

Global Perspectives on AI Governance: A Comparative Overview

Nimrod Mike¹

¹ Corvinus University of Budapest, Fővám tér 8, 1093, Budapest, Hungary

Abstract

The spread of artificial intelligence (AI) technologies has raised a huge question about the safety of their regulation to uphold their effective development and utilization. This research is about the AI regulatory landscapes of the United States, China, and EU, particularly on principles that include the rights to know, be fair, and have a sense of accountability. The EU, for its part, takes a more comprehensive approach, and the Artificial Intelligence Act (AIA), as an instance of this, only targets applications deemed to be high-risk and aims at AI that is trustworthy and aligned with ethical and legal norms. On the one hand, there is the case of the US, where there are just federal and state laws and regulatory plans, and industry self-regulation seems to predominate. Meanwhile, the practical standpoint is stressed by China, which finds its AI technologies useful for admin speeds up. However, strategic aims and societal questions are not ignored. Although governmental authorities differ as to the approach they select, shared values constitute the key principles of AI regulation worldwide. A greater level of transparency, impartiality, and accountability are put in place, although their levels of implementation are not uniform. A cross-country interaction, for example, the Global Partnership on AI (GPAI) agreement, is vital in facilitating a regulation system and an exchange of the best application forms. Among the most important ways policymakers can improve AI governance is through coordination, transparency, and research. Working with regions and stakeholders can ensure that the development of AI ethics is consistent with the values of society; this will in turn promote innovation and people's privacy.

Keywords

Artificial intelligence (AI), Regulation, European Union (EU), United States (US), China, Artificial Intelligence Act (AIA)

1. Introduction

The advancement of AI technology has underscored the critical need for effective regulation to ensure its responsible development and deployment. While it should be noted that the European Union (EU) has been at the forefront of drawing up a multifaceted regulation framework emphasizing the areas of explainability, fairness, and transparency, it is too early to say whether the regulation will be strongly acceptable throughout Europe or the world. Such an environment gives rise to the study area that focuses on AI regulation, where the US, China, and EU's positions on AI regulation are intensively studied and compared. Through studying the EU's legislative structure, with its primary focus on explainability, fairness, and disclosure, we try to gain a deep understanding of the information about how effectively these regulations foster ethically responsible AI practices.

HHAI-WS 2024: Workshops at the Third International Conference on Hybrid Human-Artificial Intelligence (HHAI), June 10—14, 2024, Malmö, Sweden

 nimrod.mike@uni-corvinus.hu;  0009-0005-7485-7271

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2. Background

In the last few years, the development of AI technologies across various sectors has underscored the critical need for robust regulation. AI finds a wide range of applications, from algorithms that are used for automated decision-making to machine learning models that shape our society and people's lives [1]. This implementation ranges from employment opportunities to health care access and much more. While it is true that the inherent complexity and ambiguity of AI algorithms have been causing some worries about accountability, transparency, and possibly bias issues, the opportunities they offer in certain areas must be explored further. Unless we make room for adequate regulations, AI systems may well end up creating or worsening socio-economic inequalities, infringing on individuals' rights, and abusing ethical standards [2].

Furthermore, the fast-tracked advancements of AI technology have surpassed the law-making mechanisms, requiring regulators to address the need for accountability among AI systems. Thus, the most essential thing is to create modern AI regulation for the purpose of positioning new-age technologies in an ethical way that is transparent and completely in line with societal values.

3. Research objective

How do the regulatory frameworks for AI in the US, China, and the EU align with ethical principles for AI governance?

Throughout this paper, the first objective is to analyze the AI regulation program of the EU and take it as a sample, looking at similar solutions. Second objective is to evaluate the key concepts and frameworks behind the US and China's regulation of AI. The third objective is to conduct a comparative analysis to uncover patterns, divergences, and potential implications for AI governance.

4. Methodology

In this paper, a qualitative methodology is employed to delve into the complex and nuanced landscape of AI regulation across the US, China, and EU. Qualitative research is quite a flexible approach that is needed for the investigation of complex regulations and policy approaches. Furthermore, it reveals deep-rooted exhibitions and allows for sensory and mindful interpretation [3]. The qualitative approach is what enables the questioning of both sides of an existing regulation in how they work and how they are understood in the broader societal, political, and economic contexts of society.

The research will make use of in-depth analysis to draw strategic conclusions related to the principles, purposes, and dangerous implications of AI taking place in each region, as well as intricacies around innovation, management, and values.

The qualitative methodology adopted in this study involves a systematic review of the European Union's Artificial Intelligence Act (AIA) and a more higher-level analysis of relevant policy documents, legislative texts or official statements pertaining to AI regulation in the United States (US), China. With a variety of qualitative data sources, the main task of

the study will be to bring together all these viewpoints to address challenges that arise in AI in general and different political routes [3].

5. The EU's Framework for AI Regulation

5.1. Analysis of the EU's AI regulatory framework

The EU has emerged as a global leader in crafting a comprehensive regulatory framework to govern the development and deployment of AI systems. The key aspect of this strategy consists of the AIA proposition, which looks into advancing legal harmony through the implementation of a uniform regime of norms and legal standards in all member countries [4].

The AIA is known for its processes of risk assessment for AI, which leads to AI apps being used in critical fields such as healthcare and transportation, which are highly regulated, with such regulations requiring accuracy in information, accountability, and human intervention. The EU concept of applying AI in areas of high risk (i.e., in which ethical principles and law fundamentally drive AI operations) differs from the idea that technological developments require moral and legal safeguards and that AI systems in Europe must operate in accordance with ethical principles and legal norms.

The EU's AI regulatory framework emphasizes the principle of 'trustworthy AI,' advocating for systems that are lawful, ethical, and robust from both a technical and societal perspective. The AIA lays down a set of conditions for developers and users of AI in terms of ensuring that AI systems are transparent, employ algorithms without biases, and have a regulating mechanism that is human [5]. Moreover, the EU honors scientific progress in the field of AI; thus, the focus should be put on the development of AI technologies while implementing them according to human rights, democratic values, and the rule of law. The strict regulation on AI is at the heart of the EU's goal to support AI innovation, competitiveness, and trust, which are fundamental to the emergence of an AI-empowered future. However, the EU is also helping to build the ethical basis for AI, which it is pioneering on a global level.

5.2. Principles of explainability, fairness, and transparency in the EU

Within the EU regulatory framework for AI, the principles of explainability, fairness, and transparency serve as fundamental pillars guiding the development and deployment of AI systems. Explainability stands for the comprehensible aspect of AI systems that should include rational explanations behind their decisions and actions and enable humans as well as users or stakeholders to fully understand the critical thinking and reasoning behind AI-based results [6]. Whether the algorithm is fair, transparent, and accountable, and whether that same level of transparency and accountability applies to major applications such as healthcare, finance, and criminal justice, determines the credibility of the algorithm and the AI technology as a whole. The EU aims to accomplish this by emphasizing the aspects of explainability, which will in turn lead to AI systems always operating on the principle of transparency and interpretability. This will be crucial in facilitating appeals and objections by the people against algorithmic decisions.

Fairness is another key principle shaping EU AI regulations, whereby the inclination to fight against bias and discrimination within AI systems is prioritized. The extent of equitability in AI software is exhibited when such programs do not have a biased or unequal output, which results from sensitive characters like gender, race, and social-economic status [7]. Thus, a model of AI should be designed with data capability for redundancy and trained and tested methods that can employ multiple data sets. Apart from that, approval of a model should be against bias. Corrections for the failure of the algorithm are also essential. AI technology is a new tool full of great potential; learning how to handle this new power quickly is a tough task. Consequently, it is the principle of equality that must be in the main context of any activity with AI to allow social integration as well as defend people's rights, together with the developer's trust in AI technologies.

5.3. Definition of an AI system. Prohibited AI practices.

Article 2 of the EU AI Act defines an AI system as “*a machine-based system designed to operate with varying levels of autonomy and that may exhibit adaptiveness after deployment and that, for explicit or implicit objectives, infers, from the input it receives, how to generate outputs such as predictions, content, recommendations, or decisions that can influence physical or virtual environments.*” This definition is generic and broad to the extent that it permits the classification of all machine-based systems that operate with autonomy based on input data to generate outputs in the form of content, decision, prediction, or recommendation.

While Article 1 of the EU AI Act provides that the purpose of the Act is to regulate the use of AI, Article 5 of the Act expressly prohibits some AI practices. These include, first, that the Act prohibits AI systems that use manipulative and deceptive techniques that are intended to distort the outcome of a decision. Secondly, the Act prohibits the use of AI systems that exploit the vulnerability of a person on the grounds of age, disability, or economic class. Thirdly, the Act prohibits the use of AI systems to filter people based on their race, political opinion, religion, trade unions, or any other grounds that may be used to discriminate against a person. Fourthly, the Act prohibits social scoring, which includes categorization of people based on their social status, behaviour, and characteristics. Additionally, the Act prohibits real-time biometric identification of people.

In all, it is evident that Article 5 of the EU AI Act seeks to address the unfairness challenge in AI practices. According to [22], unfairness in AI systems is a sociotechnical challenge. This is because, for societal and technical reasons, AI systems tend to produce unfair results by relying on biased data sets. Recognizing this reality, Article 5 of the Act prohibits AI practices that profile people based on their socioeconomic characteristics, such as race, disability, age, and economic class.

5.4. High-risk AI systems.

Of interest to note is that the EU AI Act creates rules for the application of high-risk AI systems. A reading of Article 6(2a) of the Act demonstrates that a high-risk AI system is one that poses significant risk to the “health, safety, and fundamental rights” of a person. According to Articles 6(1) and (2) of the Act, there are two categories of high-risk AI systems. The first category is that of AI systems that are used on products that are regulated by the EU product safety regulation (Directive 2001/95/EC of the European Parliament and of the Council of 3 December 2001 on general product safety). Article 2 of Directive

2001/95/EC provides that it applies to products (goods and services) that are intended to be supplied to consumers for commercial activity. These include aviation services, transport, health, and lifts used in buildings (Annex II to the EU AI Act). Article 6(1) of the EU AI Act classifies AI used to provide or in relation to the provision of these products as high-risk.

The second category of high-risk AI systems is AI used in specific areas that must be registered with the EU database. These specific areas are listed under Annex III to the Act. These include biometrics, critical infrastructure, education and vocational training, employment and management of employees, access to essential services, law enforcement and administration of justice, migration, border control and asylum, and administration of democratic processes. Article 7 of the Act allows amendments to Annex III to introduce or remove classes of high-risk systems that fall under this second category. The amendment should be preceded by an assessment of the risk that the subject category poses to natural persons. In the following subsections the compliance requirements of high-risk AI systems are briefly discussed.

5.4.1. Risk management system.

On the understanding that high-risk AI systems pose significant risks to people, Article 9(1) of the Act decrees that the use of high-risk systems shall be based on the establishment, implementation, documentation, and maintenance of a risk management system. A risk management system assists in identifying potential risks that an AI system poses [23]. Thus, if established before the enrollment of an AI system, the provider will be able to introduce the necessary infrastructure to monitor, mitigate, and handle the identified risks [24].

According to [25], the establishment of a risk management system at its inception assists in risk assessment, evaluation, and mitigation and is thus an important ingredient for the success of risk management. What follows the establishment of the risk management system is its implementation, which means applying the risk management strategy established at its inception [23]. The risk management system should be regularly monitored, tested, and improved [23]. This is what Article 9(1) of the EU AI Act refers to as documentation and maintenance.

Article 9(2) of the EU AI Act provides that the risk management system should be continuous and run throughout the lifetime of a high-risk AI system. In addition, this article requires regular review and updating of the risk management system. The systematic review includes the identification of risks, the evaluation of how they may arise, and the adoption of targeted measures to address the identified risks. Article 9(3) of the EU AI Act provides that the measures adopted must be commensurate to the estimated effects of the identified risks. The aim of this is to ensure that the effects are eliminated or minimized.

5.4.2. Data governance.

Article 10(1) and (2) of the EU AI Act provide for training, validation, and testing of data sets used in high-risk AI systems. The training, validation, and testing should be done as per the appropriate data governance practices. Data governance focuses on the type of data intended to be collected, the collection process, its management, use, storage, and disposal [26]. According to [26], data governance in relation to AI involves an organizational approach that focuses on the planning and control of data collection, the implementation of data protection principles, the evaluation of the approach, and the improvement of the

approach to address any identified gaps. Article 10(2) of the EU AI Act sets out the practices that should inform appropriate data governance and management for AI systems. These include (a) relevant design, (b) collection of data based on a purpose, (c) relevance in data processing, and (d) identification of data gaps.

Article 10(3) of the EU AI Act requires that the training, validation, and testing of data sets be relevant, representative, and free of errors. Appropriate statistical infrastructure should be employed to achieve this objective. In addition, Article 10(4) of the EU AI Act provides that the data sets should be limited to the intended purpose.

5.4.3. Technical documentation.

Article 11(1) of the EU AI Act provides that a provider of a high-risk AI system must draw up a technical documentation of the AI before availing it of the market. The technical documentation assists in assessing and evaluating the potential risks that the AI system poses [27]. According to [27], technical documentation of an AI system involves a description of the AI system, labeling, and instructions for use.

Article 11(1) of the EU AI Act provides that the technical documentation should be able to demonstrate that the high-risk AI system complies with the provisions of the Act. The minimum elements of technical documentation are set out under Annex IV of the EU AI Act. First, the technical documentation should contain a description of the AI system, which should include its name, the provider, the intended purpose, the relevant software, the version and previous version, if any, and instructions on how to use it. Secondly, there shall be a detailed description of the elements of the AI system, including the methods used to develop it, its design specifications, architecture and software components, data requirements, required human oversight, validation and testing procedures used, and cybersecurity protection measures employed. Thirdly, the technical documentation should describe how to monitor, use, and control the AI, which should include information about the AI system's limitations and abilities. Fourthly, the technical documentation should set out the performance metrics used, the risk management system employed, an EU declaration of conformity, and the post-marketing monitoring plan.

The technical documentation aims at achieving the long-desired principle of explainability of AI systems [28]. The authors in [28] argue that explainability seeks to provide information relating to an AI system with the aim of achieving transparency and traceability. With respect to transparency, the broad information required under Article 11(1) of the EU AI Act and Annex IV before enrollment in a high-risk AI system is intended to ensure that users whose rights are at risk have sufficient information about AI systems that they interact with. In addition, the requirement for a EU declaration of conformity sets out a higher standard for providers to ensure that they disclose as much information as may assist users in understanding high-risk AI systems. On traceability, the technical documentation obligates providers to give information on how the AI system was developed, the previous versions, if any, and its performance metrics. This is aimed at solving the long-standing problem of a lack of sufficient information on the traceability of AI systems on the market.

5.4.4. Record keeping.

Article 12(1) of the EU AI Act provides that a high-risk AI system shall be designed in a way that it allows recording of its activities during its lifetime. The recording is required to be in the form of logs. This also seeks to address the issue of traceability, as discussed by [28]. It ensures that there are traces of information relating to actions undertaken by the AI system. This is for accountability purposes, as there can be traces of information relating to the act that can explain it.

Indeed, Article 12(2) of the EU AI Act expresses that the purpose of recording is to ensure traceability of the functioning of an AI system. Under Article 12(2a) of the Act, tracing is necessary for monitoring the risks that an AI system poses, the functioning of the AI system, and post-market monitoring as required under Article 61 of the Act. At the very least, Article 12(4) of the Act requires the logs to indicate the time, database, input data, and natural persons involved in any use of the system.

5.4.5. Transparency.

Further to the technical documentation that requires the provision of information, Article 13(1) of the EU AI Act requires that AI systems be designed in a “sufficiently transparent” manner to enable deployers to understand their output and functioning. This enjoins designers to provide sufficient information relating to a high-risk AI system. To wit, Article 13(2) of the Act requires that a high-risk AI system be accompanied by instructions on its use. The instructions should be in an appropriate digital format. The digital instructions should be comprehensive, concise, comprehensible, clear, and correct.

Article 13(3) of the EU AI Act sets out the minimum information that should be included in the instructions. First, the instructions should provide detailed information about the provider and/or the provider’s duly appointed representative, if any. Secondly, the instructions should provide a detailed description of the AI system, including its features, abilities, and limitations on its use. In addition, the instructions should provide information about its human oversight measures, the hardware needed to run it, and the techniques used to collect, store, and interpret data.

According to [29], the use of high-risk AI systems comes with the risk of subjecting users to deceptive results, especially where the intended use of the AI system is to predict outcomes. Therefore, [29] calls for the demystification of AI systems by opening the algorithmic box. He argues that this can be achieved through transparency in AI. Similarly, the authors of [30] argue that transparency is an AI governance matter. Although they argue that AI transparency is in its infancy stage, it is both an ethical and legal challenge that calls for a well-thought-out solution. The challenge emerges from the complexity of the concept of AI transparency, which stems from the multiplicity of aspects that call for transparency. These include the data, software, hardware, and algorithms involved.

In April 2019, the EU Commission’s High-Level Expert Group for AI (AI HLEG) published the ethics guidelines for trustworthy AI. One of the seven requirements of a trustworthy AI, as per the AI HLEG, is transparency. To AI HLEG, transparency includes traceability, communication, and explainability. This means that providers should provide sufficient information about AI systems, and the same, including their output, should be explainable to humans. Ideally, these are the objectives that Articles 11, 12, and 13 of the EU AI Act seek

to achieve by requiring technical documentation, record-keeping, and the provision of information by providers.

5.4.6. Accountability.

Article 17(1) of the EU AI Act requires providers of high-risk AI systems to establish and maintain a quality management system to assist them in complying with the provisions of the Act. The quality management system is tasked with ensuring that the provider is regulatorily compliant. Article 17(1)(m) of the Act provides that the quality management system should set out the accountability responsibilities of the provider by clearly designating the responsibilities of the management and its staff.

According to [31], the implementation of an effective quality management system assists in ensuring command, communication, and control of processes in an organization, which is necessary for ensuring accountability for any decision made. According to AI HLEG, accountability is one of the seven requirements of a trustworthy AI. AI HLEG notes that accountability connotes auditability, reduction or mitigation of risks, and the presence of adequate, simple, and accessible redress. Notably, the requirement for recording logs under Article 12(1) of the EU AI Act aims at ensuring that the logs are available for auditing. In addition, Article 9 of the EU AI Act provides for risk management. This is aimed at ensuring that providers identify, mitigate, minimize, and address risks associated with the use of high-risk AI systems. Further, Article 14 of the EU AI Act provides for human oversight of AI systems to address inter-face problems that users may encounter. Therefore, it is evident that the Act is committed to ensuring AI practices are accountable in line with the AI HLEG 2019 guidelines.

6. Brief overview of AI regulation in the US

The current landscape of AI regulation in the United States is a composite of diverse laws, guidelines, and initiatives that span federal and state levels. A significant federal action is Executive Order 14110, titled "Safe, Secure, and Trustworthy Development and Use of Artificial Intelligence," issued by President Biden on October 30, 2023 [8]. This comprehensive order outlines a multi-faceted approach to ensure that AI development aligns with national values of safety, security, and trustworthiness. It mandates the creation of standardized testing procedures for AI systems to assess their safety and reliability comprehensively. The order also emphasizes the importance of international collaboration in developing norms and standards for AI, aiming to foster a global environment where AI technologies are developed responsibly. Executive Order 14110 ("AI EO") is a key component of a broader, albeit fragmented, regulatory framework that involves multiple governmental branches.

Specific measures outlined in AI EO include the establishment of guidelines for the ethical use of AI by federal agencies, the development of tools to detect and mitigate biases in AI applications, and the strengthening of privacy protections in AI operations. It also calls for the Department of Commerce to collaborate with private sector and academic leaders to advance the technology's safety protocols and to ensure public transparency of AI systems' functionalities and limitations. Furthermore, the order directs federal agencies to

prioritize funding for AI research that focuses on enhancing human-AI collaboration and understanding AI's societal impacts.

In Section 2 of the AI EO, the administration establishes a comprehensive policy framework along with eight guiding principles aimed at shaping the development and governance of AI technologies. The principles begin with a strong emphasis on the safety and security of AI, highlighting the priority for AI systems to be developed as safe, reliable, and secure through standardized testing and risk mitigation strategies. This includes addressing significant security risks in areas such as biotechnology and critical infrastructure, ensuring that AI systems are resilient and ethically operated. Furthermore, the order introduces the development of labeling and content provenance mechanisms to enable users to distinguish between AI-generated and human-generated content.

Continuing with the theme of fostering a conducive environment for AI innovation, the AI EO promotes responsible technological development and robust competition. This includes bolstering AI-related education, addressing intellectual property challenges, and ensuring a marketplace that supports small developers and fosters innovation, maintaining a fair and open market landscape that nurtures American technological leadership.

The executive order also recognizes the transformative impact of AI on the labor market, underscoring the necessity of including workers in this transition. This involves updating training programs and ensuring that all workers, through mechanisms like collective bargaining, can benefit from the opportunities AI presents. The administration seeks to ensure that AI implementations in workplaces enhance job quality without infringing on workers' rights or safety. Additionally, the order outlines strategies to enhance the federal government's ability to govern and utilize AI effectively. This includes training for government employees to understand AI's implications fully and upgrading governmental IT infrastructure to support ethical AI uses.

Moreover, the policy asserts a commitment to using AI in ways that advance equity and civil rights rather than perpetuating discrimination. Building on initiatives like the Blueprint for an AI Bill of Rights, the order mandates that AI deployments comply with federal laws designed to eliminate bias and ensure broad-based benefits. This commitment extends to maintaining consumer protections in the era of AI, as the administration emphasizes the importance of enforcing laws that protect against fraud, bias, privacy infringements, and other harms, particularly in sensitive sectors such as healthcare and finance. This principle advocates for AI uses that elevate service quality and consumer safety.

Lastly, the executive order positions the US as a leader in shaping the global discourse on responsible AI usage. It seeks to collaborate with international partners to develop a framework that addresses AI's global risks and potentials, promoting a unified approach to AI governance. This international collaboration is pivotal as it underpins the administration's vision of leading global societal, economic, and technological progress in the era of AI.

6.1. US Federal and state-level initiatives

In addition to federal efforts, individual states like California, Illinois, and New York have enacted their own AI-specific regulations. California's Consumer Privacy Act (CCPA),

officially known as AB-375, stands as one of the most stringent data privacy laws globally. It specifically includes provisions that affect AI companies by mandating increased transparency and granting consumers substantial rights regarding the use of their data [9]. Illinois and New York are actively working on amendments to further regulate AI, with a primary focus on reducing bias, enhancing transparency, and ensuring accountability in AI applications. These state-level initiatives underscore the growing demand for personalized legal responses and the protection of individual rights, illustrating the complexity of regulating AI solely at the federal level.

6.2. Comparison of the US with EU principles

While there are significant differences in regulatory philosophies between the US and the EU, both regions address similar ethical concerns within AI technology. The AIA, for example, mandates robust frameworks for high-risk AI applications, requiring comprehensive risk assessments, sustained human oversight, and explicit transparency [10]. In contrast, the US approach, as exemplified by AI EO, tends to emphasize innovation and technological leadership while also incorporating ethical considerations like transparency and accountability. This difference in approach reflects the varied roles of government and regulatory priorities in the US and EU, highlighting diverse strategies in the global governance of AI.

7. Brief overview of AI Regulation in China

China's AI regulatory environment is characterized by a mix of government oversight, industry self-regulation, and emerging regulatory frameworks. The Chinese government has become cognizant of the fact that AI may serve strategic purposes and has therefore produced policies that encourage the development of AI but also manage the dilemmas [11]. The government has created initiatives such as the National New Generation Artificial Intelligence Development Program, which describes the intent to pursue ambitious goals in AI research, technology, and industrial application by different sectors separately. Besides, Saalman states that China conducts a lot of AI technology investments and infrastructure construction efforts, including the "AI + X" plan, which seeks to unite AI and traditional industries' transformation and develop a fast-growing economy and deep innovation model [12].

7.1. The Chinese government's approach to regulating AI

The Chinese government has adopted a pragmatic approach regarding automated decision-making (ADM), leveraging AI technologies to enhance administrative efficiency, improve public services, and optimize decision-making processes. For example, strategies to balance the economic and social consequences of automation can include reducing working hours or promoting lifelong learning and training [13].

A law titled "Interim Measures for the Management of Generative Artificial Intelligence Services" was released by the Cyberspace Administration of China (CAC) and six other central government regulators. On August 15, 2023, this law was put into effect with the

intention of regulating the provision of generative AI services [14]. This regulation, framed under existing laws such as the "Cybersecurity Law of the PRC" (2017), which establishes protections for network and information security; the "Data Security Law of the PRC" (2021), which regulates data processing activities; the "Personal Information Protection Law of the PRC" (2021), focusing on individual data rights similar to the GDPR; and the "Law on the Scientific and Technological Progress of the PRC" (revised in 2022), which encourages the integration of scientific and technological innovations into national development, aims to steer the healthy and regulated use of generative AI while safeguarding national security and public interest. Its primary goals are the protection of legitimate rights and interests of individuals, legal entities, and other organizations; the promotion of safe and consistent use of generative AI; and the preservation of social public interests and national security. Though these steps are highly likely to be effective in the sense of improving the quality of governance and service delivery, they also pose a threat to privacy, scrutiny, and accountability, especially if collecting personally identifiable information and algorithms are used to make decisions in major areas of people's lives.

The new legislation establishes several key requirements for all generative AI services in the country. These services must uphold national sovereignty and social stability, prevent discrimination in their applications, respect intellectual property rights and commercial ethics, ensure the physical and psychological well-being of individuals, and enhance the transparency and reliability of AI-generated content. These stipulations aim to integrate ethical considerations into the technological development and deployment of AI.

Chapter II of the legislation advocates for the innovative application of generative AI across various fields. It encourages the coordination of innovation, risk prevention, and the establishment of public data resources, while also promoting independent innovation in core AI technologies and international cooperation. This reflects the nation's intention to be a leader in AI technology globally while managing potential risks.

Chapter III requires providers of generative AI services to take responsibility for the security of online information and the protection of personal data. Providers must transparently disclose service details to users, prevent misuse, and particularly protect minors. Furthermore, they are obligated to accurately label AI-generated content and ensure the continuity and safety of their services, promoting a secure and reliable environment.

Chapter IV outlines the roles of various government departments in enforcing these measures. This includes improving regulatory methods and conducting security assessments, particularly for services with significant public influence. Violations of these provisions may lead to administrative sanctions or criminal charges, underscoring the importance of strict compliance.

The final section clarifies key terms and specifies conditions for administrative permits for providing generative AI services. It also outlines the requirements for foreign investment in generative AI, ensuring that all engagements align with national regulations and interests.

These regulatory measures underscore China's cautious yet proactive approach to harnessing the potential benefits of generative AI while addressing the associated risks and ethical concerns. By establishing a robust legal framework that emphasizes both innovation

and regulation, the government aims to foster a responsible AI ecosystem that aligns with its broader socio-economic goals and security interests, while balancing the rapid advancement of AI technologies with necessary safeguards to protect citizens' rights and maintain social stability. This regulatory approach could influence global AI practices and promote a safe and equitable development of AI technologies.

7.2. Analysis of Chinese principles and their alignment with the EU

In analyzing the principles guiding China's AI regulation and their alignment with the EU, there are notable differences in approach and emphasis. China and the EU are similar to each other for the reason that each of the AIs attaches great importance to the core elements of transparency, justice, and accountability [15]. However, their AI governance regulations have divergences both in implementing and enforcing them.

On AI regulation in China, the emphasis is put on government programs with regard to engaging industry in the possibility of self-regulation towards strong oversights and institutions with well-defined and independent checks and balances. Firstly, even though there are rules and provisions for AI in China, it is still up for question about transparency and the fact that the interests of industry stakeholders might influence policymaking. On the contrary, the goal of the AIA is to make sure there is a sound framework in place with consistently implemented rules and standards for high-risk AI applications, as well as demand that transparency, human supervision, and risk assessment be ensured for new technologies to be used reliably and ethically [16].

8. Comparative Analysis and Discussion

In comparing AI regulation across the US, China, and the EU, several common elements emerge despite differing regulatory approaches. Secondly, it also works in favor of responsible AI development. One of the main factors that determines whether AI governance should be seen as globally accepted is the principle of transparent, fair, and accountable processes that make the system belong to all of the world [17]. They are going to make a splash, as these leading entities already know how to do it in a way that balances innovation and risk awareness. They are anxiously anticipating how AI can revolutionize the world while at the same time being cautious not to forget about the possible biases, discriminations, infringements on privacy, and other bad things.

Despite these commonalities, key differences exist in the regulatory approaches of the US, China, and the EU, with significant implications for AI governance. The US corporately is mainly driven by industry self-regulation and recommendations that are soft on the legislature, but the European Union takes a more rigorous standard by law in accordance with the safety of its consumers [18]. However, being an approach with a strong focus on the development and use of novel technologies, it will generate a set of regulatory gaps and problem selection for addressing arising ethical issues. In the choice of approaches, China's model contradicts the American model, whose conception is linked to the trans-sectoral one, whose features affect heavily the national strategic goals and industrial policy [19]. This approach could propel quick scientific developments, but it raises a number of concerns on the basis of government set out in the field, surveillance, and censorship. Also,

the EU set up a regulatory regime that has resulted in profound principle-based regulation merged with practical assessment of high-risk AI applications. Ultimately, the two factors united and separated. Nevertheless, the big-ticket EU rules, by all means, may become an obstacle to doing business, and the competitiveness of the global AI market is also affected.

Given the cross-border nature of AI technologies and their potential impact, international cooperation and standards play a crucial role in shaping AI regulation and governance. This joint cooperation between states and regions helps to establish a consistent policy and information sharing, promote the implementation of the best AI practices, and present a unified standard for the growth and application of AI [20]. The member countries can make use of various initiatives like the Global Partnership on Artificial Intelligence (GPAI). Platforms provide a venue for members to maintain collaboration on their activities and express their opinions on the general AI issue at a regional level [21]. These partnerships will create conditions where both parties involved will be building trust, making constant innovations, and ensuring that the creation and use of AI technology will be ethical, human rights-based, and for the well-being of society.

In interpreting the findings of this comparative study on AI regulation across the US, China, and the EU, several insights emerge. Primarily, each one of the regulatory frameworks becomes a direct influence of the interconnectivity between technological advancement, societal values, and the geopolitical landscape. Despite the American preference to give a license to industries to self-regulate and be quick to innovate, on the other hand, China is aimed at a centrally planned and state-led approach to promoting national strategic goals [21]. The EU is embracing principles-based regulation rather than strict laws to foster innovation, with ethical considerations being given due attention. Such research results accentuate the necessity to formulate AI regulation culture- and region-specifically, taking into account the specific political, economic, and social factors of a country, which create a basis for a country's own regulatory landscape regulating AI practices in a certain country or region.

The delicate balance that must be maintained between innovation and regulation in the context of AI governance is another topic that is being discussed. Additionally, the same innovation-unknown road can be destructive because it disregards some ethical principles, society's disparities, and the possibility of breaching human rights. This is in addition to the fact that innovation is the key to fueling economic growth, technical advancement, and societal development. An important consideration in this context is legislative care, which can be utilized to reduce the likelihood of these hazards occurring while also ensuring the proper utilization of AI technologies [13]. While excessive or restrictive regulation may delay progress in AI, new insights, and innovation, it may also reduce competitiveness and limit the benefits that may be achieved from AI for society as a whole. Therefore, the ethical and sustainable governance plans for AI are already striking a balance between the creation of innovation silos and the implementation of prudential protection in order to achieve success.

Looking ahead, the future outlook for AI governance is multifaceted and dynamic. As AI technologies continue to evolve and permeate various aspects of society, there is growing recognition of the need for coordinated international efforts to address common challenges and promote responsible AI development. International collaboration and cooperation can

no doubt enable the creation of well-planned and aligned regulatory frameworks, the sharing of experiences, and the setting common standards for AI governance. The variety of AI initiatives, such as the GPAI, create platforms for cooperative arrangements and fight for the future of AI regulation in the world [20]. Further, continuing talks and working with people outside the sphere of these technologies, including governments, industries, academia, and civil society, is critical for ensuring that AI technologies are developed and used to respect human rights, develop people's trust, and achieve a common good in an AI-driven world.

9. Conclusion

This comparative study has provided valuable insights into the current state of AI regulation across the US, China, and the EU. Among the main outcomes of the research, we note that respective regions apply diverse regulatory policies ranging from industry's self-regulation in America to the state's access policy in China, while the European Union in particular relies on the scope of principles. Their common nature, however, transparency, impartiality, and accountability, does not interfere with differences in the implementation and enforcement of human rights in various regions reflecting unique political, economic, and social contexts. Besides, the dialogue accentuated this uncomfortable equilibrium in AI governance between the encouragement of innovation and the institution of regulatory measures. It highlighted the significance of, according to different contexts, suggested approaches that prioritize ethical AI development while at the same time fostering innovation and competitiveness.

Based on these insights, several recommendations can be made for policymakers to enhance AI regulation and governance. Policymakers should focus on coordination and information sharing between regions and countries to ensure the unity of legal regulation and the exchange of best practices so that common standards for AI development can be established. For the second part, policymakers must embrace transparency, accountability, and fairness when AI systems are involved by making sure certain regulations and guidelines are followed for high-risk AI applications, which would build public trust in AI systems and strengthen the confidence of the public in AI technologies. Moreover, policymakers should promote research and advanced development to overcome ethical and societal aspects that might arise from AI systems, for instance, discrimination, biases, and loss of privacy, and at the same time ensure that a well-established monitoring system is in place to ensure that the AI technologies are maintaining societal rights and values. Finally, leaders would work with stakeholders, like governments, industry, academics, and civil society, to draw in diverse perspectives and interests and promote a co-creation approach in AI governance.

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