The Space Industry: Achievements, Development Trends, and Opinions

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Abstract. Space has been studied over extended periods. However, it remains an unexplored and mysterious field attracting much attention. A wealth of information about astronautics appears in the media (newspapers, magazines, television, news websites, etc.) and other public sources. Space exploration captivates not only scientists, but also ordinary people who are not directly involved in space exploration. Therefore, the purpose of this study is to find sources, materials, and websites in the public domain that will provide insight into the development of the space industry in different countries and increase interest in studying space exploration achievements. The study provides a brief overview of several scientific and non-scientific projects and materials that anyone on the planet can read and learn about the achievements of the space industry worldwide and in a specific country, choose a topic of interest to research, and even build a professional career in the space industry, etc. The study also contains students' opinions regarding the need for further space exploration by Russian specialists. Based on the results, conclusions have been made regarding the development potential of the space industry in the near future.

Keywords: space, space industry, development potential, space exploration, student opinions, astronautics.

Introduction

There are numerous publicly available materials examining the development of the space industry. This raises questions such as: How to study such a wealth of information? How to structure all the available data on astronautics? How to understand what really relates to space science, and what is simply speculation and dreams of ordinary people (fiction), etc?

All available materials can be roughly divided into several categories: scientific (articles, monographs, conference reports, etc.), popular (websites, newspapers), entertaining and educational (project development platforms, software, mobile apps, games, cartoons, etc.).

Currently, numerous initiatives are being implemented in Russia to popularize astronautics and enhance the prestige of the astronaut profession. In this study, we will examine only a few of the materials, events, and projects that promote this goal (within the scope of this study).

The main purpose of the study is to find open sources of information that will provide insight into the development of the space industry in different countries and increase interest in studying space exploration achievements.

This purpose can be considered in more detail using the following tasks: to review the opinions of Russians regarding the need for space exploration and to determine the development potential of the space industry in the near future.

Materials and Methods

The theoretical background of the study includes a variety of information sources (scientific and non-scientific) that are available to the public: websites of corporations, agencies, companies, communities, analytical reports, articles, etc. The empirical background of the study, along with the author's own survey, is based on polled data of the All-Russian Public Opinion Research Center (VTsIOM) and researches conducted by other companies.

To study students' opinions regarding the need for space exploration and the implementation of other space projects, an online survey was conducted using the Google Forms service and the results of previous large-scale surveys of Russians were examined. Currently, 157 third-year students of the Financial University participated in an anonymous survey.

Limitations of the study. One limitation is the small number of students surveyed, and another is the limited format of the research papers, which makes it impossible to include all the results.

However, this study also makes a certain contribution and helps identify areas for further research related to the space industry.

Results and Discussion

It is worth noting that there are many Russian and foreign scientific studies devoted to various aspects of astronautics and the development of the space industry in different countries, published in the modern period and earlier (Koval, 1977; Zheleznyakov, 2002; Dushkova, 2011; Samulenkov et al., 2025; Burov et al., 2025; Banerjee, Chattopadhyay, 2025; Elliott et al., 2026, Feng et al., 2026). The history of Russian and foreign astronautics is studied, calculations are made and plans are drawn up for the exploration of new planets, concepts for the extraction of rare resources are discussed, the chemical composition of planets is studied, etc. (Dushkova, 2011; Samulenkov et al., 2025; Burov et al., 2025), scientific articles are published related to the development of the space industry in various countries (Efimova, 2024), etc.

The most important scientific achievements in space exploration are published on the website of the Space Research Institute of the Russian Academy of Sciences (SRI RAS)[1].

Global achievements in the space industry can be discovered by studying open sources.

An article on the RBC news agency website describes the achievements of the private company SpaceX (I. Musk) and its key technologies and projects (the Falcon

[1] Website of the Space Research Institute, available at: https://iki.cosmos.ru/ (accessed 07April 2026)

rocket line and the Dragon series spacecrafts, etc.), as well as ongoing testing and new developments [2].

You can read the author's analytical reports 2025[3].

A website has been launched in Russia for collecting and publishing up-to-date information on the development of the space industry (research, technologies, companies, personnel, etc.)[4].

By the Decree of the President of the Russian Federation, the annual "Space Week" started in Russia in 2026[5].

A lot of reliable information is posted on the websites of space agencies, such as the National Aeronautics and Space Administration (NASA) and European Space Agency (ESA)[6,7]. The ESA website is full of news about space exploration and space missions, scientific data, educational materials, information about various projects of the agency, and so on. NASA also offers an interesting project for exploring the Universe without leaving home. They encourage people to subscribe to the agency's latest news and receive newsletters directly to the Email.

The European Space Agency (ESA) announced over 400 vacancies in 2026 to support the agency's new programs, missions, and strategic initiatives[8]. Funding has been increased across several programs: funds have been allocated for the development of space technologies at various stages, from research to test flights (under the General Support Technology Programme (GSTP), for the space safety program, etc. [9].

Many websites devoted to space and astronomy are popping up, such as Universe Today [10].

To raise a new generation of space leaders, it's essential to instill an interest in the space industry from childhood and engage children in various ways. The Space Foundation (a nonprofit organization created to develop the global space community) has a collection of resources for educators to help them train the next

[2] Salo I. (2025). SpaceX: the history, technologies and projects of Elon Musk's company // RBC [Electronic resource], available at: https://www.rbc.ru/base/11/07/2025/6870e4d89a794713b26756d8?ysclid=mnoi7td55339077076 (accessed 07April 2026)

[3] Vorontsov D. (2026). Results of 2025: space // Electronic periodical "3DNews" [Electronic resource], available at: https://3dnews.ru/1135015/itogi-2025-kosmos (accessed 07April 2026)

[4] The Pro Cosmos website, available at: https://prokosmos.ru/ (accessed 07April 2026)

[5] Decree of the President of the Russian Federation dated December 29, 2025 No. 995 "On Space Week in the Russian Federation"

[6] The official website of the European Space Agency (ESA), available at: www.esa.int (accessed 08 April 2026)

[7] The official website of the National Aeronautics and Space Administration (NASA), available at: https://science.nasa.gov (accessed 08 April 2026)

[8] A stellar year for talent: more than 400 job opportunities in 2026 // European Space Agency [Electronic resource], available at: https://www.esa.int/About_Us/Careers_at_ESA/A_stellar_year_for_talent_more_than_400_job_opportunities_in_2026 (accessed 08 April 2026)

[9] Ministerial Council 2025 // European Space Agency [Electronic resource], available at: https://www.esa.int/About_Us/Ministerial_Council_2025 (accessed 08 April 2026)

[10] Site Universe Today, available at: https://www.universetoday.com/ (accessed 08 April 2026)

generation of space leaders [11]. The Space Foundation operates in three main areas: education, which includes a variety of educational programs starting from preschool; collaboration between space professionals; and variety of information, including the latest news[12].

NASA's website also has a “For Students and Teachers” section with content from the monthly electronic newsletter “Earthrise” [13].

Bloomberg published a special report “Asia's Space Race” which includes articles on the achievements of China, Japan, and India in space exploration [14].

An interesting project named “Who Is In Space?” is being implemented, featuring photographs of astronauts and recording their time in space [15].

Many fascinating websites have been created for people interested in space. For example, Solar System Scope is a free model of the solar system and the night sky designed for personal exploration of the Universe. It also provides background information on the planets, keeps a night sky diary, and much more. There is a mobile version (app) for smartphones [16].

Up-to-date information on space exploration in Russia is available on the Roscosmos website [17]. In particular, a chronology of Russian astronauts' orbital flights has been compiled, beginning with Yuri Gagarin's flight in 1961 and continuing to the astronauts being in space now [18].

Private space technology companies are also emerging in Russia, providing essential and up-to-date geospatial information [19].

Moreover, people are always interested in reading science fiction about space, both widely known (Lem, 1976) and popular among a narrow circle of people.

The results of the surveys show that the topic of space and the achievements of the national space industry are of interest to Russians, and they consider such achievements important for the country's development and its position in the world as the great power.

Numerous surveys are currently being conducted on space exploration, exploring diverse opinions. Below the results of the author's survey and surveys conducted by VTsIOM and VK (Russian Investment and Technology Corporation) are shown.

The survey was conducted at the Financial University and involved 157 people. In response to the question, “Are you interested in learning about achievements in

[11] Resources For Educators // Space Foundation Discovery Center [Electronic resource], available at: https://discoverspace.org/education/resources-for-educators/ (accessed 08 April 2026)

[12] Site Space Foundation, available at:: https://www.spacefoundation.org/ (accessed 08 April 2026)

[13] Earthrise: Monthly e-Newsletter With Earth and Climate Science Resources // NASA [Electronic resource], available at: https://www.nasa.gov/stem-content/earthrise/ (accessed 08 April 2026)

[14] Asia’s Space Race // Bloomberg [Electronic resource], available at: https://www.bloomberg.com/graphics/2016-asia-space-race/ (accessed 07 April 2026)

[15] Who Is In Space? // Smarter Every Day [Electronic resource], available at: https://whoisinspace.com/ (accessed 07 April 2026)

[16] Сайт Solar System Scope, available at: https://www.solarsystemscope.com/ (accessed 07 April 2026)

[17] The website of the Roscosmos State Corporation, available at: https://www.roscosmos.ru/#nav (accessed 07 April 2026)

[18] Statistics: chronology of orbital flights of Russian cosmonauts // Roscosmos State Corporation [Electronic resource], available at: https://www.roscosmos.ru/30011/ (accessed 07 April 2026)

[19] SR Data company website, available at: https://www.srdata.ru/ (accessed 07 April 2026)

the space industry? Are you interested in the space topic?", the majority of respondents answered in the affirmative (64.3%).

Further questions asked whether the younger generation follows the achievements in the space industry in their country and abroad (Figures 1 and 2).

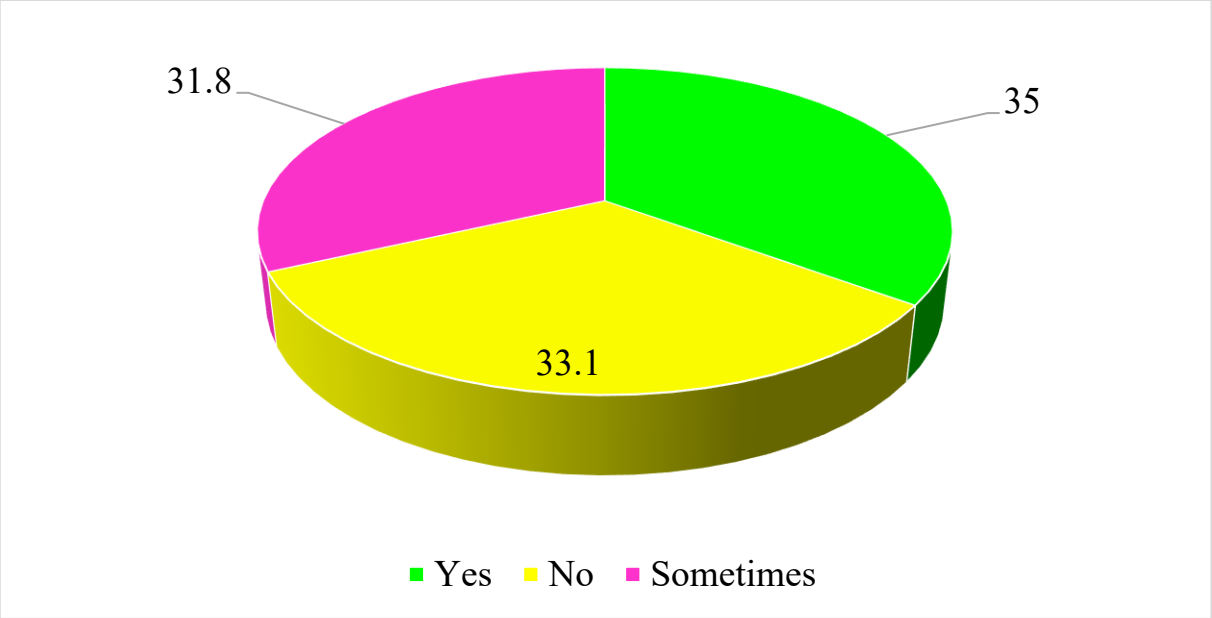

Figure 1. The distribution of survey answers to the question "Do you follow developments in the space industry in Russia?" (% of all respondents)

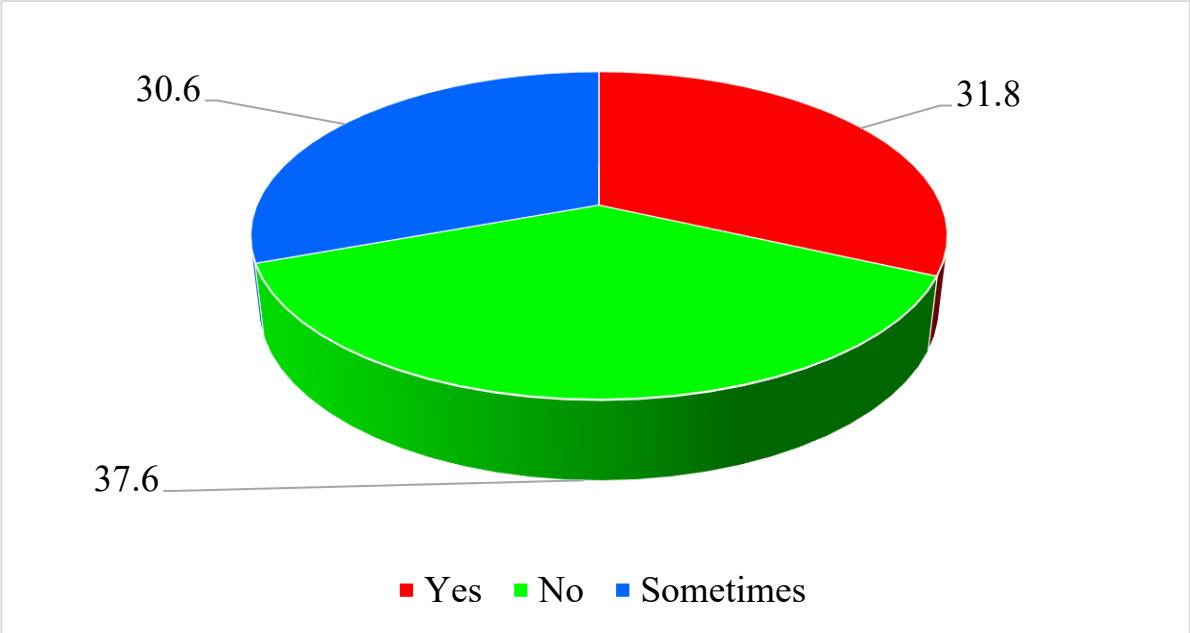

Figure 2. The distribution of survey answers to the question "Do you follow developments in the space industry in other countries?" (% of all respondents)

As the Figures 1 and 2 show, the responses were distributed roughly equally: the majority of survey participants follow the achievements of different countries.

The next question focused on the list of sources which students obtain information about achievements in the space industry from (Figure 3). The younger generation primarily prefers to follow space news online (75.2%).

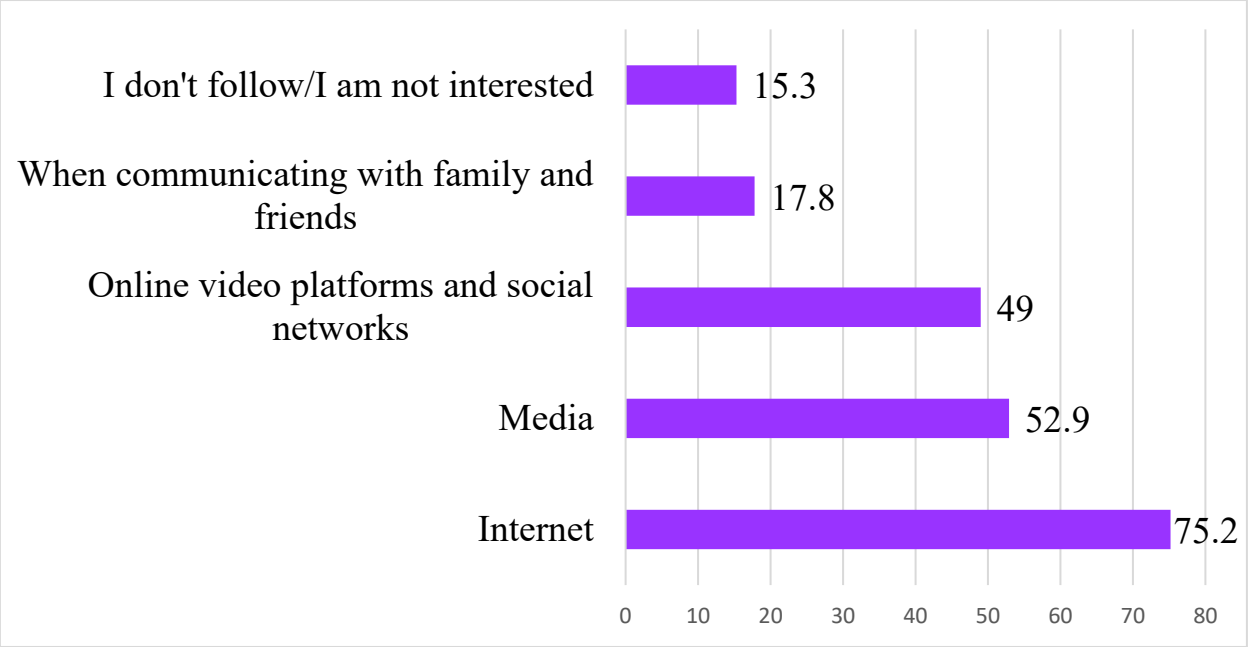

Figure 3. The distribution of survey answers to the question "Where do you get information about news/achievements in the space industry?" (% of all respondents)

To the question "Do you think Russia should participate in space exploration?" the overwhelming majority of respondents (87.3%) answered "Yes".

The final question was about space tourism: "It is possible to go on a space trip. Would you like to go into space?" Over a half of respondents (55.4%) expressed a desire to travel to space, and 28% are considering it (responding "Maybe").

These findings are confirmed by another survey conducted by VK Records and Hi-Tech Mail in 2026 (over 3,000 people participated in the online survey). According to the survey results, 71% of Russians wants to travel to space. An interesting question concerned musical preferences: "What song would you like to start your space flight to?" 34% of survey participants named "Grass by the House" by the band Zemlyane, and 21% named "I'm Free" by the band Aria [20].

The 2025 VTsIOM poll (1,600 Russian residents were interviewed) also revealed reasons why Russia needs to participate in space exploration (Figure 4 shows responses that received more than 10% of votes)[21].

[20] VK Records and Hi-Tech Mail: Russian rock and Soviet pop are the main genres for space flight // VK, available at: https://hi-tech.mail.ru/news/145560-glavnye-zhanry-dlya-poleta-v-kosmos/ (accessed 08 April 2026)

[21] Smak T. Space for Russia: a symbol or a resource? // VTsIOM, available at: https://wciom.ru/analytical-reviews/analiticheskii-obzor/kosmos-dlja-rossii-simvol-ili-resurs?ysclid=magtnlbz6j436564252 (accessed 07 April 2026)

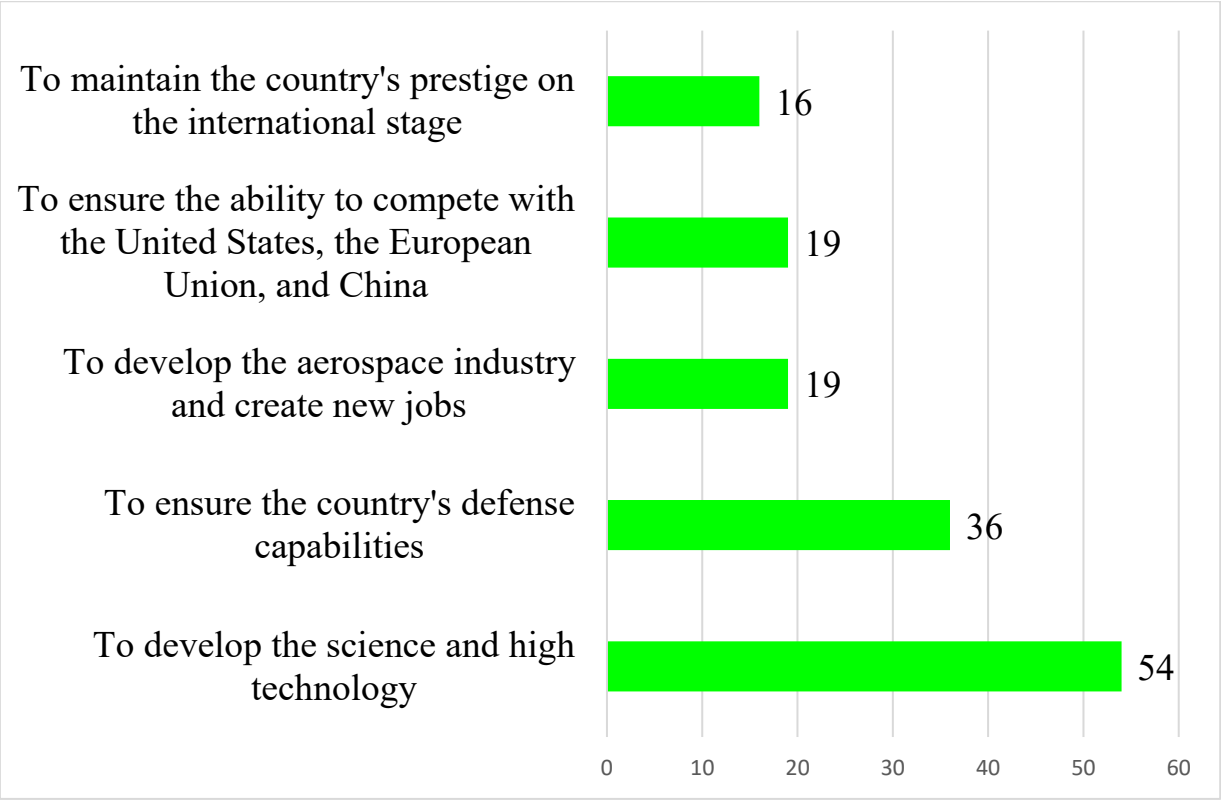

Figure 4. The distribution of survey answers to the question "Do you think Russia should or should not participate in space exploration? If so, why it should?" (% of all respondents)

Source: VTsIOM (Smak T. Space for Russia: a symbol or a resource? // VTsIOM, available at: https://wciom.ru/analytical-reviews/analiticheskii-obzor/kosmos-dlja-rossii-simvol-ili-resurs?ysclid=magtnlbz6j436564252 (accessed 07 April 2026))

Thus, survey results show that Russians are interested in space industry achievements and see the reason to continue space exploration.

Further, let us consider what priorities that have been noted in the development of the space industry.

A 2019 study conducted by the Platforma Center for Social Design, using in-depth interviews, identified the key development prospects for Russia's space industry, depending on the current state policy. The study involved 40 experts with different degrees of involvement in the space industry: representatives of government agencies, space industry experts, astronauts, representatives of businesses interested in space programs, representatives of science, innovative industries, sociologists/political scientists/cultural scientists, and specialized journalists. The following development directions have been proposed[22]:

- separation of space activities into military and civil;
- creation of an ecosystem for the development of private business in various segments of space activities;
- updating the legal framework regulating space activities;

[22] The Russian space industry: expectations of business and society // CSP "Platforma" [Electronic resource], available at: https://pltf.ru/wp-content/uploads/2019/11/otchet_26.11.1500.pdf (accessed 07 April 2026)

- increasing competencies in the production of spacecraft and space technology;
- modernization and digitalization of rocket and space production;
- participation in major space exploration projects within the framework of international alliances;
- increasing space industry funding;
- etc.

According to experts the following development areas are also important for Russia: focusing on the maximum pragmatizing of space industry, participating only in profitable and ambitious projects, defining its own goals, a plan for achieving them, and the sequence of their implementation, developing international cooperation to combine technologies, competencies, and financial resources, developing private entrepreneurship in the area of space exploration, and diversifying the space industry[23].

One of the global prospects is flights to the Moon and Mars[24]. In 2026, the priorities identified by different countries will remain unchanged, namely, the exploration of the Moon, Mars, and possibly other planets.

Conclusions

The research results show that interest in space exploration, both of scientific and non-scientific nature, does not wane. There are numerous sources of information about space allowing you to choose something according to your preferences.

This study provides only a brief overview of such sources. As a direction for future research, we recommend exploring a specific area in greater depth, such as space education and educational materials, or space economics, etc.

Ultimately, in the modern world space exploration and the further popularization of astronautics are essential for any country.

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