

Bibliometric Analysis and Review of Domestic Research Literature on Internet Governance (Postprint)

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Abstract

[Purpose/Significance] With the proliferation of the Internet, research on Internet governance has attracted increasing attention, and various issues emerging in the cyber realm have also garnered widespread concern. Therefore, systematically reviewing existing theoretical achievements holds great significance for both theory and practice. [Method/Process] This paper utilizes CiteSpace software to conduct a visual bibliometric analysis of Chinese literature in the field of Internet governance from the CNKI database spanning 2002–2014, examining the current state of authors and research institutions, research topics and hot issues, and the evolution of research themes, and evaluates the characteristics of existing achievements based on research topics. [Results/Conclusions] The study reveals that in the field of Internet governance, there is frequent intra-institutional exchange but scarce cross-institutional collaboration; the vast majority of scholars have professional backgrounds in communication studies; cybersecurity and online public opinion are hot issues with relatively abundant research output; the evolution of research themes can be roughly divided into three stages: a stage focusing on Internet technology, resources, and industry; a stage focusing on content governance; and a stage where research themes develop toward broader connotations.

Full Text

Academic Exploration: Bibliometric Analysis and Review of Domestic Research Literature on Internet Governance

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Abstract

[Purpose/Significance] With the widespread adoption of the Internet, research on Internet governance has attracted increasing attention, and various problems emerging in the digital world have drawn broad concern. Therefore, systematically reviewing existing theoretical achievements holds great significance for both theory and practice. **[Method/Process]** This paper employs CiteSpace software to conduct a visualized bibliometric analysis of Chinese literature in the CNKI database from 2002 to 2014 related to Internet governance, examining the networks of authors and research institutions, research themes and hot topics, and the evolution of research topics. Based on these themes, it further reviews the characteristics of existing research findings. **[Result/Conclusion]** The study reveals that in the field of Internet governance, there is considerable communication within the same institution but limited cooperation across institutions. The majority of scholars have academic backgrounds in communication studies. Network security and online public opinion represent particularly fruitful hot topics. The evolution of research themes can be roughly divided into three stages: an initial stage focusing on Internet technology, resources, and industry; a subsequent stage emphasizing content governance; and a current stage where research themes are expanding toward broader connotations.

Keywords: Internet governance; Chinese literature; CiteSpace; bibliometrics

Classification: G251

1 Introduction

By December 2015, China's internet user population had reached 688 million, with 39.51 million new users added throughout the year. The Internet penetration rate stood at 50.3%, representing a 2.4 percentage point increase from the end of 2014 [?]. As the scale of internet users expands and half of China's population gains online access, the connection between the virtual and physical worlds grows increasingly close, prompting theoretical circles to pay closer attention to various issues emerging in cyberspace. Alongside the popularization and innovative development of Internet applications, the connotation of Internet governance has become richer, encompassing both governance *of* the Internet and governance *by* the Internet through e-government. Theoretical exploration must provide substantial research outputs to support these governance practices. Systematically reviewing existing research findings and clarifying ideas to identify key problems is therefore significant for both theoretical and practical communities.

The United Nations Working Group on Internet Governance (WGIG) defines Internet governance as the development and implementation by governments, the private sector, and civil society, each in their respective roles, of shared

principles, norms, rules, decision-making procedures, and programs that shape the evolution and use of the Internet.

2 Research Methods and Data Sources

This study adopts bibliometric methods to statistically analyze research hotspots and frontier issues in domestic Internet governance research. The analytical tool employed is CiteSpace [?], a Java application for detecting and visualizing emerging trends and transient patterns in scientific literature. It utilizes spectral clustering and feature selection algorithms to perform co-occurrence and co-citation analyses, with particular attention to identifying pivotal nodes that play key roles in knowledge evolution over time—what can be termed knowledge turning points [?].

The dataset primarily consists of core journal articles from the China National Knowledge Infrastructure (CNKI) database, using “Internet governance” as the search term and “journal articles” as the document type, covering the period from 2002 to 2014. The year 2014 was selected as the endpoint because the basic unit of analysis in this study is the year, and this represented the most recent complete year available at the time of research. The starting year of 2002 was chosen because domestic research literature on Internet governance began to increase continuously from this point onward, with keywords demonstrating strong centrality. The bibliometric analysis utilized 486 records exported in plain text format as “full records + references.”

3 Analysis of Research Status

3.1 Authors and Research Institutions

Selecting authors and institutions as co-occurrence objects, we generated the author-institution distribution map for domestic Internet governance research shown in [Figure 1: see original paper]. Several characteristics emerge from this visualization. First, there is substantial communication within the same institution but minimal cooperation across institutions. The map reveals virtually no connections between research institutions, indicating they operate in isolation. The few scattered connections among authors occur mainly within institutions—for example, Luo Yi, Zeng Runxi, and Wang Guohua from the School of Public Management at Huazhong University of Science and Technology. This suggests that current research remains in its early stages.

Second, the vast majority of scholars have academic backgrounds in communication studies. However, Internet governance is an interdisciplinary field requiring joint attention from political science, management, psychology, sociology, law, information science, and other disciplines to produce more diversified research findings. This disciplinary concentration further indicates that the field is still in its infancy.

Third, in terms of publication frequency, representative institutions include the

School of Journalism and Communication at Wuhan University, the School of Journalism and Communication at Jinan University, and the School of Public Management at Huazhong University of Science and Technology. Their research focuses respectively on multi-stakeholder governance paradigms, new online media, media economics, and Internet governance in social transformation.

Fourth, a group of relatively prolific authors has emerged. For instance, Fu Yuhui from the Integrated News and Publicity Department of China Unicom Group focuses on online communication and new media research; Zeng Fanbin from the School of Journalism and Communication at Jinan University studies new online media and media economics; Kan Daoyuan, Deputy Director and Lecturer of the Political Science (Integrity Education) Teaching and Research Office at the State Taxation Administration Cadre College, focuses on political theory, current affairs, party building in the taxation system, and integrity construction; and Liu Ruisheng from the Institute of Journalism and Communication at the Chinese Academy of Social Sciences specializes in online communication and new media.

3.2 Research Themes and Hot Topics

To visually demonstrate the relationship between research hotspots and themes, we selected keywords with occurrence frequencies greater than 15 to create the theme-hotspot co-occurrence map shown in [Figure 2: see original paper]. In this visualization, the size of circular nodes represents keyword frequency, while the number of connecting lines indicates the centrality of each keyword—a measure of a research theme’s position and influence within the field. Greater centrality signifies a more central node and higher research concentration on that issue, implying greater overall influence on the research domain.

The map reveals several characteristics of domestic Internet governance research themes and hot topics. First, research on governance subjects remains relatively monolithic. The Ministry of Industry and Information Technology—the industry regulatory authority—is the only government agency appearing in the map, while Tencent is the only enterprise represented as a keyword. This reflects that current Internet governance subjects in China are primarily government departments, with markets and social organizations not yet playing their proper roles. Internet governance emphasizes multi-center, multi-stakeholder gaming, collaboration, co-governance, and sharing—concepts that require prior research attention. Notably, “governance capacity” appears as a keyword, indicating domestic research attention to capacity building among governance subjects.

Second, research on governance content concentrates primarily on the management of Internet ontology itself, such as domain names, network security, online public opinion, online rumors, opinion leaders, and pornographic information. This focus is related to researchers’ academic backgrounds and closely connected to prominent contradictions in China’s cyberspace and government priorities. According to the WGIG definition, Internet governance involves “not only In-

ternet domain names and IP addresses (which are mainly handled by ICANN), but also other significant public policy issues such as critical Internet resources, Internet security, and development and usage-related issues [?].” This area urgently requires systematic research.

Third, regarding governance methods, the keyword “specialized governance” appears in the map, indicating that domestic research closely follows the “campaign-style” governance practices in Internet governance, lacking necessary foresight.

3.3 Evolution of Research Themes

When generating the visualization map using CiteSpace, we selected “Keyword” as the node type to distinguish it from the author-institution map, producing the timezone map of domestic Internet governance research shown in [Figure 3: see original paper]. The temporal position of each node indicates when that theme first appeared in the domestic literature.

The evolution can be divided into three stages. The first stage, from 2002 to 2008, focused on Internet technology, resources, and industry, with hot keywords including the Internet of Things, next-generation networks, and the communications industry. The second stage, from 2009 to 2013, emphasized content governance, with hot keywords including public opinion, speech, and pornography. During this period, increasing literature mentioned government governance and network regulation, as Internet regulatory authorities implemented control measures against websites disseminating harmful information and inappropriate links. The third stage, after 2013, has seen research themes expanding toward broader connotations, with hot keywords including social governance, governance capacity, and pluralistic governance [?].

4 Key Research Areas and Typical Findings

Domestic academic research on Internet governance continues to deepen alongside practical developments, covering various aspects of the Internet. Network security and online public opinion are particularly fruitful areas. However, most research remains theoretical, with relatively few findings adopted in public policy, possibly due to the dispersed nature of research outputs and limited collaboration among institutions and researchers, which hinders the formation of influential results.

4.1 Cybersecurity Research: Focus on Technology, Country Studies, and Library Information Security

Existing literature on cybersecurity focuses on three main themes. First, technical research on personal information protection. As people become increasingly dependent on the Internet, personal information protection has emerged as a prominent issue. Most existing studies approach this from a technical per-

spective, focusing on information protection technology, identity authentication technology, firewall technology, and data encryption technology. Representative scholars include Guo Xiaomiao and Li Jinjing. Guo Xiaomiao comprehensively introduced technologies for protecting online information security, including firewalls, data encryption, virus prevention, intrusion detection, and IC card technology, noting that Internet security is relative—the higher the security coefficient, the higher the cost, and measures to enhance network information security inevitably consume or restrict network resources [?]. Li Jinjing discussed various implementation methods, technologies, and development trends of identity authentication in information security, arguing that in the field of electronic payment, identity authentication technology will play an important role as both authentication and network security technology [?].

Second, country-specific studies on cybersecurity. In research on foreign experiences, Cheng Qun is a representative scholar. Through analysis of the evolution of U.S. government cybersecurity strategies, he examined their characteristics and essence, suggesting that China should establish and strengthen institutionalized prevention mechanisms and enhance independent innovation in network technology from a national security perspective [?]. Regarding international norms for information security, Hua Tao argued that European countries, China, and other developing countries share concerns about information security primarily directed at the United States, making it imperative to promote the establishment and implementation of an international regime for information security in the globalization era [?]. Zhang Xinbao explored the formulation of an “International Convention on Network Information Security” based on the “International Code of Conduct for Information Security,” proposing five principles: respect for sovereignty, respect for citizens’ basic rights, protection of information security and Internet freedom, legitimacy of state actions, and corporate self-discipline [?].

Third, more research focuses on information security in university libraries, exploring problems and countermeasures. Xie Rukun identified factors causing network insecurity as security vulnerabilities in software, the Internet, and firewalls themselves, while noting that university library network security construction suffers from weak security awareness, inadequate management systems, and backward team building, proposing corresponding countermeasures [?]. Li Wenyan proposed that factors affecting digital library network information security include environmental factors and accidents, management factors, computer network viruses, hacker attacks, and copyright protection issues, offering preventive suggestions regarding management systems, firewall technology, network virus prevention, data backup, and digital watermarking technology [?].

4.2 Comprehensive Research on Online Public Opinion

Current domestic research on online public opinion covers four main aspects. First, studies on online public opinion subjects, including the subjects themselves and their manifestations. Definitions of online public opinion subjects

vary—some researchers consider the public as the sole subject, while others believe the public and news media supervision organizations constitute a dual structure. Representative researcher Guo Guanghua argues that in traditional perspectives, public opinion subjects are difficult to define due to their “non-physical” nature, but the Internet provides a new communication platform, allowing online public opinion subjects to be defined as netizens based on network characteristics [?]. Another researcher, Zhang Guixia, explored the behavioral manifestations of online public opinion subjects, arguing that Chinese online public opinion subjects exhibit group polarization tendencies: externally manifesting as online nationalism and internally as online critical realism, reflecting real-world social differentiation and various interest groups’ pursuit of maximum benefit in the online world [?].

Second, research on the formation and causes of online public opinion. Regarding the formation of online public opinion, prominent researchers Zheng Ping and Xue Bing analyzed its formation mechanism based on Habermas’s deliberative democracy theory, dividing the process into topic aggregation, debate and controversy, and consensus formation stages, through which the internal mechanism of online public opinion formation becomes clearly visible [?]. Huang Yonglin and colleagues investigated the causes of online public opinion, arguing that interest relevance, value resonance, and emotional sympathy are the fundamental reasons, with interest relevance being the core factor, as values essentially represent views on “principles and methods of interest distribution and protection,” and emotional attitudes often stem from issues related to interest distribution and protection [?].

Third, research on online public opinion supervision and guidance. Online public opinion supervision is a double-edged sword. Representative researchers Sun Jian and Xu Zuying argue that online public opinion supervision greatly enhances citizens’ right to speak but also has shortcomings, mainly manifested as online violence and media trial. Therefore, besides strengthening correct guidance and reasonable regulation from institutional, technical, and ethical dimensions, it is necessary to enhance traditional media’s supervision of the Internet and regulate the content and methods of online reporting to achieve effective supervision and pursue healthy, rational online public opinion oversight [?]. Regarding online public opinion guidance, representative perspectives suggest that facing endless online public opinion incidents, the government should further enhance crisis awareness, improve its ability to respond to online public opinion, promptly disclose information to effectively guide public opinion, strengthen legal construction and skillfully use legal means for regulation, and smooth channels for public interest expression to regulate online political participants’ behavior [?].

Fourth, research on the impact of online public opinion, including its influence on government policy-making and national security. Numerous studies have explored both positive and negative impacts of online public opinion on public policy formulation, placing higher demands on government officials’ ability

to analyze online public opinion. Determining whether online public opinion represents mainstream public opinion is crucial, as it relates to the credibility of decision-making information, and the different class structure distribution in virtual society shakes judgments about whether online public opinion represents mainstream public opinion, potentially creating negative impacts on government decision-making [?]. Tang Ke Chao discussed the impact of online public opinion from a macro perspective, arguing that the Internet has become a primary means for the United States and other Western countries to influence China's national security, and that inadequate supervision, guidance, and direction of online public opinion could directly affect and endanger social stability and national security when incited and exploited by Western and hostile forces [?].

4.3 Focus on Special Populations in Domestic Internet Governance Research

Domestic Internet governance research pays special attention to college students and adolescents. Based on existing literature, research on these populations focuses on three themes. First, research on Internet addiction. Representative researchers Lin Xuanhui and Yan Gonggu explored Internet addiction among college students, finding through extensive questionnaires at Fuzhou University that 9.6% of college student Internet users are addicted, and that Internet addiction is not necessarily linked to time spent online or degree of participation [?]. Research on adolescent Internet addiction focuses on online gaming addiction. Zuo Bin and Ma Hongyu conducted large-scale surveys and interviews with primary school, middle school, high school (technical secondary), and college students across 10 provinces and cities, finding that 79.3% of Chinese adolescents have played online games, with an addiction rate of 3.2%. They argue that adolescents' special psychology, the attractiveness of online games themselves, and family environment, school education, management, and social supervision are all important influencing factors [?].

Second, research on college students' online political participation. The Internet has both positive and negative impacts on college students' political participation. Song Zhenghui argues that the Internet stimulates college students' political participation enthusiasm, broadens their participation channels, and cultivates their political participation spirit, but also suggests measures for orderly political participation from the perspectives of college students themselves and institutional construction [?]. Zou Jingqin, Wang Jing, and Su Yue conducted a survey on the current status of college students' online political participation in 8 universities in Guangdong, finding that college students pay close attention to social public affairs and national political life but do not actively participate, belonging to the category of active yet silent observers with high identification with mainstream ideology [?]. Other scholars have conducted comparative studies of "real-world" and "online" political participation among college students, arguing that contemporary college students' political participation behavior is

disconnected from their cognition, with real-world political participation still showing strong utilitarianism while online political participation is slightly more idealistic [?].

Third, research on the impact of the Internet on the lives and ideological values of college students and adolescents. This broad theme includes online entertainment, information acquisition and dissemination, social networking, physical health, shopping behavior, and job-seeking through the Internet—essentially all aspects of college student life. Research on the impact of the Internet on college students' ideology and values mainly focuses on ideological and political education in universities. Some scholars argue that the Internet has extensive and profound impacts on college students' ideological concepts, value orientations, thinking modes, behavioral patterns, and personality psychology. Song Yuanlin suggests implementing educational management combining education with management, self-discipline with external discipline, guidance with blocking, online with offline, active guidance with equal communication, and solving ideological problems with solving practical problems [?].

5 Conclusion

Bibliometric methods help us objectively and comprehensively grasp the thematic context and changing patterns of domestic Internet governance research. The historical trajectory revealed by data analysis compels us to consider future research directions. Analysis of the current state of domestic Internet governance research reveals that the field remains in its early stages. From the perspective of authors and institutions, there is extensive communication within research institutions but limited cross-institutional cooperation. Most scholars in Internet governance research have backgrounds in communication studies, yet the field is interdisciplinary and requires attention from multiple disciplines. Regarding research themes and hot topics, studies on governance subjects are relatively monolithic; research on governance content focuses mainly on Internet ontology management; and governance methods lack necessary foresight.

Analysis of key research areas and typical findings shows that cybersecurity research emphasizes technology, country-specific studies, and library information security; online public opinion research is relatively comprehensive; and special populations receive particular attention. The main shortcomings of current domestic Internet governance research include insufficient cooperation and exchange between research institutions and scholars, relatively uniform disciplinary backgrounds among researchers, and a primary focus on ontology management with inadequate research on Internet-related issues. Therefore, systematic and interdisciplinary research should become the direction for future Internet governance studies.

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Author Contributions:

Su Lanfang: Responsible for data analysis and manuscript revision;
 Zhang Yu: Responsible for material collection and support in bibliometric tools;
 Wang Yinchu: Responsible for literature collection and organization;
 Sun Yu: Determined the research theme, guided research direction, and provided revision suggestions.

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

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