The Legal Challenges and Regulatory Responses to Artificial Intelligence (AI) in China

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Abstract. Recently, artificial intelligence (hereinafter referred to as "AI") technologies have played an important role in the digital economy. AI is widely used in industrial manufacturing, network security, healthcare, transportation, robotics, energy, and public services, which has greatly promoted the progress and development of human society in China. However, the use of AI paves the way for new legal challenges, including but not limited to the issues of morality and ethics, data privacy and security, and protection of citizens' basic rights, that require a promote response and intervention. Specifically, how to balance AI innovation and control legal risks. By using doctrinal legal research methodology, this study examines the legal challenges and regulatory responses to AI in China. Primary and secondary data have been used and analysed using critical, analytical, and comparative approaches. It is found that special emphasis should be placed on promoting AI technological innovation and safety supervision in parallel in China. In light of this, it is suggested that there is an urgent need to formulate comprehensive AI' supervision regulations, adopt innovative regulatory measures, such as regulatory sandboxes, promote technological innovation in safety regulation, strengthen cooperation between government departments and technology companies, and finally improve industry self-discipline norms.

Keywords: Artificial Intelligence (AI), Legal Challenges, Regulatory Innovation

1 Introduction

Science and technology are important elements that are driving social progress. Nowadays, AI is being widely used in healthcare, cybersecurity, transportation, industrial manufacturing, robotics, energy, and public services, because of its ability to greatly promote social progress and human well-being. AI technology provides humans with better healthcare, more efficient transportation systems, and better public services. In addition, AI provides an important technological foundation and industrial momentum, which is significant to the development of China's digital economy.One study shows

that by 2030, the scale of China's AI core industry will exceed 1 trillion yuan (it is equal to 150 billion dollars). Moreover, AI has been considered one of the most transformative forces of the 21st century and has been incorporated into national strategic goals by governments around the world. In the context of this article, China has a vision to become the world's major AI innovation center [1].

Nevertheless, while AI is bringing significant benefits to human lives and economies, the existing legal system is also facing increasingly frequent legal challenges. For example, Cambridge Analytica illegally obtained the personal data of millions of users through a Facebook app and used it for election manipulation and political advertising [2]. The scandal has revealed the potential risks of AI and big data in terms of privacy and data protection, triggering a global focus on data privacy and user rights. Additionally, LaLibre, which is Belgian media, reported that a Belgian woman claimed that an AI chatbot induced her husband to commit suicide, raising security concerns [3]. These challenges brought by using AI technology raise an urgent question is China's legal system ready to overcome the legal challenges of using AI technology?

In fact, regulators in various countries and regions have expressed concerns about AI technology and related applications to varying degrees, and plan to regulate AI through policies and legislation [4]. Specifically, The European Union (hereinafter referred to as "EU") is already at the forefront of the world in AI regulation. The most noteworthy is the Artificial Intelligence Act (hereinafter referred to as "AIA") which was adopted by the European Parliament on June 14, 2023. It establishes a unified legal framework to safeguard AI security, especially for the development, the placing on the market, the putting into service, and the use of AI. AI systems are classified as unacceptable risk, high risk, limited risk, low, and minimal risk according to the degree of risk. High-risk AI systems can only be used if they meet mandatory requirements. It also encourages innovation and employment, aiming to make the EU a leader in AI [4]. As the world's first comprehensive AI governance legislation, it will provide a wide range of references for the development of AI-related laws and standards in countries around the world. In contrast, the United States (hereinafter referred to as "US") has focused on non-regulatory measures to encourage innovative development in the AI industry. However, US Senate Majority Leader Chuck Schumer has been a strong supporter of sweeping legislation in the field of AI [5].

In China, the New Generation Artificial Intelligence Development Plan (hereinafter referred to as "AIDP") issued by the State Council in 2017 proposed a "three-step" strategic goal aiming that from 2020 to 2025 and then to 2030, more complete AI laws and regulations, ethical norms and policy systems will be gradually established. It also emphasizes the establishment of an open and transparent AI regulatory system. Specifically, a two-tier regulatory structure of design accountability and application supervision is implemented to achieve whole-process supervision of AI. Recently, the State Council released the 2023 legislative plan, showing that the draft AI law is ready to be submitted to the Standing Committee of the National People's Congress for deliberation [6]. Based on the previous facts and arguments, it is important to examine the legal challenges and regulatory responses to AI in China.

2   Problem Statement

It is undeniable that the development of AI is profoundly changing the way of human production and life, creating new opportunities for economic and social development, and also bringing many legal challenges. Specifically, security challenges constitute a high concern for governments [7]. As China's first national AI development plan, AIDP requires that the government must attach great importance to AI security challenges and ensure that AI is safe, reliable, and controllable. It proposes to ensure the security of AI networks and increase punishment for data abuse, invasion of personal privacy, and violations of ethics.

AI development relies on extensive data, and during the collection, utilization, and analysis of this data, there are security risks like data leaks and violations of personal privacy [8]. If the problem of data security is not solved well, AI cannot develop accordingly. AI security challenges can lead to more severe and intricate consequences compared to traditional technologies. problems like "autonomous driving traffic accidents," "robot attacks," "deep forgeries," and "face disclosure". These challenges result from limitations or malicious use of AI technology.

This problem is exacerbated by the fact that the rapid development of AI technology is coupled with lagging regulation. In fact, there are currently legal gaps in some areas of AI. In particular, the traditional laws cannot adapt to a series of special problems in the field of AI. For example, how to compensate for pedestrian injury caused by self-driving cars? should robot judges be allowed? should face recognition technology be completely banned? How to ensure people's privacy and data security? These legal issues have been placed in front of legislators and decision-makers. There is still a long way to go in regulating the application of chaotic AI scenarios. In light of this, it is believed that it is necessary to examine the legal challenges and regulatory responses to AI in China.

3   Research Question

The research questions are as follows: (1) What is the regulatory framework for AI in China? (2) What challenges does AI pose to China's legal system? (3) How can China's AI regulatory system be improved?

4   Purpose Of Study

The main purposes of this article are as follows: (1) to analyse the development of AI regulation in China; (2) to identify the legal challenges in AI regulation in China; (3) to recommend improvements.

5   Methodology

By using doctrinal legal research methodology, this study examines the legal challenges and regulatory responses to AI in China. This article contains a description and narrative of the legal measures taken by national regulators in the development of AI. Using a critical, analytical, and comparative approach, key materials and information relevant to AI regulation are used and analysed.

In addition, the assessment and analysis are based on data collected from primary and secondary sources. The main data of this study are national legislation, policy documents, and decided cases related to AI regulation. The secondary data are books and journal articles on AI research by Chinese and foreign scholars.

6   AI as a Regulatory Target

6.1   Legal Definition of AI

To regulate AI, it is inevitable to define AI at the beginning. However, defining AI from a legal perspective is quite challenging. Because no single definition of AI has been accepted so far [9]. Moreover, the meaning of AI varies depending on the application context. It could refer to automatic driving systems or smart medical systems. From a legal perspective, AI systems have very different levels of risk and must be regulated differently according to their degree of risk [10]. The definition of AI in the AIA is the most widely used. Article 3(1) states that 'artificial intelligence system' means:
...software that is developed with [specific] techniques and approaches [listed in Annex 1] and can, for a given set of human-defined objectives, generate outputs such as content, predictions, recommendations, or decisions influencing the environments they interact with.

The United Kingdom (hereinafter referred to as "UK") believes that the substantive scope of AI regulation should be determined based on the core characteristics of AI and allow regulators to develop more detailed definitions based on the core characteristics [11]. Schuett examines how policymakers should define the substantive scope of AI regulations and argues that there are often different definitions of AI in different regulatory areas [12]. There is also no unified definition of AI in Chinese legislation. As a type of AI system, generative AI refers to models and related technologies that can generate text, pictures, audio, video, and other content [13]. In this paper, AI is defined as using computers or equipment controlled by them to simulate, extend, and expand human intelligence by sensing the environment, acquiring knowledge, and deriving methods[14].

6.2   The Regulation of AI in China

From the two levels of ethical norms and legal norms, this article reviews the status quo of regulatory norms that have been established or will be established for the development of AI technology in China.

Ethical Norms. Since the introduction of AIDP in 2017, China has successively issued a series of ethical norms. For example, Guidelines for the Prevention of Artificial Intelligence Ethics Security Risks, Measures for the Ethics Examination of Science and Technology. On September 25, 2021, the National New Generation AI Governance Professional Committee issued the New Generation of Artificial Intelligence Ethics Code (hereinafter referred to as the "AIEC"), which aims to integrate ethics into the entire life cycle of AI and provide ethical guidance for AI-related activities. The AIEC fully takes into account the ethical concerns of all sectors of society regarding privacy, prejudice, discrimination, and fairness. It not only puts forward six basic ethical requirements: improving human welfare, promoting fairness and justice, protecting privacy and security, ensuring controllable and credible, strengthening responsibility, and improving ethical literacy. At the same time, 18 specific ethical requirements for AI in specific activities such as management, research and development, supply, and use are also proposed [15].

Legal Norms. As opposed to ethical regulation, the Standing Committee of the National People's Congress, China's top legislature, passed legislation to regulate network and data security in 2016. The Cybersecurity Law of the People's Republic of China stipulates that network operators shall follow the principles of legality, legitimacy, and necessity when collecting and using personal information, and obtain the consent of the people collected [16]. The Data Security Law of the People's Republic of China stipulates a system of classified and tiered data protection, an open platform system for government data, and a data transaction management system, focusing on the protection of important public data [17]. The Personal Information Protection Law of the People's Republic of China focuses on the protection of personal information and prohibits the illegal collection, transfer, and disclosure of personal information [18]. Those three laws constitute the basic legal framework for data security in China.

At present, AI technology has been applied to autonomous driving, face identification, smart diagnosis and treatment, and smart courts. Because AI faces different legal challenges in each area, as shown by the summary in Table 1, legislation requires domain-specific responses in addition to making general rules. Normally, those areas related to public services are generally considered high risk and are given high attention by regulators. For example, the National Medical Products Administration regulates the use of AI for medically assisted diagnosis and treatment. With the popularity of ChatGPT in 2023, generative AI has also been included in the scope of supervision by the state. The Interim Measures for the Administration of Generative Artificial Intelligence Services (hereinafter referred to as the "Interim Measures"), which has been widely concerned by the society, was publicly released on July 13, 2023, and will come into force on August 15. The "Interim Measures" focus on the supervision of network information content security, and put forward prudent and inclusive supervision principles and hierarchical and classified supervision measures [19].

Table 1. AI regulation for specific application scenarios in China

Category	Institution of Release	Name of the File
Automatic driving	Ministry of Industry and Information Technology	Notice on Carrying out the Pilot Program of Smart Internet Vehicle Access and Road Passage
Face recognition	State Administration for Market Regulation	Information Security Technology Face Recognition Data Security Requirement
Smart diagnosis and treatment	National Medical Products Administration	Guiding Principles for Registration Review of Artificial Intelligence Medical Devices
Smart Court	Supreme People's Court	Opinions of the Supreme People's Court on Regulating and Strengthening the Judicial Application of Artificial Intelligence
AIGC	State Internet Information Office	The Interim Measures for the Administration of Generative Artificial Intelligence Services

Since the introduction of the AIDP in 2017, China has successively issued a number of regulatory documents on AI, ranging from moral regulation to legal regulation. Looking back at the practice of AI regulation in China, AI regulation is mainly focused on promoting the development of the AI industry and does not involve unified AI legislation. While promoting the application of AI technology, China's AI regulation also pays attention to the risks of technological ethics and data security. It emphasizes the legislative supervision of AI high-risk areas. Regulatory documents mostly involve AI plans, opinions, guidelines, or principles, which are "soft laws" and not legally enforceable. On the contrary, in high-risk areas, such as data security, autonomous driving, and

healthcare, "hard laws" have been enacted to strictly guarantee the safety of AI. Generally speaking, China is exploring an AI governance system in which flexible ethics and hard laws are paralleled.

7 Findings

The ethical norms and legal system shown above reflect China's positive attitude towards AI technology that pays equal attention to development and security. However, with the rapid development of AI technology, it is inevitable that the legal system lags behind the application of AI technologies [20]. Therefore, it is believed that the following gaps in regulation need to be filled urgently.

7.1 Data Security Challenges

Whether in face recognition, healthcare, autonomous driving, or AIGC, there are common legal risks in the specific application of AI in various fields, mainly focusing on data security. Both model training and inference prediction in machine learning rely on large data sets, which may contain sensitive or private information about users. Such as personal basic information and preferences, financial information, medical information, educational information, etc. This information may be used to provide users with better services but may also be used improperly. Security incidents such as data leakage, privacy disclosure, and the use of AI fraud have sounded the alarm for AI regulation. For example, OpenAI officially released an investigation report on the temporary interruption of ChatGPT service on March 20 and said that 1.2% of ChatGPT Plus user data may have been compromised [21]. According to a survey report by Imperva, a US cybersecurity company, the number of online data breaches worldwide reached 1.7 million in 2020, an increase of 93% over the previous year [22].

In order to strengthen data protection, many countries have proposed data protection legislation. California introduced the California Consumer Privacy Act of 2018 (CCPA) in 2018, which specifies the types of data to be protected and gives consumers the right to access, delete and know their data [23]. In 2018, the EU adopted the General Data Protection Regulation (GDPR), which gives individual users the right to delete and migrate data and strengthens controls on data transfers to third countries outside the EU [24]. In practice, however, it is very difficult to completely remove data from the training model [25]. Because AI trains the model by obtaining data, the AI decision-making process is not transparent. There is a "hidden layer" that we cannot gain insight into, which is called a "black box". A black box means not being able to observe and not being able to understand. Therefore, the data obtained by AI is trained into a model that exists as a black box, and the automated process makes it difficult to completely remove traces. More seriously, the black box may have led to a crisis of trust in AI supervision. Because the black box hides its own defects and may trigger security risks, it is difficult for regulators to supervise and control.

In China, the Personal Information Protection Law provides provisions on issues such as excessive collection of personal information, cross-border flow of personal information, and processing of sensitive personal information. The Data Security Law, as the first basic law in the field of data security in China, stipulates the basic data security system. However, these two laws lack specific provisions for various AI application scenarios. In addition, with the continuous development of China's digital economy, the generation, flow and processing of data are becoming more complex, and the requirements for data protection are further increased [26].

7.2   Complexity and Uncertainty of AI

In addition, the high complexity and uncertainty of AI technologies exacerbate regulatory difficulties. The rapid development of AI technology has put enormous pressure on regulators. With the continuous breakthrough and innovation of AI technology, it is difficult for regulators to keep up with the pace of AI technology development. This rapid change makes existing regulatory frameworks unable to fully adapt to the characteristics and needs of emerging technologies, creating the legal risk of regulatory lag.

For example, self-driving cars are the most typical application scenario of AI and have great market prospects. But it has also triggered a series of legal challenges, involving AI legal subject status, product liability, cybersecurity, and privacy protection. Most of the systems specifically applicable to automatic driving in China are administrative normative documents, and the legislative process of automatic driving is slow, far behind the legal needs generated by the development of automatic driving. Moreover, in terms of regulation, there are big differences between self-driving cars and traditional motor vehicles. On the one hand, the legal system of the old regulatory fields such as transportation management, public transportation management, and taxi management needs to be revised; on the other hand, the legal system of the new regulatory fields such as surveying and mapping management, communication management, and network management needs to be constructed [27]. Overall, the existing regulatory mechanisms and legal rules are significantly lagging behind the development of AI technology. The development and potential risks of AI technology are highly uncertain, and prior regulatory decisions will become increasingly difficult.

7.3   Unclear Regulatory Responsibilities

AI technology is widely used in various fields, each with its own unique characteristics and regulatory needs. However, the existing division of AI supervision responsibilities in China is difficult to cope with the strong scenario of AI. As a result, the development of a comprehensive regulatory package has become very complex and challenging. At present, China's AI regulatory bodies include the State Administration for Market Regulation, the State Internet Information Office, the Ministry of Industry and Information Technology, and the Ministry of Science and Technology. Too many subjects are involved in the governance process, which will lead to regulatory competition and prevarication. Specifically, for matters that may have potential interests, various depart-

ments may compete to formulate corresponding regulatory policies and actively promote enforcement. On the contrary, where the situation is complex and the potential benefits are insufficient, each regulatory body may be lazy in supervision. In addition, intensive single-domain legislation increases compliance costs for businesses and increases the complexity of enforcement [28].

It is argued that lawmakers must clarify their responsibilities and powers, and ensure the effectiveness and consistency of the implementation of regulatory policies. At the same time, it is necessary to reasonably grasp the control intensity of regulatory measures, so as to improve the AI regulatory system and enhance the vitality of industrial innovation.

8   Discussion and Recommendations

Governance of AI with "soft law" seems to be a new trend in global governance [29]. Soft law is a set of rules of conduct that are established in document form and are not legally binding but may have some indirect legal effects [30]. Professional guidelines, private standards, and codes of conduct that cannot be enforced by the government fall into the category of soft law. Compared to hard law (the form of legislation created or modified), the form of soft law is more flexible, more adaptable, and easier to apply at the international level [31]. Given that strong regulation inhibits AI innovation, various countries have adopted soft laws such as principles, guidelines, and standards to address the legal challenges posed by AI. For example, in terms of ethical governance of AI, Algorithm Watch has combed through an online list of the world's AI ethical guidelines, a total of 167, which are non-mandatory and guiding [32].

However, there are obvious defects in "soft law" governance, that is, the validity and credibility are easily questioned. For example, the 52-member panel of experts, led by industry representatives, developed a code of ethics that has been criticised as an "ethical washing" whose real purpose is to delay or avoid binding regulation [33]. Moreover, because the government is unable to impose administrative penalties under soft law, its effectiveness is greatly reduced. Especially for high-risk AI applications, such as autonomous driving, legislative regulation is often more accurate and effective. It has been recognized that soft law can be used as a supplement and substitute for hard law, and even develop into hard law [34]. Considering the previous, it is argued that widely accepted ethical standards should be elevated to legal rules.

Therefore, in the high-risk field of AI, a better approach is to use legal regulations to address AI security issues. Soft approaches can be applied to low-risk AI applications, thereby promoting innovation while ensuring ethical standards. Assessing the level of AI risk then becomes the key to taking a different regulatory approach. The AIA classifies AI risks as unacceptable, high, limited, low, and minimal, based on the magnitude of AI's impact on fundamental human rights and security [35]. Regulators should focus on applications where there is evidence of real and high risk, rather than low or assumed risk, so as not to create unnecessary barriers to innovation. At the same time, experts who are closer to AI technology than regulators are allowed to develop soft laws such as AI industry standards.

It is important to note that AI regulation must not stifle AI innovation. Therefore, it is recommended to use a regulatory sandbox as an innovation regulation measure to assess the impact of AI technology innovation on data protection. Especially when new high-risk AI products appear on the market, using a regulatory sandbox approach can avoid stifling innovation and data security risks. Regulatory sandboxes were originally used by financial regulators to encourage financial innovation. The regulatory sandbox is about providing a secure and fast testing environment in which fintech companies can test innovative financial products and services, and then decide whether to carry out real marketing outside the sandbox [36]. By building an AI regulatory sandbox, the risks posed by AI products can be better assessed and addressed. On the one hand, the regulatory sandbox helps regulators assess the risks of AI products in advance and improve regulatory efficiency. On the other hand, regulatory sandboxes can reduce barriers to technological innovation caused by safety regulations.

In order to address the challenges posed by the uncertainty of AI development, it is argued to establish a diversified AI regulatory participation path. In particular, private institutions, such as industry associations, and technology companies should share best practices and participate in the development of AI regulatory standards. Finally, improve industry self-regulatory norms to guide enterprises to take the initiative to ensure the safety and credibility of AI technology.

9   Conclusion

While the development of AI has changed human life, it has also brought impacts and challenges to the existing legal system. This article argued that such legal challenges are manifested in the risks of data security and privacy protection, as well as the contradiction between the rapid development of AI technology and backward regulation. The legal and ethical debate triggered by the AI revolution has only just begun. As AI technology further develops and policymakers begin to consider strict laws and regulations, how to balance the contradiction between AI technology innovation and safety supervision has become an urgent problem to be solved.

This article presents different views on AI regulation. It is suggested that, in terms of AI regulation, instead of calling for ethical governance without legally enforceable binding force, it is better to learn from the draft EU AI Act and establish comprehensive AI regulatory legislation. At the same time, this article emphasizes the balance between AI technology innovation and safety supervision. By introducing a regulatory sandbox approach in the financial sector to promote AI technology innovation and prevent data security risks. Finally, it is recommended to strengthen cooperation between government departments and technology companies to guide industry self-discipline. Due to the complexity and regionalism of AI regulation, the research gap is that this article cannot cover the full content and depth of AI regulation. However, the results of this study can provide preliminary suggestions for the formulation of AI legislation in China and enrich the legal research on AI.

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