Personal Information Protection Issues in the Metaverse Perspective

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Abstract. The metaverse—a digital virtual society of realities, has emerged from the innovations of the information age. The development of this new virtual society depends on the concerted participation and joint efforts of all parties. Governments should play a leading role in its development by setting international rules and planning the human resources needed to adapt to the field’s development. The development of a comprehensive regulatory system is essential. This includes the involvement of multiple parties, such as internal enterprise regulation, government regulation, public supervision, and third-party regulators. By combining prevention, operation, and supervision, the aim is to enhance the governance of the metaverse industry and prevent issues such as the inadequate protection of personal information. The government should establish regulations related to the meta-universe, clarify behavioural norms and legal responsibilities, and strengthen law enforcement. Enterprises, on the other hand, should actively promote a culture of compliance and build a sound internal regulatory mechanism. With the joint cooperation of all parties, the governance structure should be optimised to achieve the goals of fairness, transparency, and administration in accordance with the law.

Keywords: meta-universe; compliance regulation; personal information protection; responsive regulation.

1. Introduction

In 2007, the US Accelerated Research Foundation's Metaverse Route Map Project provided a precise definition of a metaverse: it is a virtual reality augmented by virtualisation and a virtual world that is temporally and spatially persistent and co-constructed by the user. The user can experience a fusion of the two at the same time.[1]

In comparing the real world and the virtual world to a circle, the meta-universe can be seen as the interaction zone between the two. Information, as the basic unit of the meta-universe, holds particular importance.[2] The meta-universe acquires information primarily through two means: input from physical space and output from virtual space. The meta-universe acquires information from two sources: input from the real world, which is displayed in the virtual world through digitalisation, and output from objects in the virtual world. The appeal of the metaverse lies in its ability to combine reality and virtual reality, its decentralisation, and its high level of openness and freedom. These features attract a large number of users. It is important to maintain a clear and objective tone when discussing the metaverse. Users can experience a comprehensive sensory experience through games, virtual reality (VR), and holograms. They can also interact socially by communicating with people across physical distances and social statuses. The content includes VR movies, immersive board games, and other high-quality experiences. Additionally, users can conveniently trade and circulate digital assets.[3]

The protection of personal information has become a public concern with the rise of the meta-universe.[4] Personal information concerns not only personal privacy but also property rights, interests, and market order. Currently, the protection of personal information in China's metaverse faces challenges, such as the high risk of information being easily collected, stored, and used. The infringement of personal information in the metaverse is more hidden and difficult to trace. To tackle these challenges, the government and regulators are creating and enforcing appropriate laws and regulations. For example, Article 24[5] and Article 47[6] of the Cyber Security Law. However, disputes over the dissemination of information on the internet are common in judicial practice.
These cases typically involve three main parties: internet operators (internet meta-universe enterprises), internet users, and third parties who suffer from infringement of rights, mostly related to copyright and reputation infringement due to the dissemination of information by internet users. It is common for Internet meta-universe enterprises to mishandle third-party claims for rights protection, leading to lawsuits or even criminal charges. This can occur due to subjective or objective reasons. It is important for meta-universe enterprises to objectively evaluate such claims and take appropriate action to avoid legal consequences. This paper discusses the establishment of a closed-loop compliance monitoring process system that is scientific and reasonable. It covers the leaders, implementers, and implementation methods within the system.

2. Rational and Effective Ex Ante Preventive Mechanisms

In the context of economic globalization, meta-universe enterprises are subject to increasingly strict market regulations both domestically and internationally.[7] During the development process, meta-universe enterprises should manage and mitigate various risks, including compliance issues related to laws, regulations, quality management, and information security. An increasing number of meta-universe enterprises are integrating compliance management systems into their operations to ensure long-term development, gain a competitive advantage, and maintain compliant operations.[8] The compliance management system provides a systematic framework for preventing compliance risks within the meta-universe enterprise.[9] It also helps to comprehensively assess compliance risks in the external development environment, effectively avoiding illegal behaviours, promoting the enterprise's own supervision, reporting, disclosure, and rectification, and achieving a separation of responsibility between the enterprise and illegal employees. To reduce the risk of the Yuan-universe enterprise, it is important to clearly separate responsibilities between the company and any illegal employees.[10]

2.1 Improve compliance management and implement responsible cutting.[11]

In order to ensure the smooth progress of compliance regulation, it is important to clarify the core responsibilities and job descriptions of each position.[12] This maintains order in the metaverse and ensures that each position operates in accordance with relevant regulations and ethical norms. Clarity of duties is especially important in judicial practice. For example, the dispute over tort liability between Shen and Shanghai Ctrip Business Co.[13] highlighted this need. The court found that Ctrip had failed to fulfil its security obligations adequately and was therefore required to bear supplementary liability due to the obvious loopholes in its information security management. Ctrip was unable to prove that the leakage of Shen's booking information was the result of other subjects. The information security management problems of Ctrip in this case were mainly manifested in two aspects. Ctrip's information security management problems were primarily due to two factors. Firstly, there were clear inadequacies in its management system. Specifically, Ctrip's formulation and implementation of the management system did not fully consider the actual situation and needs of the management targets, resulting in a significant disconnect between the management system and the management targets. The court found that Ctrip had information security management loopholes due to a management defect. Additionally, Ctrip's management measures were inadequate as they failed to provide sufficient evidence to attribute responsibility for the leakage of Shen's information to other subjects. This was a key reason why the court found Ctrip liable for supplementary compensation.

To summarise the lessons learned from this case, it is important to emphasise that data managers should prioritise information security management. They should ensure that the formulation and implementation of relevant systems and measures fully consider the actual situation and needs of the targets of management. Secondly, data managers should enhance the management and supervision of employees, ensuring that the specific duties of each position are clearly listed and stipulated. Thirdly, data managers should develop relevant standards and guidance documents,
including data standards and specifications for data collection, storage, processing, analysis and application, to ensure data consistency, accuracy, reliability and completeness. Developing data standards and specifications can guide team members to follow a uniform data-processing process, reduce the risk of data errors and biases, and improve data quality. This sets appropriate indicators for the compliance responsibilities of each position.

2.2 Analyse internal and external factors to improve business regulation.

The rise of the metaverse is causing significant changes to the internal operations and external environment of enterprises.[14] From a meta-universe perspective, enterprises should reassess the challenges and opportunities they face. Internally, companies should prioritize digital transformation to ensure their operational model aligns with the meta-universe era. In this process, companies need to analyse process optimisation, human error prevention and management shortcomings.[15]

2.2.1 Internal Oversight

Process problems are a common occurrence within organisations.[16] Business processes can become increasingly complex as an organization grows, and the original process design may no longer be suitable for new business needs. It is important to ensure that process design is adaptable to changing business requirements. Such problems can lead to inefficiency, waste of resources, and other issues. To address this issue, businesses should streamline and simplify their existing processes to ensure efficient operations. One way to achieve this is by implementing automated and intelligent technologies. By incorporating advanced industrial Internet technology, businesses can achieve intelligent control of production lines and improve overall efficiency. Enterprises can utilise big data and artificial intelligence technology to conduct in-depth analysis of business processes, discover potential optimisation space, and simplify processes.

Additionally, human error is an internal factor that cannot be ignored. Employee quality and ability directly affect overall enterprise performance. Human error can result in production accidents and quality problems, leading to significant economic losses for the enterprise. To prevent this, enterprises should enhance employee training and motivation to improve their sense of responsibility and motivation. Regular employee training activities can be conducted to improve employees' skill levels and safety awareness.[17] Enterprises can encourage employee participation and improve job satisfaction and loyalty by establishing a sound incentive mechanism. Through these measures, enterprises can reduce the occurrence of human errors and improve production safety and quality.

Furthermore, ineffective management poses a significant challenge for enterprises. Management is the cornerstone of all enterprise operations, and enhancing management practices can aid in achieving strategic objectives. Inadequate management can result in issues such as ineffective communication and disorganized coordination. To enhance the management situation, enterprises should establish a robust management system, strengthen communication and collaboration between management and employees, and improve the execution and cohesion of the organization. Enterprises can establish a comprehensive management system and workflow to ensure that all work follows rules and has evidence to support it. Enterprises can establish an effective communication mechanism to strengthen information exchange and feedback between management and employees, promoting teamwork and execution. The implementation of these measures can establish an efficient management system, providing a strong guarantee for the sustainable development of enterprises.

2.2.2 External Oversight

External environmental factors play a significant role in the success of an enterprise, in addition to internal operational factors.[18] Enterprises should consider various factors when dealing with the external environment. Economic factors are crucial for the survival and development of
enterprises. Fluctuations in the economic cycle and changes in market demand can significantly impact the operation of the enterprise. Enterprises should pay attention to changes in industry trends when dealing with economic factors. This will help them adjust their development strategies and maintain competitiveness in the changing economic environment. For instance, during an economic upswing, enterprises can expand their production scale to increase production capacity due to the growth in market demand. Conversely, during an economic downturn, enterprises should reduce costs and optimize their product mix to adapt to market changes caused by reduced demand. In the competitive market, enterprises should face the reality of pressure. To win market share, they need to continuously innovate and improve their product quality and service level. For instance, enterprises can improve their competitiveness by researching and developing new technologies and introducing new products. They should also pay attention to their competitors' dynamics and adjust their own competitive strategy accordingly to maintain an advantage. Enterprises should comply with national laws and regulations to ensure legal business operations. They should also pay attention to changes in laws and regulations to adjust their business strategies and reduce legal risks. For instance, when new laws and regulations are introduced, enterprises need to understand the specific content and requirements to ensure compliance. Additionally, they should strengthen their legal awareness to improve risk prevention capabilities and avoid economic losses and reputation damage caused by illegal behaviour.

Afterwards, all risks are assessed for their probability and impact. The risks are then prioritised based on the assessment results, and coping strategies are developed accordingly. These strategies may include risk avoidance, risk transfer, risk mitigation, and so on. It is important to ensure that the chosen strategy matches the characteristics and significance of the risk and is effective in dealing with it.

Establishing a list of job compliance duties and a risk identification list is an ongoing and comprehensive process that requires constant communication and adjustment with employees, regulators, and legal groups. It is important to ensure the transparency and fairness of the list and to avoid discrimination and unreasonable restrictions. Simultaneously, it is advisable to utilize measures such as expert consultation when formulating and executing risk management strategies to guarantee comprehensiveness and efficacy.

3. Establish an effective ex post facto operational mechanism

The traditional modes of administrative supervision mainly include the 'directive' and 'consultative' modes.[19] Under the "directive" model, the administrative organ mainly adopts a mandatory ordering approach, requiring the administrative relative to strictly comply with it, and no consultation is allowed. Under the 'consultative' model, the administrative body prioritises communication and consultation with the administrative counterpart, aiming to reach a consensus through dialogue and negotiation in order to achieve regulatory objectives. This model emphasises cooperation and interaction, with the goal of establishing a collaborative relationship to achieve shared objectives.

Under the traditional administrative supervision model, the emphasis is on regulating misconduct. In contrast, compliance supervision focuses on the entire compliance process, rather than just ex ante prevention and ex post corrective supervision. Establishing an effective compliance supervision process and ensuring its implementation is the top priority of compliance supervision.

3.1 A Contingent Shift in Traditional Regulatory Thinking.

An American scholar called Ian Ayers and an Australian scholar called John Braithwaite proposed two models for regulation: 'strengthening regulation' and 'deregulation'.[20] They tested both models and concluded that using either one alone is insufficient to achieve the desired compliance effect. Braithwaite also proposed the 'Responsive Regulation Theory', which is a hybrid model of government and non-government regulation.[21]
In contrast to the traditional regulatory model, the responsive regulatory model addresses the shortcomings of the former by providing a faster response. This is achieved through a more proactive approach to regulation. The responsive regulatory model prioritises timely responses, with third-party regulators actively collecting market issues and making quick adjustments. In contrast, the traditional regulatory model typically relies on static, ex ante rules and standards, and is relatively slow to respond to market changes. Another difference is in flexibility. There are differences between the responsive regulatory model and the traditional regulatory model. The former is more flexible in adapting to changes in the meta-universe to ensure regulatory effectiveness, while the latter prefers fixed rules and processes that are difficult to adjust to updated iterations of the meta-universe. Additionally, there are differences in cooperation and consultation. The responsive regulatory model promotes cooperation and consultation between the supervisory body and the market entity, facilitating mutual supervision to jointly solve regulatory problems. In contrast, the traditional regulatory model involves only government supervision of the market entity and lacks vitality.

The responsive regulatory model operates through the effective cooperation of enterprises in the meta-universe, in addition to government regulatory tools. The government assumes the roles of enactment, enforcement, and punishment. It determines key areas and targets to be monitored through research in the field. In the event of a violation of the law, appropriate legal means are taken to maintain social peace. The meta-universe enterprise is responsible for executing this process. Implementing the compliance monitoring model effectively within the metaverse enterprise and avoiding paper compliance and false compliance are significant challenges.

3.2 Arguments for a Responsive Regulatory Model in Judicial Practice

Chinese regulatory system has continuously adjusted and improved its regulatory model to keep up with the progress of the market environment and technology. Currently, China primarily employs a risk management-based regulatory strategy that centres on identifying, assessing, and controlling risks. This strategy centres on identifying, assessing, and controlling risks. The focus is on identifying potential risks of market players in advance and formulating and implementing corresponding regulatory measures to reduce the impact of risks.

Compared to the responsive regulatory model, China's current regulatory model still has certain deficiencies. The case between Xie Moujiang and Guangzhou Kudou Computer Technology Co Ltd regarding copyright ownership and infringement raises two key issues. The first issue is the lack of user management. Article 24 of the Network Security Law states that Kugou failed to implement real-name user management. As a result, the platform was unable to confirm the real identity of relevant users when faced with a lawsuit from the copyright owner. Consequently, Kugou was only held liable for infringing songs distributed by users on its platform. Additionally, ineffective management had negative effects. Although Kugoo has not implemented real-name management, it has censored infringing songs uploaded by users. If the platform is found to have gained significant illegal profits from the infringement, the copyright holder may seek civil damages and the platform may also face criminal liability for copyright infringement. In this scenario, the companies responsible for operating the platform may face even greater legal and operational risks.

However, internal non-profit compliance regulation can lead to problems such as paper compliance and false compliance (Chen, 2021). How to solve these problems, the author believes that we can start from the following aspects: firstly, the necessity consideration of compliance regulation. To address these issues, the author suggests In some large meta-universe enterprises, the cost of compliance regulation even reaches $130 million, which undoubtedly challenges the for-profit purpose of meta-universe enterprises. Unnecessary compliance regulation should be removed, and meta-universe enterprises should be given a certain degree of freedom to alleviate the cost burden. It is important to consider the type and content of the meta-universe enterprises when determining the appropriate level of regulation. Meta-universe enterprises
should promote and establish a strong culture of compliance, so that employees understand the significance of compliance and consider it a fundamental principle of meta-universe enterprise operations. A positive compliance atmosphere can be created through organisational publicity, incentive mechanisms, and internal communication. Additionally, a feedback mechanism should be established to timely understand and track compliance, discover problems, and take effective measures for correction and improvement. This can be achieved through internal audit, risk assessment, complaint and reporting channels, and other means to collect and provide feedback on compliance information.

In conclusion, the compliance mechanism for meta-universe enterprises should rely on governmental regulations and penalties, as well as the effective cooperation of said enterprises. The responsive supervisory mode significantly reduces the cost of compliance supervision for meta-universe enterprises, minimizes the likelihood of offenses committed by such enterprises, and effectively enhances the governance structure of meta-universe enterprises through the supervision of diverse subjects and modes. This creates a demonstration effect on the compliance construction of other meta-universe enterprises, thereby improving the governance level of the entire industry.[28]

4. Build a Comprehensive Ex Post Facto Monitoring System

A complete compliance supervision and management system requires a preventive mechanism beforehand, an operational mechanism during the event, and a comprehensive monitoring mechanism after the event. All three are indispensable. The construction of the ex-post supervision system requires the joint participation of meta-universe enterprises and the government.

4.1 Government Oversight

To promote the orderly development of the meta-universe industry, the government should regularly collect and analyse information related to policy implementation, projects, and orders. This includes data, feedback, and reports. Information should be sourced from multiple channels, including government departments, experts, academic research, and other stakeholders. This promotes network interconnection and data sharing, curbs financial speculation and excessive capital speculation, and guides the industry to empower the real economy while safeguarding network security and user privacy.[29] Secondly, the government should enhance the construction of a regulatory infrastructure framework that is compatible with the development of the metaverse. The intensity of regulation should be moderately controlled to prevent innovation from being restricted. Morgan Stanley’s research report suggests that the regulatory framework of the metaverse should focus on three aspects: developing regulations and systems for digital assets, digital real estate, and digital payments; constructing global metaverse systems and platform solutions; and exploring governance principles and third-party supervisory practices of decentralised autonomous organisations (DAOs). Furthermore, it is imperative that the government takes into account the feedback and suggestions provided by supervisory bodies and implements corresponding adjustments and improvements to policies, projects or orders. Simultaneously, the government should regularly assess and enhance its ex post facto supervision to improve its effectiveness and quality.[30]

Compared to traditional online games and meetings, the meta-universe platform requires the ability to interact with millions of users in real-time, with high levels of interactivity and immersion in virtual space. This places stringent demands on technology, algorithms, and infrastructure, such as mobile communications, big data, and artificial intelligence. Currently, it is imperative for governments worldwide to invest more in basic information technology research and development in the metaverse. Additionally, they should encourage enterprises to improve their technological innovation capacity and enhance the maturity of their technology. At the same time, governments should take the lead in the formulation of international rules for the meta-universe and plan ahead...
for the human resources team needed to adapt to the development of the meta-universe in order to seize the first opportunity for industrial development.[31]

4.2 Supervision of meta-universe enterprises

Meta-universe enterprises, both supervisors and supervisees[32], should prioritize the establishment and improvement of internal supervisory mechanisms during their operations.[33] To ensure the positive development of the meta-universe enterprise, maintain its image, and protect the legitimate rights and interests of employees, an internal supervisory organization should be established to strengthen the management and supervision of all enterprise work.

Firstly, companies should use the meta-universe corporate compliance checklist flexibly to improve it in a timely manner for internal misbehaviour. This not only helps to eliminate potential risks but also provides a strong guarantee for the healthy operation of the enterprise. Enterprises should pay close attention to industry dynamics and changes in laws and regulations. They should adjust their internal management system in a timely manner to keep pace with the development of the enterprise.[34]

Secondly, it is important to collect and process user feedback and complaints in a timely manner, understand user needs and opinions, and make improvements and optimizations in response to any issues.[35] Enterprises should focus on internal communication and collaboration to enhance team cohesion. By establishing a reliable communication mechanism, employees can express their views and suggestions, enabling enterprises to continuously optimize management and improve efficiency. Additionally, the construction of enterprise culture should be strengthened, promoting the core values of integrity, fairness, and justice, and creating a positive and equitable working environment for staff.

Finally, enterprises should pay close attention to both internal and external risks within the industry and improve their risk prevention and response abilities. In the emerging field of the meta-universe, enterprises should be adept at grasping development trends, leveraging their own advantages, actively exploring the market, and enhancing their core competitiveness.[36] At the same time, it is important to enhance cooperation and communication with the government, industry associations, partners, and other relevant parties to promote the healthy development of the metaverse industry.

4.3 Third-party Monitoring

Third-party regulators play a crucial role in the rapidly growing metaverse industry. Their legitimacy, professionalism, independence, resource security, reputation, and word-of-mouth advantages make them a key force in regulating the metaverse industry. To ensure that regulatory practices are standardized and regulated, third-party regulators should establish clear regulatory provisions and operational procedures.

Regulators in the meta-universe industry should develop a clear set of regulations and operational processes based on industry characteristics and enterprise development. These regulations and processes should be flexible to keep up with industry changes and to update and improve the regulatory system and processes in a timely manner. Ensuring legal compliance and regulatory behaviour is crucial, as is enhancing regulatory efficiency and accuracy.

With the advancement of science and technology, modern tools such as big data analysis and artificial intelligence are increasingly being used in regulation. Third-party regulators can utilise these tools to build a regulatory technology platform, thereby improving regulatory efficiency and accuracy. Real-time monitoring and analysis of meta-universe enterprises' data and operational status can detect abnormalities and potential risks, enabling timely implementation of corresponding regulatory measures.

Third-party regulators should continuously summarise their experiences during the regulatory process to provide useful references for future regulations. Sharing regulatory cases can improve regulators' response ability and protect the healthy development of the metaverse industry.
Additionally, regulators should collaborate with third-party regulators in other regions to share experience and resources and jointly address challenges posed by the metaverse industry.

Supervision after the fact involves multiple parties. In internal supervision, meta-universe enterprises should protect the legitimate rights and interests of employees and prevent excessive invasion of employee privacy. Managers of meta-universe enterprises should also comply with laws and regulations to ensure the legality and fairness of internal supervision. In implementing ex post facto supervision, the regulator should ensure fairness, transparency, and lawful administration of supervisory behaviours to safeguard the legitimate rights and interests of meta-universe enterprises and the public. Accusations made by the public should be supported by solid evidence to make efficient use of judicial resources.

5. Conclusion

Metaverse is a virtual augmented physical reality with spatio-temporal persistence and user co-construction, providing users with a full range of sensory experiences, social interactions and premium content.[37] However, the protection of personal information is becoming an increasingly prominent issue, and relevant regulations have been introduced. In this context, establishing a scientific and reasonable compliance and regulatory process system is crucial for the development of Metaverse. The compliance operation mechanism of Meta-Universe Enterprises relies on the government to formulate and enforce regulations, as well as the cooperation of the enterprises themselves to achieve responsive regulation. It is important for the government to formulate comprehensive Meta-Universe related regulations to clarify the norms of conduct and legal responsibilities within the Meta-Universe. Additionally, law enforcement should be strengthened to crack down on illegal and criminal behaviours. The government and enterprises should collaborate to enhance the governance structure and establish a robust governance mechanism. This should include systems for power checks and balances, information disclosure, and public participation to improve governance efficiency and credibility. The post-event supervision system should involve internal supervision of meta-universe enterprises, government regulation, and public supervision to achieve multi-party cooperation and ensure compliance. At the same time, it aims to protect the rights and interests of employees, comply with laws and regulations, and achieve fairness, transparency, and lawful administration. Third-party regulators have certain advantages in regulating corruption and technology, which can provide short-term regulation and effectively restrain corrupt practices. Effective supervision, including pre-, during, and post-supervision, can enhance industry governance and prevent breaches of personal information protection.

Reference

[5] Article 24 of the Network Security Law: Network operators shall require users to provide true identity information when signing agreements with them or confirming the provision of services. If the user does not provide true identity information, the network operator shall not provide the relevant services to the user.
[6] Article 47 of the Network Security Law: Network operators shall strengthen the management of information published by their users, and if they find information whose publication or transmission is
prohibited by laws or administrative regulations, they shall immediately stop transmitting the information, take measures to eliminate it and other disposable measures to prevent its proliferation, keep records of it, and report it to the competent authorities concerned.


[32] Self-monitoring and external oversight


