KnE Social Sciences

Knowledge E
enriching | engaging | empowering

Conference Paper

Public Opinion on Artificial Intelligence Development

A.V. Merenkov[1], R. Campa[2], and N.P. Dronishinets[3]

[1]Ural Federal University named after the first President of Russia B. N. Yeltsin, Yekaterinburg, Russian Federation
[2]Jagiellonian University, Krakow, Poland
[3]Novouralsk state Institute of technology, Novouralsk, Russian Federation

Abstract

In connection with the active role of Russia and other countries in the design and implementation of devices with artificial intelligence (AI), there is a need to study the opinion of different social groups on this technology and the problems that arise when using it. The purpose of this work is to analyze public opinion on AI, in Russia and various foreign countries, and the possible consequences of its implementation in different areas of human activity. The research has revealed students' opinions about AI devices and the problems related to their development in Russia. The research methods adopted are a content analysis of foreign publications devoted to the study of public opinion on AI and a questionnaire survey. Overall, 190 students of the Ural Federal University enrolled in Bachelor's and Master's programs were interviewed. The analysis of publications devoted to the study of public opinion in the United States, Japan, and Western Europe, as well as the results of our survey, has led to the conclusion that the majority of people have only a vague idea of what AI devices are. Our study has revealed that 23.6% of the respondents know nothing about AI. 36% of the respondents believe that in the near future the most demanded specialists in the labor market will be those who create robots and control their work. The survey has also shown the important role of mass media and general and special education institutions in informing the population about the opportunities and problems that arise when devices that exceed human mental capabilities are created and enter the social fabric.

Keywords: public opinion, artificial intelligence, subjects of public opinion, representations of social groups about artificial intelligence.

Corresponding Author:
A.V. Merenkov
anatoly.mer@gmail.com

1. Introduction

In the last 10–15 years, the creation of systems with elements of artificial intelligence has become the leading direction in the development of science and technology. For the first time in the history of mankind, technological devices have surpassed human capabilities in many respects. They can process large amounts of data better and faster

🔓 **OPEN ACCESS**

than any human mind. They can replace human workers when performing standardized actions. They can also make optimal decisions in complex situations in many spheres of human activity, such as the economic, political, industrial, and military ones. In a world dominated by competition, the task of designing new and more powerful devices has become a priority. Not surprisingly, in the developed countries of the world, both governments and large corporations are adopting special programs for the development of artificial intelligence. According to the McKinsey Global Institute, about 70% of the companies will adopt, at least, one type of AI technology by 2030, and 50% of large companies will deploy the full range. McKinsey estimates that artificial intelligence systems can provide an additional economic benefit of about $13 trillion, by 2030, increasing world GDP by about 1.2 % annually [18].

The US is the undisputed leader in the field of artificial intelligence, but the Federal Government strategy for the development of AI was adopted only on February 11, 2019. On that date, US President Donald Trump signed a decree called the "American AI Initiative." This document highlights five main principles of AI development in the United States: 1. It considers AI as the driving force for technological breakthroughs; 2. It provides incentives for the development of appropriate technological standards, 3. It organizes the training of employees to enhance their skills in creating and using AI technologies, 4. It promotes the implementation of AI together with the protection of American values, including civil liberties and privacy, 5. It provides technological advantages for the United States in the field of AI and contributes to the creation of an international environment that supports innovation in this area [1]. In July 2017, the State Council of China announced a plan for the development of new generation of AI systems. It involves the creation of a domestic AI industry worth nearly $150 billion in the next few years and the country's transformation into a leading power in the creation of such machines by 2030 [6]. The Japanese government relies on AI as the key to developing a plan for the future of the country, linking it to the concept of Society 5.0 [13]. The plan envisions a "super-smart society," understood as a sustainable and inclusive socio-economic system based on digital technologies, AI, the Internet of things, and robotics. To implement the AI development strategy, in June 2019, Prime Minister Abe unveiled a plan to train 250,000 people annually in AI skills until 2025.

The first intergovernmental AI standard was adopted by all Countries of the Organization for Economic Cooperation and Development (OECD) and several partner countries on May 22, 2019. The document refers to the involvement of governmental and intergovernmental organizations, the business community, technological organizations,

scientists, engineers, civil society and trade unions to actively participate in discussions on how to put AI and devices based on it at the service of the entire society [16].

In 2019, the Decree of the President of the Russian Federation on the development of AI was issued together with the "National strategy for the development of artificial intelligence for the period up to 2030" [14]. It sets specific goals and objectives and suggests solutions for problems related to the implementation of artificial intelligence systems in all areas of human life. Nonetheless, Russia is still significantly behind other countries in the number of startups in this area. In 2018, 1,400 startups were registered in the United States, 360 in Israel, 105 in Germany, and only 19 in Russia [20]. Meanwhile, regardless of the pace of development of AI, any country has the problem of preparing people to change the usual forms of interaction with technical systems in different life spheres, such as labor, family, household, leisure, and social activities. At all the stages of the previous scientific and technological development, humans acted as subjects controlling the operation of various machines and instruments that facilitated their work and accelerated the execution of physical activities. Intellectual activities remained for a long time the prerogative of the supposedly best product of natural evolution. The emergence and continuous improvement of computer science has led to a situation where machines solve better and faster problems that were previously assessed by the human brain only.

In other words, humans have crafted machines that exceed their capabilities in solving many problems. For instance, the safety of workers was improved by assigning to machines complex and often dangerous tasks in the industry, transport sector, military affairs, and medicine. Computers and robots are involved in the early detection and effective treatment of many diseases. AI devices provide prompt information about available goods and services and new ways of educating different groups of people.

The emergence of AI systems inevitably leads to qualitative changes in all areas of human life, which can be both positive and negative for individuals and social communities. As is well known, innovations are accepted by people when they are physically, psychologically, morally, and socially prepared for the changes that are waiting for them in the near future. In this regard, the study of public opinion becomes an urgent task. We need to verify the completeness and sufficiency of information about what constitutes artificial intelligence, and which are the expectations about the transformations that are likely to take place in all life spheres. It is also vital to investigate the attitude and confidence of people toward state authorities and the media, as these are the actors called to form the opinion of various social groups about the human-machine interaction.

In synthesis, the purpose of this article is to analyze the public opinion about artificial intelligence in Russia and other countries and the possible consequences of its use in different spheres of life.

2. Methodology and Methods

The methodological basis of the work is the theory of formation and development of public opinion. The study of public opinion emerged in the 16th century to identify the mindset of different social groups in the context of the rise of capitalism [15]. The idea that public opinion is "the consciousness of the masses, mass consciousness" has also been incorporated in Russian sociology [9]. This type of study provides an assessment of social processes and phenomena based on information obtained from various sources. It also assesses different options to change the living conditions of specific social groups. Gabriel Tarde studied the peculiarities of public opinion formation, by taking into account the influential role of mass media. In recent years, false pieces of information concerning political and economic matters have been widely spread by the mainstream media, which significantly affected the public opinion of different countries and confirmed the early insight of this classic of sociology. People act under the influence of the media in the interests of those elite groups that finance, control, or directly possess newspapers, magazines, and TV channels. Today, we may add Internet and social networks to this list. This way the elite also exert a form of control over politicians in democratic systems. This is what is called the power of public opinion [19].

The actual problem is for people to get reliable information in the process of public opinion formation. This necessity is underlined by B. Z. Doctorov, J. Fishman, R. Luskin, R. Jowell. One of the ways to solve this problem is to form a deliberative public opinion [7]. To achieve this result, people should be educated to get a balanced perception of different views on a specific social problem, envision the possible consequences of actions taken by social actors to solve the problem and take into account the interests of the different social groups involved. At the same time, the information received must be objective, complete, timely, and understandable to people. Ideally, public opinion should be formed by using reliable information resulting from scientific research, statistical data, witnesses' testimonies, and experts' assessments. It is necessary to take into consideration these requirements if we want to help people to interact successfully with the most complex technological devices.

The content analysis of foreign literature discloses contradictory opinions about the social consequences of the introduction of AI in different areas of public life. The main ideas are the following ones. Stephen Hawking, Elon Musk, Steve Wozniak, Bill Gates, and others have recently expressed concern in the media and via open letters about the risks posed by AI [5]. Their point of view is supported by a number of leading AI researchers [10]. However, sociologists started only recently to systematically study public opinion on new technological devices. It is an extremely relevant topic. Therefore, we can hardly agree with the view that "for sociology and other social sciences, the problem of AI is, in general, a side issue" [17].

In December 2019, Baobao Zhang and Allan Dafoe from the Centre for the Governance of AI Future of Humanity Institute, University of Oxford published the results of a large-scale survey (n=2000), entitled "U.S. Public Opinion on the Governance of Artificial Intelligence." They examined Americans' perceptions of 13 AI governance challenges as well as their trust in governmental, corporate, and multistakeholder institutions to responsibly develop and manage AI. [4]. In summer 2018, Pew Research and Elon University's Imagining Internet Center conducted a large-scale survey involving 979 leading experts in the field of AI, such as technology specialists, scientists, business leaders, and politicians. The results were published under the title "AI and the future of humanity. Will it help most of people to be better in 2030 than in 2018?" [3].

A large group of Japanese sociologists attempted to figure out the future relationship between humans and AI. The scientists concluded that the interested parties have different opinions about these devices and the consequences of human-machine interaction. Based on the results of the questionnaire, recommendations were elaborated to favor the cooperation of interested parties in the context of the development of AI [8]. In January 2020, the Russian Public Opinion Research Center presented the results of a study on the attitude of Russians toward AI technologies [12]. Sociological research is vital to better understand what the public thinks about AI and its management. The gathered information is very important for policymakers who have to take key decisions on how to develop new technological systems and enhance people's confidence in artificial intelligence.

Our research was based on quantitative methods. The major research objective was to study students' opinions on artificial intelligence. The primary data were collected using a questionnaire survey. One hundred and ninety students enrolled in undergraduate and master programs of the Ural Federal University named after the first President of Russia B. N. Eltsin were interviewed. The sample included 73% women and 27% men. Among the respondents, 32% were aged 17–18 years old, 45% 19–20 years old,

and 19% 21–22 years old. The questionnaire consisted of 25 questions referring to artificial intelligence. The study was conducted in December 2019 at the university during students' spare time.

3. Results and Discussion

The results of the Pew Research and Elon University's Imagining the Internet Center survey (involving 979 leading experts in the field of AI technology) have shown that 63% of the respondents are convinced of the positive consequences of AI implementation. Devices with AI elements are considered as machines that can process large amounts of data faster than human beings and make prompt decisions in difficult situations. Their appearance will allow us to fully reveal the human potential in all spheres of life. However, 37% of the respondents believe that people will not live better. 25% of the interviewed people were ambivalent [3]. Solutions were proposed to solve problems arising from the implementation of AI devices. The study has shown the importance of digital cooperation in the interests of all mankind and the necessity to keep control over complex human-digital networks. A prerequisite for this task is to develop a policy based on the postulate that AI must be used for the common good. According to the respondents, the designers of these new technologies are bound by social and ethical obligations. An important task is to reorganize economic and political systems in order to expand the opportunities for human cooperation with AI and reduce the threat of establishing its power over people. At the same time, the majority of experts expressed concern about the effectiveness of policies aimed at preventing the dangers associated with the uncontrolled creation and use of AI machines.

The results of a large-scale survey entitled "U.S. Public Opinion on the Governance of Artificial Intelligence" have shown that the vast majority of US citizens (82%) believe that AI and/or robots should be closely monitored by the state and public agencies. At the same time, US citizens have shown a low level of trust in government agencies, corporate institutions, and stakeholders who are supposed to develop and implement AI in the public interest [4]. The public mostly trusts university researchers (50%) and the US military (49%); followed by research organizations, technology companies (except Facebook), intelligence agencies, US Federal Government, state governments, and the UN. The survey has shown that 45% of scientists from the American Association for the Development of Science believe that the achievements of the United States in AI are the best in the world, but only 15% of the American public is on the same page. 36% of Americans believe that US AI R&D is "above average," but 45% put China higher.

The perception of the American public may be triggered by media reports that China is catching up with and overtaking the United States in access to big data. Future research should examine how information on the developments of AI in the USA and China affects public opinion [2].

In May 2017, the European Economic and Social Committee (EESC) expressed an opinion on 'The consequences of artificial intelligence on the (digital) single market, production, consumption, employment and society'. The document's conclusions and recommendations underline the need to shape and promote a public debate on AI and its implementation in different spheres of people's life. The EESC insists on the necessity to constantly monitor the developments in this sector and has identified 11 areas where AI poses societal challenges: "ethics; safety; privacy; transparency and accountability; work; education and skills; (in)equality and inclusiveness; law and regulations; governance and democracy; warfare; superintelligence." [21].

Our survey has revealed that 23.6% of the respondents know nothing about AI. The most informed students about this problem are those aged 21–22 who are enrolled in a master's degree program, while 17–18 years old students are less informed. The survey has detected gender differences. 51.6% of men and 20.5% of women have an idea about the functioning of AI devices, and 61.3% of men and 47% of women already use them. In general, men are more interested in technological gadgets. The main sources of information for all groups of respondents are the Internet (90%), social networks (63.3%), publications in scientific journals and magazines (30%), and information from friends (25%). This topic is rarely discussed on TV broadcasts or in newspapers — a situation that negatively affects the formation of public opinion on the prospects and problems related to the development and implementation of artificial intelligence in Russia. The survey has found that respondents have an idea of where AI would be used in 5–7 years. 84.4% of men and 69% of women believe that it will be primarily used to build autonomous cars. A lot of people know that in the United States, China, Japan, Korea, Germany, and Russia attempts are made to design vehicles that will be completely controlled by a computer. 72% of men and 59.8% of women believe that intelligent devices will be used to serve customers in large stores; 59.4% of men and 66.7% of women consider medicine to be a leading area of AI application. 66.7% of the respondents hope that robots will be able to perform simple household tasks in a few years. Only 21% of the respondents predict that AI devices will soon be introduced at schools and universities to improve the quality of education. Students rely on personal experience. They notice that the education system is very slowly saturated with modern technologies that profile students by collecting data on their characteristics. Respondents are informed that

the majority of AI specialists envision possible negative consequences of the use of intelligent devices in everyday life. 64% of men and 82.4% of women agree with those experts who point out the danger of increasing social inequality. They are convinced that only people with high incomes will be able to use such complex technologies in everyday life. The threat of unemployment is emphasized by 82% of our respondents in all age groups. 47% of the respondents aged 21–22 believe that it will be necessary to constantly ensure that machines' autonomy does not jeopardize humans' interests. 36% of our respondents believe that shortly the most demanded specialists in the labor market will be those who design robots and control their work. Moreover, the majority believes that the artificial intelligence industry is developing slowly in Russia. Russia lags behind China, Korea, the USA, Japan and other countries in this indicator. This idea is confirmed by the materials presented in the analytical compilation in the field of "Artificial Intelligence" prepared by the Center for National Technological Initiative based on the Moscow Institute of Physics and Technology (MIPT) [11].

4. Conclusion

The analysis of the publications on public opinion in several countries all over the world, as well as the results of our survey, have shown that the vast majority of people have only a rough idea about what AI systems are. The Internet influences the opinion of different social groups about AI.

In particular, our survey has revealed that students have an opinion about the use of AI in medicine, in the development of new types of vehicles, in the military, etc. Still, they do not have yet a clear view of the most likely impact of AI on human labor and household activities. One of the reasons for this lack of awareness can be identified in the paucity of multidisciplinary scientific projects involving both experts in the engineering sciences and specialists in the social sciences and the humanities, aimed to produce comprehensive studies on opportunities and problems generated by new technological devices. This situation has a negative impact on the organization of different groups training for safety purposes. New educational programs should be implemented to improve the quality of human-machine interaction and minimize unwanted side effects.

TV broadcasts, mass media, and educational institutions should assume a more active role in spreading knowledge and information among different groups of people about the promises and perils of a digital society inhabited by machines that exceed human mental and physical capabilities.

References

[1] *Future of Life Institute*. (March 19, 2019). AI Policy – United States. Retrieved February 4, 2020 from https://futureoflife.org/ai-policy-united-states/.

[2] *Governanceai*. (2019, January). Retrieved February 6, 2020 from https://governanceai.github.io/US-Public-Opinion-Report-Jan-2019/ai-policy-and-u-s-china-relations.html.

[3] *Poweresearch.org*. (2018, December). Retrieved February 4, 2020 from https://www.pewresearch.org/internet/2018/12/10/artificial-intelligence-and-the-future-of-humans/.

[4] [4]Zhang, B. and Dafoe, A. U.S. Public Opinion on the Governance of Artificial Intelligence. (December, 2019) Retrieved January 29, 2020 from https://www.researchgate.net/publication/338291850

[5] *Forbers*. (2015, July). Retrieved February 4, 2020 from https://www.forbes.com/sites/ericmack/2015/07/27/hawking-musk-wozniak-freaked-about-artificial-intelligence-getting-a-trigger-finger/#5f582f787416.

[6] *Money.com*. (2017, July). Retrieved February 14, 2020 from https://money.cnn.com/2017/07/21/technology/china-artificial-intelligence-future/.

[7] Doktorov, B. Z. (2004). Obogashchennoye Obshchestvennoye Mneniye: Ponyatiye. Sotsialnaya Praktika. Opyt Izucheniya. *Monitoring obshchestvennogo mneniya: ekonomicheskiye i sotsialnyye peremeny*, vol. 3, issue 71, pp. 57–70; Fishkin, J. S., Luskin, R. C. and Jowell, R. (2000). Deliberative Polling and Public Consultation. *Parliamentary Affairs*, issue 53, p. 657–666, https://doi.org/10.1093/pa/53.4.657

[8] Arisa Ema, Naonori Akiya, Hirotaka Osawa, Hiromitsu Hattori, Shinya Oie, Ryutaro Ichise, Nobutsugu Kanzaki, Minao Kukita, Reina Saijo, Otani Takushi„Naoki Miyano, Yoshimi Yashiro. Future Relations between Humans and Artificial Intelligence: A Stakeholder Opinion Survey in Japan\\IEEE Technology and Society Magazine (Volume: 35 , Issue: 4 , Dec. 2016) from https://ieeexplore.ieee.org/document/7790979/authors#authors

[9] Grushin, B. A. (1987). *Massovoye soznaniye*. Moscow: Politizdat.

[10] Mack,E. (July 27, 2015). Hawking, Musk, Wozniak Warn About Artificial Intelligence's Trigger Finger *Future of Life Institute*.,Retrieved February 4, 2020 from https://futureoflife.org/background/benefits-risks-of-artificial-intelligence/

[11] V MFTI podgotovili al'manah po razvitiyu rechevyh tekhnologij iskusstvennogo intellekta. (12.09.2019) Retrieved February 5, 2020from https://ntinews.

ru/news/tsifrovaya-ekonomika/v-mfti-izuchili-razvitie-rechevykh-tekhnologiy-iskusstvennogo-intellekta.html

[12] *Wciom.ru*. (27 yanvarya 2020 g.) Retrieved February 5, 2020 from https://wciom.ru/index.php?id=236&uid=10132.

[13] Japan pushing ahead with Society 5.0 to overcome chronic social challenges. https://en.unesco.org/news/japan-pushing-ahead-society-50-overcome-chronic-social-challenges [Accessed February 13 2020].

[14] Konsul'tant plyus. 2019. Ukaz Prezidenta RF « O razvitii iskusstvennogo intellekta v Rossijskoj Federacii» ot 10.10.2019 № 490 (vmeste s Nacional'noj strategiej razvitiya iskusstvennogo intellekta na period do 2030 goda») from http://www.consultant.ru/document/cons_doc_LAW_335184/ (2019, October). Retrieved February 6, 2020

[15] Miklin, A. M. (1965). *Politicheskaya sotsiologiya*. Peterburg: Sankt. Iz-vo Baltijskij gosudarstvennyj tekhnicheskij universitet. (2007). p.110. Childs, H. L. (1965). *Public Opinion: Nature. Formation & Role*. Princeton: Van Nostrand.

[16] OECD 2019. *Artificial Intelligence in Society*. Paris: OECD Publishing, https://doi.org/10.1787/eedfee77-en.

[17] Rezayev, A. V. and Tregubova, N. D. (2019). Iskusstvennyy intellekt». «onlayn-kultura». «iskusstvennaya sotsialnost»: opredeleniye ponyatiy. *Monitoring obshchestvennogo mneniya Ekonomicheskiye i sotsialnyye peremeny*, issue 6, p. 39.

[18] Marcin, S. (2020). Economic Impacts of Artificial Intelligence (AI). Retrieved February 02, 2020 from http://www.europarl.europa.eu/RegData/etudes/BRIE/2019/637967/EPRS_BRI(2019)637967_EN.pdf.

[19] Tard, G. (2015). *Obshchestvennoye mneniye i tolpa*. Moscow: LENAND.

[20] *Rosbalt.ru*. (2019, December). Retrieved February 06, 2020 from https://www.rosbalt.ru/blogs/2019/12/05/1816917.html?utm_source=rosbalt&utm_medium=web&utm_campaign=editorchoice.

[21] EESC. (2017). Opinion of the European Economic and Social Committee on 'Artificial intelligence — The consequences of artificial intelligence on the (digital) single market, production, consumption, employment and society'. Official Journal of the European Union, C 288/1. Retrieved February 25, 2020 from https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52016IE5369&from=EN.