# Navigating the Progress and Future Directions of TikTok Research in the Innovative Era: A Bibliometric Analysis

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## **Abstract**

TikTok is an exponentially growing mobile video platform that has millions of global subscribers. Accordingly, more scientific and empirical studies from various fields have explored the platform. This study examined TikTok using a bibliometric approach, as TikTok studies using bibliometric and network analyses are scarce. This study bridged the research gap by examining the TikTok dynamic expansion from 2019 to 2023 using comprehensive bibliometric and network analysis. The Scopus database yielded 727 articles published in 169 journals, which were analysed using VOSviewer. The analysis highlighted key contributions on the evolution of publications, journals with the most publications, the most productive countries, keyword analysis, and the top three TikTok-related research hotspots. Among the 80 countries examined, the United States, Australia, and China revealed the highest number of publications on TikTok. The journal with the highest h-index was Social Media and Society, while the Journal of Medical Internet Research denoted the highest CiteScore. A cluster analysis of 2238 author keywords determined that the top three TikTok research tiers were related to computer science, arts and humanities, and business management. The analysis also emphasised the number of studies on TikTok. The significant implications for the prospective audience refined the research contribution. This study presented novel contributions to the literature by providing concrete evidence of current TikTok use.

Keywords: Tiktok, Mobile Application, Digital Era, Bibliometric Analysis, Vosviewer

## Introduction

TikTok was launched in 2017 and is a mobile application (app) platform that allows users to share, create, upload, and repost short videos. As an innovative emerging social medium with significant growth and wide community exposure, TikTok has been downloaded more than 45 million times and leads Facebook and WhatsApp as the most popular mobile app (Adnan et al., 2021). In addition, TikTok was the most popular app in the United States in 2018 and is used in most of the country. The app serves approximately 800 million active users monthly (Fiallos et al., 2021). Users on the platform compose and share quick, simple short (15–60 seconds) videos using editing features like filters and music background. Moreover, TikTok COVID-19 videos comprise acting, infographics, documentaries, news, dialogues, pictographic displays, and dances (Y. Li et al., 2021).

TikTok shares many features with other popular social media platforms, such as content presentation in feeds, the ability to "like" and comment on content, as well as content aggregation via hashtags (Warburton, 2022). However, TikTok differs from most social media platforms due to its unique approach to content delivery. The app focuses on challenges, recurring sounds, visual motifs, and other memetic activities. While many social media platforms heavily rely on users choosing accounts to follow, which are frequently based on existing relationships with friends and family, the TikTok main feed ("For You Page" [FYP]) primarily features algorithmically recommended content (Cotter et al., 2022). This feature might contribute to a more authentic or organic feel on the platform. Thus, virality is more achievable on TikTok than on platforms that prioritize follower count (Warburton, 2022).

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TikTok has experienced extraordinary growth because of lockdowns implemented during the COVID-19 pandemic (Omar & Dequan, 2020; Kiflee et al., 2023). One compelling TikTok feature is that the content played on users' accounts is based on an algorithm designed according to the user's video history and liked

content (Zulli & Zulli, 2022). This novelty accelerates TikTok's diverse user engagement (Anderson, 2020). As a result, the app revolutionized current social media platforms by offering short, fun, entertaining, viewer-proposed challenges and the opportunity to obtain rewards (Gerea et al., 2021).

TikTok hashtag activity challenges allow community contributions, where the success or failure of the activity solely depends on community involvement. TikTok is particularly popular among young adolescents (13–29 years old), where 32.5% of users are 10–19 years old and 29.5% are 20–29 years old (Clement J., 2020). Therefore, the vast majority of TikTok users are teenagers and young adults. Furthermore, TikTok is useful not only for entertainment but also for circulating educational messages or content on medicine, culture, and sports.

Many articles provide empirical overviews and the key TikTok concept. Nevertheless, few articles analysed bibliometrically compiled TikTok studies. Bibliometric methods are generally advantageous in summarising the ideas of a journal and assessing the prominent journal publications, citations, writers, keywords, and institutions. Some articles partially addressed systematic reviews and bibliometric analyses, which included the evolution of social media Feldkamp (Feldkamp, 2021), Mapping the Scholarly Landscape of TikTok (Douyin): An Exploratory Study on the Research Topics and Trends (using the World of Science [WoS] database) (Treiblmaier, 2023), (Rejeb et al., 2023), (Missen et al., 2020). Based on preliminary studies, no publication has presented an overview of the development of TikTok research topics and trends by combining bibliometric indicators and systematic literature review focusing on the Scopus database. Thus, this literature review generated the following research questions:

How is publication distributed over time (evolution) of TikTok mobile application?

What journals have published most of TikTok mobile application?

Which country has dominated publication related with TikTok mobile application?

What is the current topic or research hotspot of TikTok mobile application?

## Methodology

This study used a bibliometric analysis to identify articles on TikTok. Bibliometric analysis differs from traditional reviews, which focus on identifying publication trends, recent advancements, and future directions in a specific topic (Carrión-Mero et al., 2021). Bibliometric analysis facilitates an in-depth understanding of the literature on omni-channel retailing. Furthermore, this methodology enables the identification of critical trends and research gaps and the prediction of future directions in the field. Montalván-Burbano et al. (Montalván-Burbano et al., 2017) emphasised that bibliometric analysis provides a scientific foundation for decision-making and aids policy formulation and determining research priorities. While Anderson (2020) and Gerea et al., (2021) used the WoS database in their studies, the Scopus database was used in this work to collect relevant articles on TikTok. The Scopus database contains over 70 million records from 5000 publishers across various fields (Zupic & Čater, 2015).

Software Selection

VOSviewer software is used to graphically determine the network relationship of a specific research topic (Van Eck & Waltman, 2010). The networks comprise key indicators, such as bibliographic coupling, Kessler (Kessler, 1963), co-citation, Small (Small, 1973), and keyword co-occurrence. Researchers provide a sound understanding by creating graphical maps of bibliographics with VOSviewer (Van Eck & Waltman, 2010), (Cobo et al., 2011). VOSviewer provides information for analysis in the form of graphical maps, such as bibliographic coupling, co-citations, co-authorship, and author keywords. Bibliographic coupling may occur

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when  $\geq 2$  articles cite similar documents. Bibliographic coupling can also occur with any indicator (authors, institutions or countries). Using VOSviewer enabled a more detailed and direct result of TikTok research.

## Screening Strategy

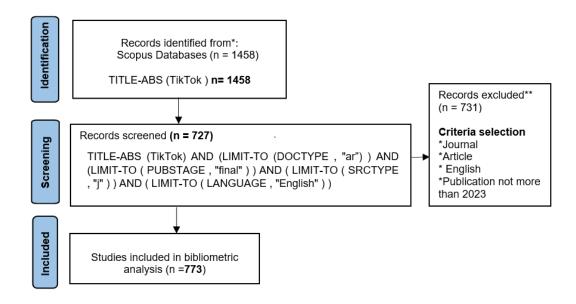
Selecting the most appropriate journal is necessary to extract useful bibliometric information. The author maintained objectivity during the information extraction process by relying on information from the Scopus database provided by Thomson and Reuters (Zupic & Cater, 2015). The database contains data from numerous fields in > 15,000 journals and 50,000,000 research papers, which were categorised into 251 subject classes and 151 subject areas.

The keyword was searched on the Scopus database from 10 September 2023 (Figure 1). The main keyword "TikTok" was used to screen and obtain a total of 1458 articles. The keyword employment clarifies the concept and research categorisation and notifies the researcher of the concepts without sufficient analysis. This study permanently removed some articles from the final dataset after continuous filtration. The study also removed proceeding articles and other unrelated documents. The final selection comprised articles, final publications, and journals in the English language. Overall, 727 articles were included in this study.

## Bibliometric Analysis

The final dataset underwent citation and co-occurrence analysis. Citation analysis refers to the degree of importance determined by the researchers for one publication. A higher number of citations indicates that the article is more significant in the research community (Ramos-Rodrígue & Ruíz-Navarro, 2004). The publication numbers and citation of bibliographic data were represented using bibliometric analysis consistent with (Garfield, 2006), (Ding et al., 2019). Bibliometric analysis measures productivity through total publications, while influence is evaluated through citation numbers (Long et al., 2014). Other indicators of similar importance are the h-index, CiteScore, and citations per article (Hirsch, 2005).

Researchers, organisations, and journals have identified several techniques to assess the calibre of the research in a collection of publications (Hallinger & Suriyankietkaew, 2018). Among the popular indicators is the h-index, which evaluates the quality and quantity of a publication (del Río-Rama et al., 2020). The hindex is extremely useful when researchers assess author, institution, and country qualities. Nevertheless, the journals in which the article was published might be of differing quality (Roldan-Valadez et al., 2019). This bibliometric analysis also used CiteScore as an alternative to the Clarivate Analytics Impact Factor of the Elsevier Scopus database. CiteScore determines the journal impact with Scopus database citations.



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Figure 1. Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) table for the keyword search strategy (Moher et al., 2009)

## Results and Discussion

## Evolution of Publications

The popularity of TikTok has significantly increased since its creation. In 2020, the app had approximately 800 million active users (Cervi, 2021). Hence, more TikTok-based academic research focused on various fields emerged. Figure 2 plots the five-year trend of publications on TikTok (2019–2023). The results demonstrated one TikTok research article in 2019, which indicated that fewer researchers published research on TikTok compared to Facebook and Instagram. The number of publications increased in 2020 and 2021, which amounted to 105 and 440 articles, respectively.

The increased number of publications on TikTok aligned with the higher app download numbers, which were likely due to the COVID-19 pandemic. People's movement was restricted during the pandemic lockdowns, thus enhancing the use of TikTok to remain connected with other people and be entertained (Wu, 2023). There were 306 TikTok-related publications in 2022, which demonstrated that TikTok continues to influence human lives post-pandemic. In 2023, there were fewer TikTok-related publications. Such publications were ongoing during this evaluation, which was performed in September 2023. Thus, the rapid advancement of TikTok enabled researchers to examine this topic from various perspectives.

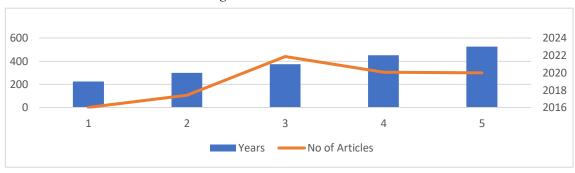


Figure 2. Tiktok Research Trends

The 10 Most Active Journals

The 727 articles were published in 169 journals. Table 1 presents the analysis outcomes of the 10 most active journals on TikTok studies. The analysis was based on publication numbers, h-index, 2022 CiteScore, and top cited articles and publishers in 2019–2023. Of the 727 articles, 132 were published by the top 10 journals. Social Media and Society was the most productive journal, where it published 4% of the total TikTok top publications. The journal contained 231 citations, which was the highest among the top 10 journals. The next most active journals were the International Journal of Environmental Research and Public Health (87 citations), Frontiers in Psychology (47 citations), and the Journal of Medical Internet Research (197 citations). The results suggested that six journals dominated the 10 most productive journals on TikTok research (see Table 1).

Social Media and Society was the highest-ranked journal according to the h-index (h-index = 7), followed by the International Journal of Environmental Research and Public Health (h-index = 6) and Frontiers in Psychology (h-index = 5). Balancing the quantity of journal publications and citations is challenging, as publishing more articles does not necessarily guarantee high journal calibre. Although the influence of a journal tends to increase as it publishes more articles, publishing too many of them can degrade the journal quality. The 2022 CiteScore revealed that all the top 10 journals had a CiteScore ≥ 3. The journals with the highest and lowest CiteScores were the Journal of Medical Internet Research (CiteScore: 12.1) and Frontiers in Public Health (CiteScore: 3.8), respectively. Some authors consider CiteScore the key indicator to

determine in which journal they should publish. Nonetheless, other important factors should be considered, such as the target audience for the work. Additionally, authors should consider how well the publication can disseminate their work to the appropriate audience and advance their area.

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Knowledg e of Identity and Engage in Algorithmi c Resistance " (54 citations). Rank								
1	Social Media and Society	30	231	7	7.7	Showing They Care (Or Don't): Affective Publics and Ambivalent Climate Activism on TikTok	66	SAGE
2	International Journal of Environmen tal Research and Public Health	19	87	6	5.4	The Use of Social Media in Children and Adolescent s: Scoping Review on the Potential Risks	18	MDPI
3	Frontiers in Psychology	18	47	5	4.5	Understand ing the Mechanism of Social Attachment Role in social media: A Qualitative Analysis	16	Frontiers Media S.A.
4	Journal of Medical Internet Research	14	197	5	12.1	Factors Driving Citizen Engagemen t with Governme	58	JMIR Publicati ons Inc.

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						nt TikTok Accounts During the COVID-19 Pandemic: Model Developme nt and Analysis	org/10.62	754/joe.v4i3.6244
5	Media and Communicat ion	10	65	5	5.0	Immigrant Influencers on TikTok: Diverse Microceleb rity Profiles and Algorithmi c (In)Visibilit y	17	Cogitatio Press
6	Frontiers in Public Health	9	31	4	3.8	TikTok and Adolescent Vision Health: Content and Informatio n Quality Assessment of the top short Videos Related to myopia	3	Frontiers Media S.A.
7	Media International Australia	9	33	3	4.6	Teachers of TikTok: Glimpses and gestures in the performanc e of professiona l identity	9	SAGE
8	Proceedings of the ACM	8	131	5	4.8	Algorithmi c Folk	54	ACM

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						(in)visibility		

Table 1. The 10 Most Productive Journals on Tiktok Research

# Country- and Continent-based Publication Distribution

The included articles were from 80 countries across five continents (Oceania, Europe, Asia, America, Africa) (see Figure 3). In VOSviewer, two countries that are located more closely have a stronger relationship as indicated through the thickness of the line connecting the two countries. The countries located in the middle of the figure were strongly linked to the other countries and territories. The USA had the highest number of TikTok publications (234/727, 32.18%).

Based on the co-authorship analysis, the USA had the highest number of affiliations (79 links to other countries or territories), followed by China (145/727, 20%) and Australia (59/727, 8.1%). Subsequently, the link demonstrated that China developed a relationship with 74 countries, followed by the United Kingdom with 47 countries. The analysis suggested that European countries published most of the TikTok

Spain

Israel

Netherlands

Norway

Australia

United States

United Kingdom

Pakustan Germany
Saudi Arabia
Greece

VOSviewer

Figure 3. Country- And Continent-Based Publication Distribution

# Keyword-based Publication Distribution

articles.

The author keywords were re-examined and re-labelled to form a new thesaurus file. Re-examination of the comprehensive keywords identified 2238 author keywords (minimum occurrences: 5). Author keyword occurrence was measured when the keywords appeared more regularly in the articles and usually followed the article abstract. Keyword occurrence was highest for "TikTok" (310 occurrences and 60 links), followed by "social media" (269 occurrences and 60 links), and "COVID-19" (51 occurrences and 83 links) (see Figure 4). In the figure, the different colours in each keyword represent the average publication year for the articles in which the keyword appears. A darker colour indicates an older publication, such as technology or evidence-based practice.

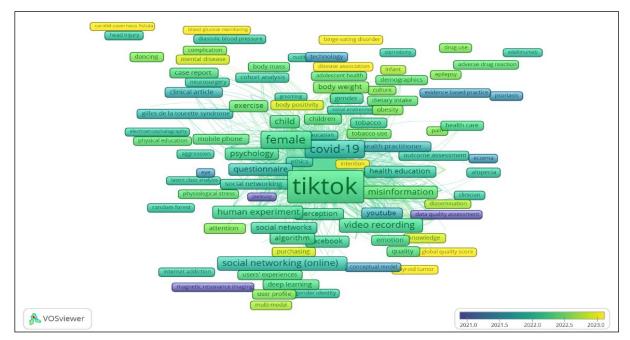


Figure 4. Keyword-Based Publication Distribution

# Research Hotspots

During the COVID-19 pandemic, TikTok became a channel distributing information and connecting governments with the public to communicate updated news (Basch et al., 2021). The Scopus output counts (see Figure 5) demonstrated that the top three TikTok research hotspots were computer science (97 articles), arts and humanities (60 articles), and business, management, and accounting (35 articles).

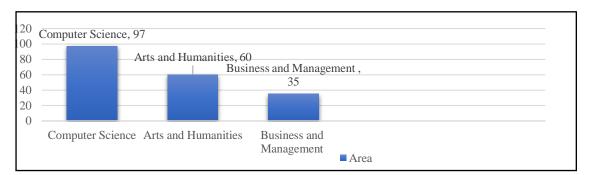


Figure 5. Top Three Tiktok Research Hotspots

## Computer Science

Computer science research on TikTok was related to the exploration of security, misleading information, and applications. The popularisation of TikTok has generated various security issues (Li et al., 2023). The study by Lu et al. (Lu et al., 2023) reported that users' viewing history significantly influenced the app recommendation features. The users' marketing strategies for products and services constantly relied on their privacy concern level. Based on Hase et al. (Hase et al., 2023), the younger generation were advised to exercise caution when using new technology. New technology entails positive and negative consequences of which users might not be aware. Regarding TikTok, image decentralised privacy overlays suggested that

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users' institutional threats were interpersonal threats, where the users were more sensitive about sharing their content (Logas et al., 2022).

Social media are frequently associated with greater potential for misinformation or misleading information, regardless of the intention (Lazer et al., 2018). One prevention strategy is to fact-check the presented information and convey modified information (Pennycook & Rand, 2019). A study by Lu et al. (Lu & Shen, 2023) stated that nine important audiovisual factors contribute to good video production: entropy, brightness, warm and cool colour saturation, face angle, tempo, loudness, and video duration. Furthermore, TikTok creators who approach or criticise unjust content restriction tend to change or introduce new terms to prevent TikTok from banning their video (such as by changing "lesbian" to "le\$bean"). The TikTok content algorithm fails to identify and understand the creators' sensitive content dispute, which is one reason TikTok is the best platform for creators to approach specific subjects without being banned. For example, sex education, sexuality, gender identity, ethnicity, or social and political issues (Steen et al., 2023).

Computer science research on TikTok also involves artificial intelligence (AI). The AI is popular among Facebook and TikTok users, which demonstrates that the system is not built in a vacuum. Instead, AI exists as a human–machine combination that cannot function without humans as the system is based on daily material input (Grandinetti, 2023).

## Arts and Humanities

Multidisciplinary research on TikTok includes the exploration of culture, art, education, and the political environment, which relates to the arts and humanities. With the rising popularity of TikTok, many Chinese artists began sharing their craftmanship via TikTok videos. TikTok also allows users to remain up-to-date with the latest trends (including local hidden gems and heritage), which indirectly promote national pride (Yi, 2023), (Shoukat et al., 2023). Furthermore, TikTok provides marketing opportunities for politicians to share and strengthen their propaganda. TikTok has been used to distribute propaganda by imitating digital support to influence users (Cervi & Divon, 2023), (Espinoza-Rojas et al., 2023).

Simultaneously, TikTok can be positively used as an educational platform. Educators used TikTok to convince young people to use a more attractive approach during and after the COVID-19 pandemic (Xiuwen & Razali, 2021), (Jiang & Jiang, 2022). Escamilla-Fajardo et al. (Escamilla-Fajardo et al., 2021) proposed using TikTok in the classroom to increase student engagement, enrich classroom instruction, and foster the development of creativity and inquisitiveness. Rand et al. (Rand & Brushett, 2023) suggested that TikTok videos are an amusing and informal means for students to remain up to date with learning materials and aid in closing the communication gap between teachers and students. Furthermore, Khan (Khan, 2022) noted that TikTok promoted conversation in comments and users' responses and reactions. Thus, the platform is a key instrument to improve educational settings. The COVID-19 verbal art (songs, poems, comedy) is growing as a means of increasing societal awareness of physical distancing, isolation, hygiene, and cleaning routines (Pennesi, 2021). Future developments that could further improve the viability of mobile-based web learning include the integration of cutting-edge technologies, the implementation of personalised mobile learning, and the improvement of internet accessibility (Hakiki, 2023).

# Business and Management

Business and management research on TikTok examined TikTok influencers, parasocial relationships, TikTok livestreams, and purchase reviews (Hasbullah et al., 2022). Impulse buying has been examined, with specific stimuli applied to exaggerate customers' purchase behaviour (Hasbullah et al., 2023). Amid social media emergence, increasing TikTok users, business adoption, and evolutionary marketing tactics have introduced a new avenue The COVID-19 pandemic resulted in heavy reliance on the Internet and online businesses. As stated by Roggeveen and Sethuraman (Roggeveen & Sethuraman, 2020), the pandemic compelled many physical stores to change their selling strategies from online to offline following physical shop closures.

TikTok influencers positively influence the environment through their presence and telepresence, which indirectly influence tourist enjoyment and generate a positive impact (Zhu et al., 2023), (Syarifuddin, 2022). Yang et al. (Yang & Ha, 2021) investigated Chinese millennials' motivations for using TikTok and the implications of the persuasive effect of influencer videos on product purchases. Based on an online survey of 382 Chinese college students from various regions, the study revealed that most TikTok users use the app for entertainment. Deng et al. (Deng et al., 2022) used the message interpretation framework to investigate how TikTok users react to short influencer-endorsed wine clips to identify gender and age disparities in audience segmentation (specifically, between Generation [Gen] Z and Gen Y). A business that intends to sell an item should focus on the easily influenced segments or counterparts with high parasocial interactions (Yang & Ha, 2021). Sellers who intend to market in non-English-speaking countries should consider other marketing methods, such as local or code-switched languages, when marketing their products (Zhu et al., 2023), (Kapucu, 2021). Marketing strategies that appropriately utilise the language potential can maximise the outcomes (Wahid et al., 2023). Nevertheless, Papageorgiou et al. (Papageorgiou et al., 2022) stated that consumers become concerned about information presented by businesses on social media. Consumers rely more on the information provided by much older social media, such as Facebook, Instagram, and LinkedIn, which they consider highly credible (Rautela, 2021).

Short video shopping has become a new trend. Thus, TikTok can also serve as a platform to promote new products (Zhang et al., 2023). Nonetheless, few people truly understand the relationship between purchase intention and TikTok live-streaming (Wang & Oh, 2023). Live streams are aimed at much larger audiences by creating effective communication through creative content to attract more viewers (Ilias et al., 2022), (Rukuni et al., 2020). As live-streaming businesses rely on viewer attention, influencers and online sellers must create live content that attracts viewer attention.

#### Limitations and Research Avenues

Although this study contributed significantly to TikTok literature, some limitations were encountered. For example, the current work excluded major conference publications, books, book chapters, and dissertations. Focusing on articles written in English might have disregarded key relevant networks and publications written in other languages. Although this study aimed to provide a holistic overview of the paradigms shaping TikTok research, future researchers should examine other relevant areas. Addressing these limitations would clarify new research prospects.

## Conclusion

This bibliometric analysis aimed to provide a comprehensive overview of TikTok research articles between 2019 and September 2023 using VOSviewer, which are steadily increasing. The USA, Australia, and China were the most productive countries in this area. *Social Media and Society* revealed the highest h-index rank, while the *Journal of Medical Internet Research* demonstrated the highest CiteScore. Furthermore, the analysis determined that the keyword "TikTok" had the highest occurrence. The top three TikTok research topics were computer science, arts and humanities, and business and management. Despite the relative novelty of TikTok research, the subject matter is highly dynamic.

This study aids technology developers in understanding how TikTok can improve and enhance its performance in various sectors. The collaboration networks identified can facilitate researchers to exchange ideas and thoughts to enhance influence. Furthermore, the emerging research hotspots can be a starting point for novice TikTok scholars. This study is the first of its kind to conduct a TikTok-related bibliometric analysis, which can facilitate potential scholars to understand TikTok and its contributions. These empirical outcomes represented the first research attempt to provide insight, extend the current body of literature, and enhance research and practice effectiveness.

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