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Original Research

Modern Technologies and Human Rights: Challenges and Solutions

Leila. Ghalijaei[1]*, Sara. Siri[2]

[1] Assistant Professor, Department of International Law, Varamin-Pishva Branch, Islamic Azad University, Tehran, Iran
[2] PhD Student, Department of International Law, Qaimshahr Branch, Islamic Azad University, Qaimshahr, Iran

* Corresponding author email address: Leila_ghalijaie@yahoo.com

Technologies can play a significant role in promoting human rights. For instance, information and communication technologies provide broader access to information and enable individuals to freely express their opinions and strengthen civil organizations. However, the issue of challenges posed by modern technologies in violating human rights is an important subject that requires thorough discussion and examination. Accordingly, the aim of the present article is to examine the challenges posed by modern technologies to human rights and to propose solutions in this regard. This article is descriptive-analytical and employs library research methods to explore the mentioned topic. The findings indicate that the use of surveillance technologies such as facial recognition and large-scale information systems can lead to violations of privacy and other human rights. Algorithms used for advertisements and content display may exhibit racial, gender, or social biases, which in turn can result in forms of discrimination. Additionally, the digital divide between developed and developing countries can negatively affect individuals' ability to benefit from technology and related rights. Enacting laws that regulate the application of technologies within the framework of human rights, raising public awareness about the benefits and risks of technologies, enhancing international cooperation to develop global solutions related to technology and human rights, ensuring transparency, and establishing precise and stringent regulations are among the most important solutions to address the mentioned challenges. Moreover, platforms need to improve their technologies and algorithms to prevent conscious and unconscious biases.

Keywords: Technology Law, Human Rights, Privacy, Artificial Intelligence, Discrimination.

1. Introduction

Human rights refer to a set of rights and freedoms that belong to every individual simply because they are human. These rights include the right to life, liberty, personal security, freedom of expression, justice, and equality. In the modern era, the importance of human rights has increased due to profound social, economic, and technological changes. Human rights in the modern age are not only a moral ideal but also a social and political necessity. Continuous attention to and support for these rights can help create a more just and peaceful world.

Despite significant progress, major challenges in the field of human rights persist. Poverty, discrimination, war, and the violation of minority rights are among the issues that require serious attention and effective international measures. In the modern era, human rights play a central role in shaping domestic and international policies. With the expansion of globalization and increased international communications, human rights violations in one part of the world can have far-reaching impacts on

other regions. Consequently, the protection of human rights has become one of the main indicators of progress and sustainable development.

Modern technologies such as the internet and digital media have created new opportunities for raising awareness and combating human rights violations. The second half of the twentieth century witnessed the emergence of technologies such as computers, the internet, and smartphones, which revolutionized access to and processing of information. This period continues to evolve rapidly, affecting almost every aspect of daily life. Digital technologies and the internet have provided extensive access to information, leading to greater transparency and increased public awareness of human rights. Additionally, social media platforms have facilitated communication among human rights activists and non-governmental organizations (NGOs) worldwide, empowering local communities and aiding in the fight against human rights violations.

Moreover, educational technologies such as online courses and learning platforms provide access to quality education for individuals in remote or underprivileged areas. However, this is only part of the reality. While modern technologies have contributed to improving human living conditions, they have also introduced new challenges. In the present era, the intersection of human rights and modern technologies has become one of the most significant global concerns. New technologies, from the internet and social media to artificial intelligence (AI) and blockchain, have created numerous challenges for human rights alongside their opportunities. This aspect of the issue has not been extensively examined. The objective of the present article is to examine these challenges.

Based on the foregoing, the present article seeks to address the question: What are the challenges posed by modern technologies to human rights, and what are the solutions to these challenges? The hypothesis of the article can also be formulated as follows: "Issues such as privacy protection, cybersecurity, and the environmental impacts of new technologies require careful attention and management. Thus, technology has always played a dual role in human history: on one hand, contributing to progress and facilitating life, and on the other hand, imposing new responsibilities and challenges on societies." To investigate the mentioned question and hypothesis, the challenges posed by

modern technologies to privacy, free access to knowledge and information, and discrimination, as well as the challenges of AI for human rights and the solutions to address these challenges, have been examined.

2. Challenges of Modern Technologies to Privacy and Solutions

Privacy refers to an individual's right to maintain an area of private life that governments and institutions should not intrude upon without consent. In the digital age, this concept includes the protection of personal data, communications, and information related to individuals. In a world where advanced technologies are rapidly developing, the issue of privacy and digital surveillance has gained particular importance.

2.1. Challenges of Modern Technologies to Privacy

With technological advancements, digital surveillance tools have acquired extensive capabilities. These tools include technologies such as facial recognition, big data analysis, and monitoring user behavior in virtual spaces. Government and private surveillance can be beneficial for security purposes, but at the same time, it poses the risk of violating individual privacy. Increased surveillance and access to personal information by governments and companies, especially without adequate oversight, can lead to abuses of power. This has raised serious concerns about privacy protection in the modern world (Floridi, 2014).

Surveillance technologies such as closed-circuit television (CCTV) cameras, facial recognition software, and digital spyware enable precise monitoring and analysis of individuals' behaviors and habits. These technologies can be used in various fields such as public security and targeted advertising but can also become a serious threat to privacy. Surveillance technologies can serve as both tools for protection and means for violating human rights. Extensive surveillance, under the pretext of security, can lead to human rights violations by depriving individuals of their right to privacy and freedom of expression.

Edward Snowden's revelations in 2013 exposed how the U.S. National Security Agency (NSA) extensively collected personal data of both American and non-American citizens. This incident sparked widespread debates about the scope of government surveillance and

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privacy (Greenwald, 2014). Similarly, the Facebook and Cambridge Analytica data breach in 2018 demonstrated how the personal data of millions of Facebook users were used without their consent for targeted political advertising, emphasizing the importance of transparency and consent in the use of personal data (Helbing, 2019).

Additionally, China has implemented extensive government surveillance laws, including the use of facial recognition cameras and widespread electronic monitoring, raising serious concerns about privacy and individual freedoms (Gasser & Palfrey, 2007).

Biometric technologies, including facial recognition, fingerprint scanning, retinal scans, and voice analysis, have rapidly developed in recent decades and found widespread applications in various fields ranging from national security to e-commerce and identity management. However, the use of these technologies has raised deep concerns about privacy, surveillance, and individual rights. Facial recognition technology, in particular, has garnered attention and concern due to its seamless and inconspicuous surveillance capabilities. This technology can collect precise and sensitive information without the individual's knowledge or consent, potentially violating privacy laws and leading to potential abuses.

Governments may use biometric technologies for security purposes, including surveillance at airports, shopping centers, and other public spaces. While this application can enhance security, it can also create a permanent system of surveillance and control that infringes on individual rights (Deibert, 2013).

Companies may use facial recognition for marketing purposes, such as targeted advertising based on individual characteristics obtained through facial analysis. This can lead to privacy violations, subjecting individuals to influence without their awareness. Furthermore, biometric technologies, especially facial recognition, face significant ethical and legal challenges. Without proper oversight, these technologies can become tools for racial or economic discrimination. Additionally, the accuracy of biometric technologies may vary among different racial groups, potentially leading to new inequalities.

2.2. Solutions

The violation of privacy by governments and companies can have profound impacts on civil liberties and public trust. To address these challenges, it is necessary to strengthen legal oversight, increase transparency in data collection processes, and enhance accountability mechanisms. Through the strict enforcement of privacy laws and the promotion of a culture of data protection, we can move towards a society where individuals' fundamental rights and freedoms are respected and protected. Some countries, such as certain U.S. states and several European nations, have enacted strict laws to limit the use of facial recognition technology. These laws include restrictions on the use of such technologies in public spaces and require explicit consent from individuals for the collection of biometric data. These measures are designed to protect individual rights and prevent potential abuses.

The concept of privacy varies in the legal systems of different countries. The European Union, through the enactment of the General Data Protection Regulation (GDPR), has been a pioneer in this field, demanding greater transparency in the collection and use of personal data (Chander, 2013). In contrast, some countries have fewer regulations in this area, which can lead to the misuse of personal data.

Both international and national legal frameworks can be highlighted in this regard:

1. The European Union's General Data Protection Regulation (GDPR): Enforced in May 2018, this regulation sets stringent standards for the protection of personal data within and outside the European Union. GDPR applies not only to governments but also to companies processing personal data of EU citizens (Mansell et al., 2019).

2. The Children's Online Privacy Protection Act (COPPA) in the United States: This law focuses on protecting the online information of children under the age of 13 and establishes requirements for the collection and use of children's personal information (Bostrom, 2014).

International laws such as the GDPR and various national regulations aim to protect individuals' privacy against

excessive surveillance. These laws seek to balance security needs with privacy protection.

Solutions to address surveillance technology threats include:

1. Strengthening Privacy Laws: National and international privacy laws must be reinforced and updated to keep pace with technological advancements.

2. Public Awareness and Education: Increasing public awareness about privacy rights and ways to protect them from surveillance technologies is essential.

3. Oversight and Accountability: Establishing oversight mechanisms to ensure proper enforcement of laws and penalize privacy violators is of paramount importance (Eubanks, 2018).

Ultimately, balancing the benefits of surveillance technologies with the protection of individual privacy is a challenge that requires serious attention from legislators, human rights activists, and citizens. Laws must be designed to ensure both security and privacy, thereby creating a more just and secure society for all.

To address challenges arising from biometric technologies, comprehensive and precise legal frameworks must be developed to protect individual rights and maintain a balance between security and privacy. Additionally, public education and increased awareness about the rights and responsibilities associated with using these technologies must be emphasized.

3. Challenges of Modern Technologies to Freedom of Expression and Solutions

Freedom of expression in the digital space is supported by international instruments such as the Universal Declaration of Human Rights (Article 19) and the International Covenant on Civil and Political Rights. These instruments explicitly guarantee each individual's right to freedom of expression, including the freedom to hold opinions without interference and to seek, receive, and impart information and ideas through any media, regardless of frontiers. Digital platforms enable individuals to widely share their ideas, information, and opinions. This has led to:

1. Increased Access to Information: Users worldwide can access a wide range of data and

be exposed to diverse experiences and perspectives.

2. Strengthened Civic Engagement: Platforms provide a space for political and social discussions, enhancing public participation and reinforcing democracy.

3. Facilitated Human Rights Advocacy: Human rights activists use these platforms to raise awareness and gather support in their fight against human rights violations.

3.1. Challenges of Modern Technologies to Freedom of Expression

The internet, as one of the most powerful modern tools for facilitating communication and information dissemination, plays a fundamental role in promoting freedom of expression. It has provided unprecedented opportunities for both individual and collective expression. Users can:

1. Overcome geographical and temporal limitations, sharing their views and experiences on a global scale.

2. Participate in political and social discussions through social networks and blogging platforms, which can strengthen democracy.

3. Easily access educational resources and news through the internet, thereby enhancing public awareness (Brynjolfsson & McAfee, 2012).

However, this space can also present new challenges and limitations for this fundamental right. Freedom of expression in the digital environment, like other human rights, is protected by national and international laws but faces unique challenges that make balancing individual freedoms with the protection of others' rights difficult. In fact, the internet has also been used as a platform for restricting and violating freedom of expression:

1. Censorship and Filtering: Some governments restrict access to information or remove specific content to prevent the dissemination of critical information. Filtering and censorship in the digital space by governments are often justified on grounds such as national security, public order, protection of morality, or prevention of misinformation. Many countries have complex systems for monitoring and managing online content, which can result in widespread

censorship. Legal challenges in this area include precisely defining "freedom of expression" and establishing its boundaries. Additionally, the rights and responsibilities of online platforms are also at issue, as these platforms must balance content management with protecting users' freedom of expression. Major technology companies like Google, Facebook, and Twitter play significant roles in shaping online expression spaces. These companies, through complex algorithms, determine which content is displayed or removed, which can itself be considered a form of censorship. Some governments request platforms to remove specific content or restrict access to certain information, leading to widespread censorship and limiting freedom of expression (Morozov, 2012).

2. Government Surveillance: Advanced technologies enable the monitoring and tracking of users' activities online, potentially violating individual rights. Some social networks may participate in government surveillance, which can result in human rights violations, including the collection of users' data without their consent and providing this information to governments for surveillance purposes. Digital platforms can become tools for government surveillance, where user information is collected and analyzed without their knowledge. Digital platforms play a prominent role in shaping expression spaces and social interactions globally (Panser, 2011). These platforms, including social networks, online forums, and blogs, can both promote and suppress freedom of expression. This section examines the impact of these platforms on freedom of expression and analyzes how they interact with laws and regulations.

3. Misinformation and Propaganda: The spread of misleading and false information online presents challenges in verifying truth and ensuring the accurate transmission of information (Naughton, 2012). Using platforms to disseminate false or misleading information can undermine constructive dialogue and public awareness.

3.2. Solutions

Freedom of expression is one of the main pillars of human rights, and the role of the internet in promoting or violating it cannot be overlooked. Balancing the provision of a space for free expression with protecting society from potential abuses is the primary challenge facing legislators, technology companies, and human rights activists. To address the mentioned challenges and strengthen freedom of expression in the digital space, legal and regulatory measures are needed, including:

1. Protective Laws: Enacting laws that preserve freedom of expression while also preventing potential abuses.
2. Public Awareness and Education: Increasing users' awareness of their rights and responsibilities in the digital space.
3. Strengthening Oversight Mechanisms: Establishing oversight frameworks to ensure that content is managed transparently and fairly (Pentland, 2014, p. 59).

Freedom of expression in the digital space is a complex and multifaceted issue that requires careful attention to legal, cultural, and technological details to ensure that individual rights are protected while defending fundamental freedoms. To maintain the balance between freedom of expression and the protection of others' rights, it is recommended that:

1. International laws should be updated to keep pace with technological advancements.
2. Digital literacy education should be provided to users to increase awareness of their rights and responsibilities in the digital space.
3. Greater transparency from online platforms regarding how and why content is managed.

The balance between freedom and responsibility is one of the most important considerations. To maintain the balance between freedom of expression and preventing abuses, digital platforms and legislators must consider:

1. Transparent Laws and Regulations: Enacting laws that clearly define the terms and conditions for using platforms.
2. Privacy Protection: Ensuring that platforms protect users' privacy and do not collect or share personal data without their consent.
3. Strengthening Professional Ethics: Promoting ethical principles among technology companies

to ensure they act responsibly and respect users' rights (Posner, 2001).

Ultimately, digital platforms must seek ways to both promote and protect freedom of expression against threats to ensure that the digital space remains a platform for the free exchange of ideas. Social networks are obliged to protect users' personal information, including preventing unauthorized access and misuse of data. Laws such as the GDPR in Europe and the CCPA in California have set strict requirements for the protection of personal data.

4. Challenges of Modern Technologies to Access to Information and Knowledge and Solutions

In the information age, access to data and knowledge is not only a competitive advantage but also a fundamental human right. Access to accurate and up-to-date information enables a better understanding of the world and more informed decision-making. This access helps individuals acquire information on various issues, including health, education, politics, and the economy, providing a foundation for a more democratic and participatory society.

Widespread access to information can have profound effects on society. On one hand, it can lead to economic and social empowerment. On the other hand, it may exacerbate social divides if not all individuals have equal access to resources. Access to information and knowledge is crucial not only for individual growth but also for societal progress. Therefore, ensuring equitable and comprehensive access to information must be considered a priority in national and international policymaking.

This requires coordinated efforts among governments, the private sector, non-governmental organizations, and civil societies to ensure that every individual, regardless of geographic location or economic status, has access to information and knowledge (Powles & Hodson, 2017). Access to information enables citizens to become aware of their rights, participate in democratic activities, and engage more effectively with governments and organizations. This right is recognized in international instruments such as the Universal Declaration of Human Rights and the International Covenant on Civil and Political Rights.

4.1. Challenges of Modern Technologies to Access to Information and Knowledge

Despite the abundance of information resources, unequal access to the internet and digital technologies has created significant barriers for many individuals, especially in developing countries and remote areas. Additionally, low levels of information and digital literacy present another obstacle to effectively utilizing available data.

The right to access information, as a fundamental pillar of human rights, plays an important role in promoting transparency, holding governments accountable, strengthening civic participation, and empowering citizens. However, rapid technological advancements and the widespread penetration of digitalization into all aspects of life have created new challenges for free access to information.

The challenges posed by technology in accessing information include:

1. The Massive Volume of Data: The existence of large and complex datasets makes it challenging for citizens to identify and extract useful and accessible information.
2. Digital Inequalities: The digital divide between urban and rural areas, the rich and the poor, and the young and the elderly significantly impacts individuals' access to information.
3. Privacy and Data Security: Surveillance technologies and data collection can threaten individual privacy and restrict free access to information.
4. Censorship and Filtering: Governments may use filtering technologies to limit access to information, thereby suppressing freedom of expression and access to knowledge (Noble, 2018).

Copyright challenges in accessing knowledge include:

1. Limited Access to Educational Resources: Copyright laws can restrict access to textbooks, scientific articles, and other educational resources, particularly in developing countries that may not afford high legal costs.
2. Barriers to Scientific Participation: Strict copyright laws can hinder the free exchange of information and international collaboration, slowing down scientific progress.

3. Issues Related to Digital Publishing: In the digital age, copyright faces new challenges, such as the easy and inexpensive reproduction of works without the authors' consent, highlighting the need for a new balance between protecting authors' rights and ensuring public access to information (O'Neil, 2016).

The digital divide, which prevents access to information and knowledge, must also be addressed. The digital divide refers to the gap between individuals who have access to information and communication technologies, including the internet, and those who do not. Besides access to information and communication technologies, other criteria include the affordability of these technologies, digital skills and literacy, and the ability to use these technologies.

According to the International Telecommunication Union's 2019 report, only 57% of the world's population uses the internet, meaning more than 4 billion people lack access to this essential tool. This gap is significantly wider in developing countries, where only 43% of people use the internet compared to over 84% in developed countries (Helbing, 2019). The report also notes a gender gap, with women using the internet less than men worldwide due to various reasons, including cultural norms, lack of access to education, and affordability. People with disabilities also use the internet far less than others due to multiple factors such as lack of access to information and communication technologies and inadequate digital literacy and skills.

In other words, the digital divide is a global issue affecting individuals of all ages, genders, and socio-economic positions, particularly in developing countries. It makes access to essential services like education, healthcare, and employment opportunities difficult or impossible and poses serious barriers to participation in civic and political life. For this reason, the United Nations has repeatedly called on governments to take action to close digital divides.

The United Nations General Assembly adopted Resolution 68/167 on December 18, 2013, recognizing the role of the internet in human rights and calling on member states to close the digital divide. This resolution emphasized the importance of the internet for freedom of expression, access to information, education, political participation, and economic development, advocating for affordable internet access. In 2016, the Human Rights Council also adopted a resolution urging governments to ensure equal access to the internet and digital technologies for all, protect human rights in the digital age, and work towards their promotion (Harari, 2016).

Recognizing the digital divide as a major challenge to sustainable development, the United Nations committed in its 2030 Agenda for Sustainable Development to closing the digital gap and ensuring universal, affordable access to the internet and mobile phones, particularly in least-developed countries.

In this regard, the United Nations has launched initiatives such as the "Broadband Commission for Sustainable Development" and the "Global Alliance for ICT and Development." The Broadband Commission for Sustainable Development is a public-private partnership established in 2010 to foster digital cooperation and global connectivity. Comprising around 50 commissioners, including industry leaders, policymakers, and experts, the Commission advocates for meaningful, safe, secure, and sustainable broadband services that reflect human rights and child rights while promoting global connectivity.

The Global Alliance for ICT and Development is a global forum aimed at leveraging information and communication technologies for sustainable development. Launched in 2006 by then-UN Secretary-General Kofi Annan, the alliance promotes open, inclusive, and multilateral dialogue on the role of ICT in development. Its objectives include expanding the use of ICT to reduce poverty, strengthening evidence on ICT's impact, enhancing cooperation between governments, the private sector, civil society, and the international community, and developing ICT policies aligned with sustainable development goals. The alliance organizes conferences, workshops, research, knowledge exchange, and policy consultations to achieve its objectives.

Additionally, the Declaration of Principles from the World Summit on the Information Society has identified the digital divide as a barrier to development and achieving development goals. In his 2021 report on the global information society, the UN Secretary-General stated that the digital divide poses a major challenge to development, with profound implications for poverty eradication, education, health, and other social and economic goals. The Declaration of the World Telecommunication Development Conference of the International Telecommunication Union has also

recognized the digital divide as a significant challenge to achieving development goals and other internationally agreed targets.

All the aforementioned points underscore the importance of the digital divide for the international community and the necessity of collective efforts to identify its causes and take appropriate actions. It must be noted that the digital divide is a multifaceted issue influenced by various economic, social, technological, and political factors. Economic factors include income inequality, high costs of information and communication technologies, lack of infrastructure, and access to electricity. Social factors include low levels of education and digital literacy, cultural barriers, gender inequality, and disabilities. Technological factors include lack of access to devices and tools, technical support, and standardization. The most significant political factors include government censorship, insufficient investment, restrictive laws, and privacy concerns. Addressing these factors is essential to closing the digital divide and ensuring equal access to information and communication technologies for all.

4.2. Solutions

In today's technological world, access to information has become an essential element for individual and social development. Therefore, the responsibilities and challenges related to technology in accessing information must be seriously identified and managed to ensure that all individuals can fully and equitably exercise this fundamental right. To address the mentioned challenges, governments and international organizations must invest in the development of information technology infrastructure and provide educational programs to increase public digital and information literacy. Additionally, online platforms must ensure greater transparency regarding their information sources and prevent the dissemination of fake news and misinformation.

Strategies to improve access to information include:

1. Strengthening Information Access Laws: Enhancing laws that guarantee access to information and promote transparency in governmental and private sector activities.
2. Reducing the Digital Divide: Investing in digital infrastructure and technology education to ensure equal access to information for all

citizens. One of the biggest challenges in using educational technologies is unequal access to the internet and digital equipment, as many remote areas and developing countries still lack suitable infrastructure for fully utilizing educational technologies (MacKinnon, 2012).

3. Data Security Support: Establishing regulations that protect users' privacy against the misuse and improper collection of data. With increased use of online platforms, data security issues have become more significant, necessitating the enactment of appropriate laws to safeguard users' personal information (Anderson & Rainie, 2018).
4. Combating Censorship: Promoting international and national laws that prohibit unfair restrictions on information access and support freedom of expression (Mayer-Schönberger & Cukier, 2013).
5. Reforming Copyright Laws: Amending copyright laws to both protect creators' rights and facilitate open access to information, such as shortening copyright durations and expanding fair use provisions.
6. Promoting Open Access: Encouraging creators and publishers to adopt open access models that allow works to be freely available to the public, thereby reducing copyright-related restrictions. Effective use of educational technologies requires adequate digital literacy among students, teachers, and parents, and education on technology and internet use must be incorporated into school curricula.
7. Using Flexible Licenses: Implementing licenses like Creative Commons that allow creators to set access levels for their works and enable others to share content while respecting authors' rights.

Educational technologies have brought about a significant transformation in access to education and created new learning opportunities. However, to fully benefit from these opportunities, existing challenges and barriers must be addressed with appropriate solutions to move towards more inclusive and equitable education.

Governments have the primary responsibility to respect, protect, and fulfill human rights. The commitment to

protecting and fulfilling human rights includes ensuring that everyone has access to information and communication technologies (ICT) and the necessary skills and knowledge for their effective use. Access to the internet and ICT is a fundamental human right essential for realizing other human rights such as freedom of expression, education, and political participation. Indeed, the obligation to close the digital divide is a positive duty under international human rights law, requiring governments to take affirmative actions to ensure universal access to ICT. Therefore, governments must invest in ICT infrastructure and services, promote digital literacy, make ICT affordable, and remove barriers to access and use of these technologies (Lyon, 2007, p. 78).

Alongside governmental obligations, relevant international organizations must provide financial and technical assistance to governments and promote international cooperation on digital issues. They must also develop and implement standards and guidelines to ensure that ICT usage respects human rights. Civil society plays a crucial role in this effort by conducting research, raising awareness, supporting government initiatives, providing educational services, and advocating for individuals lacking access to ICT. Governments, international organizations, and civil society, through collaborative efforts, can bridge the digital divide and ensure that everyone has the opportunity to enjoy human rights.

Examples of specific governmental policies aimed at closing the digital divide include India's "Digital India" program, which seeks to provide broadband internet access to all Indian villages. The U.S. government's initiative to assist low-income families in paying for broadband internet services is another example. In the private sector, Google's Project Loon is developing a network of high-altitude balloons to provide internet access to remote areas, while Microsoft's Aurhand initiative offers broadband access to rural communities in the United States.

Civil society efforts include the "One Laptop per Child" (OLPC) initiative, which provides affordable laptops to children in developing countries. Founded in 2005 by MIT professor Nicholas Negroponte, these durable and cost-effective laptops are equipped with educational software and content. OLPC collaborates with over 50 governments and organizations worldwide and receives financial support from individuals and companies globally. Evaluations of these efforts indicate that the laptops have improved access to education, enhanced digital literacy, and reduced poverty, despite challenges such as high transportation costs and technical support issues. Nevertheless, the initiative has placed laptops in the hands of millions of children in developing countries, demonstrating how ICT can improve lives, bridge the digital divide, and equip children with the tools needed for the 21st century (Ramie & Wellman, 2012).

Despite these efforts, the digital divide continues to exacerbate inequalities and discrimination, particularly affecting marginalized groups such as women, persons with disabilities, and the economically disadvantaged. This reality underscores the responsibility of governments and other stakeholders to close the digital divide and ensure that everyone benefits from ICT. This can be achieved through investment in infrastructure, promotion of digital literacy, and the development of policies that support the use of ICT for human rights.

In this regard, the United Nations Development Programme (UNDP) strives to provide access to ICT in developing countries and educate people on its use. The Office of the United Nations High Commissioner for Human Rights (OHCHR) also works to promote human rights in the digital age and protect individuals from online abuses. OHCHR's report on the right to privacy in the digital age discusses the challenges and opportunities posed by digital technologies for privacy rights, highlighting how the digital divide affects this right. The report notes that individuals without access to ICT have limited tools for protecting their privacy, making them more vulnerable to surveillance and privacy violations. They may also have less awareness of their privacy rights and risks, leading to inadvertent disclosure of personal information or becoming victims of privacy-related abuses. The Special Rapporteur on the promotion and protection of the right to freedom of opinion and expression, Frank La Rue, addressed this issue in his report on digital age freedom of opinion and expression.

Overall, the United Nations continues to pursue its mission of creating a more just world by closing the digital divide and supporting human rights in the digital age.

5. Challenges of Modern Technologies (Artificial Intelligence) in Creating Discrimination and Solutions

Artificial intelligence, as one of the most advanced and transformative technologies of the present era, holds immense potential for improving efficiency, accuracy, and access to various services. AI includes systems and algorithms capable of learning and performing complex tasks using data and statistical patterns. AI applications span various fields, including medicine, law, education, security, and commerce. Despite its numerous advantages, this technology can lead to unfair discrimination that requires careful examination and appropriate intervention.

Article 2 of the Universal Declaration of Human Rights emphasizes the principle of equality and non-discrimination, stating that every individual is entitled to all rights and freedoms set forth in the declaration without distinction of any kind, such as race, color, gender, language, religion, or other statuses. Any use of AI that results in discrimination violates this fundamental principle. Similarly, Article 26 of the International Covenant on Civil and Political Rights underscores equality before the law and the right to legal protection without discrimination. The use of AI must not undermine this equality (Richards, 2013).

Article 22 of the European Union's General Data Protection Regulation (GDPR) grants individuals the right to protection from decisions based solely on automated processing, including profiling, that produces legal effects or similarly significant impacts on them. This article ensures protection against unfair and discriminatory decisions resulting from AI algorithms. Article 5 sets principles for data processing, including fairness, transparency, and protection of personal data, which can help mitigate AI-induced discrimination.

5.1. Challenges of Modern Technologies (Artificial Intelligence) in Creating Discrimination

The use of AI can foster discrimination and inequality in various ways. Types of discrimination in AI include:

Racial and Ethnic Discrimination: Discrimination arising from AI algorithms has become one of the most significant legal and ethical challenges. International laws and regulations are needed to protect individual and social rights and reduce discrimination. AI algorithms used for facial recognition, employee recruitment, or criminal data analysis may exhibit racial and ethnic biases, contributing to systemic inequalities. For example, facial recognition systems often have higher error rates in recognizing non-white faces.

Gender Discrimination: AI algorithms may unfairly harm women and other genders due to historical data containing gender biases. For example, hiring algorithms may prefer men if trained on past hiring data that predominantly included men.

Economic Discrimination: AI applications in economic decision-making, such as loan approvals, insurance, and hiring, can exacerbate economic inequalities. Algorithms may unfairly disadvantage individuals with low incomes or from impoverished neighborhoods (Gasser & Palfrey, 2007).

AI algorithms rely on historical data for learning. If this data contains racial, gender, or economic biases, the algorithms learn these biases and reproduce them in their decisions.

Discrimination in AI arises for various reasons:

Unfair Data: AI algorithms depend on data for training and decision-making. If input data is biased, the results will be discriminatory.

Algorithm Design and Development: Lack of diversity in AI development teams can overlook the needs and concerns of different groups. Algorithms designed without considering social diversity and complexities may produce unequal outcomes. For example, facial recognition algorithms trained on data from light-skinned individuals have lower accuracy in recognizing dark-skinned individuals.

Inadequate Oversight: Lack of standards and sufficient oversight in AI development and usage can propagate existing discrimination. Absence of regular monitoring and evaluation of algorithms can result in systematic discrimination that is difficult to identify and correct.

Lack of Transparency: AI algorithms often operate as black boxes, meaning their decision-making processes are not transparent, leading to unseen and uncontrollable discrimination.

AI is rapidly permeating all aspects of life, but its applications are not always flawless. AI systems can reinforce racial and gender discrimination due to biased data or flawed designs. Notable case studies highlight racial and gender discrimination by AI systems. In 2018, a study by MIT and Stanford University revealed that Amazon's facial recognition systems inaccurately

identified dark-skinned individuals. The study found that accuracy for recognizing black women's faces was only 65%, compared to 99% for white men's faces. This highlighted that the algorithms were trained on biased datasets containing more images of white individuals, leading to widespread industry and media reactions. Amazon committed to improving its algorithms to address these biases, but concerns about the use of facial recognition by law enforcement and other agencies persist (Eubanks, 2018).

In 2018, it was also revealed that Amazon's AI system for reviewing resumes and selecting top candidates systematically discriminated against women. The system, trained on historical hiring data that predominantly included male hires, favored male resumes. Amazon discontinued this system and sought new solutions to address these issues, underscoring the importance of balanced, bias-free training data for AI algorithms.

Racial discrimination in crime prediction systems is another concern. PredPol, used by some U.S. police departments, has been shown to unfairly target African-American and Latino neighborhoods as high-risk areas due to biased historical policing data, leading to criticism from human rights activists and civil society. This criticism has raised public awareness about the risks of biased data in AI systems.

Gender discrimination in machine translation systems is also notable. Google Translate has occasionally provided gender-biased translations due to biased training data. For instance, gender-neutral phrases in the source language may be translated into gender-specific terms in English, such as translating "they are a doctor" to "he is a doctor," even when the original gender is unspecified. Google has made efforts to improve accuracy and reduce biases in its translation systems, highlighting the complex challenges of managing and correcting biases in natural language models (Powles & Hodson, 2017).

These case studies underscore the importance of training data and algorithm design in AI. Racial and gender biases can easily infiltrate AI systems, leading to unfair outcomes. Addressing these issues requires collaborative efforts from developers, researchers, policymakers, and civil society to ensure that AI promotes a fairer and more equitable society rather than reinforcing discrimination.

5.2. Solutions to Combat Discrimination in Artificial Intelligence

Artificial intelligence, despite its numerous advantages, can exacerbate existing inequalities and discrimination. To ensure the fair and ethical use of this technology, serious and coordinated efforts are required to reduce discrimination and enhance justice in AI development and usage. These efforts include developing fair data, increasing diversity in development teams, establishing appropriate regulations, and promoting widespread education and awareness. Only through these solutions can AI contribute to justice and equality in societies instead of creating inequalities.

Solutions to combat discrimination in AI include:

Developing Fair Data: Using diverse and comprehensive datasets for training AI algorithms can help reduce biases and discrimination. Training AI algorithms with diverse and representative data from all societal groups can mitigate biases. This requires collecting and utilizing high-quality, diverse data.

Increasing Diversity in Development Teams: Including individuals from diverse backgrounds and experiences in AI development teams can lead to the creation of fairer algorithms. Fair machine learning techniques can design algorithms that actively reduce discrimination and promote equality by identifying and correcting racial, gender, and economic disparities in data.

Standards and Regulations: Establishing and enforcing standards and regulations for overseeing AI development and usage can prevent the spread of discrimination. These regulations should include regular assessments of the social and ethical impacts of algorithms.

Education and Awareness: Educating AI developers and users about the discriminatory impacts of AI and ways to mitigate them can contribute to fairer systems.

Transparency and Accountability: Companies and organizations must be transparent about how AI is used and the data involved, and respond to public concerns. Developing transparent and explainable algorithms can enhance understanding and control of AI decision-making, build public trust, and enable the identification and correction of biases. Regular monitoring and evaluation of AI algorithms' performance, including independent assessments and continuous feedback, are essential (Anderson & Rainie, 2018).

AI, despite its benefits, can intensify discrimination and inequalities. Current international laws and regulations address these challenges directly or indirectly but still require strengthening and updating. Through international cooperation, comprehensive regulation, and effective enforcement, AI can be used fairly and responsibly to protect human rights from discrimination caused by this advanced technology. AI can either mitigate or exacerbate discrimination, and fully utilizing its potential to reduce discrimination requires careful attention to algorithm design, the use of diverse and fair data, and continuous monitoring and evaluation. These measures ensure that AI contributes to more just and equitable societies rather than reinforcing discrimination.

6. Conclusion

This article explored the question of what challenges modern technologies pose to human rights and what solutions exist to address these challenges. The findings highlighted that the challenges posed by technology include:

Privacy Violations: Surveillance technologies such as CCTV cameras and facial recognition software can infringe on individuals' privacy, raising serious human rights concerns.

Algorithmic Discrimination: AI and algorithms can produce discriminatory outcomes based on gender, race, ethnicity, or other individual characteristics.

Unequal Access to Technology: The digital divide between countries and within societies can exacerbate social and economic inequalities, leading to human rights violations.

Managing the impact of modern technologies on human rights requires serious and coordinated international actions, including:

Legislation and Regulation: Developing updated laws and regulations that align with technological advancements to protect individual rights and prevent abuses is essential.

Promoting Transparency and Accountability: Technology companies must adhere to transparency in their algorithmic operations and data policies.

Strengthening International Cooperation: Collaboration among international organizations, governments, technology companies, and civil society is necessary to develop global human rights standards in the digital era.

Modern technologies have the potential to either enhance or threaten human rights. Our approach to these technologies and our ability to steer them towards ethical and human rights objectives will shape the future of human societies. Ultimately, success in this field depends on a two-way interaction between technology and human rights, where both must synergize to achieve a more just and sustainable world.

Authors' Contributions

Authors contributed equally to this article.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Transparency Statement

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Declaration of Interest

The authors report no conflict of interest.

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In this research, ethical standards including obtaining informed consent, ensuring privacy and confidentiality were observed.

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