

Hotspots and Trends in Domestic Information Cocoon Research (Postprint)

Authors: Liu Xiaowen Bai Rujin

Date: 2025-07-09T00:00:00+00:00

Abstract

[Purpose] This study reviews the general landscape of domestic information cocoon research in recent years, investigates its hotspots and trends, and aims to provide references for related research. **[Method]** Keyword co-occurrence analysis and cluster mapping were performed on information cocoon-related literature using the visualization analysis software Citespace. **[Results]** The study reveals that recent domestic information cocoon research has centered on two core themes: “technology” and “human”. Additionally, it identifies issues such as narrow research perspectives and insufficient development of localized theories. **[Conclusion]** To address these issues, this paper proposes two developmental pathways: first, breaking away from Western academic conventions; second, transcending the perspective of technological determinism.

Full Text

Preamble

Hotspots and Trends in Domestic Information Cocoons Research

Liu Xiaowen, Bai Rujin

(School of Journalism and Communication, Lanzhou University, Lanzhou, Gansu 730000)

Abstract

[Objective] This study examines the landscape of domestic information cocoons research in recent years, exploring its hotspots and trends to provide a reference for related research. **[Method]** Using the visualization analysis software Citespace, this study conducts keyword co-occurrence analysis and generates cluster maps for literature related to information cocoons. **[Results]** The findings reveal that recent domestic research on information cocoons revolves

around two core themes: “technology” and “people.” Moreover, the study identifies issues such as a singular research perspective and insufficient development of localized theories in domestic information cocoons research. [**Conclusion**] To address these issues, this paper proposes two developmental pathways: first, breaking free from the constraints of Western academia, and second, transcending the research perspective of technological determinism.

Keywords: information cocoons; visualization mapping; Citespace; co-citation analysis; co-occurrence analysis

Classification Code: G203

Document Code: A

Article ID: 1671-0134(2025)04-34-05

DOI: 10.19483/j.cnki.11-4653/n.2025.04.006

Citation Format: Liu Xiaowen, Bai Rujin. Hotspots and Trends in Domestic Information Cocoons Research [J]. China Media Technology, 2025, 32(4): 34-37, 73.

1. Introduction

With the development of algorithms and artificial intelligence technologies, personalized recommendations and big data analytics have continuously enhanced user-level customization in information selection. This has led to increasingly homogeneous categories of information received by users, gradually trapping them in “information cocoons.” Against the backdrop of the social media era, major operators have launched various customized services to cater to user preferences, allowing information cocoons to thrive as a coexisting phenomenon. However, the resulting negative effects have exacerbated issues such as group polarization. In recent years, the negative consequences triggered by information cocoons have become increasingly prominent, attracting widespread attention from all sectors of society. Some scholars have even argued that information cocoons represent an inevitable problem under differential consumption of massive information [1]. To accurately grasp the overall research framework on information cocoons in China, this study employs visualization software Citespace to generate keyword co-occurrence and clustering maps, exploring the developmental trends of information cocoons research in China and analyzing the evolution of research themes across different periods to more scientifically and objectively understand its research trajectory.

1.1 Data Sources and Research Methods

This study’s data originates from the China National Knowledge Infrastructure (CNKI) database. To ensure literature quality, we conducted an advanced search using “information cocoons” as the subject term, focusing on the “Journalism and Communication” discipline and limiting the scope to CSSCI-indexed journals. After removing invalid documents, we obtained 248 valid articles. Data collection was completed on August 27, 2024. This research adopts bibliometric methods and utilizes the visualization analysis tool Citespace 6.3.R1 to conduct

quantitative analysis of Chinese-language literature in the information cocoons field. Through visualization-based screening and organization of bibliographic data, we generated maps for keyword co-occurrence, keyword clustering, and keyword timelines to intuitively present current research hotspots and frontier trends in China's information cocoons field, providing a solid foundation for research and development in this area.

This research is supported by the Gansu Provincial Soft Science project "Paths and Strategies for Developing New Scenarios of Digital Cultural Consumption in Gansu" (Project No.: 22JR11RA093).

1.2 Research Data Analysis

1.2.1 Annual Distribution of Research Output For any given field, the number of published core papers serves as a key indicator for measuring research activity and frontier trends. A trend chart of core literature publication volume can clearly reveal research hotspots and trends in that field. As shown in [Figure 1: see original paper], the earliest recorded research output in China's information cocoons field dates back to 2010. The development of social media platforms such as Weibo and WeChat gave rise to phenomena like information cocoons, prompting scholars to begin paying attention to this area. From 2010 to 2017, research on information cocoons was in its initial stage. Studies during this period primarily focused on defining information cocoons and analyzing related social phenomena, generally examining the negative effects of information cocoons on democratic society and proposing corresponding solutions. From 2018 to 2021, information cocoons research showed an overall upward trend, concentrating on phenomena emerging after the advent of new media and artificial intelligence technologies, as well as the resulting problems and countermeasures. From 2022 to the present, research has gradually become more theoretical, with empirical studies on the generation mechanisms of information cocoons becoming popular and research beginning to show diversification.

1.2.2 Research Hotspots and Trends In Citespace, the "TimeSlicing" parameter was set to 2010-2024, with "Years Per Slice" set to 1. Using "keywords" as nodes, the software generated a keyword co-occurrence map, as shown in [Figure 2: see original paper]. Larger nodes in the map indicate higher keyword frequency. The visualization map clearly reflects the top ten hotspot keywords in information cocoons research: information cocoons, algorithm, artificial intelligence, algorithmic recommendation, echo chamber, big data, grounded theory, information literacy, influencing factors, and algorithm ethics.

Building upon the keyword co-occurrence map, we processed the data using Citespace's clustering function. The resulting keyword clustering map is shown in [Figure 3: see original paper]. The map reveals a Modularity Q value of 0.6218 and a Weighted Mean Silhouette S value of 0.9662, indicating a significant keyword network structure, good clustering effect, and reasonable clustering

results. Research in the information cocoons field primarily comprises nine cluster segments.

However, high frequency does not necessarily imply strong betweenness centrality. Betweenness centrality measures the importance of nodes within a network—the higher the betweenness centrality, the more important the literature. As shown in , information cocoons, artificial intelligence, algorithm, big data, and algorithm ethics represent key focal points in this research field.

To analyze the dynamic evolution of this field, keyword timeline maps serve as essential reference materials. Using Citespace, we generated a keyword timeline map, shown in [Figure 4: see original paper], which roughly divides China's information cocoons research into three stages: the Emergence Period (2010–2015), the Germination Period (2016–2019), and the Golden Period (2020–present).

During the Emergence Period, only three research outputs addressed the concept of information cocoons. The concept had just been introduced to China's journalism and communication academic community, and scholarly attention remained limited to partial concepts of information cocoons within group polarization studies. During the Germination Period, with the emergence of algorithms and AI technologies, information cocoons phenomena became increasingly visible, yielding abundant research results focused on technical aspects of generation mechanisms. From 2020 to the present, academic research on information cocoons has gradually deepened, producing numerous high-quality studies. Notably, research during this period has shifted toward people-centered impact mechanism studies, particularly regarding the effects on college student populations.

2. Technology and People: Two Cores of Information Cocoons Research

2.1 Technology-Centered Generation Mechanism Research

The technological perspective has consistently permeated information cocoons research, particularly following the emergence of new technologies. Research on generation mechanisms within these technical contexts and comparative studies with previous technologies have become prominent trends.

First, studies have examined the generation process and negative effects of information cocoons against the backdrop of Web 2.0 platform-based media such as Toutiao and Tencent News. Li Zhenhui and Zhu Tingting dialectically analyzed the advantages and disadvantages of personalized news platforms, briefly analyzing the process of information cocoons formation and the fact that users remain unaware of their confinement [2]. Wang Qian quantitatively investigated personalized recommendation platforms like Toutiao through user surveys, laying a preliminary foundation for quantitative research on information cocoons generation mechanisms [3].

Second, research has investigated information cocoons generation mechanisms in content intelligent distribution platforms within big data and artificial intelligence contexts. Wang Yicheng et al. analyzed information flow patterns in content intelligent distribution platforms through qualitative research methods and subsequently proposed an “information cocoons formation mechanism” model [4]. Tang Lijia and Zhao Zhiqi analyzed the information cocoons generation mechanism on the Douyin platform from a big data perspective and explained its negative effects [5]. Shen Nan used media form development as a classification basis and analyzed the formation process of information cocoons from the dimension of audience psychological cognition [6]. Wang Yaqian discovered through qualitative research methods that users collaboratively create information cocoons through personified expression and emotional interaction [7]. Li Longfei [8] and others, based on information ecology theory, explored the generation mechanism of information cocoons effects from the perspectives of information actors, information, information environment, and information technology. Notably, some scholars verified and compared ten network media and found that whether the communication structure is horizontal or vertical, and whether user connections are open or closed, constitute two key mechanisms determining whether network media bring about “information cocoons” [9]. Moreover, with the emergence of generative artificial intelligence technology, scholars have begun researching this new technology, and China’s information cocoons generation mechanism research has initially woven a research network centered on media, covering the Internet, big data, algorithms, and artificial intelligence.

2.2 People-Centered Impact Mechanism Research

As the core element of information cocoons, users constitute the main focus of impact mechanism research. Since Harvard professor Cass Sunstein first introduced the concept in *Infotopia: How Many Minds Produce Knowledge* [10], the majority of scholars have focused their impact studies on the negative effects of information cocoons based on users’ selective exposure psychology. According to the scope of research subjects, these studies can be summarized into two aspects.

First, impact mechanism research targeting general users. Scholars have approached from the perspective of users’ right to know, indicating that information cocoons pose serious negative impacts on this right [11]. Jiang Xiaoling et al. analyzed from the user reading perspective how algorithmic recommendation technology under information cocoons leads to the narrowing of users’ reading horizons, creating a “so-called” information cocoon that further forcibly 绑架 (kidnaps) users, creating a vicious cycle [12]. Zhou Chuanhu constructed an analysis of information cocoons’ impact mechanisms on social consensus cohesion from macro, meso, and micro levels and proposed relevant regulatory recommendations [13].

Second, research using college student populations as subjects has also become

a trend. As a highly active online group with high media usage behavior, college students serve as important research subjects that can largely avoid errors caused by non-research variables. Moreover, the development and employment of college students are topics of high social concern, making the exploration of information cocoons' impact mechanisms on this group and the mitigation of their negative effects socially significant. Wang Huifang argued from the perspective of the micro-era that information cocoons have severely negative impacts on college student populations who heavily rely on micro-media for information acquisition [14]. Zhang Min et al. analyzed the negative effects of information cocoons on college students in the intelligent era from the perspective of information literacy cultivation [15].

3. Dilemmas in China' s Information Cocoons Research

As demonstrated above, China' s journalism and communication academic community has developed a substantial body of research on information cocoons, with increasingly diversified perspectives as studies deepen. However, objectively speaking, China' s information cocoons research still faces two major challenges.

First, insufficient development of localized theoretical research. Some scholars have pointed out that “for a long time, a research framework and perspective known as social and behavioral sciences has been established by the West. Of course, their establishment was neither consistent nor accomplished overnight, but rather evolved and refined over thousands of years before gradually being confirmed, disseminated, and expanded to achieve its dominant position in academia worldwide” [16]. Currently, China' s information cocoons research largely continues to follow Western theories. While these research findings have certain significance for promoting understanding of China' s information cocoons generation and impact mechanisms, particularly regarding analysis of negative effect factors and corresponding countermeasures, Western academic research on information cocoons often focuses on individual information selection behaviors, emphasizing individual “binding” biases while neglecting the social and cultural complexity of information cocoons. When Chinese scholars cite Western theories, they often fail to fully consider the particularities of local society, potentially resulting in research findings that cannot accurately reflect information cocoons phenomena in Chinese society. China' s traditional culture and media system differ significantly from Western countries. Simply transplanting Western research frameworks into China' s information cocoons research may largely lead to the loss of unique local research value.

Second, a late start and singular research perspective. China' s information cocoons research began in 2010, while the concept had already been proposed abroad in 2006. However, some Chinese scholars argue that information cocoons have always existed, noting that Shannon once warned the scientific community against overly broad application of information theory to all types of human communication, and Hovland' s individual differences theory had already elab-

orated on audience “selectivity and attention” —essentially discussing related concepts before the term “information cocoons” emerged [17]. This indicates that information cocoons effects have long existed and continuously attracted scholarly attention. However, the concept was only introduced to China four years later with the emergence of platforms like Weibo. As discussed in Section 2, China’s information cocoons research has consistently focused on aggregated news push platforms and social media, with people-centered research also based on studying human social media usage behaviors. This media technology determinism perspective leads to the neglect of culture and institutions. Although some scholars have touched upon discussions of information cocoons formation causes in rural China when researching coffin collection from local villagers’ information source acquisition perspectives, these discussions were only brief and lacked in-depth exploration. Thus, we can see that Chinese communication scholars have begun noticing information cocoons effects in interpersonal communication, and we can further expand research on information cocoons phenomena and generation mechanisms in China’s local interpersonal communication contexts.

Currently, China’s journalism and communication discipline’s information cocoons research generally revolves around the two cores of “technology” and “people.” However, overall, information cocoons research still suffers from the loss of localized theoretical research value under a Western-centric perspective and the problem of singular research perspectives under a media technology determinism viewpoint. Based on the above discussion, this study proposes two potential developmental pathways for information cocoons research: first, breaking through the media technology determinism perspective to explore research perspectives such as culture and institutions; second, constructing an information cocoons research system with Chinese characteristics and exploring the theoretical value of this theory within the Chinese context.

4. Possible Paths for China’s Information Cocoons Research

China’s information cocoons research remains in a developmental stage, requiring long-term exploration regarding theories, methods, and topics, particularly in transcending Western research frameworks and expanding research perspectives.

4.1 Breaking Free from Western Academic Shackles

Based on visualization results and literature review, China’s information cocoons research frameworks and approaches largely remain attached to Western information cocoons research. However, this research system may cause the loss of value in localizing information cocoons research in China. The negative effects of information cocoons on users significantly outweigh the positive effects, with problems such as group polarization caused by information cocoons

adversely affecting social development. Therefore, constructing an information cocoons research system with Chinese local characteristics holds not only important research significance but also important practical value. Some scholars believe that the term “information cocoons theory” has been conceptualized—in Sunstein’s definition, information cocoons theory should be a metaphor, yet most published papers in China use “information cocoons theory” as a title and operate within Western frameworks. This phenomenon should prompt academic reflection.

4.2 Moving Beyond Technological Determinism Research Perspectives

Some scholars have noted that so-called media technology determinism refers to humans being suspended in environments constructed by media technology, with their concepts and behaviors constrained by mediated environments and reconstructed through media technological reforms [18]. Information cocoons theory research exhibits this tendency—whenever new media technology emerges, research on the causes and characteristics of information cocoons within that technical context becomes a hot topic among scholars in this field, from algorithm technology and big data to artificial intelligence, repeating in cycles. However, according to Sunstein’s definition, information cocoons refer to users in information communication only paying attention to their own choices and topics that please them, creating a personalized “Daily Me” and thereby rejecting or ignoring other viewpoints and content. Yet information acquisition takes diverse forms, and verification and mechanism exploration of information cocoons effects in offline interpersonal communication are lacking, with research perspectives such as culture and institutions facing the threat of being obscured. Therefore, breaking through the media technology determinism research perspective and exploring cultural, institutional, and other research perspectives represents a crucial pathway for developing information cocoons research.

References

- [1] Yu Guoming, Qu Hui. Misinterpretation of “Information Cocoons” and the Necessity of Algorithmic Push—Also on Solving Social Ethical Dilemmas in Content Distribution [J]. *Journal of Xinjiang Normal University (Philosophy and Social Sciences Edition)*, 2020(1): 127-133.
- [2] Li Zhenhui, Zhu Tingting. Information Diffusion and Content Generation: Research on Personalized News Platform Development [J]. *Modern Communication—Journal of Communication University of China*, 2017, 39(3): 160-162.
- [3] Wang Qian. Opening the “Black Box” of Algorithmic Distribution—A Quantitative Study Based on Toutiao News Push [J]. *Shanghai Journalism Review*, 2017(9): 7-14.
- [4] Wang Yicheng, Wang Ping, Zhang Lu, et al. Research on “Information Cocoons” in Content Intelligent Distribution Platforms from the Perspective

of Network Information Ecology Chain [J]. Library Science Research, 2018(9): 7-13, 36.

[5] Tang Lijia, Zhao Zhiqi. Analysis of Douyin' s Communication Methods and Problems from a Big Data Perspective [J]. Editing Studies, 2018(6): 52-56.

[6] Shen Nan. Information Cocoons and Information Equity in the Algorithm Era [J]. Journal of Xi' an Jiaotong University (Social Sciences Edition), 2020(2): 139-144.

[7] Wang Yaqian. “New Pseudo-Environment” : Research on Personified Expression of Short Video Bloggers and Its Influence on Users [J]. China Youth Study, 2020(1): 68-75.

[8] Li Longfei, Zhang Guoliang. Generation Mechanism and Governance Path of “Information Cocoons” in the Algorithm Era—Based on Information Ecology Theory [J]. E-Government, 2022(9): 51-62.

[9] Shi Yingjie, Gui Yong, Huang Ronggui, et al. Typology, Mechanism, and Impact of Network Media “Cocoon Effect” —A Mediation Analysis Based on the “Chinese College Students’ Social Mentality Survey (2020)” [J]. Journalism & Communication, 2022(5): 43-59, 126-127.

[10] [US] Cass Sunstein. Infotopia: How Many Minds Produce Knowledge [M]. Translated by Bi Jingyue. Beijing: Law Press, 2008: 18.

[11] Lin Aijun, Liu Yunhong. Algorithmic Bias and Ethical Regulation in Intelligent News Information Distribution [J]. Journalism Research, 2020(1): 29-39, 125-126.

[12] Jiang Xiaoling, Ma Jiayi. The “Violence” of Reading: Rethinking Algorithmic Recommendations in News Client Apps [J]. China Publishing, 2018(24): 43-46.

[13] Zhou Chuanhu. The Dual Effects of “Information Cocoons” on Social Consensus Cohesion [J]. People' s Tribune • Academic Frontier, 2019(23): 130-133.

[14] Wang Huifang. The Negative Impact of Information Cocoons on College Students’ Information Reading in the Micro-Era [J]. Publishing Wide Angle, 2018(2): 69-71.

[15] Zhang Min, Wang Pengjiao, Meng Xiangyu. How Can College Students in the Intelligent Era Break “Information Cocoons” ?—From the Perspective of Information Literacy Cultivation [J]. Modern Educational Technology, 2021(1): 19-25.

[16] Zhai Xuewei. Renqing, Mianzi, and the Reproduction of Power [M]. Beijing: Peking University Press, 2023: 6.

[17] Hu Yiqing. Rehabilitating Media Technology Determinism: Also on New Perspectives in Communication Intellectual History [J]. Modern Communication

–Journal of Communication University of China, 2017(1): 51-56.

[18] Lin Yufeng. Coffin Collection in Huang Village: A Deep Description of Communication and Cultural Practices in a Southern Village [J]. Chinese Journal of Journalism & Communication, 2024(5): 69-88.

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

Source: ChinaXiv –Machine translation. Verify with original.