Postprint: Measuring Compliance of Personal Information Protection Policies in Chinese Mobile Reading Applications

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Date: 2023-04-01T16:02:58+00:00

Abstract

[Purpose/Significance] This study investigates users' perception of personal information protection policy compliance in mobile reading applications in China, constructs an evaluation index system for the compliance of personal information protection policies in mobile reading application software, and provides theoretical and practical guidance for the formulation and improvement of privacy policies from a user perspective.

[Method/Process] Drawing on domestic and international research on personal information protection policies, this study selects the top ten popular mobile reading apps in China as research objects, constructs a user reading perception measurement system for personal information protection policy compliance from four dimensions: alignment with standards and regulations, text completeness, location prominence, and content readability, and employs the grey weighted correlation analysis method to calculate correlation degrees and rank the selected apps.

[Results/Conclusion] The compliance of personal information protection policies is influenced by both policy representation and content; privacy policies with prominent links, complete content, strong readability, and high alignment with regulations are more likely to receive positive user feedback regarding compliance.

Full Text

Preamble

Title and Abstract

Research on Compliance Measurement of Personal Information Protection Policies for Mobile Reading Applications in China

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Abstract:
[Purpose/Significance] This study investigates user perceptions of compliance with personal information protection policies for mobile reading applications in China, constructs an evaluation index system for the compliance of such policies, and provides theoretical and practical guidance for the formulation and improvement of privacy policies from a user perspective. [Method/Process] Drawing upon domestic and international research on personal information protection policies, we selected the top ten popular mobile reading apps in China as research subjects. From four dimensions—alignment with standards and regulations, text completeness, positional prominence, and content readability—we constructed a user perception measurement system for policy compliance. The grey weighted correlation analysis method was employed to calculate and rank the correlation degrees of the selected apps. [Result/Conclusion] Compliance of personal information protection policies is influenced by both policy representation and content. Privacy policies with prominent links, complete content, strong readability, and high alignment with laws and regulations are more likely to receive positive feedback from users regarding compliance.

Keywords: mobile reading app; personal information protection policy; privacy policy; compliance; reading perception

Classification Number: G250
DOI: 10.13266/j.issn.0252-3116.2021.22.004

Since the 18th National Congress of the Communist Party of China proposed the nationwide reading initiative, the Party Central Committee and the State Council have shown great concern for promoting national reading activities. "Advocating nationwide reading" has been included in the government work report for eight consecutive years [1], and the national reading rate has continued to rise. Digital reading has become an important way for Chinese citizens to obtain information and acquire knowledge. In 2020, the number of digital reading internet users in China reached 490 million [2], with adult nationals' digital reading contact rate reaching 79.4% [3]. As of December 2020, China's mobile internet user population reached 989 million, with 99.7% of internet users accessing the internet via mobile phones [4], making mobile reading a crucial form of promoting nationwide reading.

Currently, most mobile reading apps adopt an "advertising profit, free content" business model [5], which often requires operators to deeply cultivate user data for precise advertising placement and maximize user traffic harvesting. Based on the hard rule of "no use without consent" and operators' profit demands, some operators ignore personal information protection policies and cross the red line of consumer personal information security, infringing upon user rights [6]. Between May 2020 and March 2021, the Ministry of Industry and Information Technology

of the People's Republic of China issued notices regarding 13 batches of apps that infringed upon user rights, with a total of 21 novel reading apps listed. Meanwhile, a survey report on App personal information leakage released by the China Consumers Association indicated that over 80% of respondents had experienced personal information leakage [7]. Personal information protection policies (also known as privacy policies, privacy protection agreements, privacy statements, etc.) [8] are particularly important in the user privacy security protection chain, serving as the primary means for operators to inform users of information processing rules [9] and as a concrete manifestation of operators' social commitments and corporate information governance self-discipline [10].

In the big data environment, citizens' awareness of information protection has increased, personal data rights have gained more attention, and privacy security issues have attracted significant scholarly attention, making research on privacy policies increasingly popular. Current research on privacy policies exhibits multi-dimensional, multi-angle, and multi-level characteristics. From a user perspective, this study conducts a compliance measurement analysis of privacy policies for top-downloaded mobile reading apps in China, employing quantitative analysis methods that comprehensively consider both user information behavior and privacy policy text to construct a compliance evaluation index system for mobile reading app privacy policies. This aims to enrich research on information privacy issues in the fields of information behavior and intelligence services. Furthermore, exploring operators' self-regulation of user personal information protection can not only provide reference for users to make rational download choices and help them safeguard their own information security but also positively urge operators to further constrain their information processing behaviors and provide more compliant, transparent information services.

2 Literature Review

2.1 Foreign Research

Foreign scholars have systematically studied the relationship between privacy policies and users using various empirical and theoretical research methods. Regarding factors influencing users' willingness to read privacy policies, scholars have conducted multiple studies based on text analysis using content analysis methods [11] or structural model construction methods [12], finding that users' privacy policy reading behavior is influenced not only by text length [13], presentation method [14], and location [15], but also by users' own cultural background [16], authenticity perception [17], and information disclosure perception [18]. In terms of research on user perception of privacy policies, to help users comprehensively perceive the structure and content of privacy policies, scholars have proposed a data mining technology for automatically extracting privacy policy summaries [19], designed models for expressing complex privacy policies, and constructed privacy policy engines that facilitate user interaction and connect data management systems and response systems [20]. Regarding user risk perception of privacy policies, research building an APCO model found

that perceived effectiveness of privacy policies significantly influences users' perceived online privacy risk [18]. Additionally, highly sensitive information creates strong risk perception in users, while online self-efficacy and experience serve as warning mechanisms for user risk perception [13], thereby reducing user privacy risk.

2.2 Domestic Research

Although research on privacy policies started relatively late in China, it has gained momentum as privacy security has increasingly attracted national attention. Based on content analysis of privacy policies, scholars have used literature review methods [21], questionnaire surveys [22], and structural equation modeling [23] to study privacy policy text friendliness [24], content compliance [10], and clause readability [25], proposing improvement suggestions for building more compliant, friendly, and readable privacy policy text content, such as using business function tiered authorization [24] and elevating the legal hierarchy of personal information protection [26]. From the user perspective of privacy policies, scholars have conducted in-depth research on factors influencing users' reading willingness [23], personal information disclosure willingness [27-28], and privacy policy user evaluation [29], proposing various suggestions to improve user reading and disclosure willingness and enhance user privacy policy reading experience based on user trust. For the purpose of optimizing privacy policies, scholars have used various research methods including content analysis [30], semi-structured interviews [31], and topic modeling [32] to study existing privacy policy frameworks, identified deficiencies in current frameworks, and proposed optimization solutions such as establishing a three-dimensional coordinate system structure for privacy policy frameworks based on existing two-dimensional structures.

In summary, domestic and foreign scholars have conducted extensive research on privacy policies, with existing achievements mainly focusing on studies of privacy policies themselves (content analysis, framework optimization analysis, etc.) and mapping behavior analysis based on user perception (reading willingness, information disclosure willingness, etc.). However, there is limited research on the compliance of mobile reading app privacy policies from a user perspective. Most scholars tend to use qualitative research methods such as content analysis, text comparison, and interviews to summarize overall indicators of privacy policies, or analyze the impact of privacy policies on user behavior from theoretical perspectives (privacy scenario theory, communication privacy management theory, etc.). Quantitative analysis research on the compliance of mobile reading app privacy policies is lacking. Based on this, our study employs grey correlation analysis, using a multi-channel text evaluation indicator source that combines policy regulations, privacy texts, and expert opinions to replace traditional single-item text evaluation indicator sources, constructs a privacy policy compliance evaluation system, and conducts empirical analysis to provide theoretical support and practical research results for mobile reading developers to

formulate privacy policies that are more user-friendly and compliant.

3 Research Methods

Grey correlation analysis is an important field within grey system theory proposed by Chinese scholar Professor Deng Julong in the 1980s [33]. This study uses it to calculate the correlation degree between primary indicators and compliance, distinguish primary and secondary factors affecting user judgment of privacy policy compliance, and determine the magnitude of influence of each primary indicator on the compliance degree of mobile reading app privacy policies. In this comprehensive evaluation method, each indicator has a different role and influence, requiring weight determination based on indicator importance. This study combines grey correlation analysis with the entropy weight method, applying grey weighted correlation analysis to the compliance measurement of mobile reading app privacy policies to comprehensively and multi-dimensionally reflect users' comprehensive evaluation of privacy policy compliance perception.

3.1 Index Weight Calculation

To distinguish the different importance levels of each indicator in user perception evaluation, this paper uses the entropy weight method to assign weights to indicators. The entropy weight method is an objective weighting method that uses information entropy to evaluate the degree of variation in obtained information, thereby determining index weights. Its advantage lies in effectively reducing human factor interference in the evaluation process, making data more objective and accurate [34]. In a problem with n evaluation objects (n=1,2,3,…,i) and m evaluation indicators (m=1,2,3,…,j), the calculation process for the weight value of the r-th indicator is:

(1) Index data standardization:

$$X_r' = \frac{x_r - \min(x_r)}{\max(x_r) - \min(x_r)} \quad \text{Formula (1)}$$

In Formula (1), x_r represents the value of the i-th object on the j-th indicator, and X_r' represents the standardized index data. The standardized data effectively eliminates the problem of non-uniformity between indicators.

(2) Calculate the entropy of each indicator:

$$E_r = -\frac{1}{\ln(n)} \sum_{t=1}^{n} x_{rt} \ln(x_{rt}) \quad \text{Formula (2)}$$

In Formula (2), E_r represents the entropy of the r-th indicator. Note that when $x_{rt} = 0$, let $x_{rt} \ln(x_{rt}) = 0$.

(3) Calculate index weights:

$$W_r = \frac{1 - E_r}{\sum_{r=1}^{m} (1 - E_r)} \quad \text{Formula (3)}$$

In Formula (3), W_r represents the weight value of the r-th indicator, reflecting the magnitude of the r-th indicator's role in comprehensive evaluation. The larger the weight, the greater the indicator's role in comprehensive evaluation, and vice versa. The weight value clearly shows the degree of difference between indicators.

3.2 Grey Weighted Correlation Analysis Method

(1) Determine comparison objects (evaluation objects) and reference sequences (evaluation standards). Mobile reading app privacy policy evaluation indicators reflect factors affecting user perception measurement. Set the number of mobile reading app privacy policy evaluation objects as m, where a represents the serial number of the a-th evaluation object, a=1,2,3,…,m; set the number of secondary indicators as n, where b represents the serial number of the b-th evaluation object, b=1,2,3,…,n; x_{ab} is the evaluation value of the b-th indicator of the a-th object.

Reference sequence:

$$x_0 = \{x_0(k)|k = 1, 2, ..., n\} \quad \text{Formula (4)}$$

Comparison sequences:

$$x_a = \{x_a(k)|k = 1, 2, ..., n\}, a = 1, 2, ..., m \quad \text{Formula (5)}$$

(2) Determine index weights. In the mobile reading app privacy policy evaluation system, user perception measurement is affected by various indicators differently, requiring weight allocation for different indicators. This paper uses the entropy weight method for weight allocation. Weights are recorded as:

$$w = [w_1, w_2, ..., w_a] \quad \text{Formula (6)}$$

In Formula (6), w_a represents the weight of the a-th evaluation object, and the weights satisfy $\sum w_a = 1$.

(3) Calculate correlation coefficients:

$$\xi_{ab} = \frac{\min|X_0(b) - X_a(b)| + \rho \max|X_0(b) - X_a(b)|}{|X_0(b) - X_a(b)| + \rho \max|X_0(b) - X_a(b)|} \quad \text{Formula (7)}$$

In Formula (7), ξ_{ab} represents the correlation coefficient between the b-th evaluation indicator of the a-th evaluation object and the b-th reference indicator; where $\max|x_0(b) - x_a(b)|$ represents the two-level maximum difference, $\min|x_0(b) - x_a(b)|$ represents the two-level minimum difference; ρ is the resolution coefficient with a value range of [0,1]. Generally, larger ρ means greater resolution, while smaller ρ means lower resolution. In this study, ρ takes the intermediate value of 0.5.

(4) Calculate single-level grey weighted correlation degree:

$$r_a = \sum_{b=1}^{n} W_a \xi_a(b) \quad \text{Formula (8)}$$

In Formula (8), r_a represents the grey weighted correlation degree of the a-th evaluation object to the ideal evaluation indicator.

(5) Comprehensive evaluation analysis: Based on the magnitude of grey weighted correlation degree, conduct comprehensive ranking of evaluation objects. The larger the correlation degree, the better the evaluation result.

4 Empirical Study on Privacy Policy Compliance Measurement of Mobile Reading Apps in China

4.1 Index System Construction

The basis for constructing the model framework for measuring the compliance of mobile reading app privacy policies in this study is twofold: legal regulations and existing research achievements. Only under the premise of implementing and enforcing data privacy laws can we further discuss the compliance of privacy policies. Therefore, this paper combines China's privacy legal policy context, incorporating interpretations of the Civil Code of the People's Republic of China, Information Security Technology - Personal Information Security Specification (2020), and Provisions on the Protection of Children's Personal Information Online into the framework, using alignment with standards and regulations as one primary indicator. Referencing existing research perspectives that privacy policies should have notification and social commitment attributes [10], we incorporate the comprehensive notification obligation of privacy policies into framework construction considerations, using privacy policy text completeness as a primary indicator. As the external manifestation of personal information protection declaration, privacy policy text should have readability and visibility [35], thus we adopt privacy policy positional prominence and content readability as primary indicators. This paper uses four aspects—alignment with standards and regulations, privacy policy text completeness, privacy policy positional prominence, and privacy policy content readability—as primary indicators, with 19 secondary indicators to measure the compliance of selected mobile reading apps. For index weight allocation, this study invited an expert panel consisting of two professors in information science, one associate research fellow in legal policy, and two PhDs in user information behavior research. Based on the calculation process in Formulas (1)-(3) in Section 3.1, the weights of indicators at all levels were determined. The final mobile reading app privacy policy compliance measurement indicators and weights are shown in Table 1 .

4.2 Sample Selection and Data Collection

Huawei AppMarket has reached 261 billion global distributions, making it one of the world's top three mobile app distribution platforms [41]. Its app download volume can represent the popularity of existing applications to a certain extent. Therefore, we used the Huawei App Store platform as the data source, selecting the top ten reading apps by download volume (QQ Reading, iReader, WeChat Reading, Mi Du Novel, Shu Qi Novel, Tomato Free Novel, Fan Deng Reading, Qi Mao Free Novel, Kuai Dian Reading, and Feng Du Novel) as survey samples. For survey respondents, this study focused on mobile reading app user groups, with ages concentrated between 18-45 years old, and occupations including government employees, company staff, students, and freelancers. The questionnaire extracted secondary indicators for mobile reading user privacy policy compliance measurement as the main content, using a 5-point Likert scale to collect respondents' reading perception of each item, where 1 is the lowest score indicating strong dissatisfaction with the indicator, and 5 is the highest score indicating strong satisfaction. A total of 280 questionnaires were distributed, with 261 recovered (93% recovery rate). After eliminating 28 invalid questionnaires, 233 valid questionnaires were obtained, yielding an effective recovery rate of 83%. Respondent personal information is shown in Table 2 .

4.3 Privacy Policy Compliance Measurement Calculation

Based on the model framework in Table 1 and the data collected from questionnaires, this study used the grey weighted correlation analysis method according to Formulas (4)-(8) to comprehensively measure mobile reading app privacy policy compliance. The correlation degree of user perception for the above indicators and the ranking of user perception correlation degrees for mobile reading app privacy policies under each indicator were calculated. The results are shown in Table 3 .

To more clearly display the correlation degree values and rankings of mobile reading apps under each indicator, the correlation degrees and rankings of secondary indicators were visualized in Figures 1 [Figure 1: see original paper] through 4 [Figure 4: see original paper].

4.4 Privacy Policy Compliance Measurement Results Analysis

4.4.1 Comprehensive Evaluation Mi Du Novel app has the highest comprehensive evaluation value for privacy policy compliance, with a correlation degree score of 3.541. iReader app ranks second, with a score difference of 0.89 from the first place. This shows that users have the best overall perception of Mi Du Novel app's privacy policy compliance, far exceeding the other nine mobile reading apps. The user perception scores of middle-ranking apps are relatively concentrated, with score gaps between each app and its predecessor not exceeding 0.15 from second-place iReader to eighth-place Fan Deng Reading. This indicates that the comprehensive user perception of privacy policy com-

pliance for iReader, Feng Du Novel, WeChat Reading, Shu Qi Novel, Tomato Free Novel, QQ Reading, and Fan Deng Reading shows little difference. Kuai Dian Reading is the only app among the ten selected apps with overall user privacy policy perception below 2 points, showing the lowest comprehensive measurement value for privacy policy compliance. The relationship between the compliance measurement results and download volumes of various mobile reading apps is shown in Figure 5 [Figure 5: see original paper].

As shown in Figure 5, there is no direct correlation between mobile reading app download popularity and privacy policy compliance. Mobile reading app download volume may be influenced by multiple other factors.

4.4.2 Standards and Regulations Alignment QQ Reading ranks first in user perception of standards and regulations alignment. The privacy policies of the ten mobile reading apps show similar performance in third-party service explanations, multi-business function selection, and user profile de-identification, all providing third-party SDK directories and relatively detailed explanations of optional business functions, promising to use de-identified user profiles for external purposes based on personal information protection. In terms of legal norm mentions, Mi Du Novel, Fan Deng Reading, QQ Reading, and Feng Du Novel perform well, explicitly mentioning one or more standards and regulations such as the Contract Law of the People's Republic of China, Information Security Technology - Personal Information Security Specification, and Provisions on the Protection of Children's Personal Information Online in their privacy policies. Regarding account cancellation processes, WeChat Reading and Kuai Dian Reading do not explain how to cancel accounts in their privacy policies. Tomato Free Novel and Fan Deng Reading require contacting human customer service for account cancellation, which most surveyed users consider cumbersome. In contrast, QQ Reading and Shu Qi Novel have fewer cancellation steps and simpler operations, making them more convenient for users than the other eight apps. A comparison of app account cancellation processes mentioned in privacy policies is shown in Table 4 .

4.4.3 Text Content Completeness As shown in Figure 2 [Figure 2: see original paper], Kuai Dian Reading performs worst in content completeness, with a correlation degree of only 0.333. The main reason is its relatively short privacy policy of only 5,272 characters, while the other nine apps' privacy policies are around 10,000 characters. Therefore, Kuai Dian Reading's narrative on information collection, storage, use, and sharing is insufficient compared to the other nine apps, lacking specific and necessary explanations for listed items. Additionally, factors such as inadequate explanation of user rights, security incident handling, and privacy protection, as well as insufficient depth of explanation, affect user perception of privacy policy completeness. In contrast, Mi Du Novel and Tomato Free Novel, which perform well in privacy policy content completeness evaluation, both provide complete and comprehensive statements on various content items in their privacy policies. Their commonalities stimulate positive

emotional perception in users, who can comprehensively understand the scope of information acquisition and processing methods by app service operators and clarify their own rights through reading complete privacy policies. Therefore, maintaining high completeness of privacy policy content is an important means to enhance user perception of privacy policies.

4.4.4 Query Link Prominence As shown in Figure 3 [Figure 3: see original paper], iReader app performs prominently with a correlation degree of 0.847, ranking first. Regarding historical version link display, only iReader explains and embeds links to historical versions in its privacy policy, while the other nine apps do not mention historical versions at all. In terms of app store link display and in-app link depth, there is no significant difference among the ten apps, with in-app link paths all between 3-4 steps, allowing users to find privacy policies relatively conveniently and quickly. In terms of appearance, WeChat Reading's privacy policy link has small font size and gray color similar to its in-app background color, making its privacy policy link appearance lack prominence.

4.4.5 Text Readability As shown in Figure 4 [Figure 4: see original paper], WeChat Reading has a correlation degree of 0.936, higher than the other nine reading apps. Due to WeChat Reading's unique folded menu design, the text structure becomes clearer and more understandable, while the folded secondary menus can be expanded, facilitating users to selectively view text content according to their needs and improving reading friendliness. In terms of special term explanations, all ten apps explain terms such as personal information, device model, and user. Regarding important content display, all ten apps use bold or underlined methods to highlight key content. In terms of appearance, the font and line spacing designs of the research objects are relatively reasonable. However, in terms of length, Kuai Dian Reading's privacy policy is less than 6,000 characters, unable to fully display various content items. Although short text helps users read quickly and avoids negative perception from long reading times, overly short text can cause incomplete information display, which needs to be noted by mobile reading privacy policy makers.

5 Recommendations for Compliance Construction of Mobile Reading App Personal Information Protection Policies

5.1 Optimize Privacy Policies for Mobile Reading Apps

Mobile reading app operators should recognize that lack of link prominence brings inconvenience to users in identifying privacy policies, poor readability weakens user reading experience, and insufficient legal norm alignment leads to legal expression loopholes in privacy policy text that may affect operators' or users' rights once disputes arise. Therefore, operators should continuously improve privacy policies. For example: set privacy policy links with prominent appearance, use bold fonts to mark privacy policy portals in app stores to make

privacy policy links more conspicuous, facilitating users to accurately access and view privacy policy text in app stores. Additionally, shorten privacy policy access paths in apps, controlling privacy policy query paths within three steps to improve query link prominence. Optimize text with accurate and plain expressions, avoid using obscure and difficult words, ensure privacy policy readability. Compare with industry templates to avoid missing important components such as minor protection clauses, ensuring privacy policy completeness. As personal information protection policies and regulations are constantly updated, operators should flexibly and nimbly improve privacy policy content to better align with compliance evaluation standards.

5.2 Standardize Supervision and Governance of Personal Information Protection

Supervision and governance of privacy policies are important means to ensure their effectiveness and important links to ensure compliance preservation during specific implementation. From the operator perspective, effective risk prevention and control can be achieved by establishing standardized supervision and management functional institutions, regularly conducting training on effective user personal information protection, improving staff awareness of user personal information protection, and monitoring loopholes in personal information protection links to avoid privacy policies becoming mere paper documents. From an external supervision perspective, the Ministry of Industry and Information Technology regularly organizes third-party institutions to supervise and inspect apps, issuing notices and requiring rectification within specified periods for non-compliant apps, with removal processing for those failing to rectify on time. This regulatory behavior has standardized operators' collection and use of user personal information to a certain extent. Overall, under the premise of privacy policy alignment with legal standards and norms, supervision departments conduct regular inspections and irregular spot checks, while operators conduct internal self-supervision, thereby standardizing personal information protection supervision and governance.

5.3 Build an Internal-External Collaborative Privacy Governance System

Building an internal-external collaborative privacy governance system requires joint efforts from operators, industry organizations, and government departments. Operators need to enhance their own governance capabilities, reengineer user privacy governance business processes, and strive toward standardized user privacy governance. Additionally, establishing industry self-regulatory management institutions is significant for promoting the establishment of a unified mobile reading app privacy policy industry paradigm and urging mobile reading app enterprises to formulate compliant, standardized, and unified privacy policies. Industry self-regulatory management institutions can take measures such as formulating unified user personal information usage processes, issuing

industry notices for violations of user privacy information usage, and assisting in rectification to help enterprises standardize user personal information usage. Meanwhile, government departments, as important regulatory bodies, should supervise industry self-regulatory management institutions and mobile reading operators. Operators, industry organizations, and government departments jointly build a privacy policy governance system to create a harmonious and stable personal information protection environment and effectively safeguard user personal information security.

5.4 Improve the Legal Environment for Personal Information Protection

Compliance construction of personal information protection policies should not only focus on how policy makers formulate compliant privacy policy text and ensure complete execution under supervision but also concentrate on improving the external environment of legal supervision. Compared with the EU's General Data Protection Regulation and the Consumer Privacy Protection Act enacted in the United States, China's Information Security Technology - Personal Information Security Specification, as a national standard, lacks mandatory force compared with legal documents [42]. The relatively relaxed legal environment in the current personal information protection field provides possibilities for some operators to illegally collect and use user personal information, making it urgent to enact special laws to regulate personal information collection and use and improve the legal environment for user personal information protection [43]. Although China has not yet enacted mandatory personal information protection laws, its legislative institutions are making full efforts to advance the introduction of personal information protection law. The introduction of special laws will enable optimal use of user personal information on the premise of compliance and significantly improve China's personal information protection legal environment.

6 Conclusion and Future Research

This study selected ten top-downloaded reading apps for empirical research on privacy policy compliance measurement. Results show that privacy policies with complete content, prominent links, strong readability, and high alignment with laws and standards are more likely to obtain positive emotional feedback from users. Therefore, mobile reading privacy policy makers should comprehensively consider the impact of multiple factors on user perception when formulating app privacy policy text to create more compliant policies that align with users' positive emotional identification. However, this study has certain limitations: first, constructing the mobile reading app privacy policy compliance measurement index architecture from four dimensions has certain expandability; second, the study selected popular reading apps from the Android app store, without covering less popular reading apps or reading apps from the iOS store with large user bases. Future research will further extend index dimensions, improve

the evaluation system, expand sample data extraction scope, and conduct more in-depth research on privacy policy compliance of mobile reading apps.

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Author Contributions:
Zhang Yanfeng: Proposed research ideas and methods, revised the paper;
Qiu Yi: Wrote the paper, analyzed statistics.

English Title: Research on Compliance Measurement of Personal Information Protection Policies for Mobile Reading Applications in China

Note: Figure translations are in progress. See original paper for figures.