

TECHNOLOGICAL INNOVATIONS AND HUMAN RIGHTS: THE CHALLENGE OF THE FUTURE

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Abstract

The article explores the impact of technological innovations, in line with the demands and opportunities of the modern era, on human rights and highlights major challenges for the future. With the development of technology, issues such as privacy protection, censorship, artificial intelligence ethics, and similar matters come to the forefront. These issues generate various social and legal problems, both due to the rapid advancement of technology and the changing needs of society. It is emphasized that there is a growing need for more legal and ethical norms in these areas, and the importance of finding regulatory approaches that not only consider the positive aspects of technology but also its potential risks. The article broadly discusses how the rapid development of technology affects human rights and what can be done to prevent these impacts. It also explores the relationship between international law, ethics, and technological innovations, stressing that this connection will require more attention in the future. Furthermore, the article highlights the importance of international cooperation and the establishment of appropriate legal frameworks in regulating new technologies. Such regulatory measures can not only increase the positive impacts of technology on social, economic, and cultural fields but also minimize its negative effects.

Keywords: technological innovations, ethical norms, legal regulation, impact of technology, technology risks, data privacy, cybersecurity, biotechnology.

1. Introduction

In recent years, the rapid advancement of technology has had a profound impact not only on individual lives but also on the structure of society. The implementation of integrated artificial intelligence systems, the analysis of big data, developments in biotechnology, and other advanced innovations have penetrated every aspect of life, transforming everything from business operations to daily activities. While the swift pace of technological progress offers numerous opportunities, it simultaneously raises significant ethical, social, and legal concerns. In particular, these new waves of technological innovation have intensified threats to human rights and individual freedoms.

While the implementation of innovations can contribute to societal development and improve the quality of human life, it also carries a number of risks and potential negative consequences. The relationship between human rights and technology has become increasingly complex in the contemporary era. Issues such as information security, the protection of personal and family privacy, equality, and principles of social justice have gained heightened importance in parallel with the expansive growth of technological innovations. As technology continues to evolve, the globalization of these challenges and risks appears inevitable. The protection of human rights is not solely the responsibility of law enforcement agencies or the state; rather, it is a shared obligation involving technology companies, specialized professionals, and every member of society. Although technological advancements hold the potential to facilitate human life and

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promote global equity, they can also result in violations of personal freedoms, discrimination, and injustices. Therefore, addressing these challenges requires not only legislative and policy reforms but also the active involvement of individuals and organizations operating within the field of technology.

The protection of human rights is not solely the responsibility of states and corporations; it is a collective duty shared by all individuals. Approaching these issues with sensitivity and in the right direction is vital for the well-being of both current societies and future generations. As beneficiaries of modern technological advancements, every member of society must also be mindful of the ethical and legal boundaries of these technologies, adhering to principles of transparency and accountability to prevent harm to human rights. Respect for human rights is not limited to the actions of governments and companies, it is inherently linked to our individual behaviors, choices, and ways of thinking. In this context, public and legal awareness, as well as the development of ethical guidelines, are essential. Only through such contemporary approaches can we effectively safeguard against the potential negative impacts of technology and ensure that innovation serves the common good without compromising fundamental rights and freedoms.

II. The power and reach of technology: its relationship with human rights

Technology has become an integral part of modern society and daily life. Innovations such as the development of electronic devices, artificial intelligence, biotechnology, the rapid expansion of data infrastructures, and the widespread use of social media platforms have triggered significant transformations on a global scale. The influence of technology on human life is no longer limited to the domains of business and science; it now extends to social structures, cultural norms, and even legal frameworks, leaving a profound impact on contemporary systems of social justice. It is widely acknowledged that information and communication technologies (ICT) now facilitate the convergence of individual efforts into collective knowledge. Through interconnected digital environments, individuals can collaborate, contribute information, and co-create knowledge in ways that were previously unimaginable. This capacity for collective intelligence highlights the transformative role of technology not only as a utility but also as a social and structural force actively shaping the foundations of modern society [2]. Social networks, wiki platforms, open-source projects, and other online tools enable individuals to share their knowledge and contribute to the creation of collective intelligence. This development has also led to more interactive, interconnected societies with enhanced capacities for rapid decision-making. As a result, such technological shifts have elevated everyday life, individual rights, social relationships, and cultural values to a new dimension. In this evolving context, technology has transcended its role as a mere instrument, emerging as a powerful agent actively participating in the shaping of society. Simultaneously, the rapid dissemination of information through social media platforms has made the formation and spread of public opinion more globalized and influential than ever before. Thus, beyond the use of technology itself, it is now equally important to critically assess its broader impacts and guide its integration into society in a deliberate and responsible manner.

Recent global economic statistics indicate that the rate of development in the field of Information and Communication Technologies (ICT) is, on average, three times higher than the combined growth rate of all other economic sectors [2]. This rapid advancement in the ICT sector enables economic spheres to become more agile, competitive, and

innovative. For instance, digital transformation drives the modernization of business structures, facilitates the establishment of more efficient management systems, and leads to the emergence of new business models. Simultaneously, technological developments contribute to increased job creation and enhanced productivity.

The development of the ICT sector remains a critical catalyst for the future growth of the global economy, delivering economic and social benefits at both individual and collective levels. In this new phase of economic evolution, it becomes evident that the pace of progress in the ICT sector is one of the key drivers accelerating the advancement of other economic sectors.

In societies grounded in scientific and technological achievements and knowledge, “information” has become one of the most valuable assets for individuals, organizations, and sovereign states alike [3, p. 4]. On one hand, this has led to significant advancements in the collection, storage, and processing of data; on the other hand, it has increased the value and importance of information itself. In light of these developments, the advancement of ICT can be regarded as a vital tool for ensuring and protecting various human rights. These technologies play a crucial role in upholding fundamental human rights and freedoms, including the right to education, access to information, freedom of expression, and access to healthcare services.

The protection of human rights in the context of the growing power and reach of technology will only be achievable through the advancement of legal frameworks and ethical principles. Both states and technology developers must align new technological applications with human rights standards, ensuring regulation through transparency, accountability, ethical norms, and appropriate legislation. Furthermore, addressing digital inequalities and ensuring the ethical and responsible use of data are essential for safeguarding fundamental human rights.

III. Protection of human rights and technological threats

While technological advancements offer new opportunities for individuals, they simultaneously pose significant risks related to data collection and surveillance by both state actors and the private sector. In particular, personal information can be easily accessed through social media platforms, which has emerged as a prominent global concern in the modern era. This issue raises serious concerns regarding the protection of individual freedoms and privacy. Many users remain unaware of how and by whom their personal data is being utilized when sharing information online. Consequently, this increases the likelihood of technology being transformed into a tool of control. This situation underscores the dual nature of technology, not only as a means of progress and convenience but also as a potential instrument of power and surveillance. Through the data collected, it becomes possible to monitor individuals' behaviors, influence their choices, and even manipulate them.

Currently, virtually all countries worldwide recognize the institution of human rights and prioritize the protection of human rights and freedoms as a fundamental principle in their state policies [1, p. 283]. Many countries have established the protection of human rights as a priority in their constitutions and legal frameworks, and by joining international treaties and conventions, they have assumed obligations in this domain. The formation of the global information society has inevitably influenced the concept and practice of human rights. Such an open and interconnected society has contributed to the positive evolution of the human rights institution, promoting greater awareness, accessibility, and

enforcement of fundamental rights on a global scale [1, p. 283]. The relationship between the protection of human rights and technological threats is highly complex and timely. While the rapid advancement of technology facilitates many aspects of societal life, it simultaneously poses risks to individual rights and creates opportunities for new violations. Although the expansion of ICT enables progress across various sectors, it can also seriously threaten fundamental rights such as privacy, freedom of expression, and personal integrity. Measures to prevent such threats are implemented within the framework of information law, particularly through the institution of information security.

Traditionally, information security refers to the protection of information and its supporting infrastructure from unauthorized, harmful threats—whether natural or artificial, accidental or deliberate (pre-planned) - that may adversely affect the participants in information relations. The primary objective of information security is to ensure the protection of information in accordance with the principles of integrity, confidentiality, and availability. Information security is a critical concern for both individual users and organizations, as security breaches can lead to severe consequences and significant damage [3, p. 8]. Information security is not limited to technological issues alone; it encompasses a broad spectrum of organizational, legal, and human resource aspects. This field requires strategic approaches and continuous measures to effectively combat various threat factors.

Thus, technological advancement has created significant opportunities in the field of human rights protection while simultaneously introducing new threats and risks. The relationship between human rights and technological threats demonstrates that these two areas are complementary and interconnected elements. States, international organizations, relevant institutions, and technology developers must promote and utilize technology within ethical and legal frameworks. A balance between human rights protection and technological development should be established in such a way that advancements serve both individual and societal well-being, improve living standards, address public interests and needs, and enhance the effectiveness of combating rights violations and injustices.

IV. International cooperation and technology

International cooperation forms the foundation for joint activities among states in economic, social, cultural, and scientific fields. In recent years, this cooperation has gained significant importance in the technological sector as well. Technology plays a crucial role not only in addressing global problems and issues that transcend national borders but also in promoting international relations and integration. The rapid advancement of technology has heightened the necessity for collaboration and joint initiatives at the global level. Such cooperation is evident both among developed and developing countries. The global development and dissemination of technology present both opportunities and challenges for international cooperation. Various scholars have analyzed these dynamics extensively, offering diverse conceptual frameworks. Notably, Clayton M. Christensen's central thesis is of particular interest: just as successful companies sometimes fail to respond to disruptive technologies, similar challenges may arise in interstate cooperation. The rapid transformation of innovation and technology necessitates that countries reconsider their modes of collaboration and models for sharing technology [4]. The development of technology can transform not only markets and businesses but also countries and international relations. International cooperation must

respond to these changes by promoting innovation and remaining flexible enough to adopt new technological models. Otherwise, forms of cooperation risk becoming obsolete, trapped in the dilemma of outdated technological systems [4].

Research indicates that various scholars present the role of technology in international cooperation as both an opportunity and a risk. According to Stiglitz, globalization does not guarantee the equitable distribution of existing technological capabilities among all countries [5]. Developed countries maintain their technological advantages, thereby limiting access to technology for developing nations. This situation leads to inequities in international cooperation concerning technology use. If the global dissemination of technology is not properly regulated, it may further increase the dependency of developing countries. This, in turn, can exacerbate the problematic policies of the “powerful yet less accountable” international institutions criticized by Stiglitz [5].

Technology is not merely an economic tool; it can also bring significant transformations in the fields of education, healthcare, and governance. In healthcare, the application of technology enables more effective diagnostics, digitization of patient records, and the provision of remote medical services. Artificial intelligence and analytical tools play a crucial role in early disease detection and the development of personalized treatment plans. In governance, technology enhances transparency and accountability. E-government systems and open data platforms simplify citizen interactions with the state, help prevent corruption, and improve the overall efficiency of public administration.

Technology can promote development only if its dissemination is carried out on an equitable basis. Otherwise, technological advancement may deepen disparities and exacerbate global inequality [5]. Therefore, international cooperation, open knowledge sharing, and infrastructure support are essential for the inclusive and equitable distribution of technology. Developed countries and leading technology companies must consider more just models of technology transfer and actively promote digital equality.

The advancement of international cooperation in the field of technology faces several challenges, including technological disparities, unequal distribution of resources, and the technological lag of certain countries. Nevertheless, these issues can be addressed through collaborative international efforts and joint initiatives. To ensure a more inclusive and equitable technological development, the support of international organizations and close cooperation among countries are essential. Organizations such as the United Nations, the World Trade Organization, UNESCO, and other international bodies can create platforms to promote the fair global distribution of technology and provide technical and financial assistance to developing countries. Enhancing digital skills, increasing transparency in technology transfer mechanisms, and establishing fair regulatory frameworks are crucial components of this process.

The equitable development of technology at the global level is not merely a technical issue; it requires political will, ethical responsibility, social commitment, and sustained cooperation. Every step taken in this direction will contribute to building a more equal, just, and sustainable world for future generations.

V. The impact of technological innovations on the Political Strategy of the Republic of Azerbaijan: human rights and future prospects

In consideration of the technological revolution of the 21st century, the Republic of Azerbaijan is implementing the “Digital Azerbaijan” program. Within the framework of this program, the state has identified the application of innovative technologies and the

development of the digital economy as one of its strategic priorities. E-government services, artificial intelligence, blockchain technologies, and other contemporary innovations are being deployed with the aim of optimizing public administration and service delivery across the country. In the Republic of Azerbaijan, information security is ensured through legal, organizational, operational-investigative, intelligence and counterintelligence, scientific-technical, educational, analytical, communicative, personnel, economic, and other coordinated measures. These are designed to identify national security threats in the information domain, eliminate vulnerabilities and gaps that could be exploited by such threats, and mitigate potential consequences, either by neutralizing them or reducing their impact to predefined acceptable levels. The implementation, coordination, oversight, and continuous improvement of these measures are carried out in accordance with legal safeguards and protective mechanisms as defined by national legislation [3, p. 29]. In recent years, the Republic of Azerbaijan has achieved significant progress in the field of technology, and these advancements have had a positive impact on the country's political and economic strategies. Technological innovations play a crucial role in the modernization of the economy, the enhancement of public administration, and the overall improvement of societal well-being. At the same time, the rapid pace of technological development inevitably brings forth new challenges and prospects concerning human rights. These challenges have become increasingly relevant, particularly in light of the expanding digital space. The implementation of digital governance systems in Azerbaijan - including the ASAN service centers, the Electronic Government Portal, and various other e-services—has facilitated more efficient and transparent service delivery to citizens. The swift advancement of technology, as well as the integration of artificial intelligence and automation into various sectors of society, has contributed to the emergence of new professions in the labor market. However, this development also raises concerns regarding the potential obsolescence of traditional occupations, thereby increasing the risk of social inequality. This evolving landscape necessitates the adoption of new approaches to ensure social equity, adapt education systems, and safeguard labor rights. In response to these trends, Azerbaijan has taken steps to reform its education system by aligning it with contemporary technological competencies and preparing the workforce for the demands of the digital age.

Technological advancements exert a significant impact on the rights of both the state and its citizens. The Constitution of the Republic of Azerbaijan outlines fundamental principles aimed at aligning these advancements with the protection of human rights. A particularly noteworthy provision is Article 50 of the Constitution, which guarantees freedom of thought and expression: "Everyone has the right to freedom of thought and speech" [7]. While this article affirms the right to free expression, it is important to note that the development of technology can, in certain instances, lead to limitations on this freedom. For instance, the regulation of content and discourse on the internet and social media can lead to certain security measures and restrictions. Nevertheless, in order to strengthen the implementation of technological innovations, it is also relevant to interpret Articles 8 and 9 of the Constitution within the framework of its fundamental principles. From the perspective of information security, these constitutional provisions emphasize the need for the state to enhance protective measures aimed at safeguarding citizens' personal data [7]. These articles affirm the state's responsibility to ensure that technological developments do not compromise individual rights, particularly in relation to privacy and data protection.

While the impact of technological innovations on Azerbaijan's political strategy is largely positive, it also raises several legal and ethical issues. The Law on State Secrets of the Republic of Azerbaijan, along with other relevant legislative acts, ensures the protection of rights, data security, and social justice in parallel with technological development. These legal frameworks provide guarantees to uphold citizens' rights and safeguard sensitive information in the context of rapid technological progress.

Information security in Azerbaijan's state policy is primarily regulated by the Law on State Secrets of the Republic of Azerbaijan. This law is aimed at protecting the state's classified information and has gained increased significance with the application of technological innovations. The Law on State Secrets also covers issues related to the protection of technological infrastructure, data security, and the safeguarding of citizens' personal information [6].

In the future, technological innovations are expected to expand further and be applied more broadly across various sectors, including healthcare, education, business, and public services. Alongside these developments, the protection of human rights and the establishment of new legal regulations addressing technological innovations will become increasingly important. Cooperation between the public and private sectors, the enhancement of legal and technological security measures, and the further refinement of legislation related to the protection of personal data will lay the foundation for sustainable progress in these areas.

Overall, Azerbaijan's political strategy aims to build a modern and digital state through the application of technological innovations. However, for this process to be successful and sustainable, it is essential to respect human rights and freedoms, and to implement effective legal and social measures to mitigate the negative impacts of technological development. Only by doing so can technological innovations both protect individuals' rights and freedoms and positively contribute to the country's socio-economic progress.

This requires a governance model that prioritizes accountability, transparency, and ethical use of digital tools. Legal institutions must be continuously updated to respond to emerging technologies and new forms of digital risk. At the same time, social policies should address issues such as digital inequality and data protection. Investing in education and innovation will strengthen human capital and long-term resilience. Inclusive digital development can enhance economic competitiveness and public service efficiency. Ultimately, balancing technological progress with social responsibility will define the success of Azerbaijan's digital future.

VI. Conclusion

The relationship between technological innovations and human rights has become one of the most important and complex topics of the 21st century. In recent years, rapid technological advancements have permeated every aspect of society, fundamentally transforming our way of life and creating various new opportunities. At the same time, the new risks and threats posed by technology have brought the protection of human rights to the forefront. Issues such as the protection of personal data, social justice, equality, and individual freedoms represent some of the primary challenges arising from technological innovations. Addressing these challenges requires collective responsibility, not only from governments and law enforcement agencies but also from technology companies, experts, and every member of society.

One of the primary challenges arising from technological development is ensuring that technological tools and systems align with human rights. The illegal use of personal data, issues of confidentiality and security, as well as occurrences of discrimination and injustice, continue to persist. Therefore, legislation and regulatory frameworks related to technology must be further improved, with a clear focus on protecting human rights.

Moreover, the development of technology is not only a matter of laws and regulations but also involves ethical principles and the responsibility of technology companies. Technology companies must adopt more transparent and ethical approaches in the processing and use of data. The algorithms and decision-making systems they implement should be fair and must not create any form of discrimination or injustice. It is essential that companies do not solely pursue profit but also prioritize activities aimed at promoting societal welfare and protecting human rights.

At the same time, states and international organizations play a crucial role in addressing this issue. International cooperation and the development of normative standards can help bridge legal and technological gaps between different countries. States must update their legislation in light of technological advancements and implement progressive regulations to protect the rights of their citizens. However, national-level approaches alone are insufficient, as technological innovations have a global character. Therefore, international collaboration and the adoption of common rules are essential.

Most importantly, every individual in society must be vigilant about this issue, know their rights, and actively defend them. Human rights are not solely the responsibility of the state and corporations but represent a collective responsibility of society as a whole. A collective approach is necessary to address the challenges posed by the rapid advancement of technology. This approach entails each individual striving to understand the impacts of technology on human rights and taking action to minimize these effects. Furthermore, it aims to ensure that technological development occurs within ethical frameworks, thereby establishing a strong foundation for the protection of rights.

In conclusion, the relationship between technology and human rights has become one of the fundamental factors shaping the future of society. To effectively respond to the new challenges arising from technological advancements, attention must be paid not only to innovations themselves but also to their ethical and legal implementation. The protection of human rights will be possible not only through legislation but also through the mutual cooperation and responsibility of individuals and all stakeholders involved in the technological field. This represents a crucial step toward building a more just, equitable, and human rights-respecting future. The interaction between technology and human rights emerges as a vital factor in shaping society's future. Balanced and proper management of this relationship will serve as an important step toward establishing a future grounded in justice, equality, and respect for human rights. Achieving this balance requires the intertwined development of legislation, technological progress, and ethical, social, and cultural values.

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Date of receipt of the article in the Editorial Office: 29.08.2025

Date of acceptance for publication: 25.12.2025