

# Analysis of Viral Advertising Research Hotspots and Trends Based on Bibliometric Methods

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## Abstract

With the popularity and development of social media, viral advertising has also gained tremendous development. Viral advertising as a useful promotional strategy can increase the publicity effectiveness of a brand or product. The purpose of this study is to better understand the research and progress of viral advertising and to explore future research directions. This study examined the viral advertising literature on the Web of Science database from 2004-2022, using bibliometric methods to analyze the data in terms of the annual number of publications, source journals, citations, authors, countries and institutions, and keywords. The results reveal the publishing trend of viral advertising research, the most influential literature and journals, as well as the most productive countries, institutions, and authors, including collaborative partnerships among them. The keyword co-occurrence analysis, cluster analysis, and time evolution analysis identified the research hotspots, themes, and evolution trends of viral advertising. This bibliometric study presents an overall profile of research in the field and proposes a research framework for the study of viral advertising that can serve as a reference, providing valuable guidance for advancing research in this area.

**Keywords:** viral advertising, research hotspots, research trends, bibliometric methods

## 1. Introduction

Along with the advancement of digital network technology and the popularity of smartphones, the information dissemination mode and personal socialization formats have changed, and social media has become an essential medium for people to communicate with each other in many countries. According to the Global Digital Overview 2022 report, jointly published by We Are Social and the Hootsuite platform, as of January 2022, the world's population is 7.91 billion, and there are 4.2 billion social media users, accounting for 58.4% of the world's total population (Kemp, 2022). Companies and marketers have started to consider how they can use these social media platforms to attract customers and build profitable marketing relationships with them (Kamboj et al., 2018). The popularity of social media has provided huge opportunities for the advertising industry, driving the innovative development of advertising formats and content. It has completely changed the advertising landscape, leading to the emergence of social media advertising (Sweeney et al., 2022). Enterprises increasingly investing in social media advertising while users getting more engaged in obtaining product advertising information and purchasing products from social media platforms (Dahka et al., 2020). The revenue from social media advertising is increasingly surpassing that of traditional advertising (Cao, 2019).

Viral advertising, one of the representative forms of social media advertising, has also gained tremendous popularity and growth. In recent years, viral advertising and viral marketing have become popular, many brands have adopted these strategies (Eckler & Rodgers, 2014). Viral advertisements are online advertisements that get a large share of social media. They are created by companies and placed on the Internet and social networks with the expectation that they can "go viral" (Digital Marketing Glossary, 2013). Viral advertisement allows consumers to control the advertisement process and decide for themselves whether the advertisement is worth watching and forwarding to others. It relies on consumers' interpersonal relationships to share and spread with each other, which is often more easily accepted and trusted by consumers and less likely to be blocked or ignored (Hayes et al., 2018). Moreover, the speed and scale of viral advertisements are as fast and huge as viruses, presenting the characteristics of fast speed, wide range, and low cost, and making a deep impression on people (Zang & Zhou, 2018). Companies view viral advertising as an opportunity to gain brand and product affinity and awareness, and marketers are increasingly turning to the spread of viral advertising as a

way to gain breakthroughs and influence in the social media space (Adweek, 2015). Therefore, viral advertising is a viable marketing method and has become a new advertising trend.

However, despite the significant advantages of viral advertising, there are also associated risks and challenges. For instance, marketers face difficulty in controlling the process and specific content of information dissemination, which may result in negative word-of-mouth, leading to adverse effects on brand image and resistance towards the promoted products (Reza Jalilvand & Samiei, 2012; Woerndl et al., 2008). Additionally, viral advertising lacks legal regulations and ethical standards (Sabri, 2017), leaving consumers susceptible to feelings of deception and exploitation, or perceiving viral ads as an invasion of their privacy (Phelps et al., 2004).

Viral advertising has captured the attention of society and marketers, attracting significant interest from scholars in academic research. There is a growing body of literature on viral marketing and viral advertising. However, there is relatively less literature conducting bibliometric reviews on this topic. This study employs bibliometric methods to analyze literature related to viral advertising, aiming to provide references for further research and development. Therefore, the following research questions are proposed.

Q1: What is the basic situation of research on viral advertising?

Q2: What are the research hotspots of viral advertising?

Q3: What are the main themes of research on viral advertising?

Q4: What are the evolutionary trends of research on viral advertising?

## 2. Methodology

Bibliometrics, a branch of informatics, employs quantitative analysis of scientific literature to unveil trends and structures in a research field. This method provides an objective assessment of the subject’s status and development. By utilizing bibliometric analysis software, interactive knowledge maps can be created for a comprehensive literature review (Chen et al., 2012). COOC software is jointly developed by the WeChat official account “Academic Drip” and “Bibliometrics” teams, with data mining and knowledge discovery functions, as well as data de-duplication and data cleaning, multi-dimensional relationship construction and hotspot tracking (Gao et al., 2022). VOSviewer is a bibliometric visualization software developed in 2009 by the CWTS institution at Leiden University in the Netherlands, and its greatest advantage is its excellent data visualization (Gao, 2015). The broad set of techniques offered by COOC combined with VOSviewer provides researchers with an excellent combination for bibliometric research (Gao et al., 2022). Therefore, this study chooses this combination, which can use the advantages of each software.

To more systematically sort out the research situation related to viral advertising, this study utilizes the research framework and flow as shown in Figure 1. This study first identifies the research topic and then conducts data searches on the Web of Science database platform. Subsequently, the data is processed using COOC software. Finally, COOC and VOSviewer software are utilized to create maps and charts for data analysis. This includes analyzing the basic situation of viral advertising research from aspects such as annual publication volume, source journals, literature citations, authors, countries, and institutions to provide further insights. It also involves analyzing the research hotspots, themes, and evolutionary trends of viral advertising from multiple perspectives and dimensions, using methods such as keyword co-occurrence analysis, cluster analysis, and time evolution analysis.

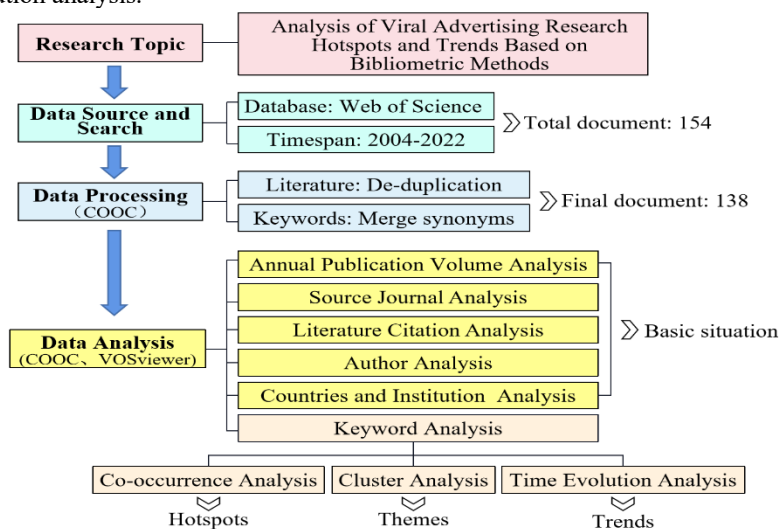


Figure 1. Research framework

### 2.1 Data Sources and Searches

This study selected the Web of Science database as the source of literature search data to better grasp the development status and research hotspots of viral advertising. The Web of Science Core Collection is authoritative, high quality and data-rich. It contains over 21,000 peer-reviewed, high-quality scholarly journals published worldwide and more than 87 million records (Clarivate, 2023). Web of Science database has been used by researchers as a single source of information for bibliometric research, publishing multiple articles that have had a significant impact (Araújo et al., 2018).

Based on the literature sources of Web of Science, this study collected and organized all the literature materials from 2004 to 2022, taking the earliest publication of viral advertising in 2004 as the starting point. The language was limited to English. The articles were searched on June 2, 2023, and the volume of publications for 2023 was not complete, so articles from this year were not considered. The subject term and its synonyms were used as the search words to ensure the comprehensiveness, systematization and accuracy of the literature data analysis. The search words included “viral advertising” and synonyms of “viral advertising” -- “viral advertisement”, “viral ads”, and “electronic word of mouth advertising”. The search was conducted in terms of title, author keywords, and abstract, and a total of 154 documents were collected.

### 2.2 Data Pre-processing

Pre-processing of literature data is crucial to obtain reliable analysis results, as duplicate documents, meaningless items or synonymous keywords are often found in the raw data (Qin et al., 2022). Duplicates were merged using COOC software, and those that did not meet the criteria and were not related to the topic were examined and removed, and a total of 138 relevant articles were finally selected as the data source for this study. Then the synonymous keywords were merged, and the meaningless words were removed, focusing mainly on the higher-frequency keywords to maximize the retention of valuable information. For example, “ad”, “advertising”, and “advertisement” were merged into “advertising”, while “ad appeals”, “ad appeal”, and “advertising appeal” were merged into “advertising appeal”. The reorganization of keywords should be carefully screened to ensure accuracy and generalizability (Qin et al., 2022). The processed data can be easily converted to a common format by COOC software and imported into other visualization software for subsequent analysis, such as VOSviewer.

## 3. Results and Discussion

### 3.1 Annual Publication Volume Analysis

The annual number of articles published in a knowledge field is an important indicator of the development of scientific research, and it to some degree reflects the increase in the amount of knowledge of the field, as well as the research progress performed by researchers in the field (Hu et al., 2017). Figure 2 shows the statistics of the number of articles related to viral advertising since 2004, with an overall wave-like increasing trend. This phenomenon indicates that academic achievements related to viral advertising are becoming more and more fruitful, drawing greater attention from scholars, and gaining growing research value. The figure shows that 2004 was the earliest publication date recorded in the database, and scholars were late in starting research on viral advertising. The whole development process can be divided into 3 stages: the slow initial stage, the gradual development stage and the hot research stage. The period of 2004–2010 was the slow beginning stage of viral advertising research with relatively few papers published, and viral advertising did not attract too much attention from scholars. The period from 2011 to 2015 was a stable development phase of viral advertising research, showing a gradual increase in the number of studies on viral advertising. After 2016, there was a remarkable surge in scholars’ research on viral advertising, which entered a hot research phase, with 17 articles published in both 2016 and 2018.

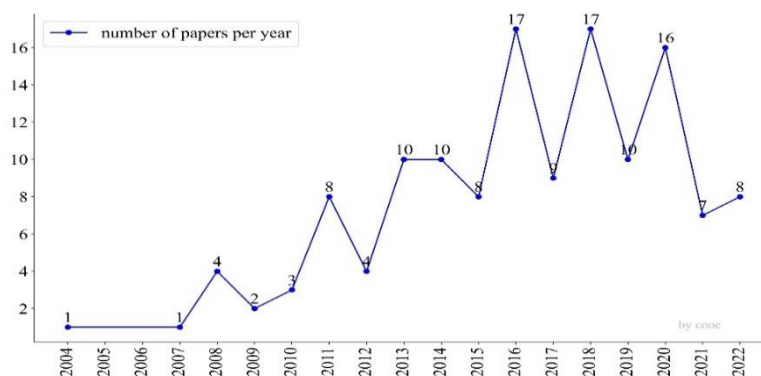


Figure 2. Line chart of annual publication volume

### 3.2 Analysis of Source Journals

The top 10 journals in terms of number of articles published are shown in the Figure 3. The top journal is Journal of Interactive Marketing, which published 7 articles related to viral advertising. Then International Journal of Advertising and Journal of Internet Commerce each published 4 articles. International Journal of Internet Marketing and Advertising and Journal of Advertising Research both had 3 publications. The next in line are Journal of Current Issues and Research in Advertising, International Journal of Online Marketing and Marketing Science with the number of 2 publications. These journals are all dedicated to marketing, advertising, business, retail and consumer services. Some of them focusing on interactive marketing, online marketing, online advertising and online business in the Internet environment. This shows that the scope of research on viral advertising is focused on the business field and belongs to journals types about marketing and advertising, which mainly focus on advertising research in the context of the Internet era.



Figure 3. Top 10 journals in terms of number of articles published

### 3.3 Literature Citation Analysis

The number of citations in one literature reflects the influence and contribution of the literature in its field (Bian et al., 2022). The higher number of citations means that the literature has more influence on other studies and may contain more important findings or viewpoints. Table 1 shows the top 10 cited articles in the field of viral advertising research. It can be seen that these articles are highly cited, with most of them exceeding 100. The content covered includes the factors influencing the spread of viral advertising, the motivation behind the sharing of viral video advertising, and the impact of viral advertising on consumer attitudes and behaviors. For example, the most cited article with a frequency of 491 is “You Reap Where You Sow: A Trust-Based Approach To Initial Seeding For Viral Advertising” by Huh et al. (2020). It examined the role of source trust in the spread of viral advertisements, particularly the effect of source trust on the extent and speed of advertisement spread. Most of the highly cited articles in the chart were published in 2016-2020 when the academic research on viral advertising was at a hot research stage.

Table 1. The top 10 cited articles

Rank	Article Title	Frequency of citations	Author	Source Journal	Year
1	You Reap Where You Sow: A Trust-Based Approach to Initial Seeding for Viral Advertising	491	Huh, Jisu; Kim, Hyejin; Rath, Bhavtosh; Lu, Xinyu; Srivastava, Jaideep	International Journal of Advertising	2020
2	Users Awareness of Native Advertising from Instagram Media Publishers: The Effects of Instagram'S Branded Content Tool on Attitudes and Behavioural Intent	441	Iacobucci, Serena; De Cicco, Roberta	International Journal of Internet Marketing and Advertising	2020
3	Modeling The Elements and Effects of Global Viral Advertising Content: A Cross-Cultural Framework	234	Sharma, Rishi Raj; Kaur, Balpreet	Vision-The Journal of Business Perspective	2018
4	Going Viral: Individual-Level Predictors of Viral Behaviors in Two Types of Campaigns	195	Hoffman, Lindsay H; Baker, Alex; Beer, Avery; Rome, Madison; Stahmer, Ashley; Zucker, Gillian	Journal of Information Technology & Politics	2021
5	Viral Video Ads: Examining Motivation Triggers to Sharing	153	Nikolinakou, Angeliki; King, Karen Whitehill	Journal of Current Issues and Research in Advertising	2018
6	Social Media Marketing: Comparative Effect of Advertisement Sources	116	Shareef, Mahmud Akhter; Mukerji, Bhasker; Dwivedi, Yogesh K; Rana, Nripendra P; Islam, Rubina	Journal of Retailing and Consumer Services	2019
7	The Influence of Internet Advertising and Electronic Word of Mouth on Consumer Perceptions and Intention: Some Evidence from Online Group Buying	99	Lim, Weng Marc	Journal of Computer Information Systems	2015
8	Influencing Vsn Users' Purchase Intentions the Roles of Flow, Trust and Ewom	96	Mortazavi, Marjan; Esfidani, Mohammad Rahim; Barzoki, Ali Shaemi	Journal of Research in Interactive Marketing	2014
9	Viral Advertising: Definitional Review and Synthesis	89	Petrescu, Maria; Korgaonkar, Pradeep	Journal of Internet Commerce	2011
10	Negative Effects of Brand Familiarity and Brand Relevance on Effectiveness of Viral Advertisements	76	Huang, Jin-Song; Zhou, Liuning	Social Behavior and Personality	2016

### 3.4 Author Analysis

Statistical analysis of literature authors provides insight into the attention of different scholars to relevant research content, explores current core research groups, and discovers network relationships among researchers (Qin et al., 2022). There were 324 authors in the 138 papers in this study. As shown in Figure 4, there were 14 authors published 2 articles, and 6 authors published 3 articles, only 1 author with 5 articles published and 1 author published 4 articles. The other 302 authors published only 1 article, accounting for 93% of the total. Among them, Petrescu, Maria published 5 articles, mainly researching on the definition of viral advertising implications, viral intentions and purchase intentions, and viral advertising appeals. King, Karen Whitehill published 4 articles focusing on the study of factors influencing the sharing of viral video ads, including emotions, interpersonal relationships, strength of brand, and user comment valence. They are the scholars who have studied viral advertising more extensively. However, the number of scholars with high publication volume in the research of related topics is not much, and most of them have published only 1 article, and fewer scholars have studied viral advertising systematically and comprehensively.

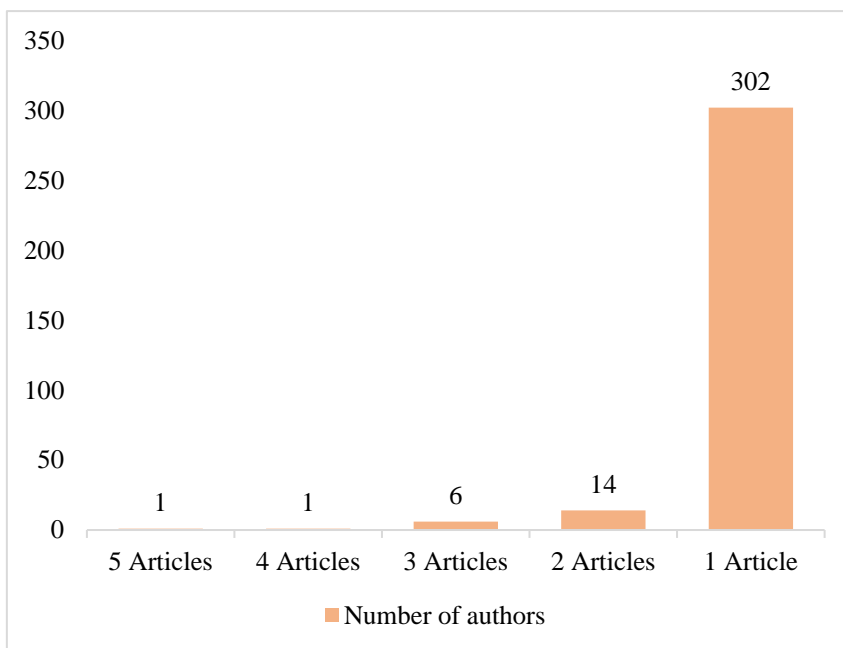


Figure 4. Author’s publication volume statistics

The largest set of connected items consists of at least 4 items on the VOSviewer software. With few cooperative connections between authors in this study, VOSviewer is not able to present the author’s cooperative network graph. Therefore, COOC software is used to present the cooperative network relationship between the authors. As shown in Figure 5, the number of connected nodes indicates the cooperative relationship, and the greater number of connected lines around a node indicates more collaborators. As can be seen, there is less collaboration among scholars on viral advertising research, only forming several small groups of cooperation. For example, Korgaonkar, Pradeep; Petrescu, Maria; Gironde, John formed a 3-person collaborative group, and Kulkarni, Kk; Kalro, Ad; Sharma, D formed a 3-person collaborative group. In summary, current researchers are collaborating in a fragmented manner and there is no apparently large collaborative cluster of researchers.

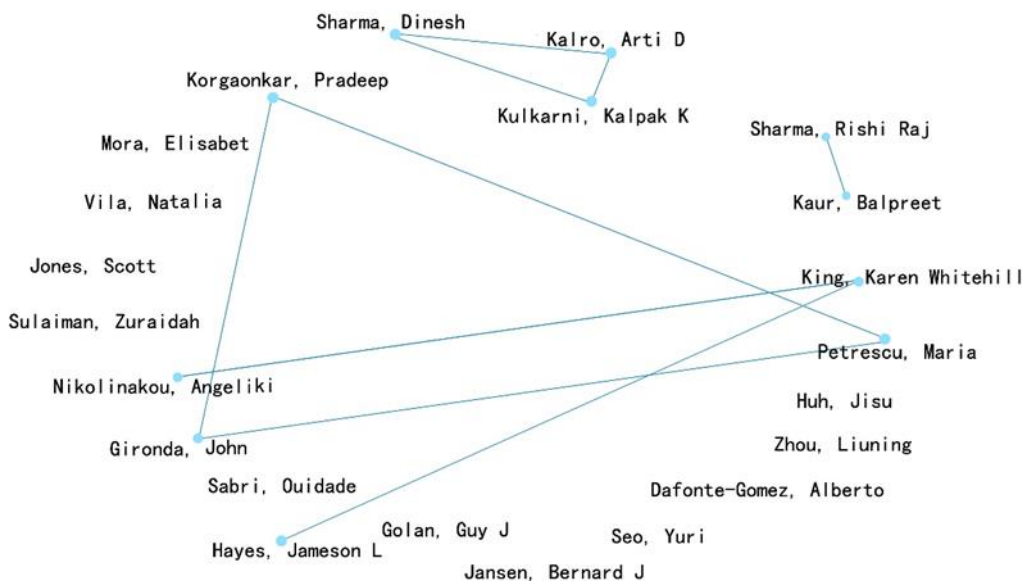


Figure 5. Cooperative network relationship between the authors

3.5 Countries and Institutions Analysis

The number of article outputs reflects the level and status of research in a specific field in that country and institution. In this study, the number of national publications on viral advertising was counted, some countries published relatively large numbers of journal articles. For example, the United States published the most articles with the number of 42. Spain was the second largest contributor having 15 articles, followed by China with 12, then were England, India, and Australia for 9. However, the number of articles published in most countries is not much, only 1-3. The degree of their contributions to viral advertising research can be seen in the word cloud diagram (Figure 6).

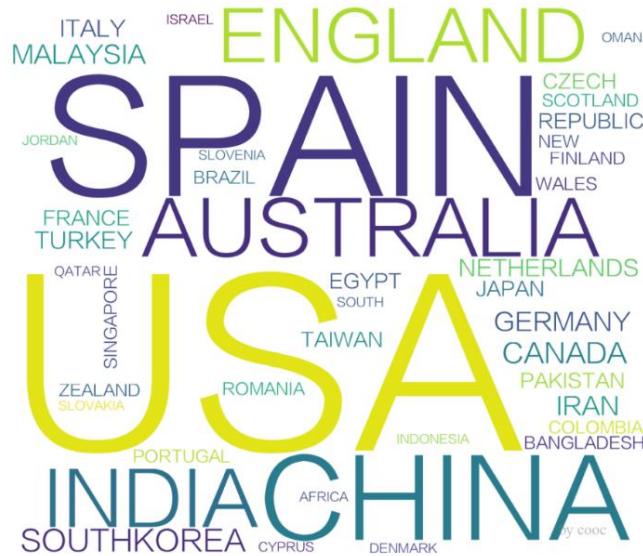


Figure 6. Word cloud diagram of countries publication situation

The VOSviewer software can be used to present the cooperative network relationship between countries. As shown in Figure 7, the number of node links indicates the cooperation relationship, more links around the node means more countries of cooperation. The node size indicates the number of published papers, and a larger node represents a higher volume of articles issued. Among them, the number of connecting lines centered on the USA and England is high, forming obvious cooperative networks with other countries. However, the cooperation between countries is not rich and close enough in the whole cooperation network graph.

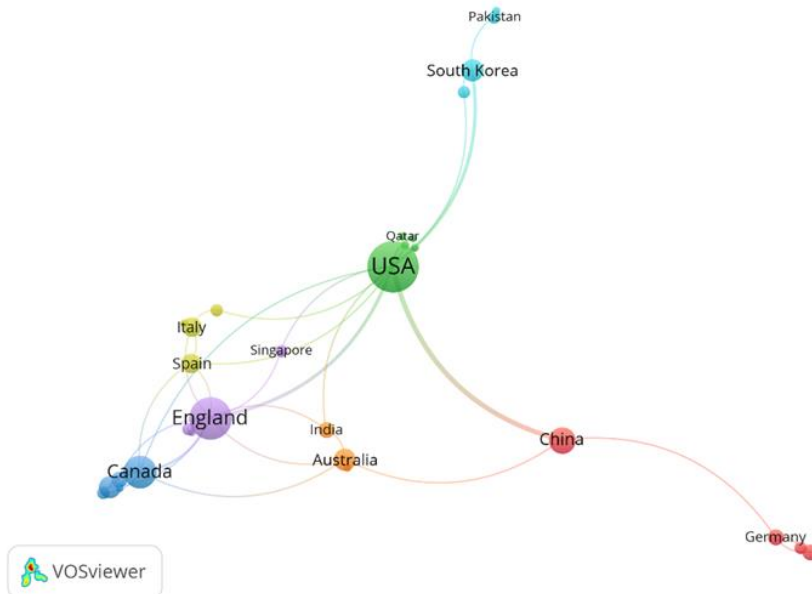


Figure 7. Collaboration network map between the countries

A calculation of the number of articles published by institutions shows that the institutions with the highest number of articles on viral advertising are the University Georgia (5 articles) and Florida Atlantic University (4 articles), both from the USA. University Valencia from Spain, Indian Institute of Technology from India, and Beihang University from China are the next ones with 3 articles. As shown in the Table 2 are the top 10 organizations in terms of publication. It can be found that the country with the largest number of articles is the United States, and the institution with the greatest number of articles is also from the USA which has the highest contribution in viral advertising research. However, there is less cooperation between institutions, and VOSviewer cannot generate the cooperation network diagram of institutions. Therefore, academic cooperation among authors, countries, and institutions needs to be strengthened.

Table 2. The top 10 organizations in terms of publication

Rank	Institution	Number of articles	Country
1	University Georgia	5	USA
2	Florida Atlantic University	4	USA
3	University Valencia	3	Spain
4	Indian Institute of Technology	3	Indian
5	Beihang University	3	China
6	North South University	2	Bangladesh
7	University Teknologi Petronas	2	Malaysia
8	University Worcester	2	England
9	Cairo University	2	Egypt
10	Birmingham City University	2	England

### 3.6 Keywords Analysis

Keywords are an indispensable part of the literature, which is a high summary and condensation of the topic of the literature and directly reflects the core idea and viewpoint of the paper (Wang, 2022). Analysis of high-frequency keywords is often used to identify hot issues, thematic content, and research trends in the research field. This study uses co-occurrence analysis to describe the focus and network relationship between the research contents, cluster analysis for the thematic classification of the research contents, and keyword time evolution analysis to summarize the research trends.

#### 3.6.1 Co-occurrence Analysis

Under the premise of using COOC software to merge synonyms and remove nonsense words for the keywords, this study used VOSviewer software to draw a co-occurrence network map. The 41 high-frequency keywords with a frequency more than or equal to 3 were selected for visualization, and the results are shown in Figure 8. Each node represents a keyword, the size of the node represents the frequency of occurrence in the articles, and the thickness of the connecting line indicates the co-occurrence strength between the keywords. The specific data about the occurrence frequency, number of links and total link strength of the top 10 high-frequency keywords are shown in Table 3. Through the visualization diagram and co-occurrence values in Figure 8 and Table 3, it can be found that the biggest key nodes are the keywords “viral advertising”, “viral marketing”, “social media”, “social networks”, and “advertising”, which are in the center of the map. These keywords are characterized by high frequency, many links, and strong connection strength. For example, if the keywords “viral advertising” and “social media” are clicked separately in the co-occurrence network map, it can be seen that each of them has rich connection lines and strong linkage (see Figure 9). There are some reasons and contexts for these keywords to be the most critical nodes. “Viral advertising” and “advertising” are critical nodes because they belong to the core topic words of this study. Viral advertising is a part of viral marketing and is developed from its foundation (Petrescu & Korgaonkar, 2011), so “viral marketing” becomes an important keyword. Customers are increasingly relying on information gathered from social networking sites about what they want to buy (Sijoria et al., 2017; Ramos et al., 2023). “Social media” and “social networks” are the main contexts and forms of advertising media for viral advertising, so they become the focus of research.



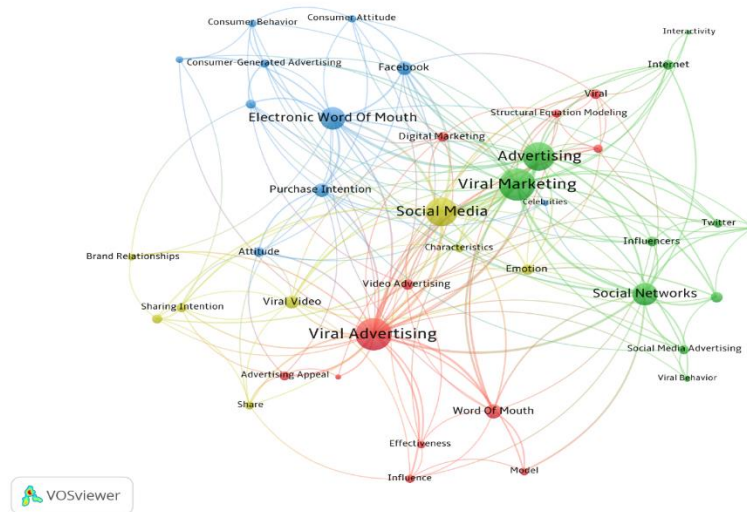


Figure 8. High-frequency keywords co-occurrence network diagram

Table 3. The top 10 high-frequency keywords co-occurrence values

Rank	Keywords	Frequency	Link	Total Link Strength
1	Viral Advertising	45	34	85
2	Viral Marketing	41	31	81
3	Advertising	33	25	67
4	Electronic Word Of Mouth	29	19	44
5	Social Media	26	25	67
6	Social Networks	21	20	46
7	Purchase Intention	10	12	19
8	Facebook	7	9	19
9	Social Media Advertising	7	7	10
10	Viral Video	7	14	17

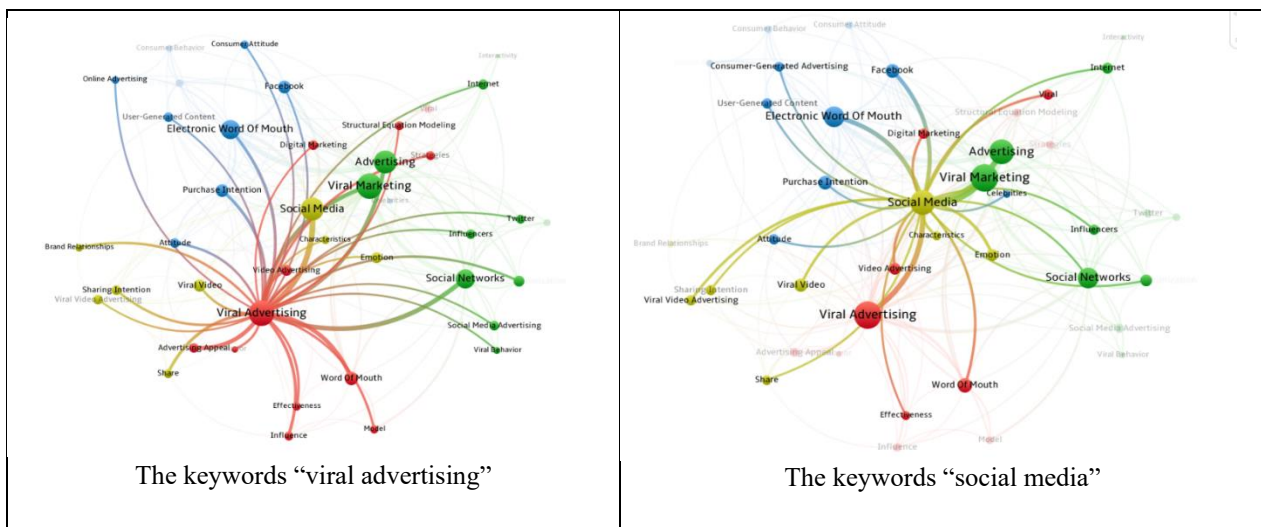


Figure 9. The co-occurrence network map of keywords “viral advertising” and “social media”

### 3.6.2 Cluster Analysis

Keywords clustering by VOSviewer software enables the discovery of relevant research topics in this research area (Wang, 2022). As shown in Figure 10, the software analysis visualization reveals that keywords with the same color nodes form clusters, each representing a distinct research topic in viral advertising. Figure 10 presents 4 clusters formed by 41 keywords with a frequency greater than or equal to 3, namely Cluster 1 (red), Cluster 2 (green), Cluster 3 (blue), and Cluster 4 (yellow). Based on the main keywords of these clusters and the analysis of literature abstracts and related content,



consumers extensively and deeply. Kulkarni et al. (2019) adopted a consumer-centric approach to examine how consumers' perceived need (high vs. low), the advertising message appeal (emotional vs. informational) and the degree of brand message (high vs. low brand awareness) interact, so as to influence consumers' intention to share viral advertising. Noor et al. (2022) investigated the role of internet advertising engagement in mediating the link between perceived personalization and good electronic word of mouth, and the moderating impact of user modes based on the context of the internet. Kaur & Sharma (2022) examined the effects of creative viral advertising on the four stages of consumer response: grabbing the consumer's attention, generating interest in the advertisement, intending to buy the advertised product, and intentions to spread positive word-of-mouth. It can be seen that the relationship between people and advertising is very complex and worth further study.

#### Topic 4: Research on the forms and content characteristics of viral advertising

This topic focuses on the study of the performance form and content characteristics of viral advertising. Quesenberry & Coolson (2019) considered viral advertising videos as a prominent form of viral marketing and discussed the role of storytelling in viral advertising videos. Dafonte-Gómez et al. (2020) conducted a content analysis of the top viral video advertisements that were the most widely distributed worldwide from 2011 to 2015. They identified common characteristics of the most shared video advertisements from an emotional perspective. Scholars have explored two key characteristics of viral advertisements that make consumers more likely to spread them: creativity and informativeness. Advertisements that are both creative and informative have a greater likelihood of spreading widely online (Moldovan et al., 2019). In summary, the study of the forms and characteristics of viral advertising helps to study the key factors of the success of viral advertising from the perspective of the advertisements themselves.

#### 3.6.3 Time evolution analysis

According to the trend of annual publication volume in Figure 2 above, the research process of viral advertising is divided into three stages, slow beginning stage, gradual development stage, and hot research stage. In addition, combining high-frequency keywords with chronological order better reflects the evolutionary trend of viral advertising research (Li et al., 2022). The following is a specific analysis of the changing trends in the content of viral advertising research in these three phases, based on the articles published in these phases and the top 20 keywords in terms of frequency (as shown in Figure 11).

##### Phase 1: Slow beginning stage (2004-2010)

Scholarly research on viral advertising started late, with 2004 being the earliest publication recorded in the database. At this time the concept of viral advertising had not been formally introduced, and Joseph et al. (2004) only examined consumers' motivations for the response and delivery of email advertising from the perspective of viral marketing and electronic word of mouth. Porter and Golan (2006, p.33) provided the first empirical effort to define viral advertising as "unpaid peer-to-peer content distribution from an identified sponsor that uses the Internet to persuade or influence audiences to pass content on to others". The concept of viral advertising was initially developed. The number of literature published at this stage is less, and the only keywords that appear repeatedly are "advertising", "viral advertising", "viral marketing", "social networks", and "Internet", but not very frequently (see Figure 11). Some scholars believed that viral advertising is a subset of viral marketing (Plummer et al., 2007), and viral advertising is a combination of online advertising and viral marketing, in short, online advertising that adopts viral marketing techniques (Xue, 2013). Therefore, it can be considered that viral marketing is the premise and basis for the development of viral advertising.

##### Phase 2: Gradual development stage (2011-2015)

The number of papers published in this phase gradually increased, and the keywords "viral marketing", "social networks", "electronic word of mouth", and "social media" increased, as shown in Figure 11. With the widespread use of the Internet and the development of social media, viral advertising has gradually received widespread attention from scholars. Scholars emphasized the importance of social networks for viral advertising, arguing that viral advertising takes advantage of eWOM and serves as a form of recommendation (Nikolinakou & King, 2018). Consumers are more likely to actively participate and share advertising in social networks through recommendations from friends and acquaintances rather than reacting to advertisements they encounter by accident on the Internet (Hayes & King, 2014). The emergence of social media platforms has revolutionized the entire media landscape as well as advertising models because audiences have shifted from the role of content recipients to content creators, distributors, and commentators (Keller, 2013; Scott, 2015). Social media provides a good opportunity for the development of viral advertising. Therefore, the keywords related to "social media", "consumer-generated advertising" and "user-generated content" have become the focus of viral advertising research. What's more, research on advertising appeals, strategies, willingness to share, humor and other aspects of viral advertising strategies also emerged.

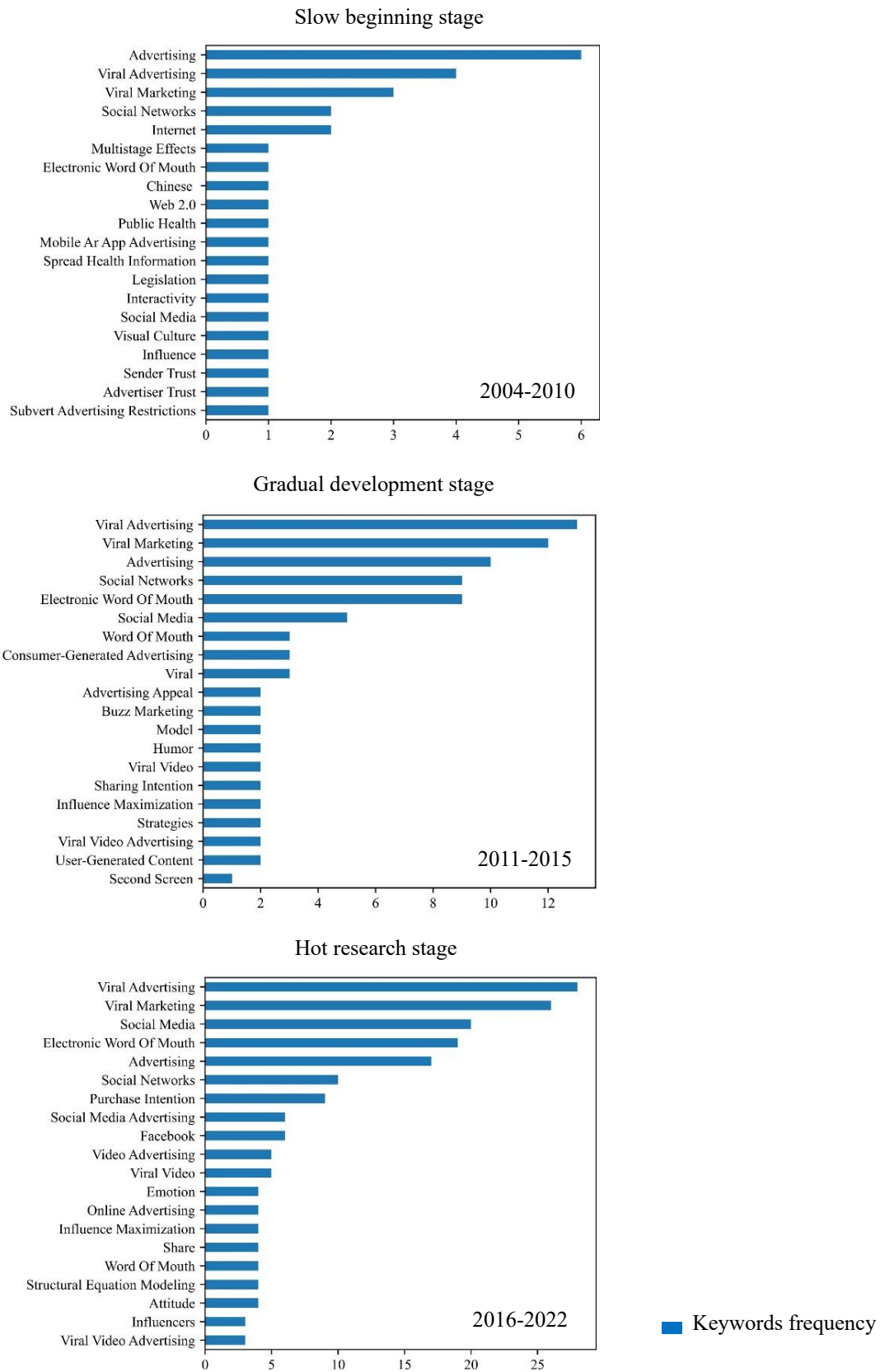


Figure 11. Time evolutionary trend of viral advertising research

### Phase3: Hot research stage (2016-2022)

This phase had the highest volume of articles published, and the frequency of keywords such as “viral marketing”, “social networks”, “electronic word of mouth”, and “social media” remained the highest and increased significantly, especially the keyword “social media”. The study of viral advertising based on social media platforms became a more important direction for research. This was inseparable from the popularity of smartphones, the rapid development of social media network consumption, and social media becoming an important medium for advertising communication. It is important to highlight the increase in keywords about video advertising in Figure 11, including “video Advertising” frequency 5 times, “Viral Video” frequency 5 times, and “Viral Video Advertising” frequency 3 times which are all relevant. With the emergency of new technologies, short video advertising is rapidly developing on social media platforms. Viral video advertising is creative and direct in visual effect, and compared to text and picture-based advertising, it rarely requires a thinking process from the audience and can delight the audience physically and mentally. Marketers are increasingly using the spread of video as a way to gain breakthroughs and influence in the social media space, and viral video advertisements are becoming a major part of the research (Wang & Lan, 2018). The phase 3 also emerged some new keywords, like “attitude”, “purchase intention”, “share”, “influencers” and “influence maximization”, it showed a broader study of viral advertising.

### Conclusion and Outlook

Viral advertising research has attracted a lot of attention from the society and scholars. The purpose of this study is to conduct a quantitative bibliometric analysis of the topic of viral advertising using COOC and VOSviewer software. Viral advertising research articles on the Web of Science platform from 2004 to 2022 (138 articles in total) are analyzed to investigate the basic situation, research hotspots, theme content and research trends. The following conclusions are obtained:

#### Basic Situation

The overall time distribution of the articles shows a wave-like increasing trend, going through three stages: “slow beginning”, “gradual development”, and “hot research”. In terms of spatial distribution, the countries and research institutions with the highest number of publications are concentrated in the USA, which has the highest contribution to viral advertising research. The number of scholars with a high number of publications is limited, and fewer scholars have systematically and comprehensively studied viral advertising. The independence and fragmentation among major research forces (authors, countries and institutions) in this field are obvious, and cooperation and communication need to be strengthened. Most of the highly cited articles were published between 2016 and 2020, and the articles had a significant impact. The scope of research on viral advertising is focused on the business field and belongs to journal types about marketing and advertising, which mainly focus on advertising research in the context of the Internet era.

#### Research Hotspots

The terms “viral marketing”, “social media”, and “social networks” are important keywords. Moreover, the co-occurrence relationship between these keywords and the keyword “viral advertising” is rich and strong, constituting the focus of the viral advertising study. The development of viral advertising is based on the development of the foundation of viral marketing and is a form of expression of viral marketing, so the study of viral advertising is closely related to viral marketing. Since the development of viral advertising, social media has been the main form of media for viral advertising. Moreover, viral advertising relies on interpersonal relations between people to spread, so “social media” and “social networks” are hotspots for viral advertising research.

#### Theme Content

The research on viral advertising mainly covers four topics: “the strategy research of viral advertising”, “research on social network communication of viral advertising”, “the study of the relationship between viral advertising and consumers”, and “research on the form and content characteristics of viral advertising”. As can be seen, the current research on viral advertising is relatively extensive, covering all aspects of advertising itself, consumers, interpersonal relationships, the relationship between advertising and people, and advertising communication. However, despite the wide range of coverage, the number of scholarly publications is not large, so more in-depth and richer research is needed.

#### Research Trends

In the three stages of “slow beginning”, “gradual development” and “hot research”, viral advertising research always revolves around the keywords of “viral marketing”, “electronic word of mouth” and “social media”, and these keywords become more and more important. In the early stage, viral advertising originated from viral marketing and electronic word-of-mouth, with manifestations ranging from original email and TV advertising to social media. During the gradual development stage, viral advertising on social media was a focal point of research, and the related research content became gradually rich. In the recent hot research stage, with the popularity of short videos, viral video advertising on social media has become the focus of research, which is different from traditional TV viral video advertising. Viral video advertising is seen as a powerful tool for communicating brand stories and building relationships with consumers on social media,

and advertisers are increasingly investing in video content and video advertising for social media. Therefore, viral video advertising may continue to be a direction of research in the future. These three stages are closely interconnected while also exhibiting some differences. Viral advertising undergoes continuous innovation and development in response to changes in the media environment.

**A Research Framework for Reference**

Based on the analysis and discussion of the above bibliometric studies, this study summarizes a research framework of viral advertising, to provide scholars and marketers with a reference for viral advertising research and marketing practice. This study proposes a research framework from the perspective of key aspects of viral advertising, including viral advertising itself, viral advertising source, viral advertising dissemination, and viral advertising recipients/disseminators. According to this framework, relevant research content is proposed based on the research themes, hotspots and trends of viral advertising discussed in this study. The details are shown in the following text and Table 4.

**Viral advertising itself:** Through an in-depth examination of the content and forms of viral advertising, the aim is to identify the characteristics that possess viral transmission potential and explore the construction methods and design principles of viral advertising.

**Viral advertising source:** Research on influential or highly spreading sources of viral advertising, including analysis of influencer characteristics, credibility studies of viral advertising sources, and examination of influencers’ connectivity and topological structure within interpersonal social networks.

**Viral advertising dissemination:** Investigate the dissemination of viral advertising across various media, especially on social media platforms. Explore the principles, mechanisms, and patterns of viral advertising propagation. Examine how viral advertising affects brands and products, and its effectiveness in spreading.

**Viral advertising recipients/disseminators:** Identify the target audience for viral advertising, delving into consumer characteristics, including cognition, emotions, interests, and behaviors, to explore how to transform them into both recipients and disseminators of viral advertising.

Table 4. A Research Framework for Reference

Viral advertising itself	Study the content and forms of viral advertising.
	Identify the characteristics that possess viral transmission potential.
	Explore the construction methods and design principles of viral advertising.
Viral advertising source	Research on influential or highly spreading sources of viral advertising.
	Analysis of influencer characteristics and credibility studies of viral advertising sources.
	Examination of influencers’ connectivity and topological structure within social networks.
Viral advertising dissemination	Study the spread of viral advertising across different media, especially on social media.
	Explore the principles, mechanisms, and patterns of viral advertising propagation.
	Examine how viral advertising affects brands and products, and its effectiveness in spreading.
Viral advertising recipients/disseminators	Identify the target audience for viral advertising.
	Research on consumer characteristics, including cognition, emotions, interests, and behaviors.
	Explore how to transform them into both recipients and disseminators of viral advertising.

This bibliometric study provides an overall research landscape in the field of viral advertising research, which is instructive for advancing viral advertising research. In the future, collaborative research among scholars, international cooperative research, and collaborative research among institutions can be strengthened. By expanding the breadth and depth of research, the quantity and quality of articles published can be improved to drive the development of viral advertising research.

Limitations of databases and bibliometric software may affect the analysis of this study. There is no high-precision database with comprehensive and reliable data, and even the Web of Science has some minor flaws (Qin et al., 2022). Future analysis combining multiple databases could be considered to research the topics investigated in more detail. The bibliometric software COOC and VOSviewer can only analyze the authors, countries, institutions and keywords of the literature, which are explicit knowledge. It is more difficult to explore the implicit knowledge existing in the literature, and the depth of exploration is not enough. In the future, a combination of bibliometric and other research methods, such as content analysis and meta-analysis, could be considered to further improve the reliability and objectivity of the findings.

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