

**p-ISSN: 2521-2982**  
**e-ISSN: 2707-4587**

GLOBAL  
**Political**  
REVIEW *empowering humanity*



# **GPR**

**GLOBAL POLITICAL REVIEW**  
**HEC-RECOGNIZED CATEGORY-Y**

**VOL. X, ISSUE III, SUMMER (SEPTEMBER-2025)**

**DOI (Journal): 10.31703/gpr**

**DOI (Volume): 10.31703/gpr/.2025(X)**

**DOI (Issue): 10.31703/gpr.2025(X.III)**

Double-blind Peer-review Research Journal  
[www.gprjournal.com](http://www.gprjournal.com)  
© Global Political Review

**Humanity Publications**  
*sharing research*

### Article Title

## Technological Innovation and Global Governance: The Role of AI, Cyber, and Space in International Relations

### Abstract

*In the 21st century, technological innovation has become a characteristic of global governance. These include Artificial Intelligence (AI), Cyber capabilities, and Space exploration, which are all emerging technologies reshaping the geopolitical landscape for better or worse. This paper examines how these technologies affect international relations to discuss their significance for power constructs, security, and cooperation between nations. Decision-making processes are being revolutionized by AI, cybersecurity is an urgent issue in the field of national defense, and space exploration is becoming more and more critical for global cooperation and competition. The analysis suggests the need to build governance frameworks to regulate these technologies globally and the importance of international cooperation to ensure responsible and ethical use. The research seeks to discover how these technologies are revolutionizing global governance and the future of international relations.*

**Keywords:** Artificial Intelligence, Cybersecurity, Space Exploration, Global Governance, International Relations, Technology, Geopolitics

### Authors:

**Abdul Qader:** (Corresponding Author)

Lecturer, Department of International Relations, Mirpur University of Science and Technology, AJ&K, Pakistan.

(Email: [itsaqkhan12@gmail.com](mailto:itsaqkhan12@gmail.com))

**Kashif Ashfaq:** Lecturer, Department of Pakistan Studies, National University of Modern Languages Islamabad, Pakistan.

**Zaiba Sarwar:** PhD Scholar, Department of Politics & IR, International Islamic University Islamabad, Pakistan.

**Pages:** 9-19

**DOI:** 10.31703/gpr.2025(X-III).02

**DOI link:** [https://dx.doi.org/10.31703/gpr.2025\(X-III\).02](https://dx.doi.org/10.31703/gpr.2025(X-III).02)

**Article link:** <https://gprjournal.com/article/youth-perspectives-on-food-security-challenges-under-climate-change-a-case-study-of-attack>

**Full-text Link:** <https://gprjournal.com/fulltext/youth-perspectives-on-food-security-challenges-under-climate-change-a-case-study-of-attack>

**Pdf link:** <https://www.gprjournal.com/jadmin/Auther/31rv1olA2.pdf>

### Global Political Review

**p-ISSN:** 2521-2982 **e-ISSN:** 2707-4587

**DOI (journal):** 10.31703/gpr

**Volume:** X (2025)

**DOI (volume):** 10.31703/gpr.2025(X)

**Issue:** III Summer (September-2025)

**DOI(Issue):** 10.31703/gpr.2025(X-III)

### Home Page

[www.gprjournal.com](http://www.gprjournal.com)

### Volume: X (2025)

<https://www.gprjournal.com/Current-issue>

### Issue: III-Summer (September-2025)

<https://www.gprjournal.com/issue/10/3/2025>

### Scope

<https://www.gprjournal.com/about-us/scope>

### Submission

<https://humaglobe.com/index.php/gpr/submissions>



### Visit Us



### Citing this Article

02	Technological Innovation and Global Governance: The Role of AI, Cyber, and Space in International Relations		
Authors	Abdul Qader Kashif Ashfaq Zaiba Sarwar	DOI	10.31703/gpr.2025(X-III).02
		Pages	9-19
		Year	2025
		Volume	X
		Issue	III
Referencing & Citing Styles			
APA	Qader, A., Ashfaq, K., & Sarwar, Z. (2025). Technological Innovation and Global Governance: The Role of AI, Cyber, and Space in International Relations. <i>Global Foreign Policies Review</i> , X(III), 9-19. <a href="https://doi.org/10.31703/gpr.2025(X-III).02">https://doi.org/10.31703/gpr.2025(X-III).02</a>		
CHICAGO	Qader, Abdul, Kashif Ashfaq, and Zaiba Sarwar. 2025. "Technological Innovation and Global Governance: The Role of AI, Cyber, and Space in International Relations." <i>Global Foreign Policies Review</i> X (III):9-19. doi: 10.31703/gpr.2025(X-III).02.		
HARVARD	QADER, A., ASHFAQ, K. & SARWAR, Z. 2025. Technological Innovation and Global Governance: The Role of AI, Cyber, and Space in International Relations. <i>Global Foreign Policies Review</i> , X, 9-19.		
MHRA	Qader, Abdul, Kashif Ashfaq, and Zaiba Sarwar. 2025. 'Technological Innovation and Global Governance: The Role of AI, Cyber, and Space in International Relations', <i>Global Foreign Policies Review</i> , X: 9-19.		
MLA	Qader, Abdul, Kashif Ashfaq, and Zaiba Sarwar. "Technological Innovation and Global Governance: The Role of Ai, Cyber, and Space in International Relations." <i>Global Foreign Policies Review</i> X.III (2025): 9-19. Print.		
OXFORD	Qader, Abdul, Ashfaq, Kashif, and Sarwar, Zaiba (2025), 'Technological Innovation and Global Governance: The Role of AI, Cyber, and Space in International Relations', <i>Global Foreign Policies Review</i> , X (III), 9-19.		
TURABIAN	Qader, Abdul, Kashif Ashfaq, and Zaiba Sarwar. "Technological Innovation and Global Governance: The Role of Ai, Cyber, and Space in International Relations." <i>Global Foreign Policies Review</i> X, no. III (2025): 9-19. <a href="https://dx.doi.org/10.31703/gpr.2025(X-III).02">https://dx.doi.org/10.31703/gpr.2025(X-III).02</a> .		





# Global Political Review

[www.gprjournal.com](http://www.gprjournal.com)

DOI: <http://dx.doi.org/10.31703/gpr>



Volume: X (2025)

URL: [https://doi.org/10.31703/gpr.2025\(X-III\).02](https://doi.org/10.31703/gpr.2025(X-III).02)

Issue: III-Summer (September-2025)



Cite Us



## Title

## Technological Innovation and Global Governance: The Role of AI, Cyber, and Space in International Relations

### Authors:

**Abdul Qader:** (Corresponding Author)

Lecturer, Department of International Relations, Mirpur University of Science and Technology, AJ&K, Pakistan.

(Email: [itsaqkhan12@gmail.com](mailto:itsaqkhan12@gmail.com))

**Kashif Ashfaq:** Lecturer, Department of Pakistan Studies, National University of Modern Languages Islamabad, Pakistan.

**Zaiba Sarwar:** PhD Scholar, Department of Politics & IR, International Islamic University Islamabad, Pakistan.

### Contents

- [Introduction](#)
- [Literature Review](#)
- [Table: Key Space Exploration Agreements and Treaties](#)
- [Research Question](#)
- [Research Objectives](#)
- [Research Methodology](#)
- [Result Findings](#)
- [Discussion](#)
- [Conclusion](#)
- [References](#)

### Abstract

*In the 21st century technological innovation has become a character of global governance. These include Artificial Intelligence (AI), Cyber capabilities, and Space exploration, which are all emerging technologies reshaping the geopolitical landscape for better or worse. This paper examines how these technologies affect international relations to discuss their significance for power constructs, security, and cooperation between nations. Decision-making processes are being revolutionized by AI, cybersecurity is an urgent issue in the field of national defense, and space exploration is becoming more and more critical for global cooperation and competition. The analysis suggests the need to build governance frameworks to regulate these technologies globally and the importance of international cooperation to ensure responsible and ethical use. The research seeks to discover how these technologies are revolutionizing global governance and the future of international relations.*

### Keywords:

[Artificial Intelligence](#), [Cybersecurity](#), [Space Exploration](#), [Global Governance](#), [International Relations](#), [Technology](#), [Geopolitics](#)

### Introduction

It is fundamentally changing the fabric of international relations in a qualitatively new way that it was previously impossible to imagine (to use the term from the Lipeniks). Nations that are more connected through the internet, space exploration, and the development of Artificial Intelligence (AI) are now testing and redefining new norms of diplomacy and global governance. This revolution of the digital, this continuous commercialization of

Space, and this growing ubiquity of artificial intelligence have all reconstituted the conditions of statecraft as much as the political economy of power in the 21st century (Garrido Rebolledo [2025](#)). Artificial Intelligence (AI), Cyber capabilities, and Space are three essential and increasing enablers and disruptors of world relations, as well as increasingly central to the development of global governance frameworks in particular.



Traditionally, both in the acquisition of national power, in economic development as well, and in military advantage, technology has been at the forefront. While Cyber, AI, and Space have outperformed their 'typical' role, they have caused a realignment of global power, security, and ethical frameworks of global cooperation. One important concept that has traced the path from science fiction to the present is the presence of Artificial Intelligence in potent forms in everyday contemporary economies, military strategies, and political decisions (Araújo-Moreira, Serrano, and Migon [2022](#)). AI has been integrated into healthcare, finance, and transportation, and as a result of this, countries and nations are starting to regulate relationships and interactions as normal as they begin to govern us with the use of AI. We are beginning to see AI-driven diplomacy, autonomous weapons systems, and surveillance systems as both part of international relations and the very mechanisms on which the instruments of global governance operate.

Just like cyber capabilities have changed the face of national security and international diplomacy in such a fashion, cyber capabilities such as hacking, cyber warfare, and digital diplomacy have all changed the landscape of national security and international diplomacy. Ramified in the cyber Space, both state and non-state actors and new forms of conflict such as cyber-attacks and wars of information have arisen in breadth (Estevens [2024](#)). In a world where cyber threats don't follow borders, it's not uncommon for a country's critical infrastructure to be attacked, its economy, and even its elections. With the evolving threat landscape, states have new vulnerabilities to offer and new opportunities for international cooperation in security issues, especially in security issues such as cybersecurity. This is one of the things we have noted: this now increasingly complex, increasingly inter-connected world also needs its paradigms the paradigms to adapt to digital espionage, cyber sabotage, and disinformation campaigns.

At the same time, space exploration has changed to the extent that, for a long time, so was the domain of geopolitical rivalry among a handful of powerful nations. Superpowers once controlled space, which has now become an intensely competitive and cooperatively ambitious environment. The commercial sector, in terms of other spacefaring

nations apart from the traditional ones, commercializes space travel, space tourism, and satellite technologies through private companies such as SpaceX and Blue Origin (Ignatov [2023](#)). Space technologies are now the pillar of the communications, navigation, and national security networks, while satellite systems are critical to global communication networks and military intelligence operations. At the same time as the space domain has become increasingly important, it has also become a site of geopolitical competition. The militarization of space, the race for control over strategic orbits, and the emergence of space as a theater for conflict present new challenges for global governance.

The fact that AI, Cyber, and Space tech are very dependent on each other results in an urgent requirement to develop and use international legal frameworks for the development and use of those technologies (Kavanagh [2022](#)). This evolution, at a rapid pace of these technologies, raises new questions on governance, ethical issues, as well as on global institutions' role in the regulation of their use. So, take also the example of how to adjust international relations to a fast-rolling process by newly invented disruptive technologies for diplomacy? For instance, are global governance structures sufficiently flexible to keep up with the speed of technological innovation or even do they exist in sufficient numbers and appropriateness to respond to the novel challenges? In the past decade, there have been gigantic issues at stake regarding these questions between nations, how they create international norms, and how power is distributed in the global order.

While still being developed, this article attempts to address these critical problems by uncovering these interactions between global governance and technological innovation (especially regarding Artificial Intelligence, Cyber, and Space). The aim of the present paper is to understand the role that these technologies play in shaping international relations as well as assess their impact on the global order. It examines the challenges this technological advancement poses to the traditional governance structure, ways that the nations are adapting to these changes, and the feasibility of international collaboration and regulation to handle the complicated global landscape that is emerging (Radanliev [2025](#)). This will ultimately yield some

insights about the changes unfolding in the connections between technological innovation and global governance, an interpretation of the future, on the one hand, of opportunities and risks in a changing context.

The paper will also discuss how AI, Cyber, and Space technologies can drive and exacerbate cooperation among states and statecraft, security, and diplomacy and how these technologies shape relationships among states. These technological shifts are now changing the geopolitical landscape, and international relations need to adapt to these outcomes: AI, cyber warfare, and space exploration (Feijóo et al. 2020). Therefore, it is essential to know what global governance structures these innovations relate to and what constitutions and global governance models might form a reaction to the challenges in the 21st century. The aim of this paper is to contribute to the more extensive discussion about how international relations will change to adapt to the technological innovations and the cross-connections that the new world offers.

Literature Review

Over the last two decades, the academic literature on technological innovation and global governance has seen a new development in terms of many scholars have begun to examine how new emerging technologies such as Artificial Intelligence (AI), Cyber, as well as Space exploration are reshaping both the national security frameworks and global cooperation mechanisms (Dunn Cavelty and Wenger 2022). Apart from these, these technologies go beyond the ways of governance as we have known them and present entirely new ways to organize the world, therefore requiring immediate regulation and attention on the global level.

It has been well noted in the literature that the dual-use nature of the technology lies in the domain of Artificial Intelligence, the benefits the technology

can bring forward, and the risks that are associated with it. But why is debate about AI intensive regarding how many of its capabilities would help optimize such sectors as health care and transportation and, of course, military applications? Now that AI is helping the world of drones lead the way, ethical challenges have begun to form, and regulations are required (Calderaro and Craig 2020). Yet their research came to discover that there was a gap in the development of international norms and rules that is often out of step with the progress being made by AI itself here. Because of the lack of AI-specific international standards, AI could become unregulated and used in inappropriate settings, such as in the military or a surveillance context.

Especially so because AI-enabled autonomous weapons systems such as drones and combat robots are now a part of the military context and concern of an arms race in a context of AI-powered warfare. Some scholars argue, like for other dual-use technologies such as nuclear energy, for international agreements and, if necessary, ethical guidelines for AI technologies to govern them. Others believe, however, that AI could serve as an impetus to international cooperation, particularly in solving international problems such as climate change, global health, and disaster response. AI provides predictive and data analysis capabilities to offer possible cooperative solutions for issues with a borderline national character, like disease outbreaks or when it comes to the cleanness of the environment.

Table: Key Space Exploration Agreements and Treaties

The table displays the important international agreements and treaties concerning space exploration that are underway and continue to require regulation and coordination in space governance, as discussed in your article.

Table 1

Data for Table

Treaty/Agreement	Year Established	Signatories/Participants	Key Focus
Outer Space Treaty	1967	110 countries	Peaceful use of space, non-weaponization, international cooperation

Treaty/Agreement	Year Established	Signatories/Participants	Key Focus
Moon Agreement	1979	18 countries	Resource management, lunar exploration, and international sharing
International Telecommunication Union (ITU) Agreement	1932	193 countries	Allocation of satellite orbits and communication frequencies
Artemis Accords	2020	9 countries	Lunar exploration, resource extraction, space sustainability

Furthermore, cybersecurity also became a significant focus of scholarly interest since it can wreck international relations. One of the key purposes of these cyberattacks, espionage, and disinformation campaigns is being used as a matter of statecraft with implications for national security and global stability (Schmidt [2023](#)). A large body of literature discusses the flaws in the traditional way of thinking about security in the digital age, where the exploitation of information and communication technologies (ICTs) is essential not only for the running of states but also for the bare existence of citizens. Although the problem in the specific nation states attributing cyberattacks, scholars are interested in what the act of retaliation and the diplomatic response entails.

This increased ambiguity in who is accountable for cyber warfare is exacerbated by the term 'cyber sovereignty,' meaning a state's right to control cyberspace and enforce laws within its borders. Thus, it questions the place international laws should occupy in the cyber threat problem as most treaties and even conventions do not deal with the case's complexity. In this area, there has been an argument that there are no explicit international norms and regulations regarding cyber conflicts in general (Veale, Matus, and Gorwa [2023](#)). Some scholars think that there should be binding international agreements on cybersecurity, while others believe that the prompt cooperation of countries yet with no centralized regulatory body is just as important. Nowadays, cyberspace is utilized by the military, economy, and diplomacy in increasing numbers, and thus, it has become a significant battlefield in global geopolitics. The rules of cyberspace need to be followed similarly.

At the same time, the academic literature about the space exploration area is also being broadened over the development of space, commercial, and militarization. In space, international cooperation and competition bloom where, until very recently, there was only a minimal number of superpowers. Private companies and some less developed nations have brought new opportunities and challenges in global governance through their involvement in space exploration. Scholars have analyzed the latest state of space activities with the growing roles of private companies (such as SpaceX and Blue Origin). Further, such involvement has also raised attention to space security, including potential military uses of technology such as space networks, missile defense systems, and anti-satellite weapons. Other than this, there is also a cause of concern about warfare in space since it is believed that this could eventually escalate, and nations will try to control the strategic orbits and satellite infrastructure that are critically important to national security and global communication. Key challenges of establishing a sustainable way forward for participatory global commons governance, such as space and ocean, are examined within the context of antiquated global frameworks embodied in the 1967 Outer Space Treaty (OS Treaty), which permits the peaceful use of space. While the treaty has previously provided a basis for international cooperation in space, scholars say the treaty provides no apparent means for handling the trend of commercialization and space militarization (Horowitz, Allen, Saravalle, et al. [2022](#)). For this same reason, there is an urgent need to bring the space's international regulations governing space activities up to speed with the expansion of private sector involvement and the expanding space assets challenge of competing for control of space-based assets. On one hand, a unique



case of global governance presents itself precisely as an example of an exceptional case of such, arguing that there will be an international collaboration of such nature between peace assistance and the strategic interests of states.

The potential need for a comprehensive regulatory framework for more responsible technological paths of innovation is an area where the literature on technological innovation and global governance features. Despite increasing recognition of the future global governance relevance of such AI, Cyber, and Space technologies, there is disagreement among scholars as to what the best approach for regulating and administering these technologies is. Because of the interesting ways these domains interact with and surround each other, the international institutions managing them have to be quick and fast to adapt themselves so they can be functional in a more and more intertwined world (Jelinek, Wallach, and Kerimi [2021](#)). According to the literature, these technologies have great potential, but the respective risks of security breaches and geopolitical tensions can be overcome only under regulation with explicit norms and regulation of the respective technologies. As such, scholars advocate for innovative ways of governance as they can adjust to new trends and encourage international cooperation and ethical standards.

### Research Question

How will artificial intelligence (AI), cyber capabilities, and space exploration shape geopolitical power structures in the 21st century? What are the implications of emerging technologies such as AI, Cyberspace, and Space exploration for global governance and international relations?

What this research question aims to study is focusing on the effects of these key material and technological domains, specifically, the impact on the global order from these dual potentialities of such technological domains of cooperation or conflict, with the potential of such engagement either positively or negatively impacting the international order (Dunn Cavelty and Wenger [2020](#)). The possibilities of AI, Cyber, and Space technologies to transform not only the statecraft and diplomacy but also the nature of national security, the standard of economy, and the international norms are pretty powerful. Though that development quickened, there have been no

answers to questions of regulation, ethical standards, or International agreements.

These include AI-driven defense systems, cyber guardians, and militarization of space, and the study studies the transformation of security dynamics caused by these technologies. It will also examine how these innovations can work for negotiations, trade agreements, and multilateral cooperation. In the research, the relevant role of international organizations in managing the new technologies is analyzed when they appear in these domains through the new actors private companies and non-state actors (Horowitz, Allen, Kania, et al. [2022](#)). The study will look at the geopolitical implications of these technologies, firstly, by examining how AI, Cyber, and Space technologies are changing the global power structure and influence.

This piece will illuminate how nations and non-state actors come to terms with these changes and whether contemporary international governance frameworks are ready to cope with such a transformative technology.

### Research Objectives

1. This is to help analyze the effects of AI on global governance and its impact on international relations, particularly military strategy, economic policy, and diplomacy.
2. They seek to focus on cyber capabilities as the essential domain for understanding how they impact a country's national security strategy and the global balance of power in terms of cybersecurity, cyber warfare, and digital diplomacy.
3. It will assess the vital aspect of space exploration and commercialization to assess the effect of space exploration and commercialization on international relations in general and its implications to space security; treat and understand the international treaties and cooperation in the global realm.
4. Look at whether new global governance frameworks are required for addressing the challenges that are coming due to the emerging technologies that are both innovative and in conflict with international norms and ethical standards.



## Research Methodology

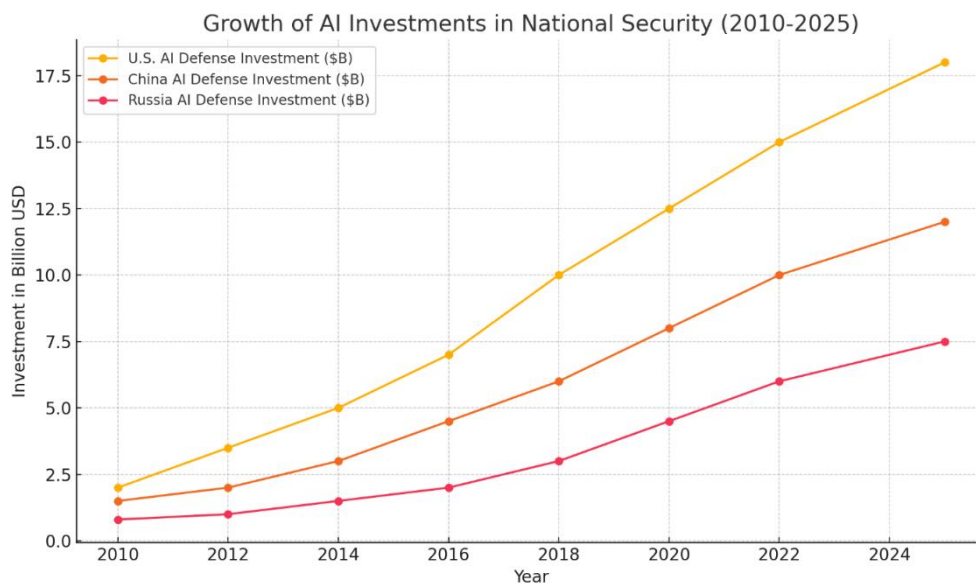
This study will adopt a mixed research methods approach that combines qualitative and quantitative study of Artificial Intelligence (AI) and cyber capability and their role in global governance and international relations. However, by combining both types of analysis, the research will reach a fuller understanding of how these technologies are changing international relations and how it is influencing global power structures in the 21st century.

**Qualitative Analysis:** The qualitative aspect will become part of this study, and I will thoroughly check on primary and secondary sources. Government reports, policy documents, academic papers, expert commentaries, and other sources related to AI, Cyber, and Space technologies influence global governance. The study will be supplemented with interviews of experts in international relations, technology policy, and

global governance, joining written materials (Barrinha and Renard 2020). These interviews will help us move closer to the real-world impact of technological advances in terms of how the techs are working in the day-to-day lives of policymakers, industrial leaders, and academia, as well as how the use of the techs matters for diplomacy, security, and power in the area of AI, cyber, and space.

This research on these technologies will focus on their broader political and economic consequences through qualitative analysis. It will then examine their use of diplomatic strategies, military use, and reshaping the established power landscape. It will interpret existing technical and ethical regulatory frameworks prevailing in the development and utilization of these technologies. The sudden innovation will enrich the previous understanding of the issue by bringing about qualitative observations of human, institutional, and international surroundings.

**Figure 1**



*The section on AI in international relations, especially the dual use of AI, can follow Graph 1, as mentioned above.*

**Quantitative Analysis:** Data on the proliferation and effect of AI, Cyber, and Space technology will be studied in the quantitative component. In truth, the data collection and processing for such important AI research indicators as the funding on each indicator, the frequency and scope, the number of space missions, and the evolution of international treaties on this or that limit or expansion of technology use will have to occur (Radu 2021). For tracking trends

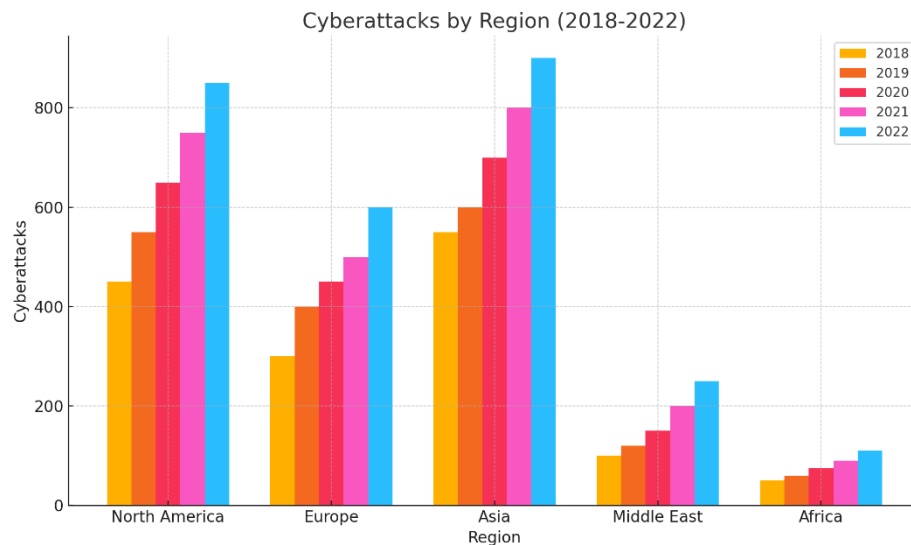
related to technological adoption, security risks, and international cooperation, data sets from the United Nations, national defense, and private sector firms will be used.

Using statistical models, specific aspects will be examined of the relationship between technological subsidies and shifts in global power structure, which include parameters of both security and diplomatic

influence. As these industries (AI, Cyber, and Space) rise, this analysis will show how these changes in the geopolitical dynamics correlate with it. The study will provide empirical evidence of how these technologies are changing international relations as

much as it will indicate, among other things, the number of cyberattacks that can be attributed to specific states or how the net is being fought in space exploration between states.

Figure 2



After the cybersecurity discussion, graph 2 can be placed, which translates to the fact that cyberattacks are becoming more critical and require more international cooperation in cybersecurity activities.

**Case Studies:** The in-depth case studies will consist of specific examples of how AI, Cyber, and Space technologies fundamentally changed critical global events. Grounding the theoretical and quantitative findings on the practical and real-life scenarios through these case studies is permitted. For example, AI plays a role in diplomatic negotiations or any kind of peacekeeping mission, but without the tools available for the work that the AI would actually use, the job would be done differently than what would have been done 100 years ago (Zeng [2020](#)). Additionally, another case study might detail how Cyber was used in past conflicts so that the attacks in elections or attacks against critical infrastructure would impact national security and international relations.

The third case study may be the increase in rivalry of power in the space race, including between considerable powers, and also private companies such as the United States and China. Second, it will explain how space has moved from a cooperative domain of the bottom space treaties — the Outer Space Treaty — to a new geopolitical frontier of confrontation and militarization. These case studies will provide the basis for the study to demonstrate

the practical implications of these technologies for global governance and the reconfiguration of the balance of national power between online (virtual) states.

**Comparative Analysis:** Thirdly, research methodology will be used to examine how the various actors are adopting, regulating, and deploying AI, Cyber, and Space technologies differently in different countries and regions. This will be done with respect to different levels of development in terms of technological capabilities, regulatory approach, and governance framework. It will assess the ways different countries are tackling these technologies' ethical, legal, and security questions, as well as international cooperation or competition in each area.

For example, this study will compare the development and the regulation of AI in military and security spheres, in particular, in the United States and China. It will also discuss how different individuals in different parts of the world have dealt with Cybersecurity, given International agreements like the Budapest Convention on Cybercrime. The Space Exploration policies will be compared among

the countries, including Russia, China, and the United States, and their race for space dominancy and global governance implications. By comparing experiences across different countries, learning will be made about how other countries govern these technologies, both successes and failures, and provide trends, challenges, and opportunities in the global governance of these technologies.

The analysis of how the use of AI, Cyber, and space technologies is shaping the way global governance is taking place would be made possible by this multi-form of research. The analysis will give information concerning the developing characteristics of international relations and challenges to the global power structures that these emerging technologies will bring to bear. The very detailed understanding of the impacts that technological innovation has on both the quantitative and qualitative impacts of international diplomacy, security, and cooperation, as well as the ability to make valuable recommendations for future global governance, is enabled by using a mixed methods approach.

## **Result Findings**

According to the findings of this research, it is expected to leverage the profound effect of Artificial Intelligence (AI), Cyber capabilities, and Space exploration on world governance, particularly in creating geopolitical power dynamics, security policies, and international cooperation. Yet these are not only technologies of economic and military advantage; they are, in fact, at the core of new global governance and of the development of new international frameworks and collaborative efforts.

As classical international cooperation and competition are quickly replaced by global cold and hot wars among national AI systems, the emergence of Artificial Intelligence is supposed to become a key motor of international cooperation and competition. AI is rapidly developing in some domains and has already arrived as a key technology capable of changing global power configurations. Economic progress by way of AI will lead to it also starting to become a strategic asset, a tool that is likely to change the face of military capabilities; this will also come with opportunities for cooperation, as well as tensions. For instance, in places where there is no such concept of a national border, AI-driven technology like predictive analytics of climate

change or disease outbreaks may spur more international-based collaboration. Meanwhile, the military applications of AI, including AI-based military systems and autonomous drones, can only go on to fuel geopolitical rivalries among superpowers like the USA, China, and Russia. It is expected that such calls will be spurned with coordinated calls for regulating AI technologies insofar as they pertain to military and surveillance uses.

As a matter of global governance, the problem of cybersecurity is most likely going to increase. With the growing number of cyberattacks comes the need to fully protect against cyberattacks, digital espionage, and disinformation campaigns. Given the view research, cybersecurity is likely to emerge as a principal part of national security strategies in all countries, and a dearth of manifest international norms in cyberspace will yield new troubles and solutions to cooperate with. The cyber is not a well-defined State border. Therefore, it does not make the nation more vulnerable to cyber threats without national cooperation in defense of cyber and in the creation of cyber laws. As states would like to work out norms for the use of cyberspace, facilitate states in debating, set deterrence against malicious activities in cyberspace and sharing threat intelligence, and construct frameworks for cybersecurity cooperation, states are likely to shift their reliance on cyber diplomacy.

Space exploration will remain an important area, but it is difficult to govern space exploration internationally as the growing militarization and commercialization of space become the norm. Satellite systems in communications, navigation, and military surveillance, mainly, are essential for modern economies and National Security. The governance in the domain of companies like Space X and Blue Origin is more fragmented with the involvement of the private sector in the area. While there are international treaties like the Outer Space Treaty of 1967, space exploration can take place in peace, but the progress of space militarization and race to strategic orbital reservation will likely result in spacefaring countries' conflicts. It is supposed to emphasize that space debris, anti-satellite weapons, and the regulation of space resources are desperately in need of updating for the governance of space. In space travel and satellite networks, even more complex will be to govern, as private actors

themselves might change something (commercialize) that the state and the international organizations do not like.

Finally, he points out that his findings will highlight that setting up strong and flexible international wrappings for supervising the use and search of AI, Cyber, and Space technologies is crucial. They have far-reaching implications for the global reshaping of order to benefit either cooperative enhancement in negotiating global challenges or more illiberal enhancement exacerbating competition and conflict. Effective global governance of these technologies will only succeed if the international platform of such institutions can create policies and regulations that are in line with the constantly changing nature of these technologies. These technologies must be used ethically and responsibly to encourage security, stability and cooperation across borders.

## Discussion

The results of this research demonstrate the magnitude of opportunities and challenges presented by emerging technologies, namely Artificial Intelligence (AI), Cyber capabilities, and Space exploration, regarding global governance. With these emerging technologies, the structure of international relations is open to being radically changed, powering a current of power queering old balances and relations in surprising ways, possibly so utterly and so fundamentally as to utterly break them.

**Challenges:** The biggest hurdle is that there are no established, agreed-upon international norms and regulations by which these technologies can be controlled. The duality of AI is that AI at once can help advance cooperation on global health and environmental protection and can provoke fears of global military systems and surveillance as AI becomes increasingly autonomous. Countries that are in a competitive race to lead in AI development (e.g., on the military or cybersecurity side) have an incentive to arm the competition as opposed to taking a collaborative approach. National boundaries do not come into play when dealing with cyber threats; in fact, cyber threats are no less than the traditional security framework. Cybersecurity problem is a problematic issue in the study of international relations, specifically, the problem of assigning cyberattacks and responsibility.

Traditionally, space exploration is seen here as the symbol of cooperation (e.g., in the Outer Space Treaty) under the challenge of its militarization and commercialization. Yet, with the involvement of the private sphere in space and the intensification of competition regarding strategic space resources, the regulation of space activities becomes more complicated for international organizations. The threat to global security is created by the very fact that individuals and countries are competing to possess space-based infrastructure.

**Opportunities:** On the other hand, these technologies do offer great opportunities for international collaboration. When properly governed, AI may produce the ability to coordinate responses on a global scale to challenges like climate change, pandemics, and natural disasters. In cybersecurity, nations might work together in sharing information, adopting similar defense protocols, and having control over the misuse of digital technologies. Space Exploration continues to offer international cooperation in scientific research and peaceful exploration.

**Ethical Implications:** One of the most critical considerations is ethics. However, issues of privacy, security, and human rights are of great importance to be engaged, as in AI-based surveillance systems and cyber warfare. Controlling these technologies' deployment at the global level must include the maintenance of fundamental human rights and the advancement of the public good.

Fourth, the paper stresses that international collaboration is important to confront issues related to AI, Cyber, and Space technologies. It will be critical for the development of comprehensive and adaptive regulatory approaches so that these technologies are developed responsibly and ethically while preserving security and human rights.

## Conclusion

International relations in the domain of technology, especially the field of Artificial Intelligence (AI), Cyber capabilities, and Space exploration fundamental reshaping. What could possibly be seen as developments in power, security, and diplomacy, developments that could offer opportunities for global cooperation and dangers of escalating conflict, but are devoid of the kind of reward? And so, as AI progresses and so too do cyber capabilities, space gets more contested, and the



world becomes home to more and more sophisticated states that just want to live; the need for universal global governance mechanisms keeps being pushed higher.

AI will shift the balance of power to improve national security and economic competitiveness and increase military capabilities. This, however, cannot help but also be fast in development and causes ethical and risk concerns about autonomous systems in the military, surveillance, and decision-making. There is henceforth another new vulnerability in the realm of national security regarding the multiplicity and globalized natures of cyberspace temporal threats, as it pertains to traditional views on sovereignty and accountability over cyberspace. To ensure equal, secure, and peaceful cooperation with countries in space, there has been a new series of problems brought about by the militarization and commercialization of space.

As they rise, we must do this as we navigate these as a proactive and collaborative approach to governance. It is necessary and key to international frameworks to secure the proper regulation and fair use of AI, Cyber, and Space technologies, which should work on fair cooperation. A global governance scope must have agility in terms of

technological changes that do not go against the idea of security and privacy as well as human rights. Without the cooperation of the United Nations and World Trade Organization, each through the operation of dialogue and agreement to find the right balance between technological innovation and worldwide safety, these frameworks have to be created and enforced by international organizations of consequence.

Starting from the ethics of these technologies, they should be governed from the implications down to privacy, security, and human rights. AI-driven surveillance, cyber warfare, and the militarization of space all present significant risks to individual freedoms and global peace. Hence, the international community should concern itself with ethical standards and regulations in order to use these technologies properly.

With the increasing cohesiveness and technology in the world, global success, rules, and ethics have become all the more obvious. The international community can use such a forward-thinking approach to governing so that these emerging technologies can contribute to a more secure, peaceful, and prosperous world.

## References

- Araújo-Moreira, F. M., Serrano, N. F. G., & Migon, E. X. F. G. (2022). From science and technology to innovation diplomacy: Their future and the relationship with international security. *Revista Tempo do Mundo*, 28, 29–42.  
[Google Scholar](#) [Worldcat](#) [Fulltext](#)
- Barrinha, A., & Renard, T. (2020). Power and diplomacy in the post-liberal cyberspace. *International Affairs*, 96(3), 749–766. <https://doi.org/10.1093/ia/iiz274>  
[Google Scholar](#) [Worldcat](#) [Fulltext](#)
- Calderaro, A., & Craig, A. J. S. (2020). Transnational governance of cybersecurity: policy challenges and global inequalities in cyber capacity building. *Third World Quarterly*, 41(6), 917–938.  
<https://doi.org/10.1080/01436597.2020.1729729>  
[Google Scholar](#) [Worldcat](#) [Fulltext](#)
- Cavelty, M. D., & Wenger, A. (2019). Cyber security meets security politics: Complex technology, fragmented politics, and networked science. *Contemporary Security Policy*, 41(1), 5–32.  
<https://doi.org/10.1080/13523260.2019.1678855>  
[Google Scholar](#) [Worldcat](#) [Fulltext](#)
- Estevens, J. (2024). International relations theories and the impact of the Fourth Industrial Revolution on global affairs. In *International relations and technological revolution 4.0: World order, power and new international society* (pp. 9–24). Springer.  
[Google Scholar](#) [Worldcat](#) [Fulltext](#)
- Feijóo, C., Kwon, Y., Bauer, J. M., Bohlin, E., Howell, B., Jain, R., Potgieter, P., Vu, K., Whalley, J., & Xia, J. (2020). Harnessing artificial intelligence (AI) to increase wellbeing for all: The case for new technology diplomacy. *Telecommunications policy*, 44(6), 101988.  
<https://doi.org/10.1016/j.telpol.2020.101988>  
[Google Scholar](#) [Worldcat](#) [Fulltext](#)
- Garrido Rebolledo, V. (2025). Impact of artificial intelligence on international relations: Towards a global algorithms governance. *Revista UNISCI*, 67. <https://www.unisci.es/wp-content/uploads/2025/01/UNISCIDP67-1GARRIDO.pdf>  
[Google Scholar](#) [Worldcat](#) [Fulltext](#)
- Horowitz, M. C., Allen, G. C., Kania, E. B., & Scharre, P. (2022). *Strategic competition in an era of artificial intelligence*. Center for a New American Security.  
<https://www.cnas.org/publications/reports/strategic-competition-in-an-era-of-artificial-intelligence>  
[Google Scholar](#) [Worldcat](#) [Fulltext](#)
- Ignatov, A. (2023). Global governance of cyberspace: The BRICS agenda. In *Digital international relations* (pp. 305–327). Springer.  
[Google Scholar](#) [Worldcat](#) [Fulltext](#)
- Jelinek, T., Wallach, W., & Kerimi, D. (2020). Policy brief: the creation of a G20 coordinating committee for the governance of artificial intelligence. *AI And Ethics*, 1(2), 141–150. <https://doi.org/10.1007/s43681-020-00019-y>  
[Google Scholar](#) [Worldcat](#) [Fulltext](#)
- Kavanagh, C. (2022). *New tech, new threats, and new governance challenges: An opportunity to craft smarter responses?* Carnegie Endowment for International Peace.  
[Google Scholar](#) [Worldcat](#) [Fulltext](#)
- Radanliev, P. (2024). Cyber diplomacy: defining the opportunities for cybersecurity and risks from Artificial Intelligence, IoT, Blockchains, and Quantum Computing. *Journal of Cyber Security Technology*, 1–51.  
<https://doi.org/10.1080/23742917.2024.2312671>  
[Google Scholar](#) [Worldcat](#) [Fulltext](#)
- Radu, R. (2021). Steering the governance of artificial intelligence: national strategies in perspective. *Policy and Society*, 40(2), 178–193.  
<https://doi.org/10.1080/14494035.2021.1929728>  
[Google Scholar](#) [Worldcat](#) [Fulltext](#)
- Schmidt, E. (2023). Innovation power: Why technology will define the future of geopolitics. *Foreign Affairs*, 102, 38–49. <https://www.foreignaffairs.com/united-states/eric-schmidt-innovation-power-technology-geopolitics>  
[Google Scholar](#) [Worldcat](#) [Fulltext](#)
- Veale, M., Matus, K., & Gorwa, R. (2023). AI and Global Governance: Modalities, Rationales, Tensions. *Annual Review of Law and Social Science*, 19(1), 255–275. <https://doi.org/10.1146/annurev-lawsocsci-020223-040749>  
[Google Scholar](#) [Worldcat](#) [Fulltext](#)
- Zeng, J. (2020). Artificial intelligence and China's authoritarian governance. *International Affairs*, 96(6), 1441–1459. <https://doi.org/10.1093/ia/iaa172>  
[Google Scholar](#) [Worldcat](#) [Fulltext](#)