Journal of Ecohumanism
2024
Volume: 3, No: 8, pp. 12057 – 12079
ISSN: 2752-6798 (Print) | ISSN 2752-6801 (Online)
https://ecohumanism.co.uk/joe/ecohumanism
DOI: https://doi.org/10.62754/joe.v3i8.5803

Hot Spots and Frontiers of Livestreaming Communication Research in China in the Past 10 Years---- Bibliometric Analysis and Knowledge Graph Visualization Using CiteSpace

KaiGe Bai[1],Kim Hua Tan[2] Nur Haniz Binti Mohd Nor[3], Jamsari Alias[4], Norazila Mat[5]

Abstract

Chinese research on livestreaming communication lacks systematic theoretical analysis and comprehensive understanding; hotspots and frontiers are still unclear. Based on the relevant literature in the past ten years (2013-2023) on CNKI, this paper explores the development trends, research status, and keyword clustering in this field. It was found that academic articles on livestreaming communication in China show a significant growth trend. The past decade's research can be divided into three stages of development, and the establishment of strong collaboration among prolific authors, represented by Yu Guoming, Liu Jia, Hua Jie, and Yan Sanjiu, remains elusive. Eight hotspots emerged in live streaming communication research during the four evolutionary phases: webcasting, livestreaming reports, mainstream media, e-commerce live streaming, sports events, media convergence, livestreaming bandwagons, and live streaming platforms. Moreover, five major research frontiers were identified: mobile live streaming, live streaming with goods, slow live streaming, live streaming with goods, and e-commerce live streaming. Regarding knowledge structure, in the cluster analysis, webcasting, e-commerce live streaming, and livestreaming coverage scale are more significant and are the current areas of concern for scholars. This study helps scholars in livestreaming communication to discover new frontiers and distinguish key knowledge subfields.

Keywords: *Livestreaming Communication, Frontiers and Hotspots, Knowledge Structure, Bibliometrics, Citespace.*

Introduction

With the rise of the Internet and social media, livestreaming communication in the new media era has emerged (Bai & Tan, 2024). The earliest introduction of livestreaming into communication research in China was Gu(1993), in the cultural analysis of radio and television. After that, Chinese scholars began to conduct studies on livestreaming from the perspective of communication studies, Luo & Liu (2021) combed the literature related to e-commerce livestreaming purchase willingness,summarised it is influencing factors. Such reviews can deepen the overall understanding of specific aspects of livestreaming communication.But, Similar to the scholars above,previous reviews in livestreaming have focused on particular subfields and topics(Liu & Meng,2018). knowledge of livestreaming communication has never been categorized as the latest state of knowledge structure,cant explore more furture subfields.

At the same time, most adopted research methods are Qualitative literature review (Tan et al.,2021), No scholars have yet conducted a systematic review using bibliometric methods to review livestreaming commnication the detailed knowledge background of communication. According to Onwuegbuzie et al. (2012), Law et al. (1998), and Dixon-Woods et al. (2005), qualitative reviews can only analyze a limited number of documents. They can lead to potential bias due to subjectivity. Therefore, there is a need for a systematic review of the vast amount of literature on livestreaming communication in this country using a quantitative approach. Past studies have shown that CiteSpace, a Java-based application (Fu & Du, 2023), uses bibliometrics, co-occurrence analysis, and cluster analysis to analyze and depict hotspots and research frontiers in the scientific literature of a subject or knowledge area (Chen, 2014; Chen, 2006). Knowledge mapping can also be used to carry out an exhaustive literature analysis of the suggested research dimensions (Chen, 2014). According to Dou et al. (2023) and Hou & Hu (2013), visual networks of co-occurring

[1] School of Media and Communication, Taylor's University, 47500 Subang Jaya, Selangor, Malaysia, Education for All Impact Lab, Taylor's University, Subang Jaya, Malaysia, Email: kaige.bai@sd.taylors.edu.my

[2] School of Media and Communication, Taylor's University, 47500 Subang Jaya, Selangor, Malaysia, Education for All Impact Lab, Taylor's University, Subang Jaya, Malaysia. Email: kimhua.tan@taylors.edu.my(Corresponding Author)
[3] School of Media and Communication, Taylor's University, 47500 Subang Jaya, Selangor, Malaysia.
[4] Pusat Pengajian Citra Universiti, & Institut Islam Hadhari, 43600 Bangi, Universiti Kebangsaan Malaysia, Email: nurhaniz.mohdnor@taylors.edu.my
[5] Faculty of Economics and Management, 43600 Bangi, Universiti Kebangsaan Malaysia, Email: jamsari@ukm.edu.my

Journal of Ecohumanism
2024
Volume: 3, No: 8, pp. 12057 – 12079
ISSN: 2752-6798 (Print) | ISSN 2752-6801 (Online)
https://ecohumanism.co.uk/joe/ecohumanism
DOI: https://doi.org/10.62754/joe.v3i8.5803

keywords can depict recent and emerging issues in scientific literature, in addition to burst analysis and cluster analysis. Finding new developments, research frontiers, and knowledge domains can also be aided by it (Chen, 2016; Tan et al.,2022). thus, to better understand the existing state and potential developments of livestreaming as a new communication medium, this study uses bibliometrics through citespace software to examine the hotspots and research frontiers in livestreaming communication.

Specifically, this paper takes the literature related to livestreaming communication in the past ten years (2013-2023) included in China's CNKI database as the data source and research object. It analyses the development dynamics, keyword co-occurrence mapping, and keyword clustering mapping of the field in the past ten years by using the CiteSpace visualization and scientometric investigation tools in terms of the number of articles, authors of the articles, institutions, journals, keyword co-occurrence mapping, and keyword clustering mapping. The field's development dynamics, research status, hotspots and development frontiers in the past ten years are analysed systematically. The following research issues were addressed:

- How has the number of articles on livestreaming communication research in China grown over time?
- Who are the significant contributors, including writers, organizations, and journals?
- In the field of livestreaming communication research, what are the most recent and promising areas of study?
- Using keyword co-occurrence network clustering, what is the knowledge structure of livestreaming communication research based on?

Research Design

Data Sources

The research object of this paper is the quality journal literature in the field of domestic livestreaming communication in China (Liu & Kuang, 2019), and the data source is the CNKI full-text database of China Knowledge Network (Li & Huang, 2017).

Search Strategy

which is searched in the academic journal repository. (search time: 28 August 2023). source category "SCI source journals, Peking University Core, CSSCI" for the period "2013-2023" using the following terms: live streaming, livestreaming communication. Search criteria: (subject %='live streaming dissemination live streaming' OR subject %='live streaming dissemination live streaming' OR title %='live streaming dissemination live streaming' OR title %='live streaming dissemination live streaming') AND ((year Between('2013','2023')) AND ((SCI-accessible journal='Y') OR (core journal='Y') OR (CSSCI journal='Y'))); search scope: journals.

Inclusion and Exclusion Criteria

In order to ensure the reasonableness and validity of the data, we carefully read the selected pieces of literature. We manually excluded 137 pieces of duplicates：

(i)Publication descriptions, journal statements, interviews, conference abstracts or errata papers; (ii) unpublished articles; (iii) duplicate publications; and (iv) unrelated articles.

Only original peer-reviewed published articles or reviews on livestreaming communication were selected for inclusion. After all, 591 publications on livestreaming communication were chosen, and on August 30, 2023, these 591 publications were processed on CiteSpace.

Journal of Ecohumanism
2024
Volume: 3, No: 8, pp. 12057 – 12079
ISSN: 2752-6798 (Print) | ISSN 2752-6801 (Online)
https://ecohumanism.co.uk/joe/ecohumanism
DOI: https://doi.org/10.62754/joe.v3i8.5803

Analysis Path-Bibliometrics and Visualisation Analysis

After retrieving the articles, we exported them as "download_XXX.txt" files including all of the records and references. These files were then imported into CiteSpace 5.7.R5 for additional analysis. We used CiteSpace's primary procedural stages, such as temporal slicing, thresholding, modeling, pruning, merging, and mapping, to create the visual knowledge map (Chen, 2014). Burst detection, median centrality, and heterogeneous networks are three of CiteSpace's fundamental ideas that enable quick visualization of the status, hotspots, and frontiers of study (Chen, 2016). Different maps' nodes stand in for writers, organizations, nations, or keywords. The size of the node reflects how frequently it occurs or is cited, and the color of the node represents the year it occurs or is cited. Furthermore, nodes with black borders are thought to be hotspots or turning points in the field since they show significant meso-centrality (Kostoff, 1993). The following parameters were configured before the CiteSpace software was launched:(1)A threshold selection criterion of the first 25 was set, meaning that data were extracted from the first 25 results of each time slice; (2) the year of each slice was set to 1; (3) the node type was set to authors/institutions/keywords; and (5) pruning was set to none or MST. The time period that was selected was from 2013 to 2023. The default settings applied to the remaining parameters.

Therefore, as illustrated in Figure 1, we used CiteSpace to carry out four analysis paths in order to respond to the study questions listed in Table 1.

Table 1. Analysis Paths

RQ	Analyzing paths
(a) How has the number of articles on livestreaming communication research in China grown over time?	Trends in time to publication
(b) Who are the significant contributors, including writers, organizations, and journals?	Co-authors, Institutions, Journals
(c) In the field of livestreaming communication research, what are the most recent and promising areas of study?	Keyword Co-occurrence, Keyword Timing
(d) Using keyword co-occurrence network clustering, what is the knowledge structure of livestreaming communication research based on?	Keyword Clustering, Keyword Burstness

RQ *Analyzing Paths*

- How has the number of articles on livestreaming communication research in China grown over time? Trends in time to publication
- Who are the significant contributors, including writers, organizations, and journals? Co-authors, Institutions, Journals
- In the field of livestreaming communication research, what are the most recent and promising areas of study? Keyword Co-occurrence, Keyword Timing
- Using keyword co-occurrence network clustering, what is the knowledge structure of livestreaming communication research based on? Keyword Clustering, Keyword Burstness

Journal of Ecohumanism
2024
Volume: 3, No: 8, pp. 12057 – 12079
ISSN: 2752-6798 (Print) | ISSN 2752-6801 (Online)
https://ecohumanism.co.uk/joe/ecohumanism
DOI: https://doi.org/10.62754/joe.v3i8.5803

The Trend in Publication Time.

The CNKI database is utilized for the extraction of primary data, encompassing statistical analysis and the consolidation of publication figures. The publication trend is then visually represented through the utilization of Excel charts. The fluctuations in the quantity of published articles can serve as a reliable indicator of the level of research activity within a specific topic over a given period, thereby addressing Research Question 1.

The Analysis of Co-Authors

According to the study conducted by Sampaio et al.,(2016), The utilization of co-author network analysis has been employed as a means to evaluate collaborative associations and discern significant researchers and institutions. The Density of each collaboration is a metric used to quantify the level of connection inside the network. It is calculated by dividing the number of existent linkages by the maximum number of potential links in the network. The range of density values spans from 1 to 0. A density value approaching 1 signifies a higher level of cohesion within the network link, while a value approaching 0 suggests a lower level of collaboration (Acedo et al., 2006). Furthermore, according to Chen (2016), when two writers collaborate on writing an article, a co-authorship network graph is created. The technique of co-authorship analysis was employed in order to address Research Question 2.

Co-Word Analysis

Keywords are linguistic units that convey subjective ideas or notions inside a literary work, The author's academic thoughts and opinions are highly generalized, (Chen, 2016).The fundamental approach of CiteSpace analysis involves the utilization of co-word analysis to find crucial research subjects and research frontiers. Two measures, namely frequency and median centrality (BC), were employed to assess the significance of keywords. Betweenness centrality (BC) is a statistic used to quantify the likelihood of a shortest path in a network passing via a specific node (He, 1999). This demonstrates the extent to which the node facilitates the establishment of connections with other nodes within the network. The degree of centrality directly correlates with the significance and influence of the keyword within particular domains of research. Furthermore, when the value of BC exceeds 0.1, it signifies that the keyword exhibits connections with other keywords inside the network map. In order to address Research Question 3 .

Keyword Clustering

The process of cluster analysis involves the simplification of keywords by grouping them into a limited number of clusters, which is determined by the examination of their co-occurrence and cluster statistics (Tonella et al., 2003). The utilization of cluster analysis allows for a deeper comprehension of the logical connection between various keywords (Chang & Hsu, 2005). The clustering process, as described by Munteanu&Marcu (2006), involved the utilization of a keyword co-occurrence map. Through this process, keyword clustering labels were chosen, and the resulting keyword clustering map, depicted in Figure 5, was generated using the LLR extraction approach. The values of the clustering modularity index Q and the clustering contour index S are 0.8552 and 0.6757, respectively. The Q value typically falls within the interval [0, 1], with $Q > 0.3$ indicating a strong structure in the divided relationships. A value of 0.7 for the S value signifies very efficient and compelling clustering, while a value above 0.5 is generally regarded as reasonable clustering (Regelson & Fain, 2006). Furthermore, a burst keyword analysis was performed utilizing CiteSpace. The emergent keyword analysis method is employed to identify keywords that exhibit quick changes or significant increases in frequency within a brief timeframe, hence highlighting the dynamic nature of keyword mutations. Keywords that possess high-intensity values have the potential to signify a research frontier（Zhang,2021）.co-word analysis to address Research Question 4.

Journal of Ecohumanism
2024
Volume: 3, No: 8, pp. 12057 – 12079
ISSN: 2752-6798 (Print) | ISSN 2752-6801 (Online)
https://ecohumanism.co.uk/joe/ecohumanism
DOI: https://doi.org/10.62754/joe.v3i8.5803

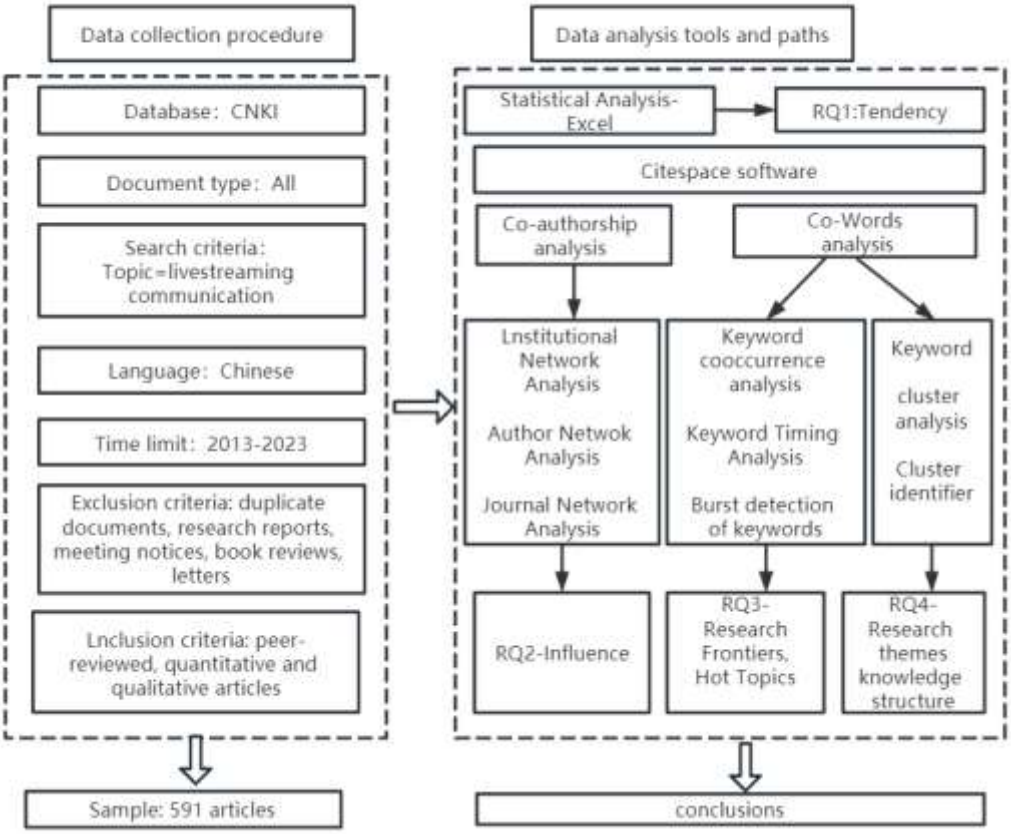
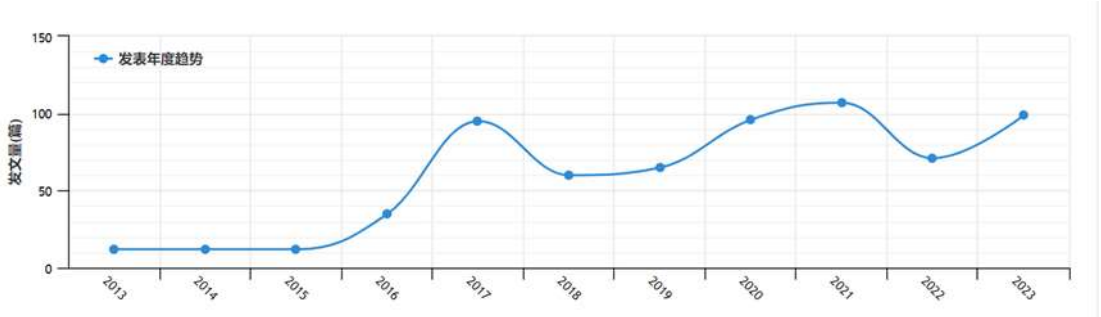


Figure 1. Flowchart of the Study

Analysis of Data Results

Analysis of the Annual Distribution of Literature

From 2013 to 2023, a total of 591 published kinds of literature were found after the restriction, and the number of publications has been increasing every year in the last ten years, albeit with some inverted S-shaped fluctuations, as shown in Figure 2. Furthermore, the lowest output years occurred in 2013-2015, with 12 publications in all three years, and interestingly, 2017 showed an upward trend, with more articles published in one year in 2017 than in 2013-2016 combined. Moreover, after nearly a decade of growth, output peaked in 2021 with 107 publications. This is still a young field, as most papers have been published in the last three years. As seen in Figure 2, research on livestreaming communication in China has roughly gone through 3 phases: a slow development phase (2013-2015), a fast development phase (2016-2017) and a zigzag development phase (2018-2023)



Journal of Ecohumanism
2024
Volume: 3, No: 8, pp. 12057 – 12079
ISSN: 2752-6798 (Print) | ISSN 2752-6801 (Online)
https://ecohumanism.co.uk/joe/ecohumanism
DOI: https://doi.org/10.62754/joe.v3i8.5803

Figure 2. Annual Trends in Publications

Co-occurrence Analysis of Authors, Institutions, Journal Collaborative Networks

Analysis of Author Collaboration Networks: Identifying Influential Authors

In this research, CiteSpace was employed to conduct co-author analysis, wherein the nodes were designated as "authors". The resulting author cooperation network graph, as depicted in Figure 3, was obtained. Figure 3 has nodes and lines, as seen from the visual representation. The nodes in the network diagram symbolize individual authors, whilst the lines connecting the nodes depict the links between these authors. Authors with a higher number of published articles are typically recognized as prominent nodes, indicating their potential to exert a substantial influence on the advancement of a specific scientific study domain. A stronger association is shown by a thicker line between two nodes.

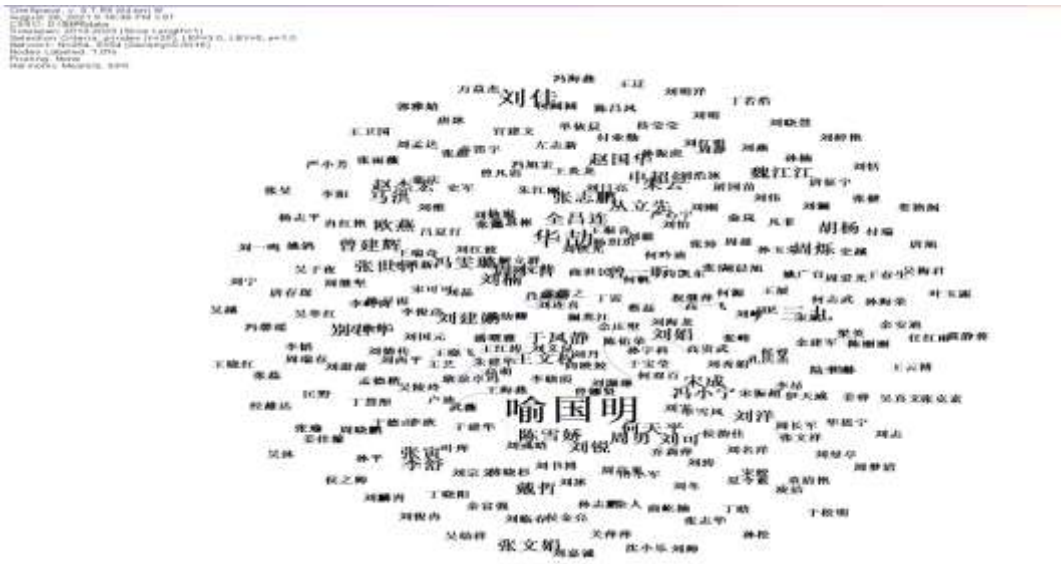


Figure 3. Key Author Co-Occurrence

Highly prolific authors play a leading role in a research area and are considered the core drivers of research. The fact that an author has published a certain number of papers in high-quality journals indicates that he or she has a particular academic status in the field and that his or her ideas are inspirational and instructive to subsequent researchers. In the study of livestreaming communication, Table 2 shows that the most productive scholars are Yu Guoming (10), Liu Jia (4), Hua Jie (4), and Yan Sanjiu (3).

Table 2. Ranking of High-Yielding Scholars

No	Author	Frequency	Percentage	Year
1	Yu Guoming	10	30.00%	2016
2	Liu Jia	4	12.10%	2013
3	Hua Jier	4	12.10%	2018
4	Yan Sanjiu	3	9%	2017
5	Cong Lixian	2	6%	2020
6	Liu Jianxun	2	6%	2019
7	Zeng Yixin	2	6%	2017

Journal of Ecohumanism
2024
Volume: 3, No: 8, pp. 12057 – 12079
ISSN: 2752-6798 (Print) | ISSN 2752-6801 (Online)
https://ecohumanism.co.uk/joe/ecohumanism
DOI: https://doi.org/10.62754/joe.v3i8.5803

8	Ma Hong	2	6%	2019
9	Yu Fengjing	2	6%	2019
10	Feng Wenlu	2	6%	2018

The identification of the primary cohort of writers is accomplished through the application of Price's Law (Xiao,2021), denoted as M = 0.749(N Max)/2. In the present investigation, the maximum value of N, denoted as Nmax, is determined to be 10 (refer to Table 2). The subsequent computation yields a value of M as 3.745, indicating that individuals who have authored three or more scholarly publications are considered as core contributors, amounting to a total of four individuals. The aggregate quantity of papers amounts to 21, which constitutes 3.50% of the overall quantity of papers. Price (year) posits that a fair expectation can be established wherein 50% of all papers pertaining to a given topic are authored by the most productive individuals in the field. Nevertheless, Chen&Ma (2022) have identified a substantial disparity between the percentages of 3.50% and 50%, suggesting the absence of a cohesive and established cohort of authors within the realm of livestreaming communication in China.

After analyzing the CNKI database, we can see that Mr Yu Guoming from the School of Journalism and Communication of Beijing Normal University has published as many as ten articles in core journals and CSSCI in the field of livestreaming communication, among which "From technical logic to social platform: the value of live video broadcasting", which was published in 2017, has been downloaded more than 5,634 times, and has been cited as many as 148 times. The total number of articles published by Mr Yu Guoming is 1202, and his ideas have a profound influence on the media field, as can be seen in Figure 4, the distribution of subjects, the most researched field is the media industry, China's media industry, media development and meta-universe. As shown in Figure 5, Mr Yu focuses on journalism and communication, cultural economy and trade economy.

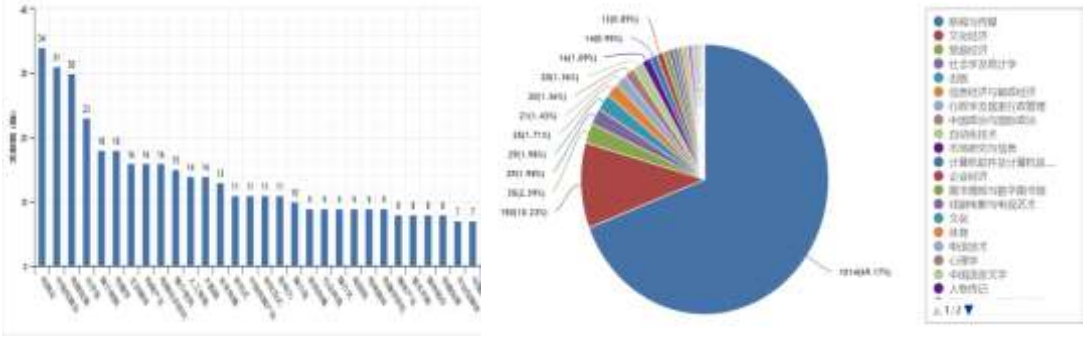


Figure 4. Highly Prolific Scholar Yu Guoming Theme Distribution

Figure 5. Discipline Distribution of Highly Produced Scholars Yu Guoming

Institutional Collaboration Network Analysis: Influential Institutions

The parameters were kept constant, with the exception of modifying the node type from "author" to "institution". The outcome of this study yielded a network consisting of 237 institutions, represented as nodes, and no partnerships, represented as lines. The network co-occurrence density was calculated to be 0. The network graph had a density of 0, signifying the absence of any actualized linkages within the network of livestreaming communication institutions. Furthermore, it may be observed that there is a lack of strong inter-agency collaboration, as highlighted by Bian et al.,(2014). The size of the nodes in the graph corresponds to the font size, indicating the magnitude of the research institutions. Larger font sizes are indicative of institutions that produce a greater number of articles. The connecting lines between the nodes represent collaborations between the institutions. The quantity and thickness of these lines reflect the degree of proximity in collaboration between the institutions (Restrepo et al.,2021).

Journal of Ecohumanism
2024
Volume: 3, No: 8, pp. 12057 – 12079
ISSN: 2752-6798 (Print) | ISSN 2752-6801 (Online)
https://ecohumanism.co.uk/joe/ecohumanism
DOI: https://doi.org/10.62754/joe.v3i8.5803

Figure 6. Institute Co-Occurrence

Journal Network Analysis: Influential Journals

Table 3 is a compilation of the five prominent academic journals that exhibit a significant focus on the domain of livestreaming communication within the context of China. Nevertheless, it is important to acknowledge that the aforementioned top 5 journals were responsible for publishing a mere 46 out of the total 591 papers, constituting a minute proportion of selected articles, specifically 7.7 percent. The field of Television Studies ranked first with a total of 11 publications, while The Young Reporter and Contemporary Television followed closely behind.

Table 3. Journal Rankings

Journal	Frequency
Television Studies	11
Young Journalists	10
Contemporary Television	9
Media	8
Modern Communication (Journal of Communication University of China)	8

In addition, as shown in Figure 7, this topic is most popular among scholars in the Journalism and Communication, Economics and Trade, and Publishing subject areas. Among them, scholars in the discipline of journalism and communication occupy a central position in the field of livestreaming communication. A total of 442 articles were published, accounting for 57.78%.

Journal of Ecohumanism
2024
Volume: 3, No: 8, pp. 12057 – 12079
ISSN: 2752-6798 (Print) | ISSN 2752-6801 (Online)
https://ecohumanism.co.uk/joe/ecohumanism
DOI: https://doi.org/10.62754/joe.v3i8.5803

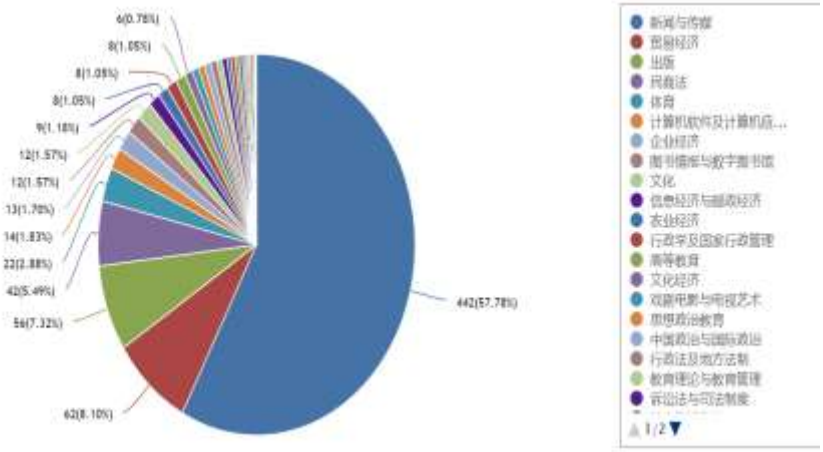


Figure 7. Distribution of Livestreaming Communication Topics in the Last Ten Years

Visualization and Analysis of Research Hotspots and Frontiers in Live Streaming Communication

High-frequency keyword analysis of livestreaming communication – hotspots

The parameters within CiteSpace remain unaltered, with the sole modification being the alteration of the node type from "organization" to "keyword". The network graph depicted in Figure 8 is a keyword co-occurrence network. It comprises a total of 384 nodes, which correspond to keywords, and 614 connections between these nodes. The diagram depicted in Figure 8 illustrates a graphical representation where individual nodes symbolize keywords. The prominence of each node corresponds to the frequency of co-occurrence, with higher frequencies resulting in more significant nodes. The connections between pairs of keywords indicate their co-occurrence relationship, while the thickness of the lines indicates the intensity of co-occurrence between the respective keywords (Zhang et al.,2022).

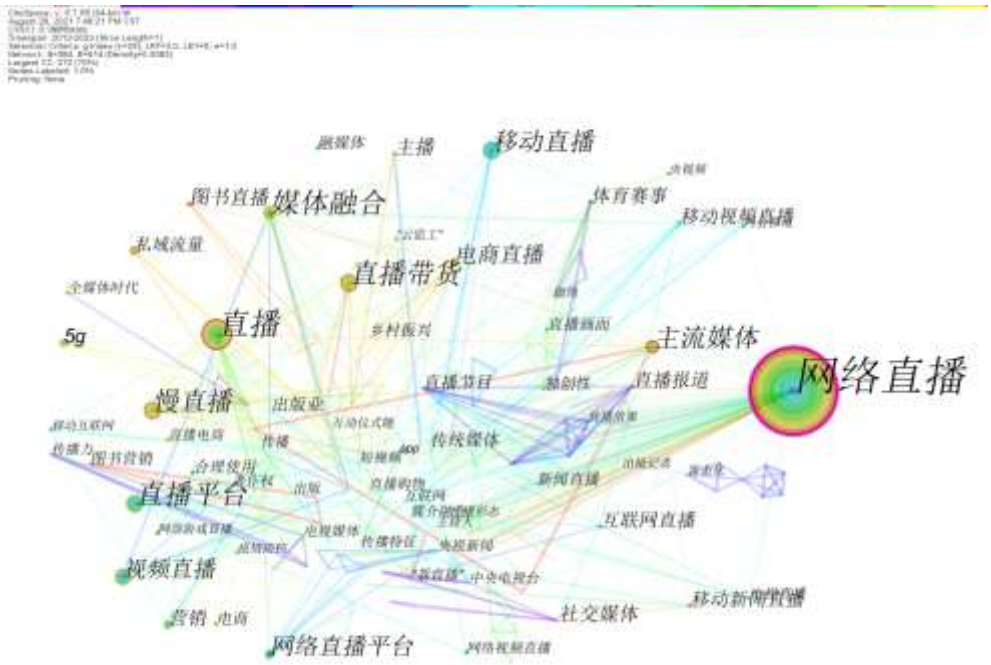


Figure 8. High Frequency Keywords

Journal of Ecohumanism
2024
Volume: 3, No: 8, pp. 12057 – 12079
ISSN: 2752-6798 (Print) | ISSN 2752-6801 (Online)
https://ecohumanism.co.uk/joe/ecohumanism
DOI: https://doi.org/10.62754/joe.v3i8.5803

According to Figure 8, Table 4 lists the ten keywords with the strongest centrality and the highest frequency, respectively.

Centrality quantifies the degree of connection between a node and other nodes; the larger the value of centrality, the more likely that the keywords on the node will be revealed simultaneously than the keywords on other nodes. According to Professor Chen (2016), when the centrality value of a document is greater than 0.1, it can be regarded as a critical node at the centre of the network. Keywords with higher centrality are more critical in livestreaming communication research. In this study, the centrality values of webcasting, live reporting, mainstream media, livestreaming, and sports events are more than 0.1, which indicates that these five keywords occupy a crucial position and are connected to other keywords in the network.

In addition, in Figure 8, each circular node in the graph represents a keyword, and the larger the node, the higher the frequency of the keyword. The top 5 in frequency in this study are webcasting, live streaming, media convergence, livestreaming bandwagon, and livestreaming platform, and therefore currently have the highest level of attention.

Table 4. The Ten Keywords with the Highest Centrality and Frequency

Centricity					**Frequency**				
No	Freq	Centrality	Year	Keywords	No	Freq	Centrality	Year	Keywords
1	150	0.66	2016	Webcasting	1	150	0.66	2016	Webcasting
2	7	0.18	2013	Livestreaming Reports	2	35	0.15	2017	livestreaming
3	20	0.16	2017	Mainstream Media	3	25	0.08	2016	Media Convergence
4	35	0.15	2017	Livestreaming	4	24	0.05	2020	Live Streaming
5	7	0.12	2014	Sports Events	5	22	0.07	2017	Livestreaming Platforms
6	25	0.08	2016	Media Convergence	6	20	0.16	2017	Mainstream Media
7	11	0.08	2020	E-commerce livestreaming	7	20	0.05	2020	Slow livestreaming
8	22	0.07	2017	Livestreaming Platforms	8	18	0.03	2016	Mobile livestreaming
9	3	0.07	2013	Journalists	9	14	0.05	2016	Webcasting Platforms
10	24	0.05	2020	Livestreaming shop	10	13	0.01	2016	Livestreaming video

Keyword Timing Analysis of Livestreaming Communication - Evolution of Hotspots

The history chart generated by CiteSpace is designed to illustrate the progressive development of research focal points in the field of livestreaming communication (Park & Jeong,2019; Farina,2006). This study categorizes the progression of livestreaming communication research into four distinct phases, based on the analysis of the most commonly used phrases, as depicted in Figure 9. The project was divided into four distinct phases: Phase I, which spanned from 2013 to 2016; Phase II, which took place from 2016 to 2019; Phase III, which occurred between 2019 and 2022; and Phase IV, which was implemented in 2022 and concluded in 2023.

Journal of Ecohumanism
2024
Volume: 3, No: 8, pp. 12057 – 12079
ISSN: 2752-6798 (Print) | ISSN 2752-6801 (Online)
https://ecohumanism.co.uk/joe/ecohumanism
DOI: https://doi.org/10.62754/joe.v3i8.5803

Section 4 provides a comprehensive analysis of each phase, examining relevant scholarly papers and significant historical events that occurred throughout those periods.

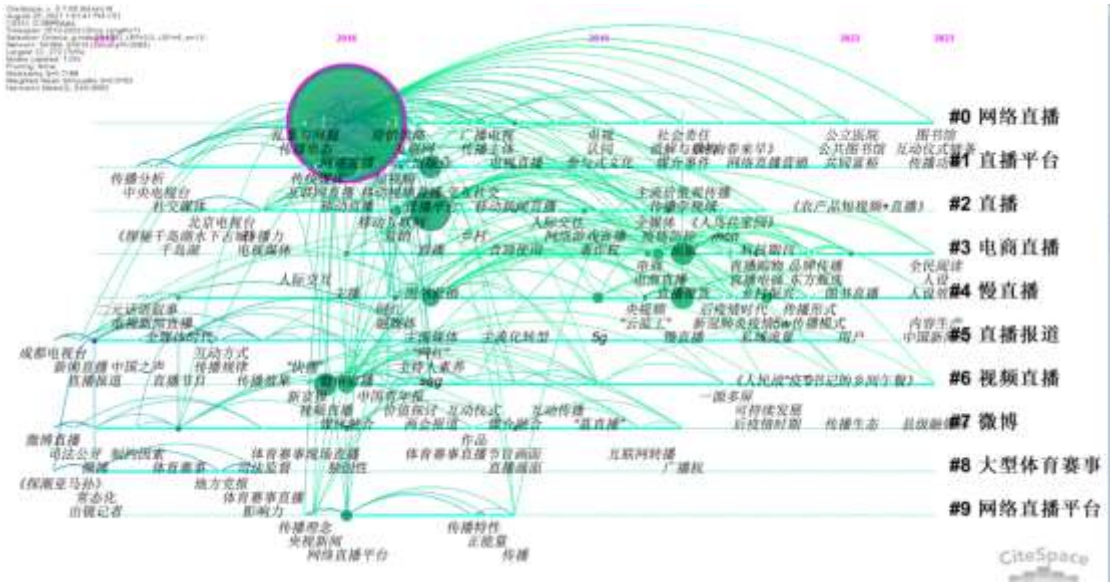


Figure 9. Keywords Time Series Graph

Burstness Analysis of Livestreaming Communication Keywords - Frontiers

A research frontier is an emerging and transient grouping of concepts and potential research questions (Zhang et al., 2020)). Kleinberg's burst detection algorithm uses burst keyword analysis to identify emerging research frontier concepts (Xu et al., 2021), which refers to keywords that show a rapid change or a sharp increase in number within a short period, emphasizing keyword mutation. Bursting consists of two dimensions: bursting intensity and bursting time. Keywords with high intensity can be identified as research frontiers (Zhou & Lu, 2012). By considering high-intensity keywords, research frontiers on the timeline of livestreaming communication research can be roughly identified. Based on CiteSpace keyword mapping analysis, select "Burstness" in the control panel, set the value of the parameter "Minimum Duration" to 1, and click " View" to get the keyword Burstness distribution graph, such as Figure 10, in order of intensity, select the intensity of the top ten keywords for analysis, the intensity value is above 2, the highest is 5.77. Combined with the year in recent years, mobile livestreaming, livestreaming with goods, slow livestreaming, live e-commerce, and livestreaming are critical topics in livestreaming communication. It has received extensive attention from scholars.

Journal of Ecohumanism
2024
Volume: 3, No: 8, pp. 12057 – 12079
ISSN: 2752-6798 (Print) | ISSN 2752-6801 (Online)
https://ecohumanism.co.uk/joe/ecohumanism
DOI: https://doi.org/10.62754/joe.v3i8.5803

Top 10 Keywords with the Strongest Citation Bursts

Keywords	Year	Strength	Begin	End	2013 - 2023
直播报道	2013	2.79	**2013**	2015	
移动直播	2013	5.11	**2016**	2018	
视频直播	2013	2.57	**2016**	2018	
互联网直播	2013	2.5	**2016**	2018	
媒体融合	2013	2.74	**2019**	2021	
直播带货	2013	5.77	**2020**	2023	
慢直播	2013	5.58	**2020**	2023	
直播	2013	4.24	**2020**	2021	
电商直播	2013	3.43	**2021**	2023	
私域流量	2013	2.62	**2021**	2023	

Figure 10. Top 10 Burstness Analysis for Livestreaming Communications Keywords

Knowledge Structure of Livestreaming Communication

Clustering

Cluster analysis is the process of simplifying keywords into a relatively small number of clusters based on the co-occurrence analysis of the keywords according to the method of cluster statistics (Chang & Hsu, 2005). The logical relationship between different keywords can be further understood through cluster analysis, and the knowledge structure can be obtained. Therefore, the main purpose of keyword clustering (Cluster) is to study the "frontiers" involved, and with the help of CiteSpace software, the keywords are clustered and mapped so that the theoretical network system involved in a specific research discipline is divided into several frontiers, with each frontier representing a sub-research area (Zhou & Lu 2012). The clustering criteria depend on the keywords in the literature. The criteria for Clustering depend on the co-occurrence and strength of keywords in the literature and literature with a more substantial density of shared relationships will be classified into a cluster (Chen 2016). Based on keyword co-occurrence mapping, Clustering is carried out, keyword clustering labels are selected, and the keyword clustering mapping shown in Fig. 11 is obtained by applying the LLR extraction method.

Journal of Ecohumanism
2024
Volume: 3, No: 8, pp. 12057 – 12079
ISSN: 2752-6798 (Print) | ISSN 2752-6801 (Online)
https://ecohumanism.co.uk/joe/ecohumanism
DOI: https://doi.org/10.62754/joe.v3i8.5803

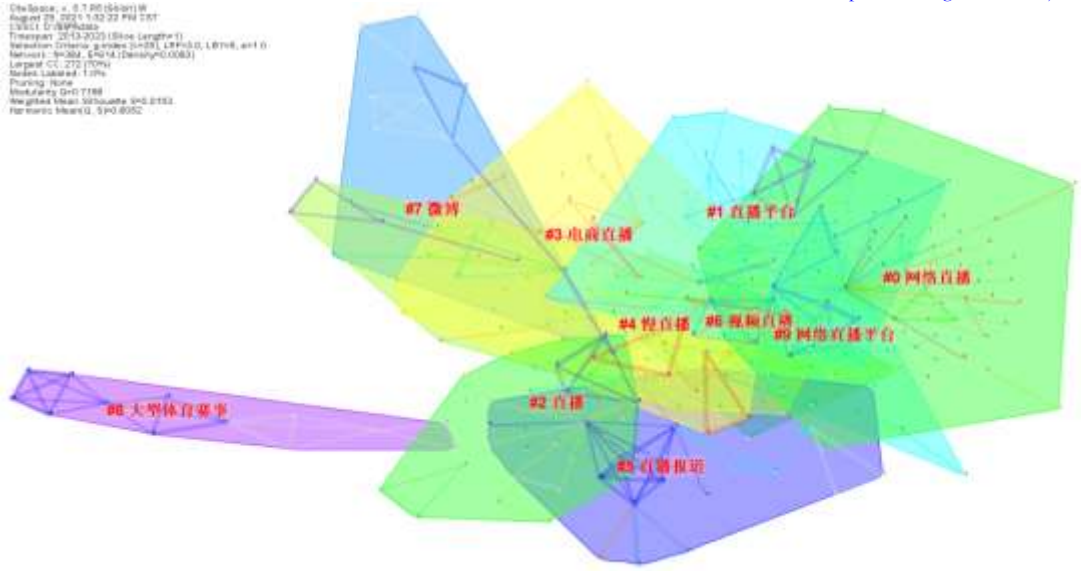


Figure 11. Keyword Clustering

The clustering modularity index in Figure 11 is represented by the Q value of 0.7188, while the clustering contourness index is shown by S with a value of 0.9153. The q-value typically falls within the range of [0, 1], and a value of Q > 0.3 indicates that the observed connection structure is statistically significant. The efficacy of clustering is significantly persuasive when the S value reaches 0.7, but clustering is commonly perceived as acceptable if it exceeds 0.5. Based on the established criterion, the clustering observed in this study has statistical significance, and the obtained clustering outcomes are deemed persuasive. As shown in Fig. 11, 10 clusters are obtained, which are "#0 Webcasting", "#1 Livestreaming platform", "#2 Livestreaming", "#3 E-commerce livestreaming", "#4 slow livestreaming" "#5 livestreaming reporting" "#6 video livestreaming" "#7 Weibo " #8 Major Sporting Events" #9 Webcasting Platforms". The higher the cluster number, the more literature there is and the larger the cluster size. Therefore, it can be seen that webcasting, e-commerce live streaming, and live streaming reports are more extensive and are the areas that scholars are currently focusing on.

Cluster Analysis of Livestreaming Communication Keywords - Knowledge Cluster Identifiers

After determining the knowledge structure, we would like to study the subcategories in each cluster to determine the specific research areas. Select "Cluster Explorer" and export the data from the background of the software to draw a keyword network clustering table (Table 5).

Table 5. Knowledge Cluster Identifiers

Cluster No	Size	Clustering Profile Values S	Marker Extract the first 5
#0 Webcasting	61	0.93	Web livestreaming; Marketing model; Socialist core values; Misbehaviour; Chaos and problems.
#1 Livestreaming Platforms	34	0.866	Livestreaming platform; Webcasting; Developmental changes; Information dissemination; Central media; Television media; Convergent communication; Knowledge diffusion; Science and technology periodicals; Panoramic lens; Knowledge diffusion.

Journal of Ecohumanism
2024
Volume: 3, No: 8, pp. 12057 – 12079
ISSN: 2752-6798 (Print) | ISSN 2752-6801 (Online)
https://ecohumanism.co.uk/joe/ecohumanism
DOI: https://doi.org/10.62754/joe.v3i8.5803

#2 Livestreaming	28	0.897	Television media; Convergent communication; Knowledge diffusion; Scientific and technological journals; Panoramic lens.
#3 E-commerce livestreaming	28	0.925	livestreaming with goods; book livestreaming; book marketing; book branding; rural revitalisation; empirical research.
#4 Slow livestreaming	28	0.91	Mainstream media; Webcasting; 5w communication model; Slow livestreaming journalism; Private domain flow
#5 Livestreaming Reporting	23	0.968	livestreaming; professional journalists; founding of new china; interactive methods; communication patterns; major news events
#6 Video livestreaming	18	0.768	Livestreaming; Interactive rituals; Online consumption; Branding; One source, multiple screens
#7 Weibo	18	0.963	Sports events; Livestreaming of sports events; Type of work; Internet broadcasting; Word-of-mouth communication
#8 Major Sports Events	13	0.966	Livestreaming; National Fitness Awareness; Influence; National Fitness; Major Sports Events
#9 Webcasting Platforms	13	0.951	Livestreaming; Television; Social Media; Appearance Path; New Media Communication

It can be seen that the number of clusters is significant, and there may be content duplication, so combined with secondary literature reading, the hot content of livestreaming communication research is summarised as follows. The first is the livestreaming platform. The core of the Clustering of livestreaming platforms is "marketing mode, developmental changes, and integration of communication". The second is e-commerce livestreaming; the core of Clustering is livestreaming with goods. The third is live reporting; the core of Clustering is "live events".

Discussion

Development Trend

From 2013 to 2015, the trend of livestreaming communication was relatively stable, with an annual average of 12 articles, and a total of 36 articles were published during this period, which accounted for a tiny proportion (6%). It shows that the research on livestreaming communication has not been paid attention to, or the research on this topic is still exploratory. mainly because of the wave of smartphones not replacement of ordinary mobile phones

In 2015-2017, the research in livestreaming communication continued to warm up. The research results on livestreaming communication gradually increased, and the number of publications showed a blowout growth. During this stage, the number of publications increased year by year. One hundred thirty articles were published during this period, accounting for about 22% of the total. mainly based on the following points: firstly, the popularity of smartphones and the whole promotion of 4G have brought the mobile era since 2015 (Zhao, 2016). Secondly, in the second half of 2015, vast amounts of capital continued supporting Dragon Ball, Panda, Battle Flag, Tiger Teeth, Beili Beili, Quick Hands, Huajiao, Stranger, and Yingke. Countless livestreaming platforms sprang up like a spring, so 2016 was called the first year of livestreaming, opening the era of universal livestreaming (Cui, 2016).

2017-2023, the period of curvilinear growth, a total of 425 papers were published, indicating that livestreaming communication has become a mainstream research topic since 2017, with the peak occurring in 2021, reaching 107 papers. A reasonable explanation China's online livestreaming industry has since entered a mature stage of multidimensional development in 2020; the COVID-19 crisis and the

Journal of Ecohumanism
2024
Volume: 3, No: 8, pp. 12057 – 12079
ISSN: 2752-6798 (Print) | ISSN 2752-6801 (Online)
https://ecohumanism.co.uk/joe/ecohumanism
DOI: https://doi.org/10.62754/joe.v3i8.5803

livestreaming economy have dramatically stimulated the consumption potential. Regarding the temporal distribution of publications from 2017 to 2023, research on livestreaming communication in China has received increasing attention. The first article, "The difference between traditional livestreaming and secondary livestreaming" (Luan, 2017) was published in the journal Journal of Journalism and Writing in January 2017, followed by the articles of the same period, "Webcasting: How mainstream media should fight this battle" (Tan, 2017); "The carnival of participatory culture: An analysis of the webcasting boom" (Wang, 2017) was also published in the journals of People's Tribune and Television Studies journals. A notable feature of the initial period is that scholars in the field of journalism and media are the main research drivers of livestreaming communication, with new media scholars absent. It was also because 2016 was the first year of livestreaming in China that the number of academic journals increased in 2017. the fact that the budding of the discipline at the beginning is all about exploring its definition, phenomena and trends.

Thereafter,scholars to begin to pay attention to the use of interdisciplinary communication theories to interpret the marketing strategy in livestreaming e-commerce as well as the impact on the user's psychology, emotion, etc., and to discuss the social interactions and participatory culture of livestreaming, which suggests that livestreaming communication has begun to put forward a communication, marketing and culture involving communication, psychology, and psychology. study focus, with a move from journalism and communication experts to professors specializing in trade and economics. Livestreaming is progressively merging with e-commerce, thereby emerging as a novel mode of communication.

In recent years, there has been a growing interest among scholars in investigating the process of livestreaming diffusion. This has led to the emergence of a group of highly productive authors, including Yu Guoming, Liu Jia, Hua Jie, and Yan Sanjiu, who have made significant contributions in this field. Nevertheless, the level of collaboration among respected experts in the realm of livestreaming communication is very limited. The occurrence of collaborative connections among scholars is infrequent. The establishment of robust collaborations among highly productive writers in the field of livestreaming communication within research institutions is an area that requires further attention. Universities in China hold a prominent position in the realm of live streaming communication research, serving as the primary driving force behind the exploration of research directions and fundamental concerns pertaining to this domain. But no established national academic organization in China that specifically concentrates on the study of livestreaming communication.

Research Hotspots and Evolution

Scholars show great interest in webcasting, live reporting, mainstream media, e-commerce live streaming, sports events, media convergence, live bandwagon and live platforms. The top 10 keywords with high frequency and high meso-centrality, eight after excluding duplicates and synonyms, are webcasting, livestreaming reporting, mainstream media, e-commerce livestreaming, sports events, media convergence, livestreaming with goods, and live streaming platforms. After combining the secondary reading of the literature, it can be divided into three categories of research hotspot direction: the first category is network livestreaming, live platform research; the second category is livestreaming reports, mainstream media, sports events, media integration research; the third category is, e-commerce livestreaming, live with goods research. This discussion will examine the prominent areas of research under three categories, focusing on the influential literature in the field of domestic livestreaming communication.

Webcasting, Livestreaming Platform Research

The phenomenon of web celebrities and webcasting, exemplified by Papi Sauce, has garnered significant attention from the general public(Zhang, 2021). its so-called first single patch advertisement was sold at a shockingly high price of 22 million yuan. Therefore, we were asked by the government to stop activities.For example, Zhang. (2016) study discusses livestreaming under the Netflix economy. In his study, he summarised the operational characteristics and communication features of livestreaming platforms, such as Anchor's high degree of mediaisation, clear target audience, strong stickiness, semi-fragmented viewing, two-way interaction, and pop-up culture. In addition, his research also explains the problems and strategies of webcasting platforms, which are explained in terms of the regulation of content categories, the regulation

Journal of Ecohumanism
2024
Volume: 3, No: 8, pp. 12057 – 12079
ISSN: 2752-6798 (Print) | ISSN 2752-6801 (Online)
https://ecohumanism.co.uk/joe/ecohumanism
DOI: https://doi.org/10.62754/joe.v3i8.5803

of livestreaming thresholds, the training of Anchor's literacy, and the punishment of non-compliance reports.Another research direction is the impact of webcasting marketing on user consumption behaviour. For example, Liu et al.,(2020) collected data through questionnaires based on SOR theory and used SPSS and Smart PLS for statistical analysis and hypothesis testing. Their study found that: Authenticity, entertainment and visibility in web livestreaming shopping significantly and positively affect consumers' arousal emotions

*Livestreaming, Mainstream Media, Sports Events, Media Integration Researc*h

In the era of "Internet+", new media has changed the way of information dissemination. In today's era, the transformation of traditional media transformation is significant; the traditional mainstream media in sports events and other events in the livestreaming coverage to achieve media convergence research is very hot. Yu (2016), combined with the example of the G20 Hangzhou Summit coverage on the online livestreaming platform "Beijing Time" of Beijing Radio and Television Corporation (BRTC), theoretically discussed how to adhere to the principle of "news is the foundation of the foundation", In his article, he explains how traditional media can survive on the Internet, i.e. the key is to form the mainstream influence of public opinion.In addition, in the study of major public event reporting in the context of media convergence as a practice of communication innovation in traditional media, Yang & Wang (2021), taking the example of the slow livestreaming of "24 Hours of Epidemic" on Central Video, discussed that during the critical period of epidemic prevention and control, Central Video launched a slow livestreaming programme of "24 Hours of Epidemic", with hundreds of millions of netizens participating in the programme in the form of "Cloud Supervisors", which brought about a phenomenal effect of communication, is a communication innovation practice. Meantime,Another research direction on media convergence is not limited to the convergence of communication platforms; for example, in Xu (2020) study, he discusses the "convergence" of mainstream media and online media in language communication, taking the online term "Xiao Zhu with Qi" as an example. china CCTV official Anchor Zhu Guangquan's livestreaming and Taobao anchor Li Jiaqi livestreaming together , his study identifies the "fusion" of mainstream and online media's commnication.Regarding the livestreaming of sports events, scholars are concerned about the direction of copyright issues. In recent years, the emergence of copyright infringement cases of pirated broadcasting of live sports events on network platforms has triggered the attention of the practical and academic circles to the protection of copyrights of sports events and live sports events. Hua,(2019)in his study, explains that live sports event programmes exhibit a unique narrative due to having the producer's planning, arranging and dubbing, etc., illustrating the status quo that the live sports event programmes are identified as works with originality,Livestreaming screen infringement cases of the application of the Law to achieve the principle of equality in the application of the Law.

Research on Live E-commerce and Livestreaming

The research hotspot focuses on studying consumer purchase intention, rural revitalization, and e-commerce to help agriculture.

Xie et al.,(2019) conducted a study on the willingness of consumers to make purchases, specifically focusing on the influence and mechanism of social presence in livestreaming marketing on online consumer behavior. Guo&Qu (2020) elucidate that livestreaming with goods has emerged as a novel business model within the realm of rural rejuvenation and e-commerce, facilitated mostly by Internet platforms, particularly social platforms.Driven by strong government support and Internet platforms, livestreaming with goods is now a new mode of e-commerce to help farmers and plays a vital role in solving the difficulty of selling agricultural products. Li&Zhao (2020), by sorting out the connotation of the new model of livestreaming agriculture, development logic, examining the chain effect of the new model of livestreaming agriculture, digging out the value of livestreaming agriculture and the development path to explore the future ecosystem to build a new model of livestreaming agriculture.

Evolution of Hotspots

Journal of Ecohumanism
2024
Volume: 3, No: 8, pp. 12057 – 12079
ISSN: 2752-6798 (Print) | ISSN 2752-6801 (Online)
https://ecohumanism.co.uk/joe/ecohumanism
DOI: https://doi.org/10.62754/joe.v3i8.5803

The evolutionary trend of livestreaming communication has gone through four phases.

The Frist period (2013-2016). The keywords frequently appearing in this phase are communication analysis, all-media era, human interaction, communication concept, and event livestreaming (see Figure 12). This phase focuses on studying communication phenomena and patterns and the outlook for the future. Cai Lei(2014) study discussed the advantages and constraints of livestreaming and found that, as a new type of media communication, the "glamour" of live webcasting will lead the development of media information dissemination and Internet applications to a higher level. The advantages of livestreaming include a broad audience, diverse access, interactivity, and spatial and temporal adaptability, indicating that webcasting has unique advantages. However, at the same time, it also faces several constraints, specifically technological bottlenecks, management deficiencies, the market environment, and the marketing model. Yan(2016) research, in the perspective of information dissemination form change and interaction mode change, through the introduction of the basic theory of scene dissemination, analyzed the scenario-based accurate dissemination concepts shown in the network livestreaming: the transmission and acceptance of the two sides of the information fit to achieve personalized service, more in-depth interactive experience to promote the livestreaming and social integration, and panoramic livestreaming technology to deepen the user's experience of spatial-temporal integration. With the specialization of livestreaming content and the all-around application of artificial intelligence technology, webcasting will develop in the direction of scenario, subverting people's information interaction and information consumption mode. Although Chinese academics have not widely accepted this concept, it has laid the foundation for subsequent research. The studies at this stage are those in which communication scholars are involved in livestreaming. However, a notable feature is that most of the academic papers on livestreaming communication research are published in News and Communication, founded and hosted by the Renmin University of China.

The second period (2016-2019). Figure 12 shows that the keywords with the highest frequency of occurrence in this period mainly include marketing, marketing strategy, interactive communication, communication characteristics, interpersonal communication, participatory culture, and livestreaming. This indicates a greater diversity of research topics in livestreaming communication during this period. In addition, web livestreaming, chaos and problematic outbreaks received the most attention. A reasonable explanation for this is that 2016 was the first year of livestreaming, and the popularity of smartphones and the full rollout of 4G brought the mobile era. Mobile phone livestreaming apps appeared, and China's livestreaming industry entered a phase of rapid development. However, it is worth noting that journalism and media scholars are still the main forces driving the research on livestreaming communication. In addition, one of the significant changes is that scholars have paid considerable attention to livestreaming marketing; for example, Yang&Yang (2017) study found that under the influence of the mobile Internet, webcasting has the characteristics of a real sense of the scene, free and extensive content forms, and strong interactivity in information dissemination, which can quickly aggregate the attention of network users." Network livestreaming +" mode has gradually become a new favourite of enterprises for product or brand marketing. At present, the brand "webcasting +" marketing mode is mainly "webcasting + stars", "webcasting + offline activities", "webcasting + platforms", "webcasting + e-commerce", etc. According to the brand's core concepts, product qualities and other needs, enterprises choose different webcasting modes of branding in order to achieve a better publicity effect. Wang&Liu (2019) found that the improvement of Internet technology and the reduction of video recording costs that mobile video livestreaming has entered the development of the climax period, the content of the network livestreaming from the game commentary, live events and other specialized areas gradually entered the public's daily vision, and presents a strong youth subculture characteristics. Their research started from the origin of Anchor, explored the external expression of Anchor and the internal causes of its hot phenomenon, and gave rational thoughts on how to get out of the bottleneck of Anchor: to play the differentiation advantage of Anchor and enhance the output of high-quality live content; to improve the threshold of access to Anchor, and to attach equal importance to the comprehensive gatekeeping and supervision by multiple parties; and to co-operate between the enterprises and private livestreaming, and to integrate the platform resources in an all-round way.

Journal of Ecohumanism
2024
Volume: 3, No: 8, pp. 12057 – 12079
ISSN: 2752-6798 (Print) | ISSN 2752-6801 (Online)
https://ecohumanism.co.uk/joe/ecohumanism
DOI: https://doi.org/10.62754/joe.v3i8.5803

The third stage (2019-2022). The keywords with the highest frequency include 5G, communication perspective, values, slow live streaming, livestreaming shopping, live e-commerce, rural revitalization, and post-epidemic era (see Figure 6). It is evident that researchers have demonstrated significant enthusiasm in examining the integration of livestreaming communication with e-commerce. One plausible reason for this phenomenon is that scholars specializing in communication have emerged as the primary drivers of study on the intersection of livestreaming communication and e-commerce. Their attention lies in examining the role and impact of livestreaming communication within the realm of electronic commerce. It is noteworthy to mention that in relation to the distribution across disciplines, in addition to scholars in the field of journalism and media being the main constituent, scholars in the field of trade and economics have begun to increase their research on livestreaming communication, and empirical studies have begun to increase, for example, the articles "Influencing factors of information interaction behaviour of live streaming bandwagon users based on the TAM model" (Liu et al., 2022); "Audiovisual communication of livestreaming in the perspective of dialogue theory" (Tang,2022); "Innovation of Live Streaming Marketing Mode in Physical Bookstores under the Perspective of Interactive Ritual Chain" (Yu & Zheng, 2022); "Technological Availability of Live Web Video Streaming under the Perspective of Computer-Mediated Communication" (Liu, 2022); and "The Inner Mechanism of Consumer Behaviour Driven by Web Live Streaming Marketing - Immersive Communication, Body Mediatization, and Emotional Injecting New Perspectives" (Xu&Lin,2021). All these articles combine livestreaming communication and the e-commerce marketing field.

Phase 4 (2022-2023). The most frequently occurring keywords in this period include users, interactive ritual chain, short video + livestreaming of agricultural products, and communication ecology (see Figure 6). This indicates that scholars began to focus on users in livestreaming communication. The primary research on the effect of livestreaming and the mechanism of livestreaming dissemination, specifically using some events of dissemination as examples, is more refined. For example, the articles "Research on the development mode of network livestreaming with goods in the era of melting media--Taking the example of Oriental Selection livestreaming room" (Ding, 2022); "Empirical research on the effect of Pinduoduo's network livestreaming" (Xu &Lu, 2022); "Buy it!" in the power of regulation - a case study based on the discourse analysis of web livestreaming rooms" (Gao & Liu, 2022); "The connection of good things: the power mechanism and meaning construction of netroots public welfare livestreaming - a research perspective based on spoken communication" (Zhang et al. 2022) In this context, scholars have found that livestreaming communication plays a vital role in e-commerce, user consumption behaviour, and rural revitalization.

Research Frontiers

Between the years 2013 and 2015, the term "livestreaming" had the most pronounced prominence, aligning with the initial phase of the preceding evolutionary trajectory. During the period from 2016 to 2018, the term that exhibited the greatest intensity was "mobile livestreaming," aligning with the subsequent phase of the preceding developmental trajectory. From 2010 to 2021, the term "media convergence" has exhibited the maximum level of prominence, aligning with the third stage of the preceding developmental trajectory. From 2010 to 2021, the term "media integration" had the most prominence, aligning with the third phase of the preceding developmental trajectory. Subsequently, "livestreaming with goods" emerged as the keyword with the highest intensity after 2021.

Knowledge Structure

The first is livestreaming platforms. In 2013-2015, the core of the system of livestreaming platforms was "marketing mode, development change, convergence communication.", as the first part of the knowledge structure, combined with the literature reading, the research in this period is based on the phenomenon and development issues. The second is livestreaming reporting; in 2016-2018, the core word was event reporting, and the research in this period was dominated by the mainstream traditional media coverage of sports events and the discussion of the copyright of event livestreaming. The third is media convergence; in 2019-2021, the core word is social media, convergent communication; this period mainly explores the integration of traditional media for livestreaming in the new media era. The fourth is 2022-2023; the core

Journal of Ecohumanism
2024
Volume: 3, No: 8, pp. 12057 – 12079
ISSN: 2752-6798 (Print) | ISSN 2752-6801 (Online)
https://ecohumanism.co.uk/joe/ecohumanism
DOI: https://doi.org/10.62754/joe.v3i8.5803

word of this period is e-commerce livestreaming, mainly in the main direction of livestreaming with goods, empirical research, and user behaviour, which draws a map of the hotspot mechanism of live broadcast communication research.

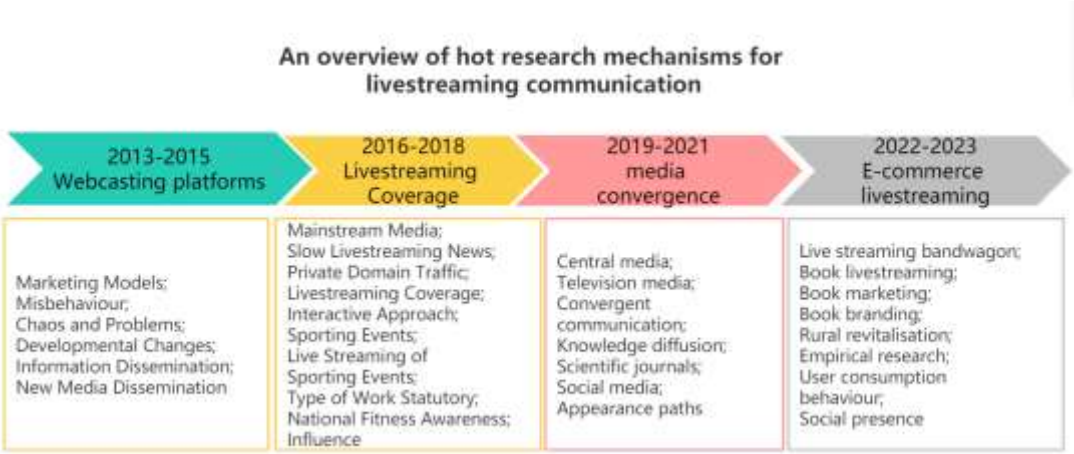


Figure 12. Hotspot Mechanism

Conclusion

This study examines the research conducted on livestreaming communication in China from 2013 to 2023, utilizing bibliometrics in conjunction with CiteSpace software. This study represents the first utilization of a bibliometric methodology to conduct a thorough and all-encompassing examination of the domain of livestreaming communication inside the Chinese humanities literature corpus over the previous ten-year period. Hence, the objective of this study is to (1) investigate the scientific findings and examine the fundamental attributes, current state, and progress of research on live streaming communication in China; (2) ascertain the contributions of key authors, institutions, and journals through an analysis of author collaboration network mapping; (3) analyze co-occurring word network mapping to uncover significant and trending research themes, evolutionary trajectories, and frontiers of inquiry. (4) Acquire knowledge structure by means of keyword clustering and identifier extraction.

The Primary Results

The quantity of scholarly articles pertaining to livestreaming communication in China exhibits a notable increase trajectory from 2017 to 2023. The research conducted over the previous decade can be categorized into three distinct phases of development: a phase characterized by gradual progress spanning from 2013 to 2015, a phase marked by significant advancements observed between 2016 and 2017, and a phase characterized by fluctuating progress observed from 2018 to 2023. Moreover, livestreaming embodies an interdisciplinary domain. In recent years, there has been a notable involvement of academics from the fields of journalism and communication in the examination of livestreaming. This has been subsequently followed by a growing number of scholars from the fields of trade and economics.

The topic of study encompasses several notable authors, such Yu Guoming, Liu Jia, Hua Jie, and Yan Sanjiu, who have made significant contributions to the literature. Nevertheless, the establishment of robust collaborations among highly productive authors remains elusive. The School of Journalism at Renmin University of China, the School of Television at Communication University of China, the School of Intellectual Property at East China University of Politics and Law, the School of Journalism, Communication, Film and Television Arts at Hunan University, and the School of Journalism and Communication at Shanghai University are among the most productive research institutions. However, the level of cooperation across production institutions is now inadequate, and there is a lack of established

Journal of Ecohumanism
2024
Volume: 3, No: 8, pp. 12057 – 12079
ISSN: 2752-6798 (Print) | ISSN 2752-6801 (Online)
https://ecohumanism.co.uk/joe/ecohumanism
DOI: https://doi.org/10.62754/joe.v3i8.5803

cooperative relationships. The distribution of scholarly journals in the field of communication studies reveals a relatively lower number of publications in authoritative journals.

In relation to areas of research focus, the study identified eight distinct research hotspots. These hotspots encompass the evolution of hotspots, as well as emerging research frontiers. The identified hotspots include live network broadcasting, live reporting, mainstream media, e-commerce livestreaming, sports events, media convergence, live streaming with goods, and livestreaming platforms.

The Evolution and development of the hotspots of livestreaming communication research are divided into four stages: the first stage (2013-2016) focuses on the study of communication phenomena and patterns and the outlook for the future.

In the second phase (2016-2019), this period of live streaming communication research topics is more diversified, including marketing, marketing strategy, interactive communication, communication characteristics, interpersonal communication, participatory culture, and livestreaming.

In the third stage (2019-2022), from this stage, scholars showed great interest in studying the combination of livestreaming communication and e-commerce.

In the fourth stage (2022-2023), scholars in this period began to focus on the users in livestreaming communication. The primary research is to study the effect of livestreaming and the mechanism of livestreaming communication, specifically using some events of communication as examples, and the research is more refined.

Five major research frontiers were identified in different periods: mobile livestreaming, livestreaming with goods, slow livestreaming, livestreaming with goods, and e-commerce livestreaming.

In the knowledge structure, in the cluster analysis, webcasting, e-commerce live streaming, and livestreaming coverage are more significant in scale and are the areas that scholars are currently focusing on. In the specific identifiers, the core of the webcasting platform cluster is "marketing mode, development change, integrated communication"; the identifier of the e-commerce live streaming cluster is "live streaming with goods"; and the identifier of the live streaming reporting cluster is "event". livestreaming".

Further Recommendations

Nevertheless, this research possesses various constraints. This study was conducted within the Chinese setting, wherein data was collected from the Chinese CNKI database. However, it is worth noting that this database does not offer comprehensive information on global studies pertaining to livestreaming communication. The selection of keywords for addressing the study topics was deemed appropriate. Nonetheless, it is acknowledged that future modifications to the keywords may be necessary in order to enhance the precision of document retrieval.

Given the aforementioned findings, it would be worthwhile for future research to explore the interplay among various processes. Hence, we put out a number of subjects for prospective investigation. In this study, we want to examine the impact of livestreaming communication on user behavior, attitudes, and knowledge within the specific context of livestreaming communication. Furthermore, we intend to examine the novel circumstances, distinctive attributes, and fundamental principles of livestreaming communication during the post-COVID-19 period. Thirdly, we propose to analyze specific groups of people in China, such as Generation Z, and to study the influencing factors of the consumer behaviour of the Generation Z group in e-commerce livestreaming. Fourth, we propose to analyze the impact of meta-universe, artificial intelligence and other technological advances on livestreaming communication. Last, a comparative analysis of databases in livestreaming communication in different countries can be conducted to gain a deeper understanding of the global state of livestreaming communication research. Future research must outline the current state of development and knowledge base of geography while analyzing essential research

Journal of Ecohumanism
2024
Volume: 3, No: 8, pp. 12057 – 12079
ISSN: 2752-6798 (Print) | ISSN 2752-6801 (Online)
https://ecohumanism.co.uk/joe/ecohumanism
DOI: https://doi.org/10.62754/joe.v3i8.5803

questions, providing researchers with a comprehensive understanding of live streaming communication disciplinary research and keeping abreast of scientific developments.

Acknowledgements

The Education for All Impact Lab Grant TIRGS-ILG/1/2023/SCM/001, Taylor's University Malaysia, contributed to the successful publication of this article.

References

Acedo, F. J., Barroso, C., Casanueva, C., & Galán, J. L. (2006). Co-authorship in management and organizational studies: An empirical and network analysis. Journal of management studies, 43(5), 957-983.

Bai, K., & Tan, K. H. (2024). The Influence of Online Social and Physical Presence on User Consumption Decisions in TikTok Livestreaming: A Scoping Review. Cyberpsychology, Behavior, and Social Networking.

Bian, J., Xie, M., Topaloglu, U., Hudson, T., Eswaran, H., & Hogan, W. (2014). Social network analysis of biomedical research collaboration networks in a CTSA institution. Journal of biomedical informatics, 52, 130-140.

Cai Lei. (2014). Advantages and constraints of online live broadcasts - taking online live sports events as an example. Young Journalists (23), 92-93. doi:10.15997/j.cnki.qnjz.2014.23.167.

Chang, H. C., & Hsu, C. C. (2005). Using topic keyword clusters for automatic document clustering. IEICE TRANSACTIONS on Information and Systems, 88(8), 1852-1860.

Chen Xiaoyu & Ma Haiqun. (2022). Empirical analysis of laws related to bibliometrics in the field of open government data. Library Research and Work (04), 26-36. doi:CNKI:SUN:TSGY.0.2022-04-004.

Chen, C. (2006). CiteSpace II: Detecting and visualizing emerging trends and transient patterns in scientific literature. Journal of the American Society for information Science and Technology, 57(3), 359-377.

Chen, C. (2014). The citespace manual. College of Computing and Informatics, 1(1), 1-84.

Chen, C. (2016). CiteSpace: a practical guide for mapping scientific literature (pp. 41-44). Hauppauge, NY, USA: Nova Science Publishers.

Cheng Xiaoxia. (2022). Interpretation of the explosive phenomenon of "Oriental Selection" live broadcast from the perspective of communication studies. New Media Research (18), 70-72+77. doi:10.16604/j.cnki.issn2096-0360.2022.18.025.

Cui Qiuxia. (2016). Model analysis and future development trends of online live broadcast. New Media Research (17), 7-8. doi:10.16604/j.cnki.issn2096-0360.2016.17.004.

Dai Yumei. (2011). Communication interpretation of self-media. Journalism and Communication Research (05), 4-11+109. doi:CNKI:SUN:YANJ.0.2011-05-004.

Dixon-Woods, M., Agarwal, S., Jones, D., Young, B., & Sutton, A. (2005). Synthesising qualitative and quantitative evidence: a review of possible methods. Journal of health services research & policy, 10(1), 45-53.

Dou Jinhua, Zhang Binrui & Qian Xiaosong. (2023). A review of research in the field of cultural heritage empowered by artificial intelligence—visual analysis based on CiteSpace. Packaging Engineering (14), 1-20. doi:10.19554/j.cnki.1001- 3563.2023.14.001.

Farina, D. (2006). Interpretation of the surface electromyogram in dynamic contractions. Exercise and sport sciences reviews, 34(3), 121-127.

Fu Tongyan & Du Huiying. (2023). Domestic and foreign cross-border e-commerce research hot spots and development trends—visual analysis based on CiteSpace. Value Engineering (21), 165-168. doi:CNKI:SUN:JZGC.0.2023-21 - 049.

Gao Yingbei & Liu Shubo. (2022). The disciplinary power in "Buy it!"—A case study based on discourse analysis in online live broadcast rooms. Journal of Central University of Finance and Economics (12), 134-147. doi:10.19681/j.cnki .jcufe.2022.12.011.

Gu Xiaoming. (1993). Welcome the new cultural form: the interpenetration of communication subjects and receptors - a cultural analysis of "live broadcast" of radio and television. Exploration and Controversy (04), 4-8. doi:CNKI:SUN: TSZM.0.1993-04-000.

Guo Hongdong & Qu Jiang. (2020). Research on the sustainable development of live streaming to help farmers. People's Forum (20), 74-76. doi:CNKI:SUN:RMLT.0.2020-20-024.

Hou Jianhua, & Hu Zhigang. (2013). Review and prospect of CiteSpace software application research. Modern Intelligence, 33(4), 99-103.

Hua Jie. (2019). Research on copyright issues of sports events and live sports programs. Lanzhou Academic Journal (07), 109-117.

Kostoff, R. N. (1993). Co-word analysis. Evaluating R&D impacts: Methods and practice, 63-78.

Law, M., Stewart, D., Letts, L., Pollock, N., Bosch, J., & Westmorland, M. (1998). Guidelines for critical review of qualitative studies. McMaster University occupational therapy evidence-based practice research Group, 1.

Li Qiming & Huang Xuebing. (2017). Interpretation of the "national live broadcast" phenomenon from the perspective of youth subculture. Chinese Youth Studies (11), 18-22. doi:10.19633/j.cnki.11-2579/d .2017.0019.
Li Xiaoxia & Zhao Xiufeng. (2020). Live streaming to help farmers: a new rural e-commerce model that integrates rural revitalization and online poverty alleviation. Business Economics Research (19), 131-134. doi:CNKI:SUN:SYJJ.0.2020-19-035 .
Liu Hong & Kuang Huihua. (2019). Data analysis of scientific research results in higher vocational colleges across the country in 2019 - based on data from China National Knowledge Infrastructure. China Vocational and Technical Education (36), 17-26. doi:CNKI:SUN:ZONE.0.2019 -36-003.
Liu Yang, Li Qi & Yin Meng. (2020). Research on the impact of online live shopping characteristics on consumer purchasing behavior. Soft Science (06), 108-114. doi:10.13956/j.ss.1001-8409.2020.06.17.
Liu Ying & Meng Jian. (2018). Review of international online video live broadcast research. Journal of Information Resources Management (04), 106-118. doi:10.13365/j.jirm.2018.04.106.
Luan Yimei. (2017). The difference between traditional live broadcast and two-dimensional live broadcast. News and Writing (01), 46-49. doi:CNKI:SUN:XWXZ.0.2017-01-014.
Luo Xiaoqing & Liu Yan. (2021). A review of research on purchase intention of e-commerce live streaming. Times Economics and Trade (08), 33-35. doi:10.19463/j.cnki.sdjm.2021.08.007.
Munteanu, D. S., & Marcu, D. (2006, July). Extracting parallel sub-sentential fragments from non-parallel corpora. In Proceedings of the 21st international conference on computational linguistics and 44th annual meeting of the association for computational linguistics (pp. 81-88).
Onwuegbuzie, A. J., Leech, N. L., & Collins, K. M. (2012). Qualitative analysis techniques for the review of the literature. Qualitative Report, 17, 56.
Park, J., & Jeong, E. (2019). Service quality in tourism: A systematic literature review and keyword network analysis. Sustainability, 11(13), 3665.
Regelson, M., & Fain, D. (2006, June). Predicting click-through rate using keyword clusters. In Proceedings of the Second Workshop on Sponsored Search Auctions (Vol. 9623, pp. 1-6).
Restrepo, N., Lozano, S., & Clavé, S. A. (2021). Measuring institutional thickness in tourism: An empirical application based on social network analysis. Tourism Management Perspectives, 37, 100770.
Sampaio, R. B., Fonseca, M. V. D. A., & Zicker, F. (2016). Co-authorship network analysis in health research: method and potential use. Health research policy and systems, 14(1), 1-10.
Tan Tian. (2017). Webcast: How should mainstream media fight this battle well. People's Forum (01), 132-134. doi:10.16619/j.cnki.rmlt.2017.01.065.
Tan, K.H.; Jospa, M.E.a.W.; Mohd-Said, N.-E.; Awang, M.M. Speak like a Native English Speaker or Be Judged: A Scoping Review.(2021) I. Int. J. Environ. Res. Public Health, 18, 12754
Tan, K.H.; Rajendran, A.; Muslim, N.; Alias, J.; Yusof, N.A. The Potential of TikTok's Key Features as a Pedagogical Strategy for ESL Classrooms. Sustainability (2022), 14, 16876.
Tang Bing. (2022). Research on audio-visual communication of online live broadcast from the perspective of dialogue theory. China Television (08), 67-72. doi:CNKI:SUN:ZGDD.0.2022-08-011.
Tonella, P., Ricca, F., Pianta, E., & Girardi, C. (2003, September). Using keyword extraction for web site clustering. In Fifth IEEE International Workshop on Web Site Evolution, 2003. Theme: Architecture. Proceedings. (pp. 41-48). IEEE.
Wang Chunzhi. (2017). The carnival of participatory culture: Analysis of the craze of online live broadcast. Television Research (01), 83-85. doi:CNKI:SUN:DSYI.0.2017-01-034.
Wang Yanling & Liu Ke. (2019). The resonance effect of online live broadcasts: Group loneliness·Virtual emotion·Consumption identification. Modern Communication (Journal of Communication University of China) (10), 26-29. doi:CNKI:SUN:XDCB.0.2019- 10-004.
Xiao Rongshi. (2021). Review and quantitative analysis of research on digital archives in my country from 1999 to 2020. Lantai World (01), 63-68. doi:10.16565/j.cnki.1006-7744.2021.01.16.
Xie Ying, Li Chunqing, Gao Peng & Liu Yi. (2019). Research on the impact and mechanism of social presence on online herd consumption in live broadcast marketing - behavioral and neurophysiological perspectives. Advances in Psychological Science (06), 990-1004.
Xu Chenglong. (2020). The "fusion" of language communication between mainstream media and online media - taking "Xiao Zhu Peiqi" as an example. Young Journalists (35), 61-62. doi:10.15997/j.cnki.qnjz. 2020.35.033.
Xu Yiting & Lin Ying. (2021). The intrinsic mechanism of online live marketing driving consumer behavior - new perspectives of immersive communication, body mediatization and emotional injection. Fujian Forum (Humanities and Social Sciences Edition) (12), 111-117. doi: CNKI:SUN:FJLW.0.2021-12-010.
Xu Zengzhan & Lu Xiaoming. (2022). Empirical study on the effect of Pinduoduo online live broadcast. Modern Communication (Journal of Communication University of China) (10), 162-168. doi:10.19997/j.cnki.xdcb.2022.10.016.
Xu, Z., Ge, Z., Wang, X., & Skare, M. (2021). Bibliometric analysis of technology adoption literature published from 1997 to 2020. Technological Forecasting and Social Change, 170, 120896.
Yan Xiaofang. (2016). Analysis of online live broadcast from the perspective of scene communication. Journalism (15), 51-54. doi:10.15897/j.cnki.cn51-1046/g2.2016.15.010.
Yang Kun & Yang Wei. (2017). "Webcast +": a new model of brand marketing under the influence of mobile Internet. Publishing Wide Angle (10), 65-67. doi:10.16491/j.cnki.cn45-1216/g2. 2017.0371.
Yang Xue & Wang Tianhao. (2021). Communication innovation practice in reporting major public events under the background of media integration—taking the slow live broadcast of CCTV's "Epidemic 24 Hours" as an example. Media (06), 33-35. doi:CNKI:SUN :CMEI.0.2021-06-014.

Journal of Ecohumanism
2024
Volume: 3, No: 8, pp. 12057 – 12079
ISSN: 2752-6798 (Print) | ISSN 2752-6801 (Online)
https://ecohumanism.co.uk/joe/ecohumanism
DOI: https://doi.org/10.62754/joe.v3i8.5803
Yu Guoming. (2016). The key to creating a new mainstream media value paradigm and influence—taking the Beijing Radio and Television Station online live broadcast platform "Beijing Time" G20 Hangzhou Summit report as an example. News and Writing (10), 48- 52. doi:CNKI:SUN:XWXZ.0.2016-10-014.

Yu Ren & Zheng Yiru. (2022). Innovation of live broadcast marketing model of physical bookstores from the perspective of interactive ritual chain. China Publishing (06), 20-25. doi:CNKI:SUN:ZGCB.0.2022-06-004.

Zhang Caixia. (2021). From the perspective of communication, the integration of live streaming and media. News Communication (15), 67-68. doi:CNKI:SUN:YWCB.0.2021-15-026.

Zhang Min. Lively “Internet Celebrities”: Problems and Countermeasures in the Development of Online Live Broadcasting Platforms [J]. China Reporter, 2016(05):64-65.

Zhang, Q., Chen, J., & Liu, J. (2022). Global trends and hot-spots in research on virtual simulation in nursing: a bibliometric analysis from 1999 to 2021. Frontiers in Public Health, 10, 890773.

Zhang, Q., Rong, G., Meng, Q., Yu, M., Xie, Q., & Fang, J. (2020). Outlining the keyword co-occurrence trends in Shuanghuanglian injection research: A bibliometric study using CiteSpace III. Journal of traditional Chinese medical sciences, 7(2), 189-198.

Zhao Mengyuan. (2016). Analysis of the current situation and characteristics of online live broadcast in my country. Western Journal (Journalism and Communication) (08), 29-32. doi:10.16721/j.cnki.issn2095-6916.2016.08.011.

Zhou Tao & Lu Huiling. (2012). Research progress on clustering algorithms in data mining. Computer Engineering and Applications (12), 100-111. doi:CNKI:SUN:JSGG.0.2012-12-022.