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ORIGINAL

From Word-of-Mouth to Social Buzz: A Triangulated Bibliometric Analysis of Viral Marketing Using Biblioshiny, VOSviewer, and CiteSpace

Del boca a boca al revuelo social: un análisis bibliométrico triangulado del marketing viral con Biblioshiny, VOSviewer y CiteSpace

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ABSTRACT

Introduction: this bibliometric analysis examines the global research landscape on viral marketing using data extracted from the Scopus database and analyzed with Biblioshiny, VOSviewer, and CiteSpace. Viral marketing, characterized by rapid message dissemination through digital networks and consumer sharing, has gained significant scholarly attention across diverse disciplines.
Objective: the annual scientific output reveals a steady growth in publications, reflecting increasing academic interest and the evolution of research themes over time.
Method: analysis of top influential researcher's highlights key contributors shaping the field's theoretical and methodological advancements. Prominent scientific journals, particularly in marketing, consumer behavior, and information systems, serve as primary publication outlets, fostering interdisciplinary dialogue.
Results: global research contributions by nation indicate that the United States, China, and India are leading producers, supported by active collaborations illustrated in the timeline network visualization of country partnerships. Co-citation analysis of cited authors and journals uncovers core intellectual foundations and interlinked knowledge domains. Bibliographic coupling of documents and co-occurrence of author keywords reveal thematic clusters that define the research focus, while thematic evolution and the thematic map highlight the transition from foundational studies to emerging topics such as social media analytics and influencer marketing. Trend topic analysis indicates growing emphasis on data-driven targeting, user engagement, and algorithmic influence modeling.
Conclusions: the study identifies research gaps in cross-cultural comparative studies, ethical considerations, and the integration of emerging technologies into viral marketing strategies, with practical implications for marketers seeking to optimize campaigns in a rapidly evolving digital environment.

Keywords: Viral Marketing; Bibliometric Analysis; Biblioshiny; VOSviewer; Citespace.

RESUMEN

Introducción: este análisis bibliométrico examina el panorama global de la investigación sobre el marketing

viral utilizando datos extraídos de la base de datos Scopus y analizados con Biblioshiny, VOSviewer y CiteSpace. El marketing viral, caracterizado por la rápida difusión de mensajes a través de redes digitales y el intercambio entre consumidores, ha recibido una atención académica significativa en diversas disciplinas.
Objetivo: la producción científica anual revela un crecimiento constante en las publicaciones, lo que refleja un creciente interés académico y la evolución de los temas de investigación a lo largo del tiempo.
Método: el análisis de los investigadores más influyentes destaca a los principales contribuyentes que han moldeado los avances teóricos y metodológicos en el campo. Revistas científicas destacadas, especialmente en marketing, comportamiento del consumidor y sistemas de información, sirven como canales principales de publicación, fomentando el diálogo interdisciplinario.
Resultados: las contribuciones globales por país indican que Estados Unidos, China e India son los principales productores, respaldados por colaboraciones activas ilustradas en la visualización de la red temporal de asociaciones entre naciones. El análisis de co-citación de autores y revistas citadas revela los cimientos intelectuales centrales y los dominios de conocimiento interconectados. El acoplamiento bibliográfico de documentos y la coocurrencia de palabras clave de autores muestran clústeres temáticos que definen el enfoque de la investigación, mientras que la evolución temática y el mapa temático destacan la transición de estudios fundacionales a temas emergentes como el análisis de redes sociales y el marketing de influencers. El análisis de temas en tendencia indica un énfasis creciente en la segmentación basada en datos, la participación de los usuarios y el modelado de la influencia algorítmica.
Conclusiones: el estudio identifica vacíos de investigación en los estudios comparativos interculturales, las consideraciones éticas y la integración de tecnologías emergentes en las estrategias de marketing viral, con implicaciones prácticas para los especialistas en marketing que buscan optimizar campañas en un entorno digital en rápida evolución.

Palabras clave: Marketing Viral; Análisis Bibliométrico; Biblioshiny; VOSviewer; Citespace.

INTRODUCTION

Viral marketing, the strategic cultivation of content or messages designed to spread rapidly and organically through consumer networks, has transcended its buzzword status to become a cornerstone of contemporary digital marketing strategy.[1,2,3] Its core premise leverages the fundamental human drives for social connection, novelty, and sharing, transforming satisfied customers or intrigued recipients into active brand advocates.[4] In an era saturated with advertising noise, the allure of viral marketing lies in its perceived authenticity, cost-effectiveness, and potential for exponential reach, offering brands a powerful mechanism to cut through the clutter.[5,6] Unlike traditional push marketing, viral campaigns thrive on user agency, relying on voluntary sharing across digital platforms like social media, messaging apps, and email, mimicking the spread of infectious agents within a susceptible population.[7] The successful harnessing of this phenomenon, creating digital content that ignites widespread sharing, represents a significant competitive advantage in the attention economy.[8]

The anatomy of a viral phenomenon involves a complex interplay of content characteristics, psychological triggers, and network dynamics.[9,10] Research consistently points to key ingredients such as high emotional resonance through amusement, awe, anger, or anxiety, practical value or novelty, social currency that makes the sender appear knowledgeable or appealing, and ease of sharing.[11,12] Triggers embedded in the environment or daily routines can reignite sharing behavior. Furthermore, the structure of social networks plays a crucial role, as campaigns often ignite within dense clusters or leverage influential nodes like opinion leaders and micro-influencers to achieve critical mass before cascading through broader networks.[13] Understanding these mechanisms and the reasons why certain content compels sharing while others fade is central to both theoretical development and practical application within viral marketing scholarship.[9,14]

The practice and study of viral marketing have evolved substantially with the advancement of digital technologies.[15,16] Early approaches centered on email forwards and simple "tell-a-friend" website features, but the rapid rise of social networking platforms such as Facebook, Twitter, Instagram, and TikTok, along with user-generated content platforms like YouTube and mobile messaging apps including WhatsApp and WeChat, has transformed the viral landscape by enabling unprecedented scale, speed, and multimedia capabilities.[17,18] As a result, viral marketing is now understood as an integral component of broader digital marketing ecosystems, intersecting with influencer marketing, content marketing, social media marketing, and engagement analytics.[19] This evolution has spurred research into platform-specific algorithms, the balance between paid seeding and organic diffusion, and the ethical considerations surrounding engineered virality, making it a complex and dynamic area of scholarly and practical interest.[20]

Despite its allure, viral marketing presents significant challenges. Predicting virality remains notoriously difficult, often resembling an art as much as a science.[14,21] The ephemeral nature of viral success makes sustained impact hard to achieve. Ethical concerns loom large, encompassing issues of misinformation

propagation, manipulation of emotions, privacy violations through aggressive data harvesting for targeting, and the potential exploitation of social networks for commercial gain without adequate transparency ("stealth marketing").[22,23] Furthermore, the measurement of true ROI beyond vanity metrics like shares or views is complex, and the potential for backlash or unintended negative associations ("viral flops") is ever-present.[3,24] The field grapples with these nuances, striving to develop more robust theoretical frameworks, predictive models, and ethical guidelines.[24]

The burgeoning significance of viral marketing in the digital economy has spurred a vast and rapidly expanding body of academic research over the past two decades.[24,25] Scholarly inquiries span diverse disciplines, including marketing, information systems, social psychology, communication studies, and computer science, each contributing unique perspectives on diffusion mechanisms, content strategies, network effects, platform dynamics, and consumer behaviour.[26] While this proliferation of knowledge signifies a vibrant field, it also creates a challenge: the intellectual structure, key evolutionary pathways, dominant themes, emerging frontiers, and collaborative networks within viral marketing research remain fragmented. This fragmentation is not merely a matter of organization; it represents a critical limitation that hinders theoretical integration, slows methodological advancement, and obscures a coherent understanding of the field's evolution.[24] As a result, despite the rapid growth of scholarship, viral marketing research risks advancing in silos without cumulative theoretical progress. Addressing this limitation requires a systematic bibliometric mapping that can consolidate diverse contributions and reveal the underlying intellectual architecture. To this end, our analysis focuses specifically on viral marketing literature—defined as research on intentionally designed campaigns and strategies for engineered message diffusion—differentiating it explicitly from the broader domains of electronic word-of-mouth (eWOM) and general social network analysis, which, although related, do not share the same strategic and managerial orientation.[26]

This study employs bibliometric analysis to systematically map and analyze the scholarly literature on viral marketing.[26] The scope encompasses peer-reviewed journal articles, conference proceedings, and reviews explicitly focused on viral marketing, buzz marketing, electronic word-of-mouth (eWOM) with a viral diffusion focus, and closely related concepts concerning the intentional design and analysis of content spread through social networks for marketing purposes.[24,25] The analysis will primarily draw from Scopus database, covering publications from the field's inception in the late 1990s/early 2000s to the present day. While acknowledging its interconnections, the study will focus specifically on the viral marketing literature, differentiating it from broader studies on general eWOM, information diffusion in non-marketing contexts, or pure social network analysis without a marketing objective.[3]

The primary objectives of this bibliometric analysis are to comprehensively map and assess the scholarly landscape of viral marketing research. Specifically, it aims to chart the publication volume, citation impact, and temporal evolution of the field to identify key growth phases and foundational works. It seeks to identify and visualize the major thematic clusters, research fronts, and intellectual structure within the literature using co-citation analysis and bibliographic coupling. Furthermore, the analysis will determine the most prolific and influential authors, institutions, countries, and core journals contributing to the domain, while also examining patterns of collaboration among them to identify key networks and hubs. Additionally, it will trace the conceptual evolution of the field by analyzing shifts in keywords and research foci over time, reflecting technological and societal changes. Ultimately, the study aims to identify emerging trends, underrepresented areas, and potential future research directions to provide a data-driven foundation for advancing scholarship in viral marketing.

To achieve these objectives, this study adopts established bibliometric techniques to systematically evaluate the landscape of viral marketing research. Performance analysis will apply indicators such as publication counts, citation counts, h-index, and journal impact factors to gauge the productivity and influence of authors, institutions, countries, and scholarly outlets.[27,28,29] Science mapping approaches, including co-citation analysis to identify foundational works and intellectual structures, bibliographic coupling to pinpoint current research fronts and thematic clusters, and co-word analysis to explore keyword linkages and thematic evolution, will be employed using specialised tools such as VOSviewer and CiteSpace.[30,31,32] These techniques will produce visual network maps and quantitative metrics, enabling an objective, data-driven synthesis of the field.[33,34] Through this bibliometric lens, the study aims to uncover hidden patterns, interconnections, and trends, offering a comprehensive understanding of how viral marketing scholarship has developed, where it currently stands, and where it is likely to advance in the future.

METHOD

This bibliometric analysis utilized the Scopus database, owned by Elsevier, selected for its extensive multidisciplinary coverage of peer-reviewed literature.[35,36,37] This coverage includes scientific journals, conference proceedings, and book series. The search strategy employed a specific keyword "viral marketing". In addition to "viral marketing", the search strategy incorporated synonyms such as "buzz marketing", "viral

diffusion", and "organic sharing" to ensure broader coverage. Exclusion filters were applied to remove irrelevant records (e.g., virology, computer viruses), improving both precision and relevance of the dataset. This search aimed to comprehensively capture scholarly work on viral marketing from its conceptual origins to the present day. The initial search execution yielded a total of 1759 records. All retrieved records, complete with their full bibliographic metadata, were downloaded for subsequent screening and detailed analysis.

Prior to analysis, the dataset underwent a rigorous data cleaning and standardization process to ensure accuracy and consistency. Variations in author names, institutional affiliations, and keywords (e.g., "social media" vs. "social-media") were harmonized to avoid duplication and misclassification. To enhance robustness, we adopted a triangulated approach by employing Biblioshiny, VOSviewer, and CiteSpace, each serving complementary functions: Biblioshiny for descriptive performance analysis, VOSviewer for network construction and visualization, and CiteSpace for temporal and evolutionary mapping. This multi-tool strategy mitigates the limitations inherent in any single software and provides a more comprehensive and reliable representation of the viral marketing research landscape.

The screening and selection process rigorously adhered to the PRISMA guidelines illustrated in figure 1, ensuring transparency and reproducibility in reporting.[38] The initial set of 1759 records underwent an eligibility assessment primarily focused on document type. Specific document types were excluded from the analysis. These excluded types comprised 38 reviews, 37 conference reviews, 17 books, 3 notes, 3 short surveys, 1 editorial, 1 erratum, and 1 letter, resulting in a total exclusion of 101 records. Consequently, a final dataset of 1658 publications was deemed eligible for inclusion in the bibliometric analysis. This core dataset consisted of 820 journal articles, 741 book chapters, and 97 conference papers, all explicitly focused on viral marketing. To ensure compatibility and facilitate comprehensive analysis, the data was exported in two distinct formats, CSV and RIS. The CSV files provided structured bibliographic metadata essential for analysis, such as titles, authors, affiliations, sources, abstracts, keywords, references, citation counts, and publication years. The RIS files offered standardized formatting specifically required for seamless importing into specialized bibliometric software tools. This prepared dataset formed the robust foundation for all subsequent quantitative and network analyses performed in this study.

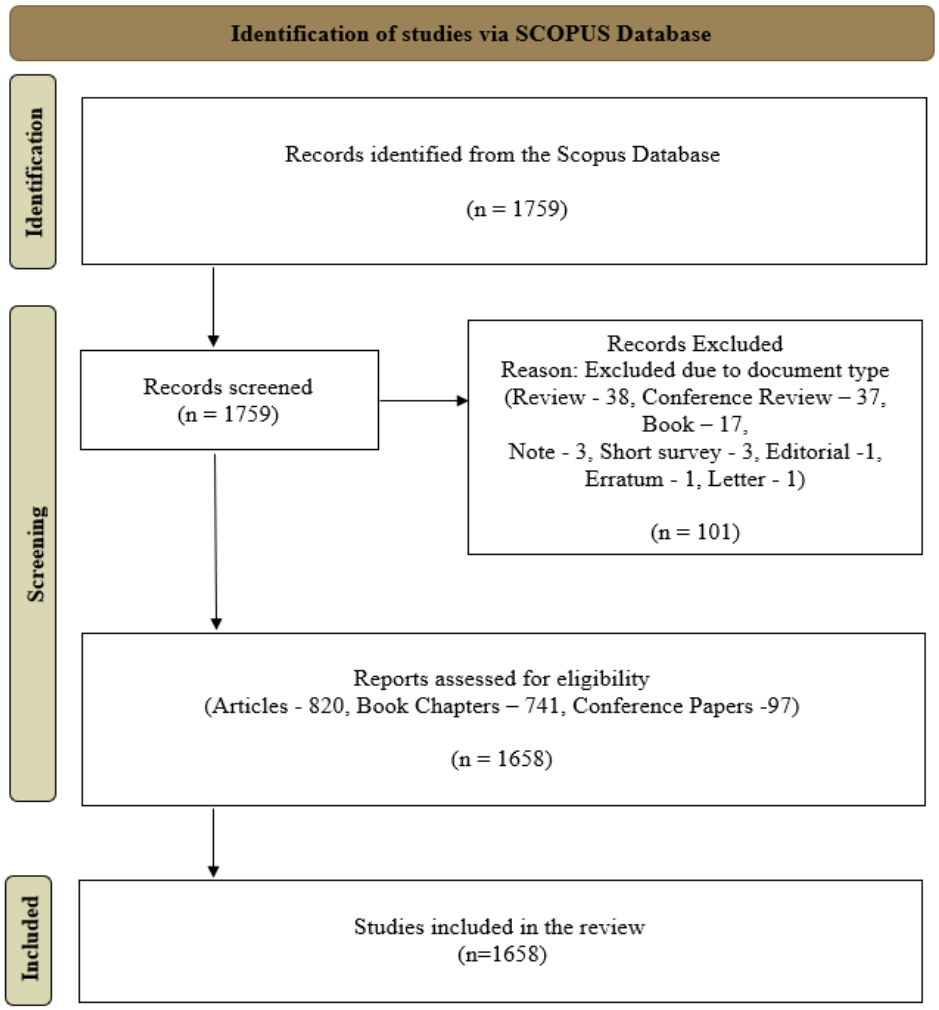

Figure 1. The PRISMA flow diagram is used to identify, screen, and include papers in the bibliometric analysis

The exported data underwent comprehensive analysis using three specialized bibliometric software packages, each serving distinct analytical purposes.[39,40] Biblioshiny, the web interface for the Bibliometrix R-Package, was used for performance analysis.[41,42,43] This involved generating descriptive statistics on publication and citation trends over time, identifying prolific authors, institutions, countries, and core journals, and calculating metrics like total citations and the h-index.[44,45] VOSviewer version 1.6.20 was employed for constructing and visualizing science maps.[46,47] This included generating co-authorship networks for authors, institutions, and countries, co-occurrence networks based on author keywords, and citation-based networks like co-citation analysis of sources or authors to identify major research clusters and collaboration patterns.[48,49,50] CiteSpace version 6.3.R1 was utilized for temporal and evolutionary analysis. Its functions included detecting bursts of activity such as citation bursts or keyword bursts, identifying emerging research frontiers through citation trajectory analysis, and visualizing the evolution of research themes and intellectual bases over distinct time periods using timeline views of co-citation networks.[51,52,53] The combined application of these three tools provided a multi-faceted and quantitative assessment of the viral marketing research landscape.[54,55]

RESULTS

Key Information Regarding the Investigation

The bibliometric analysis reveals a highly active and rapidly growing field of viral marketing research. The study encompasses 1658 scholarly documents published across 860 distinct sources between 1999 and July 2025, demonstrating a substantial and expanding body of literature. This growth is underscored by a remarkable annual growth rate of 16,24 percent, indicating strong and increasing scholarly interest. The field exhibits significant academic influence, with documents receiving an average of 40,05 citations each and collectively drawing upon 48025 references, reflecting a solid foundation of prior work. A diverse vocabulary is evident through the identification of 2986 unique author keywords and 5058 additional Keywords Plus terms. The research involves 3740 distinct authors, with collaboration being the dominant mode of work; only 160 documents are single-authored, resulting in an average of 3,22 co-authors per document. International collaboration is substantial, constituting 21,65 percent of the publications. The output is distributed across document types, including 820 journal articles, 741 conference papers, and 97 book chapters. The relatively young average document age of 8,17 years further confirms the field's ongoing vitality and rapid development.

Scientific Output Over the Years

Figure 2 clearly depicts the substantial growth trajectory of viral marketing research publications from 1999 to 2025. The field emerged modestly with only 13 publications recorded in 1999 and experienced relatively low and fluctuating annual output, remaining below 40 documents annually until 2007. A pronounced upward trend began around 2008, accelerating significantly after 2013. Annual publication volume first surpassed the 100-document threshold in 2014, reaching 120 publications that year, and peaked at 129 publications in 2019. While showing some fluctuation after the peak, including a noticeable dip to 97 publications in 2020, annual output remained robust in subsequent years, registering 124 publications in 2021 and 108 in 2022, and settling near 100 publications by 2025 with 96 documents. This overall trend vividly illustrates the previously identified high annual growth rate of 16,24 percent, showcasing the field's remarkable evolution from an emerging niche topic into a major and sustained domain of scholarly inquiry over the past two and a half decades, closely tracking the rise and maturation of digital and social media marketing platforms.

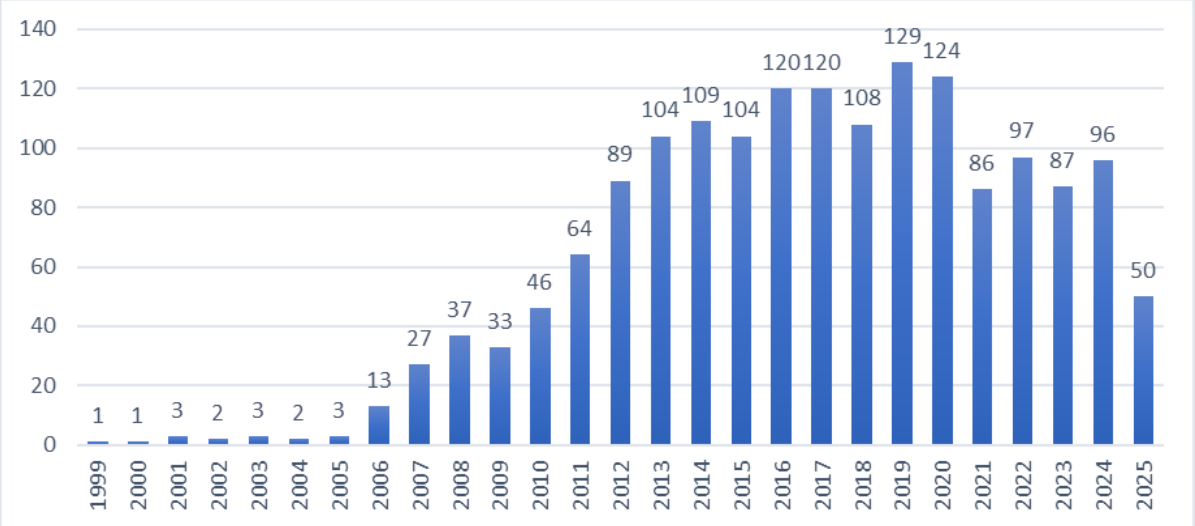

Figure 2. Annual scientific production from 1996 to 2025

Top Influential Researchers

Table 1 identifies the most prolific individual contributors based on their article output within the analyzed dataset. Wu Weili emerges as the single most productive author with 20 articles, indicating a significant and sustained contribution to the field. Jarosław Jankowski and My T. Thai follow closely, each with 18 articles, demonstrating their substantial research focus on viral marketing themes. Francesco Bonchi and Laks V.S. Lakshmanan share the fourth position with 15 articles each, highlighting their active engagement. Wei Chen, Thang N. Dinh, Canh V. Pham, and Philip S. Yu each authored between 11 and 14 articles, solidifying their positions as core contributors. Jianxiong Guo rounds out the top ten with 11 articles. This concentration of publication volume among a relatively small group of highly active authors indicates that a core set of contributors dominates the field, accounting for much of the foundational output in viral marketing research during the analysis period.

Table 1. Most relevant authors

Authors	Articles
Wu, Weili	20
Jankowski, Jarosław	18
Thai, My T.	18
Bonchi, Francesco	15
Lakshmanan, Laks V.S.	15
Chen, Wei	14
Dinh, Thang N.	13
Pham, Canh V.	13
Yu, Philip S.	13
Guo, Jianxiong	11

Prominent Scientific Journals

Table 2 reveals the core academic outlets, dominated overwhelmingly by Lecture Notes in Computer Science with 99 articles, reflecting the field's strong foundation in computational methods, algorithms, and theoretical modeling, often presented at leading conferences. Beyond this primary outlet, the distribution shows a diverse but lower publication concentration. Physica A: Statistical Mechanics and Its Applications ranks second with 22 articles, followed by IEEE Access, IEEE Transactions on Computational Social Systems, IEEE Transactions on Knowledge and Data Engineering, and major conference proceedings such as the ACM International Conference Proceeding Series, IEEE ICDM, and ACM SIGKDD. Other active sources include Social Network Analysis and Mining and Information Sciences. Together, these journals and conference proceedings account for a substantial portion of publications, reflecting the dominance of technical and interdisciplinary venues in viral marketing research.

Table 2. Prominent Scientific Journals

Sources	Articles
Lecture Notes In Computer Science (Including Subseries Lecture Notes In Artificial Intelligence And Lecture Notes In Bioinformatics)	99
Physica A: Statistical Mechanics And Its Applications	22
Acm International Conference Proceeding Series	20
Ieee Access	19
Ieee Transactions On Computational Social Systems	19
Proceedings - Ieee International Conference On Data Mining, Icdm	19
Ieee Transactions On Knowledge And Data Engineering	18
Proceedings Of The Acm Sigkdd International Conference On Knowledge Discovery And Data Mining	18
Social Network Analysis And Mining	17
Information Sciences	16

Global Research Contributions by Nation

Table 3 shows that the United States leads with 421 publications, followed closely by China with 391, reflecting their dominant influence in the field. India ranks third with 197 documents, indicating growing academic

engagement driven by rapid digital adoption. Contributions from Australia (78) and the United Kingdom (74) highlight active participation from developed economies, while Germany (62) adds methodologically strong studies. Emerging research hubs such as Iran and Italy (58 each), Spain (56), and Taiwan (51) demonstrates the field's expanding global reach. Overall, the distribution shows that the United States and China have the highest publication counts, followed by contributions from other regions.

Table 3. Countries Scientific Productions

Country/Territory	Documents
United States	421
China	391
India	197
Australia	78
United Kingdom	74
Germany	62
Iran	58
Italy	58
Spain	56
Taiwan	51

Timeline Network Visualization of Countries' Collaborations

The timeline network visualization of countries' collaborations illustrated in figure 3 reveals five distinct clusters, each representing thematic and regional research strengths in viral marketing. Cluster #0 (Influence Probabilities) is the largest, with 17 members and a high silhouette value (0,844), focusing on modeling and predicting influence spread in social networks. It is dominated by European contributions, with Germany (61 citations), Italy (58), and Spain (56) as the most cited countries, supported by France (33) and Poland (26). Cluster #1 (Evolving Network), the second largest with 16 members (silhouette 0,806), explores dynamic network analysis and influential node tracking. Here, China (389 citations) leads significantly, alongside strong inputs from Australia (78), Canada (49), Hong Kong (47), and Singapore (43), reflecting robust Asia-Pacific collaboration. Cluster #2 (Interactive Marketing) also has 16 members (silhouette 0,73) and centers on consumer engagement, brand equity, and entertainment in viral campaigns, with India (194 citations) at the forefront, followed by contributions from Indonesia (18), Malaysia (17), Greece (14), and Brazil (13), indicating growing influence from emerging markets.

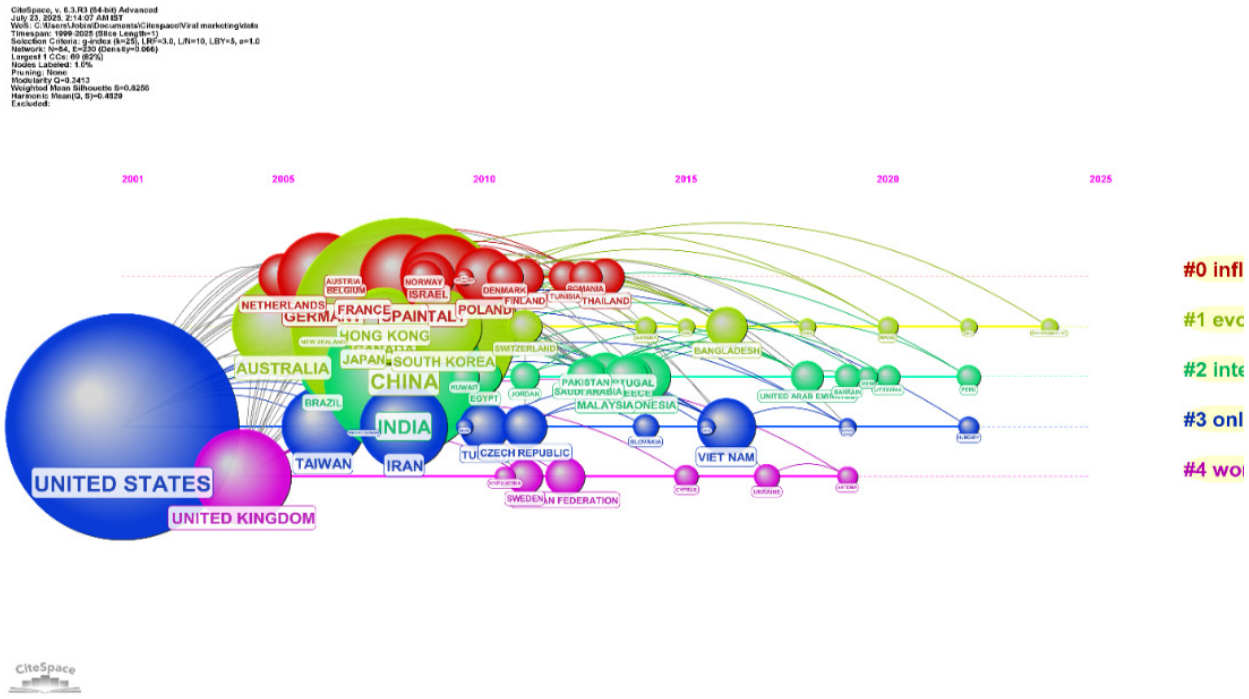

Figure 3. Timeline Network visualization of countries' collaborations

The remaining two clusters highlight more specialized thematic areas. Cluster #3 (Online Social Network), comprising 13 members with a silhouette value of 0,896, addresses electronic word-of-mouth (eWOM), purchase intentions, and online influence dynamics. The United States dominates this group with 416 citations, supported by Iran (57), Taiwan (51), Vietnam (24), and Turkey (17), showcasing cross-continental collaboration. Cluster #4 (Women Empowerment) is the smallest, with 7 members and the highest silhouette value (0,914), focusing on gendered narratives and emotional content in viral marketing. The United Kingdom (71 citations) leads here, followed by contributions from the Russian Federation (11), Sweden (9), Ukraine (4), and Cyprus (3). Overall, the visualization underscores both the thematic diversity and geographic spread of viral marketing research, with certain countries serving as global leaders in specific domains while others are emerging as regionally significant contributors.

The colors in the visualization correspond to distinct clusters generated by CiteSpace: Cluster #0 (red) – Influence Probabilities, Cluster #1 (green) – Evolving Network, Cluster #2 (blue) – Interactive Marketing, Cluster #3 (purple) – Online Social Network, and Cluster #4 (pink) – Women Empowerment. The truncated legend text in the top-left corner contains clustering metrics (e.g., size, silhouette, modularity) and has been described in the text for clarity, as it is not fully legible in the figure.

Network visualization of co-citation of cited authors

Figure 4 presents the network visualisation of co-citation of cited authors, revealing a multifaceted intellectual structure in viral marketing research, divided into 17 thematic clusters. Cluster #0 (Social Network) is the largest, with 178 members and a silhouette value of 0,678, focusing heavily on influence maximization, network analysis, and identifying key opinion leaders. The most cited authors here—Kempe D (771 citations), Leskovec J (657), and Chen W (531)—are seminal contributors to influence propagation models, whose works have become foundational references. Cluster #1 (Social Network), though thematically overlapping with Cluster #0, has 152 members (silhouette 0,682) and is characterized by research on viral marketing evaluation and consumer behavior in online communities. Key cited figures like Berger J (101), Dobele A (88), and Hinz O (84) indicate an orientation towards psychological, behavioral, and content-based determinants of virality.

Cluster #2 (Complex Network), with 119 members and a silhouette of 0,676, deals with the structural and mathematical modeling of network dynamics. Foundational theorists Watts DJ (154 citations), Newman MEJ (131), and Freeman LC (111) dominate, reflecting a strong influence from network science in understanding viral spread. Cluster #3 (Information Diffusion), consisting of 66 members (silhouette 0,728), focuses on predicting content popularity and modeling information cascades. Highly cited authors such as Yang J (95), Bakshy E (87), and Cha M (82) underscore the integration of computational social science and big data analytics in studying viral phenomena. Meanwhile, Cluster #4 (Mobile Viral Marketing), with 61 members and the highest silhouette in this set (0,925), addresses cross-cultural perspectives, mobile platforms, and behavioral drivers, with Subramani MR (34) and Ferguson R (24) as leading figures.

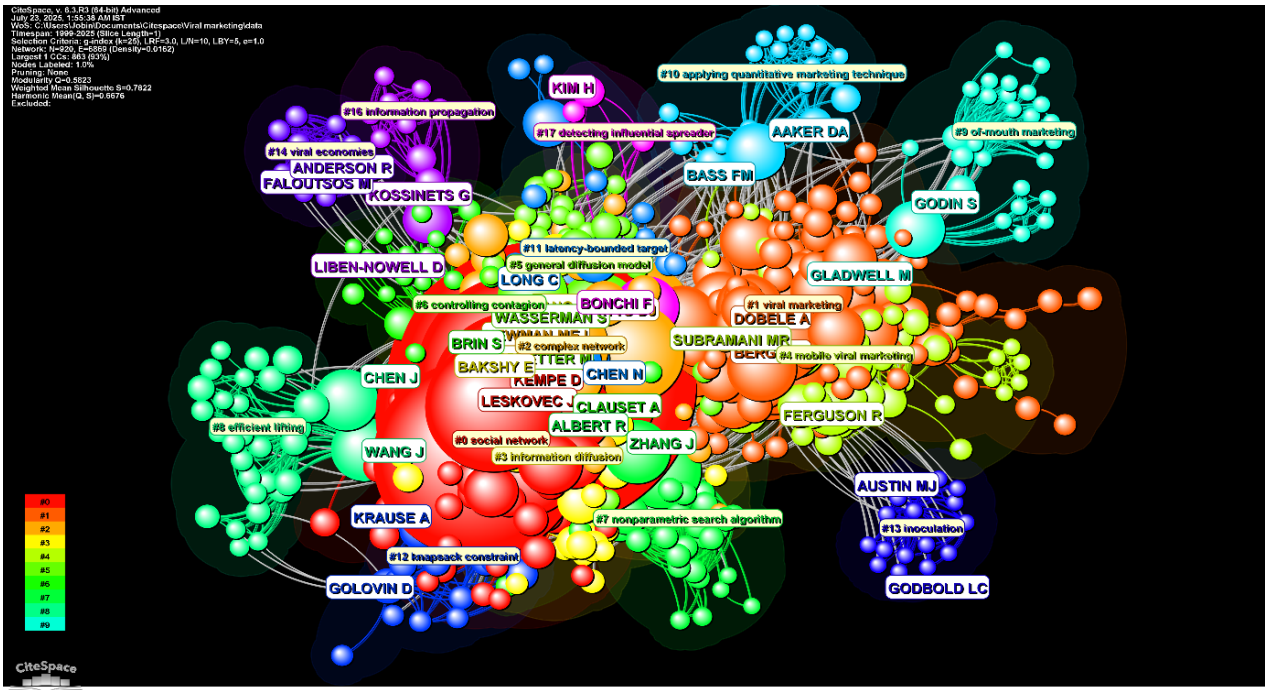

Figure 4. Network visualization of co-citation of cited authors

Network visualization of Co-citation of Cited Journals

Figure 5 presents the timezone network visualisation of the co-citation of cited journals, which presents 14 thematic clusters, each highlighting interconnected scholarly sources underpinning viral marketing research. Cluster #0 (Social Network) is the largest with 158 members and a strong silhouette value (0,91), indicating high thematic cohesion. It is dominated by leading marketing and consumer behavior journals, with Journal of Marketing (189 citations), Journal of Marketing Research (165), and Journal of Advertising Research (137) at the top, underscoring the field's deep roots in marketing theory, advertising effectiveness, and consumer psychology. Cluster #1 (Complex Network), with 147 members (silhouette 0,856), revolves around network science and computational modeling, with Nature (221 citations) as the most cited journal.

Cluster #2 (Social Network), containing 136 members (silhouette 0,701), blends computational social science with large-scale data analytics, anchored by conference proceedings such as the Proceedings of the Ninth ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (198 citations), Science (185), and PLOS ONE (144). This reflects the strong influence of data mining, machine learning, and empirical network analysis in viral marketing studies. Cluster #3 (Variable Neighborhood Search Approach), with 53 members (silhouette 0,945), is methodologically oriented, linking social network metrics with optimization and statistical modeling. Leading sources include Sociometry (63 citations), Psychometrika (30), and Physical Review E (30).

The mid-sized clusters broaden the research base. Cluster #4 (Controlling Contagion), with 45 members (silhouette 0,918), emphasizes computational strategies for influence control and is led by KDD (129 citations), ICDM (80), and WWW (73), pointing to strong ties with premier computer science and data mining conferences. Cluster #5 (Applying Quantitative Marketing Technique), comprising 37 members (silhouette 0,97), connects viral marketing to diffusion theory and econometrics, with Diffusion of Innovations (67 citations) and Annual Review of Sociology (42). Cluster #6 (Viral Marketing), with 34 members (silhouette 0,932), blends practitioner insights with scholarly research, citing Fortune (6) and Journal of the Royal Statistical Society (5).

The remaining clusters capture specialized niches in viral marketing scholarship. Cluster #7 (Clustering Algorithm), with 30 members (silhouette 0,978), cites SIGKDD (23 citations) and ACM SIGKDD (10), centering on algorithmic methods for network segmentation. Cluster #8 (Viral Economies), with 28 members (silhouette 0,964), is drawn from high-impact science and economics publications, notably Proceedings of the National Academy of Sciences (69 citations) and Physics Reports (37). Cluster #9 (Efficient Lifting), with 25 members (silhouette 0,995), is rooted in AI and machine learning, with Journal of Machine Learning Research (15 citations) and IEEE Transactions on Pattern Analysis and Machine Intelligence (8) as leading outlets. The smaller but tightly bound clusters—Inoculation (Cluster #10), Mining Knowledge-Sharing Site (Cluster #11), General Diffusion Model (Cluster #12), and Analyzing Social Network (Cluster #13)—contribute targeted perspectives ranging from persuasion resistance to graph theory and computational modeling.

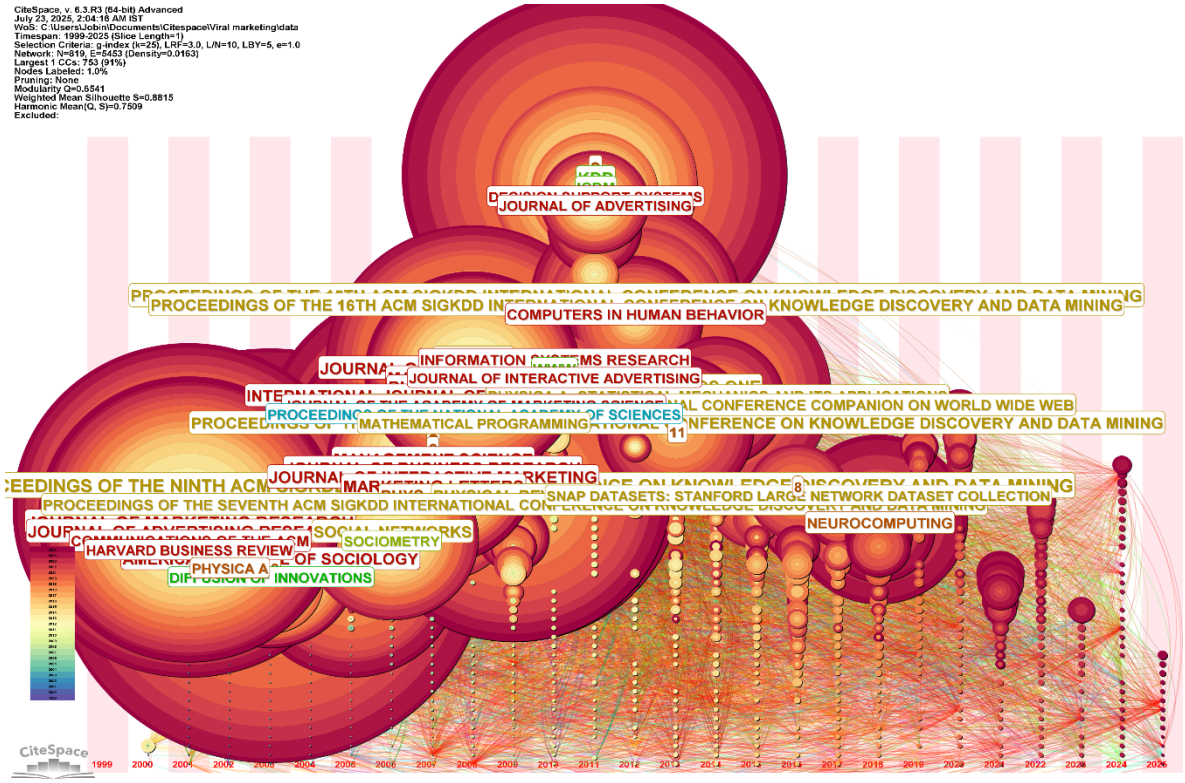

Figure 5. Timezone Network visualization of co-citation of cited journals

Network Visualization of bibliographic coupling of Documents

The network visualization in figure 6 represents the bibliographic coupling of documents within the field of viral marketing, with a minimum citation threshold of 20. Out of 1658 documents, 668 met the threshold, forming a network of 644 items grouped into 6 distinct clusters. Each node represents a document, and the size of the node correlates with its citation impact. The lines (edges) between nodes signify the number of shared references, indicating thematic closeness or intellectual similarity. The six clusters—each shown in different colors—reveal key thematic groupings within the literature. For instance, Cluster 1 (red) includes works such as Berger (2012b) and Shareef (2019).

In contrast, Cluster 4 (yellow), includes the highly influential documents by Kempe (2003) and Richardson (2002). Cluster 3 (blue), with key contributions like Chen (2010) and Bharathi (2007), appears more technical, likely focusing on computational simulations and network-based methodologies. Cluster 2 (green) includes studies like Goyal (2011b) and Tang (2014b), possibly bridging between theory and applied social media studies.

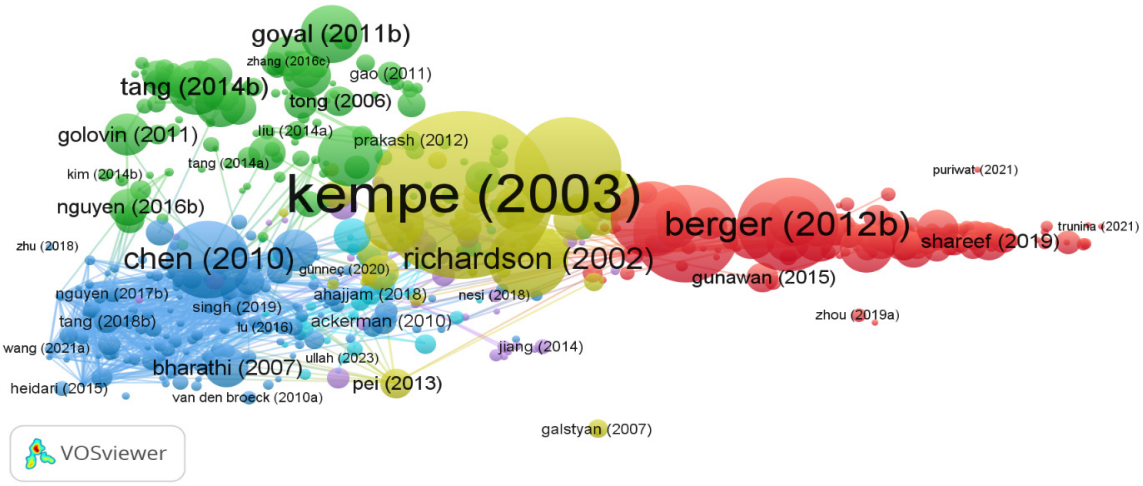

Figure 6. Network visualization of citation of documents

Network Visualization of Co-occurrence of Author keywords

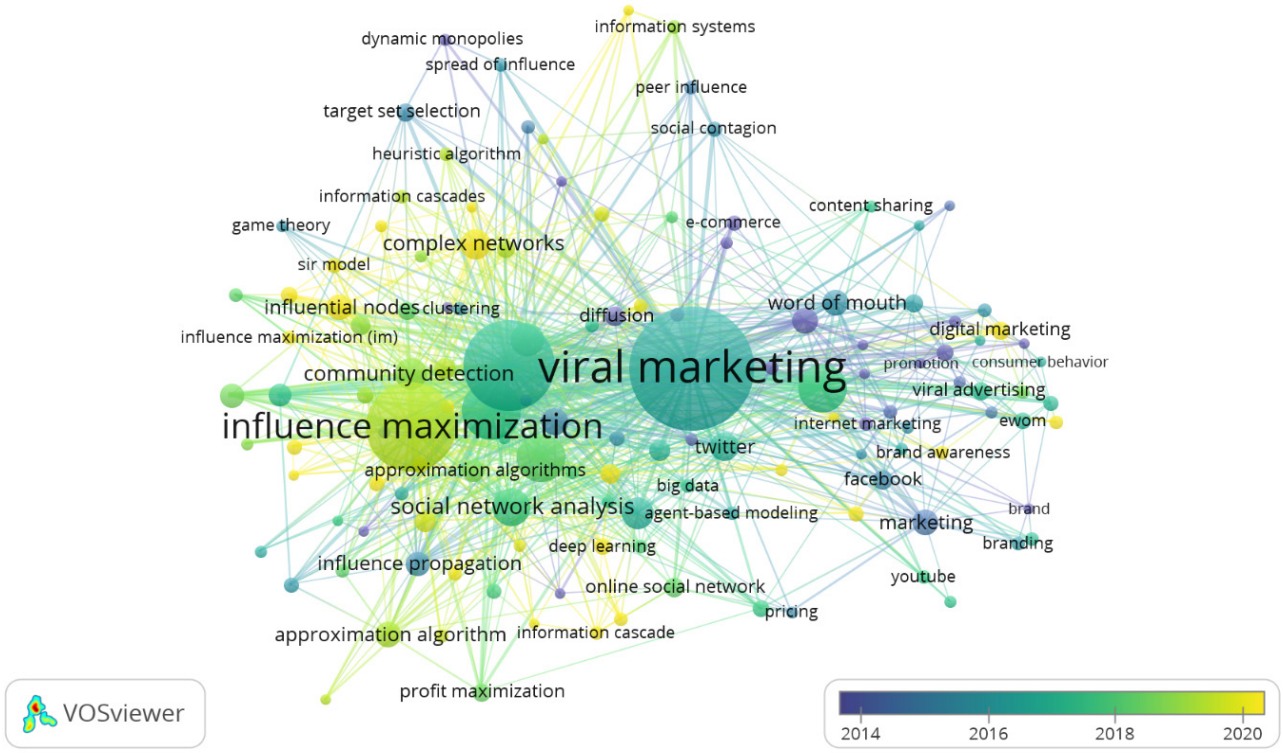

Figure 7. Co-occurrence of author keywords

Figure 7 displays an overlay network visualization of author keyword co-occurrence, with a minimum occurrence threshold of five. Out of a total of 2987 unique keywords, 133 met the threshold and formed a connected network grouped into 12 clusters. The most prominent keyword is viral marketing, with 579 occurrences, positioned centrally and strongly connected to other major themes. Social networks (316 occurrences) and influence maximization (299 occurrences) follow as key thematic anchors. Other notable terms include social network (133), social media (89), information diffusion (88), and social network analysis (54).

The overlay of publication years adds a temporal perspective to the map, revealing how the focus of the research field has evolved over time. Older research topics, appearing in darker shades, include influence maximization, community detection (40 occurrences), and independent cascade model (24 occurrences), highlighting the computational and theoretical roots of the field between 2014 and 2016. In contrast, more recent topics, shown in yellow, such as ewom, digital marketing, twitter (32 occurrences), online social networks (44), and word of mouth (25) have gained popularity between 2018 and 2020.

The network structure further shows the interdisciplinary depth of the field. Technical keywords such as complex networks (37 occurrences), influence propagation, and approximation algorithm are closely linked with applied marketing terms such as brand awareness, promotion, facebook, youtube, and internet marketing.

Thematic Evolution

The thematic evolution reveals a clear progression focus over distinct periods. During the foundational phase (1999-2013), research centered on core computational concepts like clustering and information propagation, intertwined with fundamental marketing concerns such as brand and branding. Key terms like viral marketing, target set selection, and online social network emerged, alongside early platform-specific interest (facebook) and theoretical models (voter model). The subsequent period (2014-2018) witnessed the dominance of social media as the primary context, reflecting its explosive growth and mainstream adoption. Research themes broadened to include marketing communication, social transmission, influence spread, and social contagion, emphasizing the dynamics of message diffusion within digital networks. While clustering and contagion remained relevant, the focus shifted towards understanding user behavior and content flow, evidenced by terms like blog data.

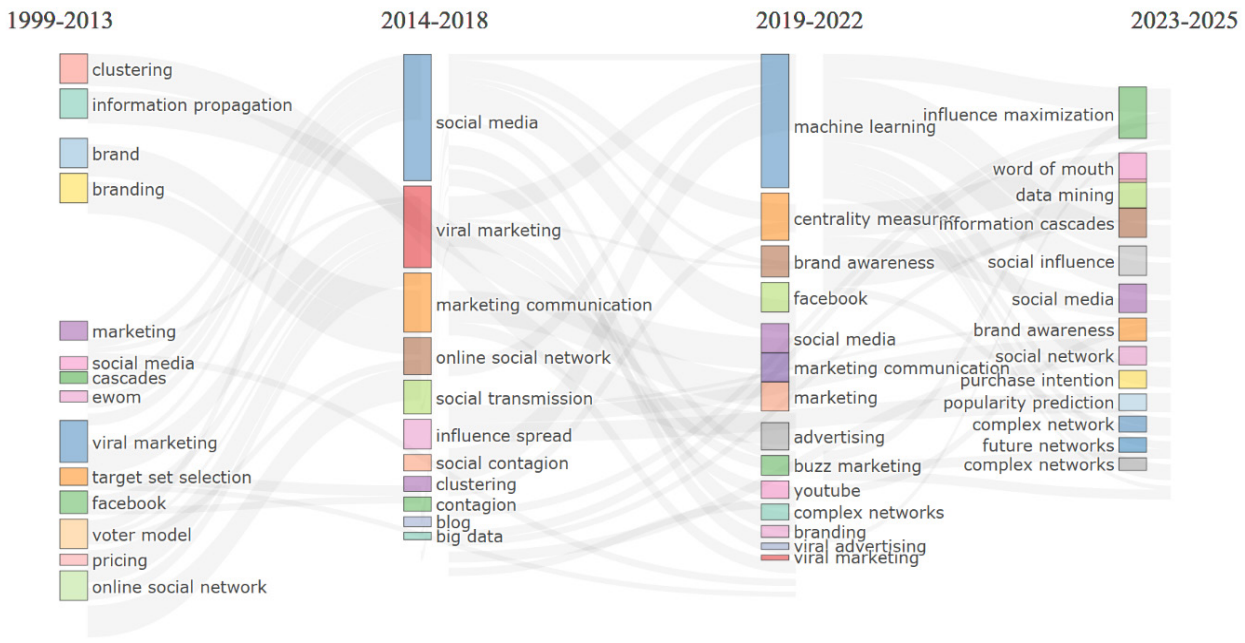

Figure 8. Thematic evolution of research in viral marketing

Thematic Map

Figure 9 presents the thematic mapping of the viral marketing literature, which plots themes on two dimensions: centrality (x-axis, measuring a theme's relevance to the overall field) and density (y-axis, measuring the internal development of the theme). The map is divided into four quadrants: motor themes (high centrality, high density), niche themes (low centrality, high density), emerging/declining themes (low centrality, low density), and basic themes (high centrality, low density).

The upper-right quadrant (motor themes) includes terms such as influence maximization, purchase

intention, brand awareness, seeding strategy, social networks, buzz marketing, and social networking. The upper-left quadrant (niche themes) contains outliers, epidemics, cascades, optimal control, hub, branding, brand equity, and social network sites. The lower-left quadrant (emerging/declining themes) groups reverse influence maximization, dynamic social networks, network science, social transmission, e-commerce, social commerce, propagation model, approximation, reinforcement, profit maximization, submodular maximization, WOM, and online marketing. The lower-right quadrant (basic themes) includes consumer behaviour, mobile viral marketing, technology acceptance model, guerrilla marketing, and internet marketing. This representation provides an overview of how different themes are positioned in relation to their development and centrality within the viral marketing research landscape.

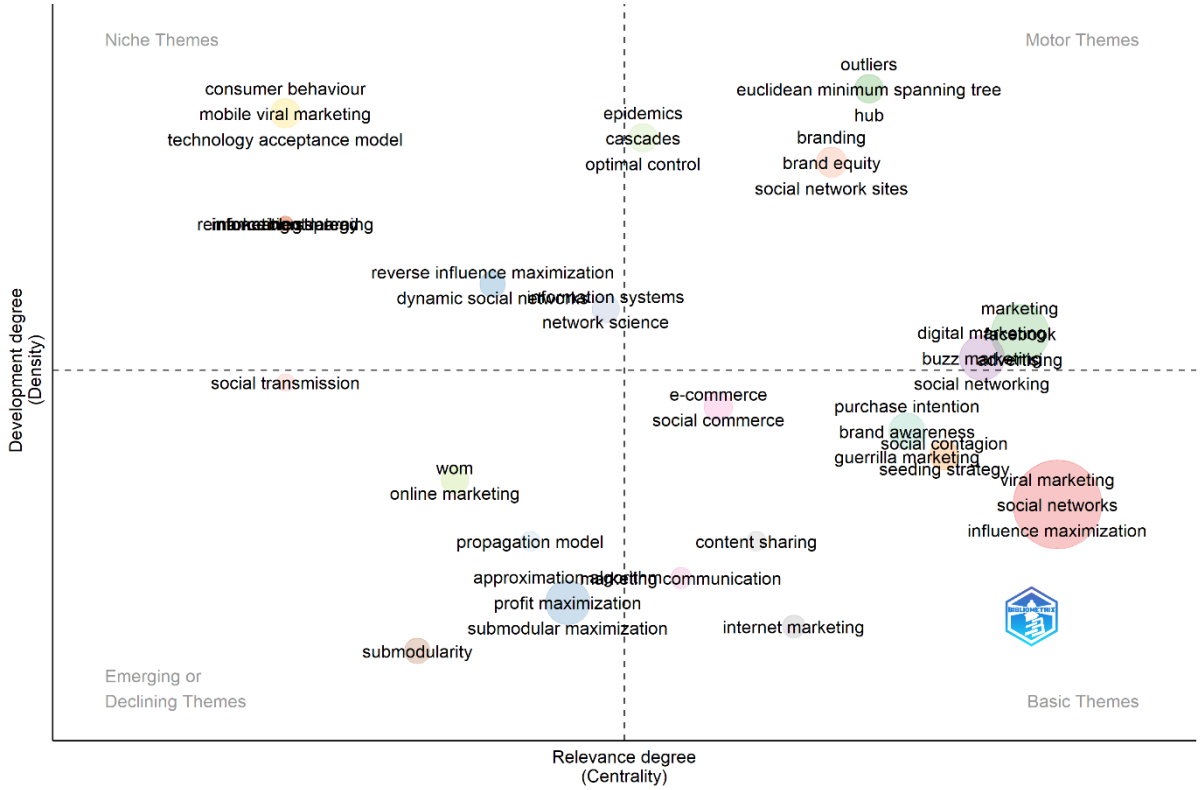

Figure 9. Thematic visualization of keywords

Trend Topics

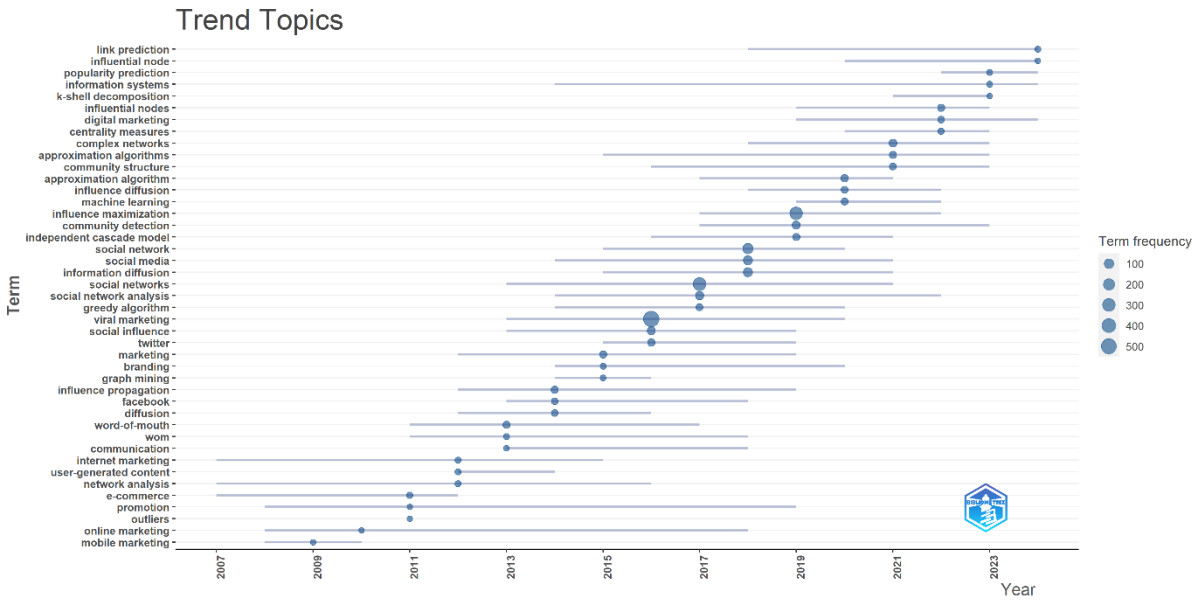

Figure 10. The evolution of trend topics in neobanking research

Figure 10 displays the trend topics in viral marketing research. The most frequent technical and algorithmic terms include influence maximization, social network, social media, machine learning, complex networks, influence diffusion, centrality measures, community detection, and greedy algorithm. Specific techniques such as approximation algorithms, independent cascade model, graph mining, link prediction, and popularity prediction also appear prominently, along with structural analyses including community structure, influential nodes, and k-core decomposition. Marketing-related terms such as viral marketing, marketing, branding, and word-of-mouth are present but occur less frequently. Platform-specific terms like Facebook and user-generated content, as well as emerging channels such as mobile marketing and social commerce, are also evident. Additional terms include e-commerce, promotion, purchase intention, and communication.

DISCUSSION

The bibliometric analysis of viral marketing research reveals a steady and accelerating growth in scholarly output, with marked increases in publication volume over the past decade, reflecting the rising strategic significance of viral marketing in both academic and commercial domains. The distribution of publications across countries shows the United States, China, and India as dominant contributors, indicating a geographically diverse but highly concentrated research landscape. Collaboration networks reveal strong intra-regional ties, particularly among Asian and Western countries, though cross-continental collaborations remain comparatively limited. Influential authors such as those specializing in influence maximization, purchase intention, and social networks have shaped the field, while journals like the Journal of Marketing, Journal of Marketing Research, and Journal of Advertising Research serve as central knowledge hubs.

Co-citation and bibliographic coupling analyses highlight the intellectual foundations of the field, clustering around computational approaches to influence spread, consumer behavior models, and social network analytics. Clusters such as “Social Network,” “Complex Network,” “Variable Neighborhood Search,” and “Applying Quantitative Marketing Techniques” reveal a strong interplay between marketing theory and data-driven methodologies. Highly cited works, including studies on diffusion of innovations, cascading behavior, and viral message design, have provided both conceptual depth and practical tools for viral campaign optimization. However, the co-citation structure also shows thematic silos, suggesting opportunities for integrating computational techniques with behavioral insights to produce richer, more holistic frameworks.

Keyword co-occurrence networks illustrate the thematic diversity of the field, with core clusters centered on viral marketing, electronic word-of-mouth (eWOM), social media, influence maximization, and consumer behavior. Peripheral yet emerging terms such as dynamic social networks, reverse influence maximization, social commerce, and profit maximization signal the field’s evolution toward platform-specific, real-time applications. The thematic map confirms this structure, with motor themes (influence maximization, purchase intention, brand awareness) driving current scholarship, niche themes (cascades, epidemics, branding) showing high development but limited external linkage, emerging themes (reverse influence maximization, social commerce) representing growth potential, and basic themes (mobile marketing, TAM) needing deeper theoretical development.

Trend topic analysis underscores a clear temporal progression—from early conceptual studies focusing on message design and consumer attitudes to contemporary research integrating machine learning, community detection, and network optimization for precision targeting and prediction. This transition demonstrates the increasing sophistication of viral marketing as a discipline but also exposes research gaps. Notably, while computational efficiency and algorithmic precision have advanced, there is limited exploration of emotional triggers, cultural nuances, ethical considerations, and the long-term brand impacts of viral campaigns. Moreover, research on cross-platform virality, the role of emerging short-form video platforms, and the effects of algorithm-driven content curation on campaign reach remain underrepresented.

The most recent phases demonstrate a significant maturation and integration of advanced technologies. Between 2019-2022, machine learning emerged as a dominant theme, applied alongside sophisticated network analysis techniques (centrality measuring) and applied marketing goals (brand awareness, advertising, buzz marketing). The research landscape reflected a multi-platform reality (facebook, youtube) and a focus on complex networks. The latest period (2023-2025) shows a consolidation around predictive optimization and commercial outcomes. Influence maximization and popularity prediction represent the pinnacle of algorithmic focus, while word of mouth, purchase intention, and brand awareness underscore the ultimate marketing objectives. Data mining and continued emphasis on complex networks/future networks highlight the reliance on large-scale data analysis and advanced modeling. This evolution illustrates the field’s journey from theoretical network models and basic branding towards a sophisticated, AI-driven discipline focused on maximizing real-world marketing impact within complex, evolving digital ecosystems.

The thematic map highlights the uneven development of research areas within viral marketing. Motor themes such as influence maximization, purchase intention, brand awareness, seeding strategy, and social networks appear as well-developed and central, reflecting their role as the established core of the field. Niche themes,

including epidemics, cascades, branding, and social network sites, show high internal development but remain peripheral to the central discourse, suggesting specialized but less widely integrated lines of inquiry. Emerging or declining themes such as reverse influence maximization, dynamic social networks, social commerce, and profit maximization indicate either nascent areas with growth potential or topics losing traction. Basic themes such as consumer behaviour, mobile viral marketing, technology acceptance model, and guerrilla marketing are highly relevant but less developed, pointing to important foundational areas that require further theoretical and empirical consolidation. Taken together, these quadrants illustrate both the maturity of certain clusters and the opportunities for expanding underdeveloped or emerging research directions.

From a practical perspective, these findings offer multiple actionable insights. Marketers can leverage network analysis to identify optimal influencers and communities for campaign seeding, employ predictive modeling to forecast virality potential, and design messages that balance algorithmic reach with emotional engagement. Policymakers and platform operators can use these insights to develop ethical frameworks that protect consumers from misinformation and intrusive targeting, while encouraging transparency in influencer-brand relationships. Closing the identified gaps, especially the integration of behavioural science with computational modeling, will enable the next generation of viral marketing strategies to be not only technologically advanced but also socially responsible and culturally adaptive, ensuring sustainable impact in a rapidly evolving digital ecosystem.

Our findings align with earlier bibliometric studies of viral marketing and related domains such as eWOM and digital marketing. For example, like Çakırkaya et al.[26] and Gibreel et al.[25], we observed strong dominance of technical and algorithmic themes, particularly influence maximization and network modeling. However, our analysis diverges in showing a sharper separation between computational clusters and consumer behavior–oriented clusters, highlighting a fragmentation less emphasized in previous reviews. Similarly, while prior studies reported thematic growth around social media marketing and brand engagement, our results extend this trajectory by identifying newer frontiers such as influencer marketing, algorithmic targeting, and social commerce. These comparisons suggest that, although our findings are consistent with existing bibliometric evidence, they also reveal more recent trends and gaps—especially the lack of integration between technical and behavioral perspectives—that may have been underexplored in earlier analyses.

CONCLUSIONS

This bibliometric analysis on viral marketing provides a comprehensive overview of the field's evolution, key contributors, influential sources, and thematic developments, offering valuable insights into both academic and practical domains. The findings reveal a significant upward trend in scholarly output, diverse international collaborations, and a concentration of research in marketing, consumer behavior, and social network analysis. Co-citation and thematic analyses demonstrate a strong foundation in influence maximization, electronic word-of-mouth, and social media engagement, while trend topics highlight the growing relevance of data analytics and emerging digital platforms. However, notable research gaps remain in the areas of cross-cultural perspectives, ethical implications of viral campaigns, and the integration of advanced technologies such as artificial intelligence and blockchain. To advance the field, future studies should explore cultural and regional variations in viral marketing effectiveness to enhance global applicability, address ethical and privacy concerns in designing viral strategies to ensure consumer trust, and incorporate interdisciplinary approaches leveraging cutting-edge technologies for more targeted and sustainable campaign outcomes. These recommendations can help bridge existing knowledge gaps and align academic research more closely with industry needs. Ultimately, the study underscores the dynamic nature of viral marketing and the necessity for continuous adaptation in both scholarship and practice.

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The authors declare that there is no conflict of interest.

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