 86   | 83   | 481   |

### Table 2. Statistics on the volume of journal pages

| Year | Forbes Russia | Profile | Expert | Total |
|------|---------------|---------|--------|-------|
| 2017 | 12            | 47      | 46     | 105   |
| 2018 | 12            | 47      | 45     | 104   |
| 2019 | 12            | 47      | 44     | 103   |
| 2020 | 12            | 31      | 43     | 86    |
| 2021 | 12            | 26      | 45     | 83    |
| Total|               |         |        | 481   |
The peculiarity of this genre group is that the analytical approach to reflecting reality (including the target, subject, and methodological aspects [15]) not only presents the description of an object or phenomenon in the text, but also gives it an explanation and assessment, as well as indicating a development forecast and, in some cases, a program of action. The second selection criterion is related to the subject of publication—the development, implementation, application, or prospects for the use of technological innovations.

It should be noted that in this study, we only consider technological innovations, represented in industry and in the service sector in only two types—product innovations and process innovations [3]. *Product innovations* involve the development and implementation of technologically new or significantly improved goods and services. These can also refer to new ways of using existing knowledge and technologies or new combinations of them. Types of product innovations include the following: new goods and services that are significantly improved in functional or consumer characteristics, new ways of using existing goods or services, and new designs. *Process innovations* are the adoption of new or significantly improved production methods, including product transfer methods. The range of types of process innovations includes new or improved means of production, new delivery methods, and new or significantly improved methods for creating and delivering services.

The final sample of our study included 1068 publications in analytical genres directly devoted to new technologies\(^1\) as well as publications with a pronounced scientific and technological aspect of presentation\(^2\) (Table 3). The last category of texts includes, in particular, publications on the development of science-intensive business, where, along with an overview of the developed or used technology, we are talking about the development strategy of companies, their financial performance.\(^3\)

In addition, the volume of selected publications reflected in the quantity of pages they occupied was taken into account. The headings were also recorded: Technologies, Innovations, Science and Technologies, Entrepreneurs, Russian Business, Opinion, and so on.

The data given in Tables 3 and 4 indicate a steady increase in the number and volume of analytical publications on technological innovations in the business

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\(^1\) Publication example: Krasnova Varvara. Digital craze/What technological trends will become a benchmark for business in 2021., *Profile*, 2021, nos. 3–4 (145), pp. 50–56.

\(^2\) Publication example: Proskurnika Olga. We will not escape our curse anywhere, the deadlock is everywhere/What made the billionaire believe in the commercial prospects of the still unproven HyperLoop technology., *Forbes Russia*, 2017, no. 5 (158), pp. 220–227.

\(^3\) Publication example: Geval Alina. Ecosilicon ballad/The Ecosilicon Company has developed a technology and launched the production of high-purity synthetic silicon dioxide—a product that is necessary in various sectors of the economy, the demand for which was previously met by imports., *Expert*, 2018, no. 47 (1098), pp. 22–25.
journals we studied over the period from 2017 to 2019, their sharp decline in 2020 and new growth in 2021. These fluctuations are due to the specifics of the market of print business journals during the coronavirus pandemic, which is reflected in the dynamics of the number and volume of print media issues (see Tables 1, 2).

MAIN RESULTS OF THE RESEARCH

To mitigate the impact of the pandemic and obtain a relevant assessment of the reflection of scientific and technological topics in business journals, we calculated the average number of analytical publications on technological innovations in one issue of the journal and the average value of the share of such publications in one issue of the journal. Both indicators showed a trend of steady growth over the study period (Figs. 1 and 2), which indicates increasing attention on the part of the editors of business journals to scientific and technological topics.

The leader in average number of analytical publications on new technologies in one issue of the journal for 2017–2021 was Expert (2.8 publications per issue), followed by Forbes Russia (2.3 publications), and Profile (1.5 publications). At the same time, the average number of publications in one issue for the entire sample for the entire study period was 2.2 texts.

On average, the share of analytical publications on new technologies for the entire study sample for 2017–2021 amounted to 10.5% of the volume of one issue of a journal. Expert led again here, with a share of 12.2%. This corresponding figure for Profile and Forbes Russia was 10.9% and 6.8%, respectively. It is interesting that, having a larger average number of analytical publications about new technologies in one issue of the journal, Forbes Russia loses to Profile in this factor. This can be explained by the observation that there are more advertising materials in an issue of Forbes Russia than in Profile; therefore, there is room for a smaller amount of journalistic content, including about technology.

When the headings of business journals that contain analytical publications on new technologies were considered, they were divided into two groups. The first group included headings devoted to science and technology: in Forbes Russia, this was Technologies and Innovations; in Expert, it was Science and Tech-

### Table 4. The volume of analytical publications in the studied journals on technological innovations for 2017–2021 (number of pages for the year, abs.)

| Journal     | 2017 | 2018 | 2019 | 2020 | 2021 | total |
|-------------|------|------|------|------|------|-------|
| Forbes Russia | 144  | 153  | 172  | 78   | 146  | 693   |
| Profile      | 189  | 340  | 385  | 292  | 255  | 1461  |
| Expert       | 410  | 387  | 429  | 492  | 608  | 2326  |
| Total        | 743  | 880  | 986  | 862  | 1009 | 4480  |

![Fig. 1. Dynamics of the average value of the number of analytical publications about new technologies in one issue of each journal for 2017–2021.](image)
Because Profile is built mainly on a functional (non-subject) basis (selected heading names Main Topics, Expertise, Details, Events, Kaleidoscope, etc.) and the thematic principle is observed in the titles of subheadings, we took into account only specialized subheadings about science and technology for this journal: Technology, Science, Innovations, Space, etc.

The second group consisted of other sections whose titles were not directly related to scientific and technological topics, for example: Entrepreneurs, Business and Life, Investments, Economics and Finance, International Business, and others.

Most of the analytical texts on new technologies were not published under specialized scientific and technological headings (Fig. 3). The share of non-profile headings was 86% for Forbes Russia, 72% for Expert, and 60% for Profile.

Moreover, the growth in the volume of scientific and technological publications (Figs. 3 and 4) was largely provided by non-profile headings. This is shown in the data on the change in the average number of publications on technological innovations in scientific, technological headings and headings of other profiles per issue of the journal (Fig. 4). This parameter grows faster in non-profile headings than in headings that describe science and technology.

In each of the journals studied, we identified the top three non-profile headings in terms of the number

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**Fig. 2.** Dynamics of the average share of the volume of analytical publications on new technologies in one issue of each journal under study for 2017–2021, %.

**Fig. 3.** The number of analytical publications on technological innovations in scientific, technological and other headings of the studied business journals for 2017–2021 (pieces).
of analytical publications on new technologies: Opinion, Entrepreneurs, and Business and Life in the Forbes Russia journal; Russian Business, Theme of the Week, and Special Report in the Expert journal; Main Topics, Details, and Expertise in the Profile journal. One-third of these headings (Entrepreneurs, Business and Life, and Russian Business) was devoted to business development; the second (Main Topics, Theme of the Week, and Special Report) was devoted to the events, problems, and trends of socio-economic development, which are main from the viewpoint of the editors of business journals; and the remainder (Opinion, Details, and Expertise) discusses a wide range of business issues.

The prevalence of publications on technological innovations outside of the specialized scientific and technological headings can be explained by the unprecedented impact of the technological revolution on socio-political processes, the economy, and business [16]. The scientific and technological aspect of journalistic analysis of the business sphere is becoming one of the most important aspects, for objective reasons—90% of the modern market for goods and services consists of science-intensive high-tech products [17].

CONCLUSIONS

The quantitative analysis of the reflection of scientific and technological issues in the leading Russian business journals allows us to draw the following conclusions.

(1) The attention of business media editors to the topic of scientific and technological development is steadily growing, as evidenced by the increase in the number and specific volume of analytical publications on technological innovations in business journals for 2017–2021. Thus, the average number of analytical publications on new technologies in one issue of the journal for this period increased from 1.8 to 2.9 pieces, and their average specific volume grew from 8.6% to 11.9%.

(2) The most publications on technological innovation are not located in specialized scientific and technological sections of journals, but in sections devoted to business development, major events, and problems and trends in the business sector. Non-profile headings are also the main drivers of growth in the volume of scientific and technological topics in business journals. This can be explained by the unprecedented impact of the new technological revolution on socio-political processes, the economy, and business, as a result of which the prospects for the role of the scientific and technological aspects of the journalistic analysis of the business sphere are increasing.

Prospects for the further study of scientific and technological issues in business media are seen in a comprehensive study of the media image of technological innovation. To this end, it is proposed to solve a number of tasks: (1) identifying the main informational reasons for analytical publications concerning innovative technologies in business media; (2) establishing the sectors of the economy and areas of scientific and technological development, as well as the types, kinds, and stages of the life cycle of technological innovations, which focus the attention of journalists-analysts; (3) determining the types of subjects of innovative development that are used as sources of information; (4) identifying the main problems of scientific and technological development discussed in analytical publications on technological topics; and (5) establishing a list of functions that are performed by journalistic analytics on innovative technologies in business media.

The results of such research can help address the problems of creating an effective communication sys-
tem in the field of science, technology and innovation, as well as increasing the receptivity of the economy and society to innovation and creating the conditions for the development of science-intensive business.

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CONFLICT OF INTEREST

The authors declare that they have no conflicts of interest.

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