



Effectiveness, Problems and Countermeasures of Personal Information Protection for Minor Consumers on E-commerce Platforms

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Abstract. With the vigorous development of the digital economy, e-commerce platforms have become an important scenario for minors' daily consumption. The protection of minors' personal information is not only a key component of the legal rights and interests protection system for minors, but also an important support for their healthy growth in the digital era. At present, obvious loopholes still exist in the collection, storage, use and other links of minors' personal information on e-commerce platforms. Prominent problems such as the formalistic implementation of the guardian consent mechanism and the lack of pertinence and adaptability in privacy policies have seriously endangered the security of minors' personal information. This paper systematically sorts out relevant laws and regulations, academic researches and industrial practices at home and abroad, and deeply analyzes the compliance risks as well as the deficiencies of the existing regulatory system concerning the protection of minors' personal information on e-commerce platforms. Combined with the survey data of 13 sampled e-commerce platforms and typical cases, it reveals the institutional design flaws and practical shortcomings of the industry, and clarifies the root causes of the problems. On this basis, countermeasures are put forward from three dimensions: legislative improvement, platform performance of duties and strengthened supervision. The specific measures include refining legal norms, improving the subject responsibility system, strengthening supervision over leading platforms, and enhancing compliance guidance for small and medium-sized platforms, with a view to constructing a more perfect protection system for minors' personal information.

Keywords: Rights and Interests of Minors; Personal Information Protection; E-commerce Governance; Online Consumption Governance

1 Introduction

Empowered by digital technology, China's e-commerce industry has achieved leapfrog development. Minor consumers are deeply integrated into online consumption scenarios, and their personal information has become a core resource and a key competitive focus for e-commerce platforms to conduct precision marketing and optimize services.

According to relevant reports, as of November 2024, the number of minor internet users in China has exceeded 196 million, with the internet penetration rate covering almost all minor groups. Online consumption among minors shows a trend of younger age; 14.14% of minors spend more than 100 yuan on online consumption every week and have formed stable consumption habits. However, minors are physically and psychologically immature, with weak capabilities in personal information protection and self-prevention, making them vulnerable to excessive collection and improper use of personal information by platforms. The high penetration rate of minor internet users and the younger trend of online consumption have expanded the exposure of their personal information in e-commerce scenarios, leading to a sharp rise in the risks of information leakage and abuse. Therefore, research on the personal information protection of minor consumers on e-commerce platforms not only responds to practical demands, but also serves as a key measure to standardize the e-commerce industry and consolidate the online protection barrier, bearing important research value and practical urgency.

2 Literature Review

Domestic academic circles have conducted extensive research on the protection of minors' personal information and information governance of e-commerce platforms. Fu Hongyu, in *Problems and Countermeasures in the Construction of China's Minor Personal Information Protection System*^[1], pointed out that China's minor information protection is faced with ambiguous definition of rights and inconsistent legal norms, and proposed that minors' personal information should be classified as sensitive information with clear identification criteria for recognizability. Other scholars have conducted special research on the rule of guardians' informed consent, and pointed out that in the e-commerce scenario, this rule faces practical difficulties such as vague operational boundaries and the absence of effective verification mechanisms.

Tu Lyu, Yulin Guo and Hao Chen^[2] analyzed the main risks in the minor information environment and discussed the necessity of establishing a constitutional and legal model to safeguard minors' information security. Li Jialin^[3] argued that it is essential to balance the relationship between "control" and "protection". Kobko Y, Foros H and Shperun K^[4] aimed to reveal that legal provisions for the protection of minors' personal data constitute a crucial element of information security.

Article 8 of the EU GDPR and France's *Information, Archives and Freedom Act* have established the core regulatory criteria for the guardian consent principle. The "provider prevention" system under Germany's *Youth Protection Act* has provided reference for scholars such as Yuan Ningning^[5] to construct risk prevention and control mechanisms for e-commerce platforms. The principle of proportionality, studied by Zhang Xinbao^[6] and other scholars, has been combined with the data minimization principle of the *Personal Information Protection Law*, forming the basic norms for information collection by e-commerce platforms. Faisal K^[7] proposed tiered risk prevention and control, tiered platform compliance, and dedicated data impact assessments for minors.

3 Organization of the Text

China has established a basic legal framework for personal information protection, having successively promulgated the Civil Code, Personal Information Protection Law, Minor Protection Law and other laws and regulations. These laws clearly stipulate that minors' personal information and privacy are protected by law, and that sensitive personal information shall be protected under higher privacy standards. The processing of minors' personal information shall in principle be subject to the consent of their guardians and abide by the principles of legality, legitimacy and necessity, so as to better safeguard the legitimate rights and interests of minors. Although a series of legal norms have been formulated, some e-commerce platforms fail to fully implement the above mandatory provisions in practice. Infringement incidents such as personal information leakage and abuse occur frequently, reflecting obvious deficiencies of e-commerce platforms in the protection of minors' personal information, which requires attention from all relevant parties.

3.1 Research Approach of This Paper

Data analysis method relies on various collected data and adopts corresponding research methods for in-depth processing, so as to ensure that the analysis results are scientific and targeted. The empirical research method reveals compliance loopholes in practice by analyzing the privacy policy samples and penalty cases of e-commerce platforms. The comparative research method, including horizontal and vertical comparison, draws on mature foreign experience by comparing the legislation of the United States, the European Union and other regions with domestic legislation. The case study method conducts an in-depth analysis of typical cases to verify compliance risks, providing a solid basis for putting forward optimization suggestions.

This study takes the literature analysis method as the core, and its data sources are divided into two categories. First, laws, regulations and policy documents, including domestic laws and regulations such as the *Civil Code of the People's Republic of China*, the *Law on the Protection of Minors*, the *Personal Information Protection Law of the People's Republic of China*, the *Law on the Protection of Consumer Rights and Interests*, and the *Regulations on the Network Protection of Minors*. It also compares relevant legislation in the United States and France to guarantee the legal basis of the research. Second, industry practical materials, covering privacy policies of mainstream e-commerce platforms, penalty cases issued by regulatory authorities, and industry reports, which ensure the research is closely combined with practical scenarios. The data collection process strictly selects authoritative sources to ensure the accuracy and reliability of the data.

3.2 Institutional Construction and Comparison

China's protection of minors' personal information has gradually shifted from vague privacy protection in the early stage to rational regulation. It has been continuously

strengthened alongside the development of the internet, eventually forming a specialized and systematic legal protection framework (Tables 1-2).

Table 1. Legal Evolution of Minors' Personal Information Protection in China

Time Period	Core Developmental Features	Key Legal and Policy Documents	Core Key Points
2012–2018	Personal information protection focuses on online scenarios with the gradual establishment of the basic framework	Cybersecurity Law of the People's Republic of China(2016)	Establish basic principles for the processing of personal information and set up special provisions for the online protection of minors.
2019	The first special regulation on minors' personal information protection is issued	Provisions on the Online Protection of Children's Personal Information (2019)	Clarify core rules such as the guardian's right of consent, and specially regulate the online protection of children's personal information.
2019–2021	The institutional system is officially established with strengthened special protection	Revised Law on the Protection of Minors (2020)	Add a special chapter on online protection and uphold the principle of in the best interests of minors.
2022 to Present	Refined governance and the formation of a coordinated protection pattern of legislation, supervision and judicature	Regulations on the Online Protection of Minors(2024)	Restrict the online consumption quota of minors and prohibit the provision of paid services incompatible with their capacity for civil conduct; the minor mode shall cover core protection functions including authority management, consumption control and content governance.
		Regulations on the Administration of Network Data Security (2024)	Standardize the processing of network data, require the processing of minors' data to follow the principle of minimization and necessity, and establish a dedicated protection mechanism.
		Measures for the Administration of Compliance Audits of Personal Information Protection (2025)	Oblige personal information processors to conduct regular compliance audits, with a special focus on the targeted compliance of minors' personal information protection.
		Measures for the Supervision and Administration of Online Trading Platform Rules (January 2026)	E-commerce platforms with a large number of minor users or significant social influence shall formulate dedicated platform rules, clarify the protection obligations of in-platform operators, and provide remedies and relevant prompts.

Table 2. Core Legal Essentials of International Protection of Minors' Personal Information

Country / Region	Key Laws and Regulations	Core Content Essentials
United States	Children's Online Privacy Protection Act (COPPA), 1998 (revised in 2025)	It establishes the basic framework for online personal information protection of children, covering those under the age of 13. The revised version adds provisions for mixed-audience websites or online services.
Germany	Amendment to the Youth Protection Act	It introduces the concept of "provider prevention" and imposes structural preventive measures on internet service providers targeting minors.
European Union	General Data Protection Regulation (GDPR), 2018	Article 8 stipulates that the baseline age for consent to the processing of children's personal information is 16, while member states may lower it to 13. Data controllers are mandatorily required to verify the authenticity of guardians' consent.

3.3 Implementation of E-commerce Platforms

3.3.1 Sample Basic Information.

All the 13 selected platforms are leading benchmarks in their respective segmented fields with high market shares and a large base of minor users. They cover six mainstream e-commerce categories: comprehensive, food delivery, live-streaming, second-hand, cross-border and book retail, basically encompassing the major scenarios of minors' online consumption. Their information protection mechanisms can truly reflect the overall standard of the industry. Different types of platforms have distinct demands and risk focuses in processing minors' personal information. For instance, live-streaming e-commerce involves reward-related information, food delivery e-commerce involves delivery information, and overseas platforms need to comply with cross-border data rules. Selecting leading samples of diverse types enables a comprehensive analysis of the differentiated characteristics of minors' personal information protection in the e-commerce context. The sample covers comprehensive e-commerce platforms (Taobao, JD.com, Pinduoduo, Suning.com), food delivery platforms (Meituan, Ele.me), live-streaming e-commerce platforms (Douyin, Kuaishou, Xiaohongshu), second-hand trading platforms (Goofish, Zhuanzhuan), overseas platforms (K4, Amazon), and book e-commerce platforms (Dangdang) (Table 3).

3.3.2 Presentation of Charts and Tables.

Achievements

1. Platforms have established a multi-layered technical protection system centered on real-name authentication, intelligent age identification, content filtering and permission management. It realizes accurate identification and protection of minors covering identity verification, content screening and access permission control.

Table 3. Privacy Policy Provisions for Minor Protection Across Various Platforms (May 2025 – January 2026)

Platform Type	Key Points of Minor Privacy Protection	Special Policies
Comprehensive E-commerce Platforms (e.g., Taobao, JD.com) Source: Rules on the Protection of Children's Personal Information and Guidelines for Guardians (effective September 2025); Basic Function Privacy Policy of Taobao (effective January 2026)	1. Personal information of children under 14 years old is classified as sensitive information, which requires separate consent from guardians and shall be governed by dedicated protection rules. 2. Information collected without the guardian's consent shall be deleted as soon as possible. 3. Some platforms prohibit providing specific services such as live streaming anchor qualification to minors under 16 years old.	For example, Taobao has launched an online shopping protection function for teenagers. For real-name authenticated minor users, it adopts a hierarchical protection mechanism of no active recommendation, invisible in search, and view-only without purchasing permission.
Food Delivery Platforms (e.g., Meituan Waimai, Ele.me) Source: <i>Minor Privacy Policy</i> of Meituan (effective May 2025); <i>Ele.me User Service Agreement</i> and <i>Ele.me Privacy Policy</i> (effective January 2025)	1. Services are mainly oriented to adults, and minors shall use the services only with guardians' consent. 2. Special privacy policies for minors have been formulated, and minors' personal information shall only be used when permitted by law or necessary for the protection of minors. 3. Guardians may inquire about and correct minors' personal information, and any illegally collected information will be promptly deleted once discovered.	These platforms only collect minors' personal information within the necessary scope and upon guardians' consent, and adopt encrypted storage for minors' personal data.
Live-streaming E-commerce Platforms (e.g., Douyin E-commerce, Taobao Live) Source: Douyin Minor Protection Rules and Douyin Live Code of Conduct (effective January 2026); Taobao Teen Mode User Guide (effective November 2025)	1. Children under 14 are prohibited from opening live-streaming accounts, and minors' recharge and reward behaviors are restricted. 2. Minors shall use the platforms with their guardians' consent; minor anchors aged 16 and above are required to obtain guardians' permission. 3. A teen mode is set up to limit usage duration, filter inappropriate content, and give priority to handling complaints related to minors.	Minor accounts are restricted from recharging, sending rewards, purchasing virtual gifts and other related functions. Platforms have established a dedicated customer service team for minors to prioritize handling disputes involving underage users.
Second-hand Platforms (e.g., Goofish, Zhuanzhuan) Source: Goofish <i>Privacy Policy</i> , effective October 2025	1. Most services are targeted at adults aged 18 and above, and minors may use the platform only with guardian consent. 2. The personal information of children under 14 requires separate guardian consent and is subject to dedicated protection rules. 3. Information collected without guardian consent will be deleted or anonymized.	Goofish prohibits the sale of virtual goods, tobacco, alcohol and other restricted items. Guardians are allowed to set consumption limits, and manually review will be triggered for abnormal large-value orders.
Overseas Platforms (e.g., Amazon) Source: Amazon Privacy Notice (including a special chapter on minors), effective June 2025; Amazon Developer Policy for Children's Apps, updated and effective December 2025	1. The U.S. COPPA requires verifiable parental consent for collecting personal information of children under 13, while the EU GDPR sets the age of consent ranging from 13 to 16. 2. Function permissions such as chatting and social interaction are regulated hierarchically by age group, and targeted advertising is restricted. 3. Guardians may withdraw consent and delete relevant data, and platforms are obligated to conduct age verification and adhere to the data minimization principle.	Dedicated platforms for minor protection are established to provide exclusive child protection services. All content is pre-screened by educational experts, with no advertisements or social media functions.

2. Biometric technologies such as facial recognition and voice recognition, together with cryptographic privacy protection technologies, are adopted to achieve more objective and accurate age determination.

3. Strict permission control is implemented for minor accounts to restrict high-risk functions including live streaming and virtual gifting. By means of independent password setting, usage duration and time period management, the risks of online overconsumption and internet addiction are effectively reduced at the user end.

4. With the continuous improvement of China's legal system for minor online protection, mainstream domestic online platforms have kept pace with legislative and regulatory requirements. They dynamically revise and update policies on minors' personal information protection, continuously refine rule provisions and upgrade protection measures. All types of platforms, including comprehensive e-commerce, live-streaming, food delivery and second-hand trading platforms, have been optimizing their privacy policies for minors.

Existing Problems

Nevertheless, some children's educational apps (such as Yiya Huahua and Panda Literacy) still have prominent deficiencies in minor protection. Such apps allow minors to purchase educational toys, books and other goods, yet they lack special targeted clauses for minors. They only make general reference to the need for guardian consent without establishing a verifiable consent mechanism. Moreover, they fail to strictly protect the personal information of children under 14 in accordance with the standards for sensitive personal information.

Meanwhile, the actual effect of the teen mode is unsatisfactory, restricted by three major factors: First, non-compulsory activation. Most platforms do not mandate the launch of teen mode even when identifying users under 18, and leave the option entirely to users, resulting in a low activation rate. Second, circumvention loopholes exist. Minors can bypass relevant restrictions by using adult accounts or cancelling real-name authentication. Third, functional limitations. The teen mode of some platforms only provides basic functions such as usage time reminders and content filtering, while lacking core control functions represented by consumption management.

3.4 Analysis and Arrangement of Typical Cases

In recent years, China has attached great importance to the protection of minors' online rights and interests. Administrative law enforcement and judicial practices concerning the governance of personal information on e-commerce platforms have been continuously deepened, forming a relatively complete regulatory system and law enforcement experience. This has provided solid case support for the application of laws and industrial rectification. Below are 15 penalty cases involving infringements of minors' personal information on e-commerce platforms from 2022 to 2025, offering comprehensive support for result analysis (Table 4).

Table 4. 15 penalty cases involving infringements of minors' personal information on e-commerce platforms from 2022 to 2025

Case Name	Cause	Case Source
Civil Public Interest Litigation Case of Deng and Xiao in Gongshu District, Hangzhou for Infringing Minors' Information	In 2022, the two defendants registered and operated an online platform, illegally collecting and trading a large amount of minors' identity information with platform transaction volume exceeding 470,000 yuan, which constituted joint infringement.	Local Procuratorate Publicized Public Interest Litigation Cases
Penalty Case of a Short-video App in Beijing for Illegally Collecting Children's Information	In 2022, without the explicit consent of guardians, the platform arbitrarily collected children's biometric information such as facial features and voice, as well as sensitive information including location and contact details.	The 35th Batch of Guiding Cases of the Supreme People's Procuratorate
Penalty Case of an E-commerce Platform for Illegally Sharing Minors' Information	In 2023, without the authorization of guardians, the platform shared collected minors' consumption and identity information with third-party merchants for targeted marketing.	Typical Public Interest Litigation Cases on Minor Protection issued by the Supreme People's Procuratorate
Case of Absent Identity Verification for Minor Rewards on a Live-streaming E-commerce Platform	In 2023, the platform failed to implement real-name authentication. Minors could use adults' accounts fraudulently to recharge and send rewards, and the platform did not establish an effective monitoring mechanism for abnormal behaviors.	Public administrative penalty case released by the cyberspace authority
Case of Excessive Collection of Minors' Sensitive Information by a Comprehensive E-commerce Platform	In 2023, when minors registered on the platform, it compulsorily collected unnecessary sensitive information such as facial data and home addresses, violating the principle of minimization and necessity.	Public administrative penalty case released by the market regulation authority
Case of Illegal Storage of Minors' Information by an Online Book E-commerce Platform	In 2023, the platform failed to encrypt and store minors' information, resulting in the leakage of some minors' registration information, and failed to inform their guardians in a timely manner.	Public administrative penalty case released by the cyberspace authority
Case of the Xu Kai Gang in Kaili City for Infringing Minors' Personal Information	In 2024, under the guise of online store agency operation, the criminal gang defrauded minors into providing sensitive information such as ID card numbers and bank card details for illegal activities including brushing orders.	Public Criminal Cases Released by Local Procuratorial Organs
Case of Violations in Minor Information Protection on a Second-hand E-commerce Platform	In 2024, the platform failed to formulate special rules for the protection of minors' personal information, and did not protect the personal information of minors under 14 years old in accordance with the standards for sensitive personal information.	Compliance Inspection Circular Cases Released by Local Cyberspace Authorities
Case of Minor Information Leakage of an Education Technology Company	In 2024, due to system vulnerabilities, the company suffered the leakage of more than 50,000 pieces of minors' sensitive information including names, ID card numbers and home addresses, which was subsequently sold on the dark web.	Public Administrative Penalty Cases Released by Cyberspace Authorities
Case of Control Loopholes for Prohibited Goods Involving Minors on a Food Delivery Platform	In 2024, the platform failed to set up an effective interception mechanism. Minors could easily place orders and purchase prohibited goods such as tobacco and alcohol, with no age verification link at the distribution end.	Public administrative penalty case released by market regulation authorities

Case Name	Cause	Case Source
Case of Identity Verification Violations for Minors on a Cross-border E-commerce Platform	In 2024, the platform failed to implement the guardian consent mechanism in accordance with domestic regulations, and did not obtain separate consent for processing the personal information of minors under 14 years old.	Jointly notified cases by customs and cyberspace authorities
Case of Absent Consumption Control for Minors on a Trendy Toy E-commerce Platform	In 2025, the platform did not set consumption limits for minors, allowing them to purchase trendy toys without restrictions, and failed to trigger the guardian verification procedure.	Compliance notification case released by local market regulation authorities
Case of a Garment Co., Ltd. in Wuxing District, Huzhou for Infringing Minors' Portrait Rights	In 2025, the company's Tmall store used 19 portrait photos of child models for the commercial promotion of children's clothing without authorization, which infringed upon the minors' right of portrait.	Typical Cases on Minors' Online Protection issued by the Supreme People's Court
Penalty Case of an E-commerce Platform Regarding Guardian Consent by Standard Clause	In 2025, the platform replaced genuine guardian consent with pop-up box ticking, and failed to clearly inform the scope and method of personal information processing, thereby infringing on the guardians' right to know.	Typical Cases on Minor Protection issued by the Supreme People's Procuratorate
Case of a Car Rental App in Jin'an District, Fuzhou for Violating Minor Identity Verification Regulations	In 2025, the platform failed to comply with the requirements for minor identity verification and lacked an effective verification mechanism for guardian consent, and was urged by procuratorial authorities to rectify its violations.	Typical Cases on Minors' Online Protection issued by the Supreme People's Court

3.5 Evaluation of Institutional Effectiveness

3.5.1 Progress and Effectiveness.

The research results show that the compliance work on minors' personal information on e-commerce platforms has achieved phased outcomes, and an initial governance pattern of legislative guidance, regulatory promotion, platform implementation and judicial guarantee has taken shape, laying a solid foundation for further in-depth governance. The specific achievements are as follows:

1. Continuous improvement of the legislative system and establishment of a special legal protection framework

China has built a complete institutional system ranging from basic laws to special rules and regulations. The *Personal Information Protection Law* classifies the personal information of children under the age of 14 as sensitive personal information. The *Regulations on the Protection of Minors Online* refines platform obligations such as identity verification and the youth mode. The *Measures for the Supervision and Administration of Online Trading Platform Rules*, which came into force in 2026, further clarifies the special protection rule requirements for e-commerce platforms. It defines core rules at multiple levels and realizes an institutional leap for minors' personal information protection from being attached to privacy protection to independent and special protection.

2. Prominent efficiency of coordinated supervision and formation of a full-process regulatory closed loop

Cyberspace administration, market regulation, procuratorial organs and other departments across regions have formed collaborative synergy. They strengthen restraint through special rectification and administrative penalties, while attaching importance to the integration of compliance guidance and judicial supervision. Experiences such as compliance guidance lists have been popularized to promote platforms to carry out special audits. A multi-channel reporting system including the 12315 platform of market regulation authorities and the 12377 platform of the Cyberspace Administration of China has been established with clear handling procedures, constructing a complete regulatory closed loop of pre-event guidance, in-event supervision and post-event accountability.

3. Deepened compliance practice of platforms and transformation from "passive response" to "active protection"

Leading e-commerce platforms have taken the lead in making efforts, and all types of e-commerce platforms have formulated dedicated privacy policies for minors, launching personalized protection functions such as youth online shopping protection, secondary age verification, and prohibition of minor recharge and reward functions. Taobao has launched a youth online shopping protection mechanism of no active recommendation, invisibility in search, and prohibition of purchase even if visible. Meituan implements secondary age verification at the rider distribution end. Live-streaming e-commerce platforms such as Douyin strictly prohibit minors from recharging and rewarding and set up dedicated customer service teams. Xianyu adopts identity labeling and manual review for transactions of minor accounts. Major platforms are gradually transforming from passive compliance to active guardianship. In October 2025, under the guidance of the Cyberspace Administration of Shanghai Municipal Party Committee, ten platforms including Bilibili, Xiaohongshu and Pinduoduo released social responsibility reports on minor online protection, serving as an important practice of the special campaign *Clear Net · Guardian for You* in Shanghai, and exploring a tripartite minor online protection system integrating the government, platforms and society.

4. Initial formation of a collaborative governance pattern and exploration of diversified protection paths

Represented by Shanghai's special campaign *Clear Net · Guardian for You*, efforts have been made to build a three-in-one protection system involving the government, platforms and society. Platforms have issued social responsibility reports on minor online protection, further enriching the practical paths of minor online protection and gathering joint protective forces from multiple parties.

3.5.2 Existing Problems.

1. Legislative Level: There are ambiguous provisions in the existing laws and regulations, lacking detailed supporting guidelines. Relevant clauses of the *Personal Information Protection Law* and the *Measures for the Supervision and Administration of Online Trading Platform Rules* contain no specific provisions on the classified protec-

tion of minors' personal information and special platform regulatory rules. The operational boundaries concerning the verification methods and revocation procedures for guardian consent remain unclear, resulting in frequent irregularities in illegal information collection.

2.Regulatory Level: The regulatory system is imperfect. Compliance guidance for small and medium-sized e-commerce platforms is insufficient, and differentiated supervision is lacking. The intensity of administrative penalties fails to match the harm caused by infringements, and a fully linked mechanism of pre-examination, in-process monitoring and post-event accountability has not been established.

3.Platform Level: Multiple loopholes exist in compliance management. First, platforms excessively collect personal information and share data with third parties without valid authorization from guardians; consent is obtained merely through standard contract clauses, which violates the principle of true expression of intent. Second, identity verification is merely formalistic. Effective measures to prevent minors from misusing adult accounts are absent, and the requirement for separate guardian consent and verification is not fully implemented. Third, the protection of minors' rights is inadequate. In the event of information leakage, platforms fail to promptly launch emergency responses, inform guardians, and report to regulatory authorities.

4.Law Enforcement Level: Legal concurrence prevails in practice. Different laws adopt inconsistent criteria for identifying similar illegal acts, penalty ranges and competent authorities, which easily leads to conflicts in legal application and inconsistent discretion standards and undermines the standardization and efficiency of law enforcement. In addition, grassroots law enforcement resources are limited and professional capabilities in data evidence collection are inadequate, resulting in insufficient law enforcement intensity targeting small and medium-sized platforms.

3.6 Suggestions and Prospects

Combined with the current policy orientation of minor online protection, judicial practice and the status quo of platform governance, targeting core problems such as inadequate implementation of real-name authentication and loopholes in consumption supervision on e-commerce platforms, this paper draws on foreign experience and puts forward the following optimization suggestions. The aim is to improve the protection system of minors' personal information in e-commerce scenarios and promote refined responsibility allocation, intelligent technological application, coordinated governance and standardized judicial practice.

1.Improve the platform primary responsibility system

Platforms should promote the setting of "protection officers" for minor online protection and improve the supporting organizational structure. Increase investment in technological research and development, and adopt new technologies such as AI face recognition and behavior analysis to improve identification accuracy. Meanwhile, integrate protection requirements into the whole process of product design, optimize functions including age verification during registration and consumption restrictions for minors, and enforce the activation of the youth mode. Strengthen industrial coordination to elevate the overall compliance level of the industry.

2.Strengthen platform identity verification and consumption control

Fully implement the dual identity verification mechanism to strictly curb behaviors such as minors registering, recharging and trading by impersonating adult accounts, and eliminate problems including inconsistent identity information and fraudulent use of parents' personal information. Set targeted control measures such as consumption limits and payment reminders for minor accounts, optimize the functions of the youth mode, and filter commodities and advertisements inappropriate for minors. Prevent risks of information leakage and improper consumption from the source, and effectively implement the relevant requirements of the *Regulations on the Protection of Minors' Online Personal Information*.

1.Optimize the hierarchical and classified supervision mechanism

Implement differentiated supervision according to e-commerce platforms' user scale, proportion of minor users and business types. Carry out regular key supervision on leading platforms with a large minor user base such as Douyin and Taobao, and provide compliance guidance lists for small and medium-sized platforms. Referring to relevant practices in Putuo District, Shanghai, clarify compliance requirements and make up for the insufficient compliance capacity of small and medium-sized platforms. Meanwhile, increase the intensity of administrative penalties and raise the penalty standard for infringements of minors' personal information. Take measures such as service suspension against platforms with repeated violations and systematic loopholes to form a strong regulatory deterrent.

2.Strengthen judicial protection

Expand the application of civil public interest litigation by procuratorial organs. File public interest lawsuits in accordance with the law against systematic infringements of minors' personal information rights and interests by e-commerce platforms to promote platform rectification. Referring to typical cases such as a short-video app case in Beijing and a car rental app case in Fuzhou, promote the implementation of regulation through procuratorial supervision. Integrate complaint and reporting channels including 12315 and 12377, strengthen online security publicity and education for minors and their parents, popularize rights protection procedures and evidence collection methods in various forms, and expand the remedy channels for minors and their guardians.

3.Establish a multi-party collaborative governance pattern

Promote the formation of a coordination mechanism among platforms, regulatory authorities, judicial organs and families, and build a complete linkage system featuring pre-event review, in-process monitoring and post-event accountability. Platforms shall take the initiative to fulfill compliance obligations; regulatory authorities shall strengthen targeted supervision and guidance; judicial organs shall provide solid judicial guarantee. Guide parents to perform their guardianship duties, and fully safeguard the personal information security of minors in e-commerce scenarios through multi-party collaboration.

4 Summary

This study aims to clarify the compliance requirements and liability boundaries for the processing of personal information of minor consumers on e-commerce platforms, reveal governance contradictions and institutional defects, sort out domestic and foreign experiences, and construct a compliance governance framework suitable for e-commerce scenarios, so as to provide guidance for legislation, supervision and platform rules. At present, the issuance of the *Regulations on the Protection of Minors Online* and multi-party coordinated supervision have promoted platforms to improve real-name authentication, intercept irregular consumption, and build a solid line of defense for the protection of minors' rights and interests. However, there are still pain points such as ambiguous legislative provisions, insufficiently detailed classified protection standards, inadequate differentiated supervision, lack of guidance for small and medium-sized platforms, non-compliant platform privacy policies, and perfunctory real-name authentication. In the future, we can draw on foreign experience to fill legislative gaps, strengthen regulatory efficiency, promote platforms to optimize compliance management, and build a solid barrier for minors' information security.

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