

Rejeb, Abderahman; Rejeb, Karim; Appolloni, Andrea; Treiblmaier, Horst;
Iranmanesh, Mohammad

Article

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Digital Business

Provided in Cooperation with:

International Telecommunications Society (ITS)

Suggested Citation: Rejeb, Abderahman; Rejeb, Karim; Appolloni, Andrea; Treiblmaier, Horst; Iranmanesh, Mohammad (2024) : Mapping the scholarly landscape of TikTok (Douyin): A bibliometric exploration of research topics and trends, Digital Business, ISSN 2666-9544, Elsevier, Amsterdam, Vol. 4, Iss. 1, pp. 1-23,
<https://doi.org/10.1016/j.digbus.2024.100075>

This Version is available at:

<https://hdl.handle.net/10419/337951>

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Mapping the scholarly landscape of TikTok (Douyin): A bibliometric exploration of research topics and trends

Abderahman Rejeb^a, Karim Rejeb^b, Andrea Appolloni^c, Horst Treiblmaier^{d,*},
 Mohammad Iranmanesh^e

^a Faculty of Business Economics, Széchenyi István University, Győr, Hungary

^b Faculty of Sciences of Bizerte, University of Carthage, Tunis, Tunisia

^c Department of Management and Law, Faculty of Economics, University of Rome Tor Vergata, Via Columbia, 2, Rome 00133, Italy

^d School of International Management, Modul University Vienna, Vienna, Austria

^e La Trobe Business School, La Trobe University, Melbourne, Victoria, Australia

ARTICLE INFO

Keywords:

TikTok
 Public health
 Social attachment
 Consumer behavior
 Bibliometrics

ABSTRACT

The TikTok platform has become widely popular among younger generations and has influenced various industries and aspects of life. This systematic literature review, using bibliometric methods, aims to examine the evolution of TikTok research from its initial development to its current status. A total of 402 journal articles from 2019 to 2022 were systematically selected from the Web of Science Core Collection. Descriptive statistical analysis identified the most contributing academic institutions, nations, journals, scholars, and influential studies. Using CiteSpace, three visualization types were implemented: cluster views, timezone views, and timeline views. The study results indicate that several TikTok research clusters exist, which summarize important topics such as the platform's overall impact on society, politics, culture, as well as human-centric issues such as social attachment, functional tics, and their implications for public health. According to the co-word analysis, TikTok research revolves around body consciousness, social behavior, consumer behavior, and news media. The comprehensive mapping of TikTok research provides valuable insights into the current state of knowledge and identifies numerous relevant technical and social areas for future investigation. As the first bibliometric review of TikTok research, this study offers an important foundation for future scholarly inquiry in various areas.

1. Introduction

Social media has profoundly impacted various aspects of our lives, ranging from personal connections to the reshaping of business strategies (Bolton et al., 2013; Hanafizadeh et al., 2021; Rejeb, Abdollahi, Rejeb, & Mostafa, 2022; Rejeb, Rejeb, Abdollahi, & Treiblmaier, 2022; Sedalo et al., 2022). Conceptually, social media is defined as online platforms for building social networks, sharing information, and maintaining connections (Alalwan et al., 2017). This universal definition, however, encompasses a diverse array of platforms, each with its unique characteristics and influence. Social media has grown beyond mere personal applications to now exert a profound influence on the business world (Basch, Fera, Pellicane, & Basch, 2022; Cleofas, 2022; Nafees et al., 2021; Szeto et al., 2021). In the business landscape, it has facilitated relationship building, advertisements, in-depth market

understanding and new business models (Aljefree & Alhothali, 2022; Benson, 2022; Reed, 2023). Amidst this diverse landscape, TikTok emerges as a distinctive phenomenon.

Zooming in from this broad social media context to a single platform, TikTok has quickly become one of the most popular social media applications, distinguished by its unique format of short, engaging video content. This has made it a crucial hub for creators, companies, and brands to distribute and promote their content (Al-Marouf et al., 2021; Anderson, 2020; Barta et al., 2023). The TikTok app is a video-sharing platform where users can view and share short (15–60 s) videos customized with filters, background music, and lip-sync templates (Mazumdar, 2022; Sadler, 2022). The value-added and prominent feature of TikTok is that it uses a user's choices and history with the app to generate a personalized feed (Qi & Li, 2021). In the United States, data reveals that 32.5% of TikTok users are aged between 10 and 19,

* Corresponding author.

E-mail addresses: karim.rejeb@fsb.ucar.tn (K. Rejeb), andrea.appolloni@uniroma2.it (A. Appolloni), horst.treiblmaier@modul.ac.at (H. Treiblmaier), m.iranmanesh@latrobe.edu.au (M. Iranmanesh).

<https://doi.org/10.1016/j.digbus.2024.100075>

Received 9 July 2023; Received in revised form 14 January 2024; Accepted 19 February 2024

Available online 22 February 2024

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highlighting the platform's popularity among a demographic that is notoriously difficult to engage with (Doyle, 2023). On a global scale, young adults and preteens make up the vast majority of the user base of TikTok. Since its inception, TikTok has been envisioned as a unique video social app with unprecedented user adoption levels and distinctive technical features that improve user interaction and involvement through memetic and imitation features (Hautea et al., 2021; Matoros-Fernández et al., 2022).

Academically, TikTok has been the subject of extensive research by numerous scholars approaching the platform from various perspectives (Rejeb, Rejeb, Appolloni, & Treiblmaier, 2023a). Scholarly debates have focused on the applications of TikTok in management (S. Kim et al., 2022), business (Mhalla et al., 2020; Ren et al., 2021), marketing (Aljefree & Alhothali, 2022; Brooks et al., 2022), tourism (Deng et al., 2022; Li, 2021), and healthcare (Jang et al., 2022; Southerton, 2021), to name a few. From an educational standpoint, the platform is hailed for its capacity to invigorate student engagement and bridge communication gaps between educators and learners, with studies showcasing its potential to foster creativity and inquisitiveness (Escamilla-Fajardo et al., 2021; Khan, 2022). Marketing research underscores TikTok's potency in gauging consumer behavior, shedding light on the motivations of specific demographics like Chinese millennials and the nuances of influencer interactions (Deng et al., 2022; Dias & Duarte, 2022; Y. Yang & Ha, 2021). In the healthcare sector, TikTok is emerging as a pivotal tool for health information dissemination. However, concerns about content quality underline the need for stringent verification, especially concerning health topics popular among its primary demographic, such as acne (Eghtesadi & Florea, 2020; Zheng et al., 2021). Investigations into user experiences and interactions, including those related to the COVID-19 pandemic, further emphasize TikTok's role in health communication and the importance of viewer engagement metrics (Li et al., 2021; Song, Zhao, et al., 2021).

Systematic reviews have previously shed light on various social media platforms and emphasized the multifaceted impacts these platforms exert across different sectors and disciplines. For instance, Kamel Boulos et al. (2016) investigated the integration of Instagram and WhatsApp within healthcare services. They highlighted the platforms' potential in fostering real-time communication among health professionals, enhancing patient handovers, and expanding the reach of health-related messaging. Méndez-Díaz et al. (2022) delved into the broader influence of social media on aspects of personal relationships, underscoring its profound impact on intimacy, psychological well-being, and parenting. Meanwhile, the business sector is not untouched. Kumar et al. (2022) explored the nexus between managerial decision-making processes and social media platforms to delineate how these platforms are shaping business strategies. On a more individual level, the dynamics between social media and self-perception have garnered attention. Vandenbosch et al. (2022) pointed out that visually oriented platforms, like Instagram, potentially distort body self-perceptions more than platforms centered around text, such as Facebook. Echoing these findings, Faelens et al. (2021) synthesized studies that probed the link between Instagram usage and various mental health indicators and classified drivers found in the existing literature into themes such as Instagram membership, intensity of its use, type of engagement, and content attributes. The psychological implications of such platforms, including self-harm and suicide, were also critically evaluated by Picardo et al. (2020), who revealed a prevailing concern but a paucity of concrete links between self-harm posts and real-world self-harm behavior. Finally, Kim et al. (2021) ventured into the domain of mental health screenings via platforms like Facebook, Twitter, and Instagram, suggesting that unique user behaviors across these platforms can serve as indicative markers.

Related to TikTok, a distinct array of research has sought to unravel its intricacies and implications across various disciplines. For example, Ionescu and Licu (2023) scrutinized how TikTok's algorithms might shape users' self-perceptions and personal values, underscoring the

algorithm's role in defining the digital self. Meanwhile, Zargaran et al. (2023) focused on the intersection of TikTok and plastic surgery. Their findings spotlighted the platform's dual role: while TikTok is pivotal for disseminating plastic surgery content, it also circulates misleading or subpar information. On the mental health front, McCashin and Murphy (2022) highlighted TikTok's increasing significance among youth. However, despite its widespread use, there is a lack of comprehensive research on its effects on mental health, especially among the younger demographic.

While these previous reviews have enriched TikTok research in general, to the best of our knowledge, no research has systematically synthesized the literature on TikTok employing bibliometric techniques such as co-citation and co-word analyses. To close this knowledge gap, our article undertakes a meticulous bibliometric analysis of TikTok-focused research. This endeavor not only chronicles the evolution of TikTok research but also spotlights leading nations and journals in this domain. By employing bibliometric techniques, we unveil the foundational themes, prevalent citation practices, and seminal articles that have shaped the TikTok research landscape (Rejeb, Rejeb, & Treiblmaier, 2023). Such an analysis is indispensable as it offers scholars a consolidated roadmap, accentuating key contributions, trends, and potential avenues for future investigations in the realm of TikTok studies (Caputo et al., 2021). Our primary objective is to offer a comprehensive synthesis of the extant literature on TikTok research with a focus on summarizing existing research clusters and identifying promising areas for future research. In summary, we aim to provide a comprehensive bibliometric analysis of TikTok research, offering insights into growth patterns, key contributors, and emerging themes, thus laying the groundwork for future scholarly inquiry. Specifically, we have identified four important research questions:

To begin with, understanding the trajectory of the growth and recognition of TikTok research helps in gauging academic attention and its congruence with the pace of the platform's own global expansion. Therefore, our initial inquiry focuses on the expansion of scholarly engagement with TikTok:

What is the growth pattern of scholarly articles and citations in the knowledge domain of TikTok?

Next, understanding the trajectory of TikTok research requires recognition of its history, the key contributors, and the foundational pillars of this academic exploration. To delve into the origins and influential voices in this field, we formulate two interlinked research questions:

Which academic institutions, countries, scholars, and academic journals have provided significant and path-breaking contributions to TikTok research?

Which studies have been instrumental in steering the academic discourse within this domain?

Finally, with a platform as dynamic as TikTok, capturing the current academic pulse and identifying emerging avenues of research, it is crucial for both scholars and practitioners to stay updated and relevant. To address this evolving landscape, we pose a forward-looking question:

What are the prevailing trends and emergent themes in TikTok research?

This study consists of five sections. Following the introduction, we detail the research approach taken for this investigation in Section 2. The results of the review are presented in Section 3. Section 4 discusses the findings and proposes an agenda for future research. The final section briefly summarizes the article.

2. Methodology

2.1. Data collection

We selected the Web of Science Core Collection (WoSCC) as the database for this research study due to its comprehensive compilation of scholarly works from across the globe. The WoSCC is particularly favored for its rigorous selection criteria, ensuring that only journals

with high impact and credibility are included (Moiceanu & Paraschiv, 2022). According to several scholars, the WoSCC is among the most prestigious and authoritative databases in the world (Rejeb, Abdollahi, Rejeb, & Mostafa, 2022; Rejeb, Rejeb, Abdollahi, & Treiblmaier, 2022; Zhao et al., 2018). Its coverage of a wide array of disciplines and high-quality sources makes it especially suitable for multidisciplinary studies like ours, which intersects technology, culture, and media. It is also more suitable for sophisticated searches and co-citation analysis than Google Scholar. Unlike Scopus, the WoSCC provides more consistent citation tracking and indexing, which is vital for accurate co-citation analysis (Chew et al., 2016). In this study, Scopus was not considered due to the lack of uniformity in citation formats (Leydesdorff et al., 2010). The WoSCC includes over 15,000 impactful journals and 50 million documents organized into 151 research domains and 251 subject groups (Merigó & Yang, 2017). Core Collection includes over 20,000 academic journals in addition to conference proceedings and books covering 254 subject areas and about 75 million entries (Singh et al., 2021). Therefore, we chose the WoSCC as our search database to guarantee the integrity of our study sample.

Keyword identification and selection serve as foundational steps to ensure a comprehensive and accurate representation of data. Venturing into this crucial phase, we meticulously navigated the intricate web of terminologies, aiming to capture the essence of TikTok's diverse and evolving research landscape. To achieve this, we employed the keywords "TikTok" and "Douyin" (the Chinese version of TikTok (Deng et al., 2022)) within the "topic" field. This dual keyword approach was considered essential to ensure a comprehensive and inclusive analysis, given that Douyin, while being the original version of TikTok, caters to a different user base and cultural context within China. This field encompasses the title, abstract, and keyword sections collectively. The initial search yielded 415 documents. To maintain consistency and ensure a broad representation of certified knowledge (Ramos-Rodríguez & Ruiz-Navarro, 2004), we confined our scope to English-language journal articles. While this decision was made to streamline the research process and focus on widely accessible literature, we acknowledge that it inherently limits the scope of our analysis. It is imperative to acknowledge that this criterion might introduce certain biases and limit the diversity of sources and perspectives, particularly from non-English-speaking regions (Rejeb et al., 2020). This limitation means that significant insights or trends in TikTok research, which are published in other languages, may not be represented in our study. We understand that this could affect the comprehensiveness of our analysis, potentially overlooking valuable contributions from non-English publications. Moreover, we introduced a rigorous screening process for article inclusion, which was executed in the following manner:

1. **Initial relevance check:** Articles were first assessed based on specific screening criteria, including their title, abstract, and keywords to ascertain their pertinence to the study's focus. This step was crucial in determining whether the content of the article was directly related to TikTok research.
2. **Full-text review:** If there was ambiguity or uncertainty after the initial check, the complete text of the article was reviewed. This comprehensive review was essential for assessing the depth of the article's relevance and its contribution to our research questions.
3. **Duplication and text availability:** Articles were then cross-checked to eliminate any duplicates. Additionally, articles without full texts were excluded, as the full content was necessary for a thorough analysis and understanding of their contributions.
4. **Relevance confirmation:** Post the aforementioned checks, articles that did not align closely with the study's objective were deemed irrelevant and subsequently omitted. This final step ensured that only the most relevant and useful articles were included in our analysis, thereby maintaining the quality and focus of our research.

After our thorough screening and evaluation, we identified a total of

402 articles that were closely aligned with the objectives of our study. For additional clarity, we have cataloged these articles in a supplementary file for readers' reference. The choice of 2019 as the baseline year is significant, as it marks a pivotal point in the evolution of TikTok-related research. This year coincides with TikTok's burgeoning popularity and its growing impact on various facets of society and culture, making it a relevant starting point for our analysis. As the earliest relevant publications on our subject in the WoSCC date back to 2019, this year is used as the baseline year in the current study.

2.2. Analysis and visualization of data

This article employs bibliometric techniques to investigate the current state of TikTok research. Bibliometric analysis, with its quantitative approach, complements the depth of qualitative and meta-analysis systematic literature reviews by providing a broad and data-driven perspective. It is positioned as a supplement to these methods, enabling a more objective evaluation of large sets of data. Quantitative methods in bibliometrics, such as co-citation and co-word analyses, add a layer of objectivity by systematically measuring connections and trends within the literature, rather than relying on subjective interpretation (Rejeb, Rejeb, Kayikci, et al., 2023). This approach is helpful in exploring the existing state and future trajectory of a certain knowledge field (Ciasullo et al., 2022; Palumbo et al., 2021; Palumbo & Manesh, 2021). Bibliometrics has seen widespread adoption across a range of scientific fields, including social media. For example, Leung et al. (2017) combine co-citation analysis and co-word analysis to offer a structured and comprehensive review of social media. This approach is particularly relevant to our study as it allows for a similar structured exploration of TikTok research, highlighting key themes and their development over time.

Yu and Muñoz-Justicia (2020) apply bibliometrics to expand the understanding of Twitter-related publications by determining the state of the art, updating the knowledge structure, and identifying and tracing the development of the most critical research themes. Similarly, our study aims to map out the intellectual landscape of TikTok research and identify pivotal publications and themes. Rejeb, Abdollahi, Rejeb, & Mostafa, 2022, Rejeb, Rejeb, Abdollahi, and Treiblmaier (2022) conduct a holistic bibliometric and network analysis of 2242 publications from the Web of Science and find a rising tide of scholarly research on Instagram, with the most common areas of focus being the psychological motivation for using Instagram, social media platforms, marketing, the COVID-19 pandemic, and healthcare. This comprehensive approach provides a model for our analysis of TikTok, particularly in understanding the multidisciplinary impact of the platform. Lopes et al. (2017) carry out a bibliometric analysis of the use of Facebook in educational research. Finally, Mostafa et al. (2022) apply bibliometric techniques for analyzing 1781 YouTube-related publications gathered from the Scopus database and find that research is mainly concerned with user-generated content, medical and health issues, and information quality. This illustrates how bibliometric analysis can uncover key research areas in social media, similar to what we aim to achieve with TikTok.

While the previous bibliometric studies contribute to an increased understanding of social media platforms, no study has yet focused on providing a comprehensive bibliometric analysis of TikTok research. This omission highlights a significant gap in the literature, which our study seeks to fill. As a result, the current work aims to address this knowledge gap in the academic literature. Our study uniquely contributes by systematically mapping and analyzing the evolving landscape of TikTok research, which is a rapidly growing yet under-explored area in social media studies. This study performs a bibliometric analysis taking into consideration descriptive results and co-citation and co-word analyses. The objective of the descriptive analysis is to provide a foundational overview of TikTok research by identifying key journals, authors, academic institutions, and influential publications. This analysis

benefits the study by offering a snapshot of the most active and impactful contributors in the field, thus setting the stage for deeper exploration. The current study not only charts the current state of TikTok research but also offers insights into emerging trends and future directions, providing a valuable resource for scholars and practitioners alike. These quantitative methods enhance the objectivity of our evaluation by providing measurable and data-driven insights into the structure and dynamics of TikTok research.

Co-citation analysis is used to map the intellectual structure of TikTok research. It identifies clusters of frequently cited works, revealing the foundational theories and methodologies within the field. This analysis is beneficial as it highlights the interconnections between different research works, offering insights into the thematic evolution and intellectual lineage of TikTok studies. According to Donthu et al. (2021), co-citation analysis represents a method of science mapping that assumes that publications frequently cited together have a common theme. By definition, a co-citation occurs whenever two articles are referenced jointly by a third one (Ante, 2021; Y. Liu & Avello, 2021). This means that there is a co-citation relationship between articles A and B if article C cites both articles A and B. Similarly, co-word analysis is employed to uncover emerging themes and trends in TikTok research. By analyzing the frequency and patterns of keyword usage across publications, this method provides an understanding of the current focus areas and potential future directions in the field (Abdollahi et al., 2021). The collaborative connection between scholars and academic institutions was also investigated via the use of co-authorship analysis. The relationship between two authors is formalized at the publication of their first paper together. Institutional affiliations of authors in a co-authored publication can provide insight into whether or not there was a collaboration across institutions or nations (Zupic & Cater, 2015).

For this study, we employed CiteSpace to visualize the results, given its distinct advantages over other visualization tools such as VOSviewer, SciMAT, and CitNetExplorer. One of the key reasons for choosing CiteSpace is its exceptional strength in dynamic visualization, which allows us to observe changes and developments in TikTok research over time. CiteSpace stands out for its advanced capabilities in cluster analysis (C. Chen, 2006), which is critical for our research. This feature of CiteSpace is particularly beneficial in identifying and analyzing complex patterns and trends in bibliometric data, which are essential for understanding the rapidly evolving field of TikTok research. Additionally, its user-friendly interface, flexibility in generating various visual representations, and ability to handle large datasets (Rejeb, Rejeb, Appolloni, & Treiblmaier, 2023b; H. Yang et al., 2019) make it an ideal choice for the intricate bibliometric analysis we aimed to conduct. CiteSpace also offers unique features such as the identification of pivotal points and key nodes within the research network, which are crucial for pinpointing influential studies and authors in TikTok research.

Emerging trends and popular subjects can be identified via the use of reference and keyword cluster analysis (C. Chen, 2006; Rejeb, Abdollahi, Rejeb, & Mostafa, 2022, Rejeb, Rejeb, Abdollahi, & Treiblmaier, 2022, Rejeb, Rejeb, Zailani, et al., 2022). In this study, we used three distinct visualization methods to elucidate the data. The cluster views method is instrumental in grouping research articles based on content similarities, offering insights into the major themes and research directions in the TikTok field (C. Chen, 2006). By visualizing these clusters, scholars can gain an intuitive grasp of primary research areas and discern overarching patterns within the vast literature landscape of TikTok. The time zone views shed light on the chronological progression of research endeavors (C. Chen & Chen, 2005). It is especially valuable in pinpointing periods marked by increased research activity or notable shifts in the thematic focus. Such a temporal perspective becomes essential in tracing the evolution of research interests over time (A. Liu et al., 2023). Finally, the timeline view paints a picture of the interrelationships between different clusters, as well as the progression of the TikTok literature within a specific cluster. Notably, the timeline view sheds light on the relationships among keywords over time.

3. Results

3.1. Descriptive statistics

3.1.1. Analysis of the annual number of publications and citations

The growth trend of published research on TikTok underscores the platform's increasing academic attention and the dynamic evolution of associated scientific knowledge. As depicted in Fig. 1, there is a marked rise in both publications and citations in this domain, with the number of articles on TikTok surging from 2 in 2019 to 252 in 2022. Among the pioneering works in the Web of Science on TikTok, De Veirman et al. (2019) and Scribano and Jingting (2019) cumulatively garnered 65 citations. The former delved into the influence mechanics of social media influencers on young audiences. Additionally, citations have witnessed a rapid ascent, peaking at 1104 in 2021 and signifying TikTok research's increasing academic recognition through frequent references by scholars. This uptrend in citations illustrates the research's caliber and its growing foundational role in subsequent academic endeavors. Chu et al. (2022) emphasized the field's rapid expansion and its consequential insights on the platform's societal influence.

3.1.2. Analysis of scholarly output based on academic institutions and countries

Figs. 2 and 3 display the countries and academic institutions that have contributed significantly to TikTok research. Most of these institutions are located in the United States and China. The City University of New York, Columbia University, and William Paterson University are the most prolific academic institutions with eight publications each, followed by Beijing Jiaotong University, Queensland University of Technology, University of California, University of Illinois System, University of Zurich, and University System of Ohio with seven publications each (see Table 1). Notably, University of Zurich received the most citations with a total of 153, followed by University of Illinois System with 133 citations and Queensland University of Technology with 114 citations. The high citation count for University of Zurich can largely be attributed to an influential article published in *Mobile Media & Communication*, which received 53 citations (Kaye et al., 2021). Similarly, the two articles by De Veirman et al. (2019) and Comp et al. (2021) from University of Illinois System focused on the topics of influencer marketing and medicine received 65 and 35 citations, respectively. These results suggest that cultural and policy environments, influence on young people's brand preferences, and exploring the potential for TikTok in the field of medicine are major areas of concern in TikTok research, and institutions that have conducted research in these fields have gained recognition and influence in the academic community.

In terms of national productivity, the United States has been the most active country, with twelve academic institutions conducting studies dealing with TikTok, followed by China and Australia with five and two academic institutions, respectively. Geographically, North America account for 57% of the 21 institutions, while Asia and Europe represent 24% and 4%, respectively.

The collaborative relationships between academic institutions according to co-authorship analysis are also presented. The City University of New York has the most extensive research collaboration, working with William Paterson University and Columbia University on TikTok research. The other collaborative effort includes Queensland University of Technology and University of Zurich, which conduct research on TikTok's platform governance and political agenda (Chen, Kaye, & Zeng, 2021; Kaye et al., 2021; Zeng & Kaye, 2022). The remaining academic institutions on the list conducted independent research.

3.1.3. Analysis of most relevant journals

Transitioning to the investigation of publication outlets, Table 2 displays statistics on the number of articles published in the most productive journals (i.e., those publishing more than three articles) in the

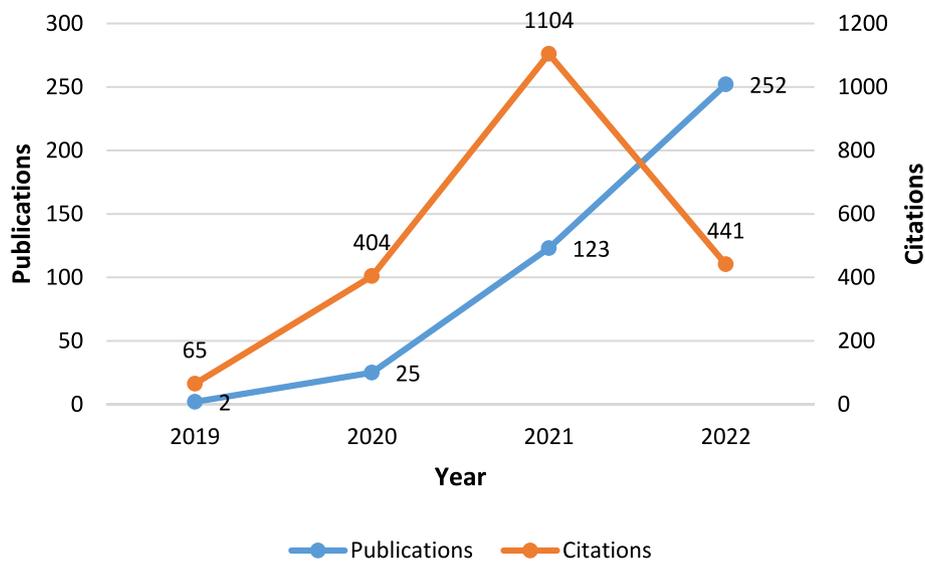


Fig. 1. Annual distribution of publications and citations.

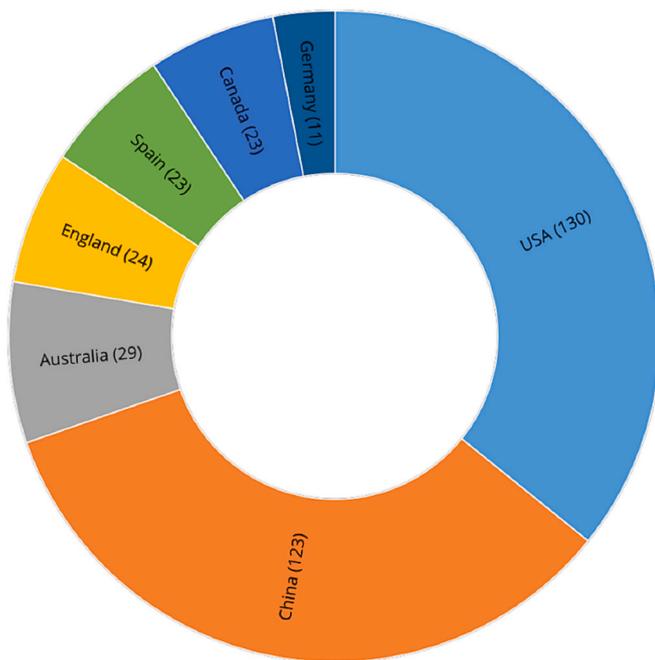


Fig. 2. Most productive countries in TikTok research.

TikTok field. International Journal of Environmental Research and Public Health, Frontiers in Psychology, and International Journal of Communication are the top three journals, publishing 17, 15, and 11 articles, respectively. However, Journal of Medical Internet Research and Frontiers in Psychology are the most influential journals, with 113 and 87 citations received, respectively. The journal impact factor (JIF), a widely-used metric to assess the influence of academic journals, is also introduced in Table 2. Interestingly, numerous authoritative health-related journals were noted, including JMIR Public Health and Surveillance, Journal of Medical Internet of Research, Frontiers in Public Health, and International Journal of Environmental Research and Public Health. Additionally, a few authoritative journals pertaining to social sciences and information technology, such as Computers in Human Behavior, Social Media + Society, and IEEE Access, were noted. In summary, TikTok research appears to be fragmented, with publications scattered across various academic journals related to health, social

sciences, and information technology.

3.1.4. Analysis of most prolific authors

Table 3 presents a list of the twelve authors who have published more than three articles in the TikTok field since 2019. Among these scholars, Corey H. Basch from William Paterson University and Joseph Fera from The City University of New York have the most publications with eight papers, followed by Jing Zeng and Charles E. Basch, who have seven and five articles, respectively. Additionally, four authors, including Shijie Song, Yuxiang (Chris) Zhao, Qinghua Zhu, and D. Bondy Valdovinos Kaye, have published four articles each. These authors have pursued different research directions, with some focusing on the analysis of TikTok videos related to various public health issues, including COVID-19 vaccination misinformation, mask use promotion, climate change, and community mitigation of COVID-19 (e.g., Basch, Joseph Fera, Charles E. Basch, Shijie Song, Yuxiang (Chris) Zhao, Qinghua Zhu, and Alessia Pellicane). Other scholars such as Jing Zeng, Crystal Abidin, and D. Bondy Valdovinos Kaye have focused on the memefication of intergenerational politics, platform governance, and the construction of science and affective publics on TikTok. Additionally, Athapol Ruangkanjanases focused on the role of social media and social networking sites such as TikTok in areas associated with social attachment, consumer behavior, and commerce. Unsurprisingly, the co-authorship analysis indicates that there is significant research collaboration among these productive authors. After reviewing individual contributors, it is imperative to look at the most influential publications in this domain.

3.1.5. Analysis of influential publications

One way to measure the influence of an article is by analyzing the number of citations it receives. Based on this metric, Table 4 presents the 20 most influential studies. The most cited article (66 citations) by Wang (2020) investigates psychological responses and persuasive outcomes related to TikTok videos and reveals that humor and camera view had significant effects on viewer perceptions of social presence, immersion, and entertainment. Another highly cited article (65 citations) by De Veirman et al. (2019) offers insights into the emergence of social media influencers as a novel form of advertising. Kennedy (2020) received 57 citations for their influential study on the media attention paid to TikTok during the COVID-19 pandemic and the risks encountered by girls who do not embody the ideals embodied in TikTok stars. Remarkably, eight out of the twenty most cited publications focused on TikTok use in the health context, including the COVID-19 pandemic. Four studies touched



Fig. 3. The most productive institutions (5 papers or above) and their location.

on TikTok's cultural impact and the ways in which the platform has been shaped and used. Specifically, [Kennedy \(2020\)](#) and [Zulli and Zulli \(2022\)](#) both explore the role of TikTok in shaping and reflecting cultural trends and values, while [Kaye et al. \(2021\)](#) and [Chen, Kaye, and Zeng \(2021\)](#) examine the ways in which the platform has been used and adopted in different cultural contexts (China and the US). In addition to these studies, three studies focus on the behaviors, motivations, or experiences of consumers on the TikTok platform. The studies examine different aspects, including influencer marketing, uses and gratifications sought by TikTok consumers, and tourist-generated content production and sharing ([Bucknell Bossen & Kottasz, 2020](#); [Du et al., 2022](#); [Haenlein et al., 2020](#)). The number of empirical and conceptual articles was evenly distributed, suggesting no apparent preference for either form of research in the TikTok field. In addition, a majority of documents (95%) were in article form. According to the Web of Science database, the top three research fields in the TikTok literature were "communication", "psychology", and "neuroscience and neurology", reflecting a multi-disciplinary approach to understanding the platform.

3.2. Co-citation and co-word analyses

In this section, we conducted co-citation and co-word analyses to determine the currently hot research topics and emerging trends. Co-citation analysis varies depending on the subject being researched, such as authors, journals, or articles, while co-word analysis is derived

from the author-supplied keywords. We performed these two analyses using cluster, timezone, and timeline views offered by CiteSpace, which helped us identify the key points and dynamic trends in the research. Generally, the size of clusters is determined by the number of co-cited references or keywords, and node size represents how frequently an article or keyword is being co-cited. Additionally, the links connecting two nodes indicate the relationship between the two co-cited articles or keywords. The thickness of the link indicates how often they are referenced together.

3.2.1. Co-citation analysis

The CiteSpace tool enables cluster analysis to be conducted on the co-citation network. Based on their degree of similarity, clustering algorithms group cited references into several clusters ([Frades & Mathiesen, 2010](#)). In essence, articles within a cluster are more alike in content. A range of statistics and views make it simpler to identify the connections between clusters. [Fig. 4](#) shows the five main clusters achieved through co-cited articles: Cluster #0 ("tiktok publishing strategies"), Cluster #1 ("social media generation"), Cluster #2 ("trending tiktok content"), Cluster #3 ("social attachment"), and Cluster #4 ("functional ties"). These cluster labels are obtained from the titles of articles assigned to the cluster using the Log-likelihood ratio (LLR) method. It should be emphasized that the clusters are linked together because of various key nodes. The articles associated with these nodes signify the strong interconnection among clusters. For instance,

Table 1
The most productive institutions (5 papers or above).

No.	Institution	Country	Number of articles	Total citations	Main Cooperative Institutions
1	The City University of New York	USA	8	49	William Paterson University (8); Columbia University (5)
2	Columbia University	USA	8	90	The City University of New York (5); William Paterson University (5)
3	William Paterson University	USA	8	49	The City University of New York (8); Columbia University (5)
4	Beijing Jiaotong University	China	7	35	\
5	Queensland University of Technology	Australia	7	114	University of Zurich (3)
6	University of California	USA	7	22	\
7	University of Illinois System	USA	7	133	\
8	University of Zurich	Switzerland	7	153	Queensland University of Technology (3)
9	University System of Ohio	USA	7	46	\
10	Chinese Academy of Sciences	China	6	54	\
11	Communication University of China	China	6	35	\
12	Harvard University	USA	6	12	\
13	Nanjing University	China	6	71	\
14	Zhejiang University	China	6	32	\
15	Johns Hopkins University	USA	5	69	\
16	Pennsylvania Commonwealth System of Higher Education (PCSHE)	USA	5	24	\
17	Stanford University	USA	5	34	\
18	University of New South Wales (UNSW Sydney)	Australia	5	46	\
19	University of Pennsylvania	USA	5	38	\
20	University of Texas System	USA	5	55	\
21	University of Toronto	Canada	5	13	\

Schellewald (2021) connected Cluster #1 and Cluster #0 and explored the communicative forms of TikTok, suggesting studying short-video communications from the bottom up. In a similar vein, Zheng et al. (2021) combined Cluster #2 and Cluster #4 and evaluated the quality of acne-related information available on TikTok.

Table 5 presents the fundamental details of the clusters, comprising the cluster ID, labels, size, silhouette, mean (year), and main keywords (log-likelihood, ratio, p-level). The cluster with the most publications is Cluster #0, “tiktok publishing strategies” (14 articles), followed by Cluster #1, “social media generation” (13 articles), Cluster #2,

“trending tiktok content” (12 articles), Cluster #3, “social attachment” (10 articles), and Cluster #4, “functional tics” (6 articles). Silhouette, provided by CiteSpace, is also displayed in Table 6, and it typically ranges from 0 to 1. A higher silhouette value indicates more similarity and coherence among the articles within the cluster. All five clusters have a silhouette value greater than 0.78, suggesting good cluster homogeneity and the high quality of the cluster analysis (Silvano Pacheco Correa et al., 2023). With respect to the mean year, the articles in the clusters were published mainly in 2020–2021.

3.2.1.1. TikTok publishing strategies. The research in Cluster #0 focuses on various purposes of TikTok use, such as disseminating COVID-19 information and promoting mask use and political expression, as well as assessing the quality of information, affordances, and user experience of TikTok for health information (Basch, Hillyer, & Jacques, 2022; Basch, Hillyer, & Jaime, 2022; Hautea et al., 2021; Kong et al., 2021). The findings suggest a need for further inquiry into the efficacy of these strategies in promoting positive behavioral change and understanding potential misconceptions that may arise. For example, Kaye et al. (2021) provide a comprehensive comparative analysis of Douyin and TikTok. They highlight the unique parallel platformization of these two apps, elucidating their shared origins yet divergent evolutions due to distinct market demands and regulatory forces. This research offers a fresh lens to understand global platform expansion, particularly highlighting strategies that deviate from conventional regionalization approaches seen with major social media platforms.

Li et al. (2021) delve into how TikTok, amid the COVID-19 pandemic, served as a pivotal information hub. They performed a content analysis on videos from official accounts featured in TikTok’s COVID-19 hub. This in-depth examination revealed crucial insights regarding audience engagement metrics and video attributes, emphasizing the significance of audience-centric risk communication. Another intriguing study by Basch, Meleo-Erwin, Fera, et al., 2021, Basch, Mohlman, Fera, et al. (2021) examines the use of TikTok in promoting mask use during the pandemic. The comparative analysis between trending videos and those from authoritative sources like the WHO suggests the untapped potential of infusing key informational content with entertainment to maximize reach. Finally, Vazquez-Herrero et al. (2022) shed light on TikTok’s permeating influence on the news media. Their study underscores the adaptive strategies employed by news outlets to cater to the platform’s younger audience, marked by short, visual content and algorithmically-driven dynamics. In summary, TikTok has manifested itself as not just a social media platform but also as an influential conduit for information dissemination, cultural representation, and even news media adaptation. The analyses of the studies in the first cluster shed light on the intricate dynamics of content creation, audience engagement, and the platform’s inherent adaptability to contemporary challenges, such as the COVID-19 pandemic.

3.2.1.2. Social media generation. The articles in Cluster #1 focus on TikTok’s impact on society, politics, and culture. More specifically, researchers explored various aspects of TikTok, including its role in generating and disseminating information about politics (Cervi & Marín-Lladó, 2021; Vijay & Gekker, 2021; Zeng & Kaye, 2022), social issues (Schellewald, 2021; Zulli & Zulli, 2022), and its potential for engaging young people and promoting collective self-expression (Kennedy, 2020). The cluster also includes studies that investigate the evolution of TikTok’s online community and its impact on traditional media and education (Escamilla-Fajardo et al., 2021; Literat, 2021). In the light of the unique memetic behavior exhibited on TikTok, Zulli and Zulli (2022) astutely identify TikTok not merely as a platform but as a memetic text that inherently promotes imitation. This groundbreaking perspective urges a reconsideration of how intrinsic platform designs can orchestrate user behaviors on a large scale. Furthermore, Kennedy (2020) encapsulates TikTok’s meteoric rise and its inadvertent celebration of

Table 2
The most productive journals (3 or above).

No.	Source title	TP	TC	TC/TP	JIF	Country	Subjects	Period
1	International Journal of Environmental Research and Public Health	17	34	2.00	4.614	Switzerland	Environmental Sciences and Ecology; Public, Environmental and Occupational Health	2021–2022
2	Frontiers in Psychology	15	87	5.80	4.232	Switzerland	Psychology	2019–2022
3	International Journal of Communication	11	66	6.00	1.637	United States	Communication	2021–2022
4	Social Media + Society	10	64	6.40	4.636	United Kingdom	Communication	2020–2022
5	Sustainability	8	16	2.00	3.889	Switzerland	Science and Technology; Environmental Sciences and Ecology	2020–2022
6	Frontiers in Public Health	8	37	4.63	6.461	Switzerland	Public, Environmental and Occupational Health	2021–2022
7	Journal of Medical Internet Research	8	113	14.13	7.076	Canada	Health Care Sciences and Services; Medical Informatics	2021–2022
8	Media and Communication	7	15	2.14	3.043	Portugal	Communication	2022–2022
9	The Cureus Journal of Medical Science	4	3	0.75	NA	United States	General and Internal Medicine	2022–2022
10	Discourse Context & Media	4	6	1.50	1.858	Netherlands	Communication	2022–2022
11	Applied Sciences (Switzerland)	3	1	0.33	2.838	Switzerland	Chemistry; Engineering; Materials Science; Physics	2022–2022
12	Global Media and China	3	0	0.00	NA	United Kingdom	Communication	2022–2022
13	BMC Public Health	3	2	0.67	4.135	United Kingdom	Public, Environmental and Occupational Health	2021–2022
14	Frontiers in Pediatrics	3	1	0.33	3.569	Switzerland	Pediatrics	2022–2022
15	Scientific Programming	3	0	0.00	1.672	Egypt	Computer Science	2022–2022
16	Internet Policy Review	3	17	5.67	NA	Germany	Communication; Government and Law	2020–2022
17	IEEE Access	3	4	1.33	3.476	United States	Computer Science; Engineering; Telecommunications	2020–2022
18	Computers in Human Behavior	3	84	28.00	8.957	United Kingdom	Psychology	2020–2022
19	JMIR Public Health and Surveillance	3	28	9.33	14.557	Canada	Public, Environmental and Occupational Health	2021–2021

TP: the number of publications; TC: the number of citations; TC/TP: the number of citations per publication; JIF: journal impact factor.

Table 3
Most prolific authors (with 3 articles or more).

No.	Author	Affiliations	Total articles
1	Corey H. Basch	William Paterson University	8
2	Joseph Fera	The City University of New York	8
3	Jing Zeng	University of Zurich	7
4	Charles E. Basch	Columbia University	5
5	Shijie Song	Nanjing University; Hohai University	4
6	Yuxiang (Chris) Zhao	Nanjing University of Science and Technology	4
7	Qinghua Zhu	Nanjing University	4
10	D. Bondy Valdovinos Kaye	Queensland University of Technology	4
8	Laura Cervi	The Autonomous University of Barcelona	3
9	Athapol Ruangkanjanases	Chulalongkorn University	3
11	Alessia Pellicane	William Paterson University	3
12	Crystal Abidin	Curtin University	3

girlhood. By spotlighting Charli D’Amelio’s journey, the author narrates the transition of intimate spaces, like once-private bedrooms, into global stages, resounding with narratives of young female stardom.

Another intriguing perspective comes from [Chen, Kaye, & Zeng, 2021](#), [Chen, Min, et al. \(2021\)](#), who underline TikTok’s emergent role as an official communication conduit. Their study on the National Health Commission of China’s strategy during the COVID-19 pandemic serves as a testament to TikTok’s potential as a formidable tool for public outreach, contingent upon aptly tapping into its unique user resonance. Finally, [Schellewald \(2021\)](#) provides an indispensable spotlight on the ascent of short-video platforms. The author challenges conventional online communication paradigms and suggests a pressing need to tailor research methodologies for platforms like TikTok. In conclusion, Cluster #1 paints a vivid tapestry of TikTok’s evolving role in the digital era, ranging from societal impacts to shifts in communication paradigms. As the platform evolves, these insights underscore the need for continued and nuanced explorations into its multifarious impacts.

3.2.2. Trending TikTok content

The articles in Cluster #2 explore the ways in which TikTok has become a popular platform for sharing and consuming trendy content, particularly among younger generations, which has influenced different industries and areas of life. For example, one common theme among the articles is the use of TikTok as a means of sharing and disseminating information in the context of medicine and health. Some articles in the cluster discuss the use of TikTok for sharing information about chronic obstructive pulmonary diseases and adolescent vision health ([Marengo et al., 2022](#); [Song, Xue, et al., 2021](#); [Song, Zhao, et al., 2021](#)). This trend underscores a shift in public health communication strategies, with social media platforms like TikTok now becoming integral to health education. Furthermore, TikTok’s utility extended beyond routine health advisories to pivotal information dissemination during unprecedented global crises. The platform was actively leveraged for contingency planning and awareness during global pandemics ([Comp et al., 2021](#); [Eghtesadi & Florea, 2020](#); [Feng, 2020](#)). Therefore, TikTok might become central to crisis communication and emergency response strategies. Other studies in the cluster look at the influence of TikTok on different industries, such as tourism, art, and food, and explore how the platform has contributed to the development and promotion of various destinations and products ([Li et al., 2020](#); [Wengel et al., 2022](#)). This indicates the platform’s potential in fostering cultural exchange and global interconnectedness, as well as its implications for businesses and marketers in shaping consumer trends.

3.2.2.1. Social attachment. Cluster #3 revolves around the concept of social attachment in the context of TikTok use. In this context, social attachment refers to the emotional bond between individuals and social media platforms, and the cluster explores how this attachment influences the way people engage with TikTok. Some of the articles examine the psychological factors that drive TikTok use, such as the gratifications sought by pre-adolescent and adolescent users and the motivations behind daytime, nighttime, and active use of TikTok in China ([Bucknell Bossen & Kottasz, 2020](#); [Scherr & Wang, 2021](#)). Other studies look at the impact of social attachment on users’ continuous engagement with the platform, including the mediating role of affective commitment ([M. Yang, Hu, et al., 2021](#)). The cluster also explores the

Table 4
The 20 most cited TikTok publications.

No.	Title	Type of document	Type of research	Research direction	Source	Total citations
1	(Y. Wang, 2020) Humor and camera view on mobile short-form video apps influence user experience and technology-adoption intent, an example of TikTok (DouYin)	Article	Empirical	Psychology	Computers in Human Behavior	66
2	(De Veirman et al., 2019) What Is Influencer Marketing and How Does It Target Children? A Review and Direction for Future Research	Review	Conceptual	Psychology	Frontiers in Psychology	65
3	(Kennedy, 2020) 'If the rise of the TikTok dance and e-girl aesthetic has taught us anything, it's that teenage girls rule the internet right now': TikTok celebrity, girls and the Coronavirus crisis	Article	Empirical	Cultural Studies	European Journal of Cultural Studies	57
4	(Kaye et al., 2021) The co-evolution of two Chinese mobile short video apps: Parallel platformization of Douyin and TikTok	Article	Conceptual	Communication	Mobile Media & Communication	53
5	(Zulli & Zulli, 2022) Extending the Internet meme: Conceptualizing technological mimesis and imitation publics on the TikTok platform	Article	Conceptual	Communication	New Media & Society	49
6	(Haenlein et al., 2020) Navigating the New Era of Influencer Marketing: How to be Successful on Instagram, TikTok, & Co.	Article	Conceptual	Business and Economics	California Management Review	46
7	(Chen, Kaye, & Zeng, 2021) #PositiveEnergy Douyin: constructing "playful patriotism" in a Chinese short-video application	Article	Conceptual	Communication	Chinese Journal of Communication	44
8	(Vall-Roque et al., 2021) The impact of COVID-19 lockdown on social network sites use, body image disturbances and self-esteem among adolescent and young women	Article	Empirical	Neurosciences and Neurology; Pharmacology and Pharmacy; Psychiatry	Progress in Neuro-Psychopharmacology & Biological Psychiatry	38
9	(Comp et al., 2021) Is TikTok The Next Social Media Frontier for Medicine?	Article	Conceptual	Emergency Medicine; Education and Educational Research	AEM Education and Training	35
10	(Eghtesadi & Florea, 2020) Facebook, Instagram, Reddit and TikTok: a proposal for health authorities to integrate popular social media platforms in contingency planning amid a global pandemic outbreak	Article	Conceptual	Public, Environmental and Occupational Health	Canadian Journal of Public Health	34
11	(Bucknell Bossen & Kottasz, 2020) Uses and gratifications sought by pre-adolescent and adolescent TikTok consumers	Article	Empirical	Business and Economics	Young Consumers	33
12	(Olvera et al., 2021) TikTok Tics: A Pandemic Within a Pandemic	Article	Conceptual	Neurosciences and Neurology	Movement Disorders Clinical Practice	31
13	(Manzar et al., 2021) Suicide among adolescents and youths during the COVID-19 pandemic lockdowns: A press media reports-based exploratory study	Article	Empirical	Nursing	Journal of Child and Adolescent Psychiatric Nursing	31
14	(Literat, 2021) "Teachers Act Like We're Robots": TikTok as a Window Into Youth Experiences of Online Learning During COVID-19	Article	Empirical	Education and Educational Research	AERA Open	31
15	(Zheng et al., 2021) Acne and social media: A cross-sectional study of content quality on TikTok	Article	Empirical	Dermatology; Pediatrics	Pediatric Dermatology	31
16	(Du et al., 2022) 'I want to record and share my wonderful journey': Chinese Millennials' production and sharing of short-form travel videos on TikTok or Douyin	Article	Empirical	Social Sciences	Current Issues in Tourism	31
17	(Tao et al., 2020) MGAT: Multimodal Graph Attention Network for Recommendation	Article	Empirical	Computer Science; Information Science and Library Science	Information Processing & Management	30
18	(Song, Zhao, et al., 2021) Short video apps as a health information source: an investigation of affordances, user experience and users' intention to continue the use of TikTok	Article	Empirical	Business and Economics; Computer Science; Telecommunications	Internet Research	29
19	(Chen, Min, et al., 2021) Factors Driving Citizen Engagement With Government TikTok Accounts During the COVID-19 Pandemic: Model Development and Analysis	Article	Empirical	Health Care Sciences and Services; Medical Informatics	Journal of Medical Internet Research	28
20	(Hull & Parnes, 2021) Tics and TikTok: Functional Tics Spread Through Social Media	Article	Empirical	Neurosciences and Neurology	Movement Disorders Clinical Practice	27

role of humor and camera view on mobile short-form video apps, and how these factors influence user experience and technology adoption intention, using TikTok as an example (Y. Wang, 2020). Additionally, some of the articles in this cluster discuss the effects of privacy concerns and the experience value of TikTok on users in developing countries (M. Yang, Zhang, et al., 2021). In short, Cluster #3 examines the ways in which social attachment influences TikTok use and provides insights into the psychological and social factors that drive engagement with the platform.

3.2.2.2. Functional tics. Cluster #4 deals with the phenomenon of functional tics, which represent involuntary and purposeless movements that are not caused by a neurological disorder, but rather by psychological or emotional factors (Hull & Parnes, 2021). The articles in this cluster aim to explore different aspects of functional tics, including their spread through social media, their portrayal in top videos on TikTok, and their relation to topics such as eating disorders and acne (Herrick et al., 2021; Hull & Parnes, 2021; Olvera et al., 2021; Zheng et al., 2021). The cluster also includes studies that propose a research agenda for

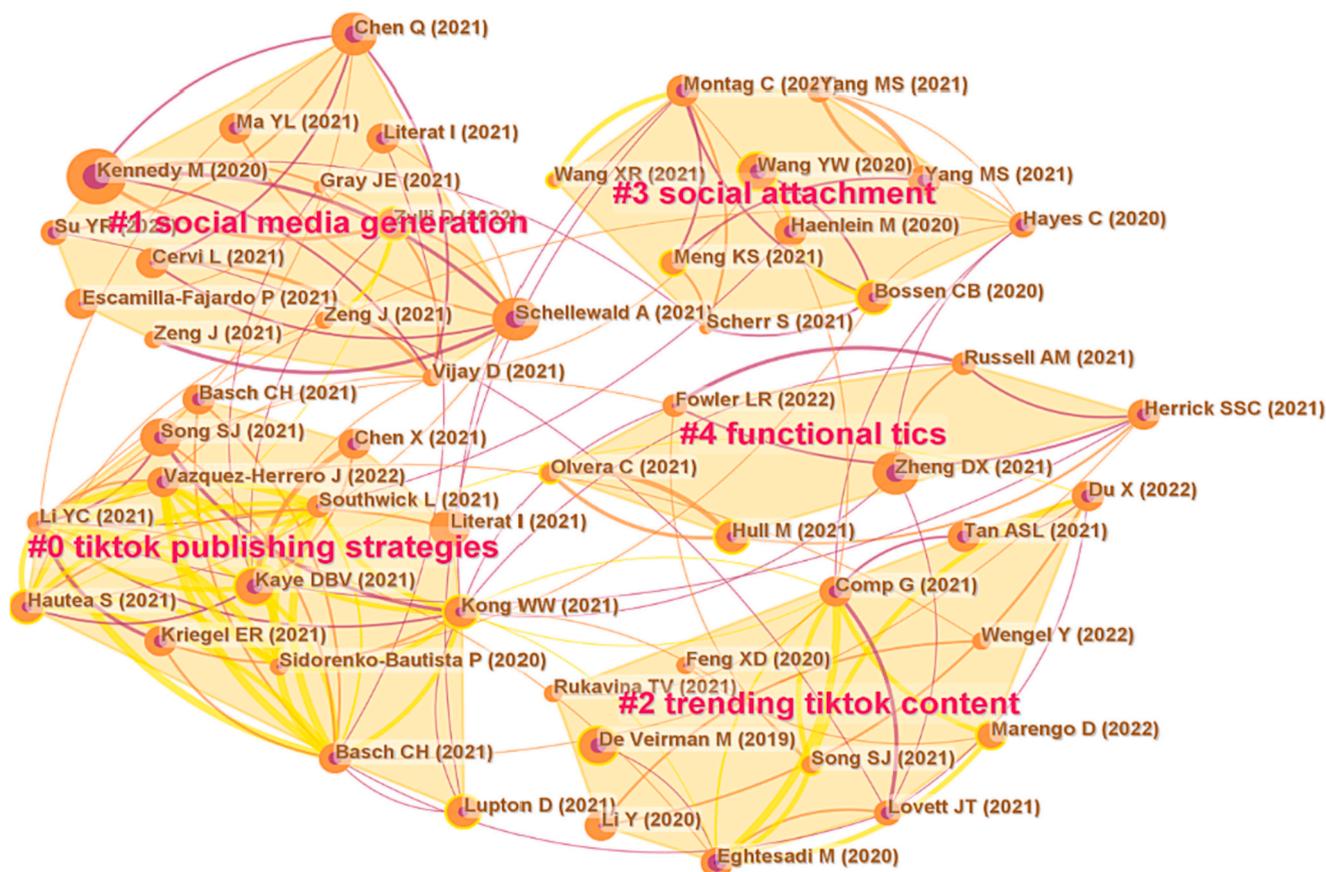


Fig. 4. Clusters of co-cited articles.

functional tics and functional movement disorder, as well as their implications for public health (Hull & Parnes, 2021). One article in the cluster focuses on sex-related online training, specifically on the content of sex education on TikTok, which highlights the potential of social media platforms like TikTok to provide accessible and engaging educational resources (Fowler et al., 2022). In general, the articles in the last cluster provide a comprehensive exploration of functional tics, their manifestation in TikTok, and their implications for various aspects of health and well-being. Table 6 provides a list of the main studies according to co-citations included in each cluster.

3.2.3. Co-word analysis

Researchers need to comprehend and detect the trends of a research field, which can be achieved using the timezone view and timeline view for co-word analysis through CiteSpace. Both of these views take into account the temporal dimension, providing an effective method of identifying popular topics and tracking the evolution of research. Prior to running CiteSpace, synonyms were merged by creating a "CiteSpace.coword" file in the original data folder, which is essential since some different keywords have the same meaning. For instance, "covid-19," "sars-cov-2," and "covid-19 pandemic" were combined into "covid-19," while "information communication technology," "information and communication technologies," and "communication technology" were merged into "ICT" to simplify the analysis.

The graphical representation in Fig. 5, known as the time zone view, displays the keywords that appear at least two times in the selected articles, providing insight into the evolution of the keywords and their relationships. Each node in the graph depicts a keyword positioned according to the year it first emerged, while the node's size is proportional to its frequency of co-occurrence from the year of its origin to the present. For example, the term "tiktok" has the largest node size, having co-occurred with other keywords 900 times from 2019 to 2022, while

"tobacco," which was introduced later, has a small node size, having co-occurred 27 times in 2022.

The top 10 most frequently co-cited keywords in the literature are tiktok, social media, covid-19, social network, instagram, facebook, youtube, public health, china, and twitter, as shown in Fig. 5. Other commonly used keywords include adolescent, youth, content analysis, infodemiology, affordance, misinformation, body image, meme digital health, health communication, and information quality. Recent research has focused on keywords such as public health, infodemiology, affordance, misinformation, body image, digital health, deep learning, health communication, health education, ai (artificial intelligence), humor, media, user engagement, and tobacco, indicating emerging trends and hot topics. For more information on these keywords, refer to Table 7.

The timeline view, as opposed to the timezone view, is displayed in clusters in this study (see Fig. 6). The process of labeling clusters was based on the titles of articles using the Log-likelihood ratio (LLR) method. In other words, the labeling of the clusters is derived from the representative keywords found in the titles of the articles associated with each cluster, rather than the keywords within the cluster itself. Therefore, while "short video app" is a notable keyword within Cluster #0, the most representative keyword in the titles of the studies for this cluster was "community mitigation". Similarly, for Cluster #1, the representative keyword in the titles was "short video app". Given this methodology, the consistency of the labeling approach is ensured, and the cluster names accurately reflect the primary themes of their respective studies.

The timeline view generated eight clusters: Cluster #0 ("community mitigation"), Cluster #1 ("short video app"), Cluster #2 ("body consciousness"), Cluster #3 ("social media"), Cluster #4 ("covid-19 pandemic"), Cluster #5 ("consumer congruence"), Cluster #6 ("internet meme"), and Cluster #7 ("news media"). Each cluster is marked with yellow lines indicating the timespan. Table 8 provides further

Table 5
Specifics of each cluster.

Cluster ID	Label	Size	Silhouette	Mean (Year)	Top keywords (Log-likelihood ratio, p-level)
0	TikTok publishing strategies	14	0.954	2021	TikTok publishing strategies (103.69, 1.0E-4); scientific communication (103.69, 1.0E-4); transmedia board (103.69, 1.0E-4); separation anxiety (100.34, 1.0E-4); children family member (100.34, 1.0E-4)
1	Social media generation	13	0.822	2020	Social media generation (79.58, 1.0E-4); collective online self-portrait (79.58, 1.0E-4); non-dangerous challenge (79.14, 1.0E-4); investigating community evolution (79.14, 1.0E-4); enemy app (78.75, 1.0E-4)
2	Trending TikTok content	12	0.791	2020	Trending TikTok content (78.58, 1.0E-4); early day (78.58, 1.0E-4); adolescent vision health (78.15, 1.0E-4); top short video (78.15, 1.0E-4); celebrity attachment (77.14, 1.0E-4)
3	Social attachment	10	0.85	2020	Social attachment (125.25, 1.0E-4); TikTok use (124.41, 1.0E-4); privacy concern (110.99, 1.0E-4); experience value (81.76, 1.0E-4); developing country perspective (75.53, 1.0E-4)
4	Functional tics	6	0.922	2021	Functional tics (120.18, 1.0E-4); functional movement disorder (117.75, 1.0E-4); proposed research agenda (91.75, 1.0E-4); public health (91.75, 1.0E-4); sex-related online training (87.09, 1.0E-4)

information on each cluster.

3.2.3.1. Community mitigation. Cluster #0 (“community mitigation”) appears to focus on research related to using short video apps like TikTok for public health purposes (Basch, Hillyer, & Jaime, 2022; Song, Xue, et al., 2021). This cluster includes keywords such as “public health,” “content analysis,” “information quality,” and “vaping.” Given the timespan of 2020–2022, it is likely that many of the studies in this cluster were conducted in response to the COVID-19 pandemic. The inclusion of keywords like “orthodontics” suggests that this cluster may also include research on the use of short video apps for educational purposes (Arslan et al., 2022). In their recent study, Basch, Fera, Pelliscane, and Basch (2021) suggest that apps, especially TikTok, relayed vital health messages during the pandemic, a sentiment echoed by Chai (2022). Furthermore, Arslan et al. (2022) found TikTok being used for orthodontic education, with young professionals sharing insights and

Table 6
Main studies in each cluster.

No.	Author and Year	Titles of Documents	Total of co-citations	Cluster ID
1	(Zulli & Zulli, 2022)	Extending the Internet meme: Conceptualizing technological mimesis and imitation publics on the TikTok platform	150	1
2	(Kennedy, 2020)	‘If the rise of the TikTok dance and e-girl aesthetic has taught us anything, it’s that teenage girls rule the internet right now’: TikTok celebrity, girls and the Coronavirus crisis	136	1
3	(Kaye et al., 2021)	The co-evolution of two Chinese mobile short video apps: Parallel platformization of Douyin and TikTok	120	0
4	(Li et al., 2021)	Communicating COVID-19 information on TikTok: a content analysis of TikTok videos from official accounts featured in the COVID-19 information hub	116	0
5	(Bucknell Bossen & Kottasz, 2020)	Uses and gratifications sought by pre-adolescent and adolescent TikTok consumers	95	3
6	(Y. Wang, 2020)	Humor and camera view on mobile short-form video apps influence user experience and technology-adoption intent, an example of TikTok (DouYin)	95	3
7	(Comp et al., 2021)	Is TikTok The Next Social Media Frontier for Medicine?	86	2
8	(Zheng et al., 2021)	Acne and social media: A cross-sectional study of content quality on TikTok	79	4
9	(Basch, Fera, Pierce, & Basch, 2021)	Promoting Mask Use on TikTok: Descriptive, Cross-sectional Study	75	0
10	(Vazquez-Herrero et al., 2022)	Let’s dance the news! How the news media are adapting to the logic of TikTok	75	0
11	(Chen, Min, et al., 2021)	Factors Driving Citizen Engagement With Government TikTok Accounts During the COVID-19 Pandemic: Model Development and Analysis	74	1
12	(Schellewald, 2021)	Communicative Forms on TikTok: Perspectives From Digital Ethnography	73	1
13	(Montag et al., 2021)	On the Psychology of TikTok Use: A First Glimpse From Empirical Findings	68	3
14	(Eghtesadi & Florea, 2020)	Facebook, Instagram, Reddit and TikTok: a proposal for health authorities to integrate popular social media platforms in contingency planning amid a global pandemic outbreak	66	2
15	(Herrick et al., 2021)	This is just how I cope: An inductive thematic analysis of eating disorder recovery content created and shared on TikTok using #EDrecovery	64	4
16	(Kong et al., 2021)	TikTok as a Health Information Source: Assessment of the Quality of Information in Diabetes-Related Videos	63	0

(continued on next page)

Table 7
Main keywords based on co-citations.^a

No.	Keywords	Co-citations	First year	No.	Keywords	Co-citations	First year
1	TikTok	900	2019	21	Body image	38	2021
2	Social media	727	2020	22	Meme	37	2020
3	Covid-19	229	2020	23	Influencer	36	2020
4	Social network	108	2020	24	Digital health	35	2021
5	Instagram	108	2019	25	Gender	34	2021
6	Facebook	103	2020	26	Mobile app	34	2020
7	Youtube	96	2019	27	Deep learning	33	2021
8	Public health	93	2021	28	Internet	33	2021
9	China	92	2019	29	Health communication	33	2021
10	Twitter	89	2021	30	Information quality	32	2021
11	Adolescent	84	2021	31	Gen z (generation Z)	32	2020
12	Youth	80	2020	32	Children	32	2019
13	Content analysis	80	2020	33	Health education	30	2021
14	Short video	69	2020	34	AI (artificial intelligence)	30	2022
15	Infodemiology	45	2021	35	U & G (uses and gratification)	28	2020
16	Affordance	44	2021	36	Humor	28	2021
17	Communication	42	2021	37	Digital media	27	2021
18	Short video app	40	2021	38	Media	27	2022
19	Video	40	2022	39	User engagement	27	2022
20	Misinformation	39	2021	40	Tobacco	27	2022

^a Summary of prominent keywords in TikTok research:

- **TikTok:** Central focus of the study, examining the platform’s growth, user engagement, and cultural impact since 2019.
- **Social Media:** Places TikTok within the wider social media context, comparing it with platforms like Instagram and Facebook.
- **COVID-19:** Explores TikTok’s role in information dissemination and public engagement during the pandemic.
- **Youth and Adolescent:** Investigates TikTok’s popularity and influence among younger demographics.
- **Public Health:** Looks at TikTok’s potential as a tool for health communication and education.
- **Misinformation:** Addresses concerns around the spread of false information on TikTok.

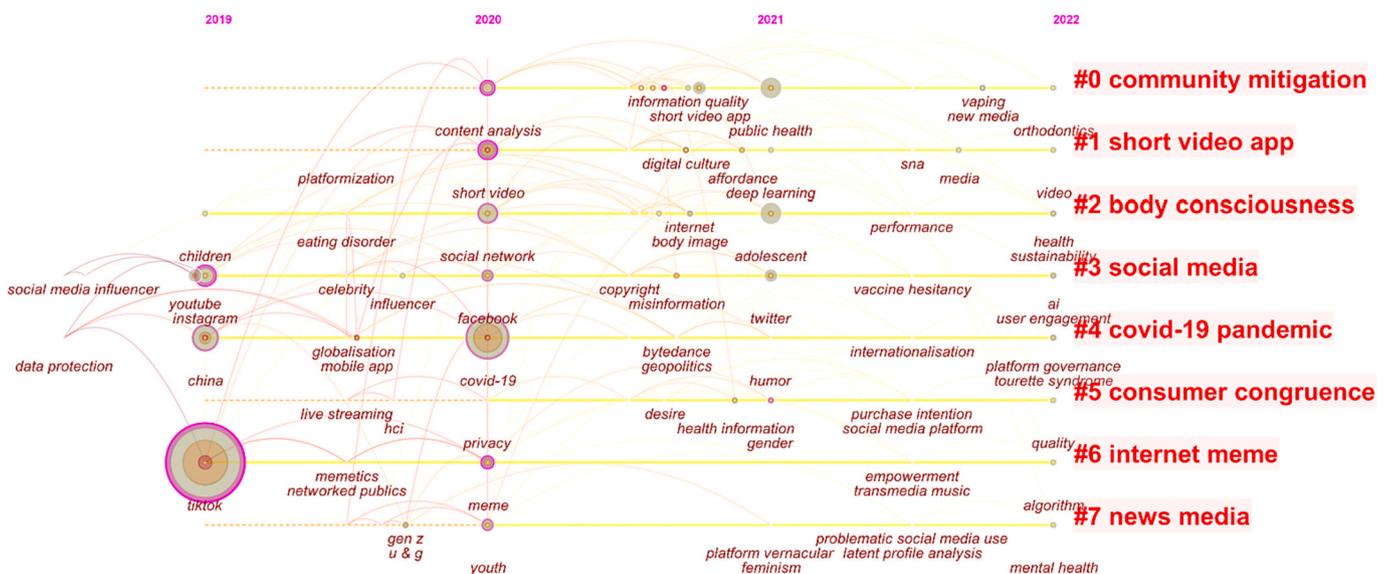


Fig. 6. A timeline view of keywords in TikTok research.

health habits. TikTok fitness challenges or health-focused content can inspire positive behaviors. Pop et al. (2021) see significant potential in such platforms to promote overall well-being. However, the balance between promoting health and propagating unrealistic standards is delicate (Wallner et al., 2022). Overall, the third cluster reveals social media’s complex and dual-edged influence on users.

3.2.3.4. Social media. Labeled “social media,” Cluster #3 encompasses a diverse array of topics on the influence of social media platforms on society. Key terms, including “misinformation,” “influencer,” and “vaccine hesitancy,” underscore the platforms’ role in shaping public views (Anderson, 2020; Rogers, 2021). In general, the cluster delves into the profound impact of social media on societal behaviors and dynamics. Platforms like Facebook, Instagram, and Twitter have evolved from

mere communication channels into significant influencers of public discourse (Rejeb, Rejeb, Abdollahi, et al., 2022). Influencers exploit their extensive reach to shape opinions, support causes, or even disseminate misinformation. Platforms such as YouTube have been criticized in the past for hosting content promoting vaccine hesitancy, which is amplified by influential personalities (Lahouati et al., 2020). Their impacts are not limited to the spread of information, however, as the vast social media landscape intersects with other legal and ethical considerations. Bonadio et al. (2022) address the challenges of copyright infringements, especially with the rise of AI-driven content. As users constantly create, share, and modify content, intellectual property boundaries become ambiguous, demanding flexible legal measures. Moreover, the role of AI in shaping user engagement is pivotal. Aydin et al. (2022) discuss how algorithms on platforms like Instagram curate

Table 8
Main details of each cluster.

Cluster ID	Cluster Label	Size	Keywords	Timespan	Main focus
0	Community mitigation	21	Public health, content analysis, short video app, information quality, orthodontics, vaping, new media	2020–2022	TikTok's role in health education and its mixed impact on public perception of vaping
1	Short video app	20	Short video, deep learning, affordance, video, digital culture, media, sna, platformization	2020–2022	TikTok's technological and cultural influence, emphasizing user interaction, app design, and the evolution of digital content trends
2	Body consciousness	20	Social network, adolescent, internet, body image, children, health, eating disorder, sustainability, performance	2019–2022	Social media's impact on body image and health, highlighting the potential for both negative self-perception and positive support networks
3	Social media	18	Instagram, youtube, facebook, twitter, influencer, misinformation, ai, social media influencer, user engagement, vaccine hesitancy, celebrity, copyright	2019–2022	The influence of social media on societal behavior, focusing on aspects like misinformation, influencer impact, and legal/ethical challenges
4	Covid-19 pandemic	18	Covid-19, china, humor, mobile app, platform governance, globalization, tourette syndrome, data protection, internationalization, bytedance, geopolitics	2019–2022	The role of TikTok during the COVID-19 pandemic, covering aspects like information dissemination, platform governance, and geopolitical implications.
5	Consumer congruence	14	Gender, quality, health information, privacy, desire, hci, purchase intention, social media platform, live streaming	2020–2022	TikTok's impact on marketing and consumer behavior, focusing on aspects like content engagement, purchase intent, and the balance between personalized advertising and privacy concerns
6	Internet meme	10	TikTok, meme, algorithm, empowerment, transmedia music, memetics, networked publics	2019–2022	The role of internet memes on TikTok, highlighting their technological, cultural, and socio-political impacts, including their potential for empowerment and misinformation
7	News media	10	Youth, gen z, u & g, mental health, problematic social media use, latent profile analysis, platform vernacular, feminism	2020–2022	TikTok's influence on youth and Gen Z news engagement, focusing on psychological impacts, diverse voices, and issues like feminism, while also acknowledging potential challenges with mental health and news authenticity.

user content, potentially reinforcing echo chambers or promoting misinformation. The power and reach of influencers can also be a double-edged sword, for while they can champion positive changes, they can also amplify misleading information, which is especially concerning on vital matters like vaccination (Lahouati et al., 2020). In essence, this cluster unravels the multifaceted world of social media, highlighting its potential, challenges, and entanglements with legal and AI elements. As we advance digitally, it is crucial to approach this realm with consciousness, accountability, and judiciousness.

3.2.3.5. COVID-19 pandemic. Cluster #4, themed “covid-19 pandemic,” explores the intersection of the global health crisis with social media like TikTok, using keywords like “covid-19,” “platform governance,” and “geopolitics” (Gray, 2021; Mishra et al., 2022). TikTok became a dominant channel for information and engagement during the pandemic. Notably, humor on the platform served dual purposes: alleviating stress and disseminating crucial health data (Bozzola et al., 2022). Meanwhile, the surge in COVID-19 content necessitated stronger platform governance. ByteDance's response was the use of advanced AI to counteract misinformation. Geopolitically, TikTok played a role in global discussions on COVID-19's origins and China's early actions (Basch, Meleo-Erwin, Fera, et al., 2021). Simultaneously, rising TikTok adoption brought forth data privacy concerns, especially regarding potential data sharing with China (Gray, 2021). Furthermore, Hull and Parnes (2021) noted a link between increased TikTok consumption and symptoms mirroring Tourette syndrome. Considering globalization, TikTok's content can either unify or fragment audiences, making its governance pivotal. In sum, this cluster offers a panoramic view of the pandemic's multifaceted relationship with digital spaces, where humor, geopolitics, and health intertwine.

3.2.3.6. Consumer congruence. Cluster #5, labeled “consumer congruence,” examines TikTok's influence on user interaction with marketing and advertising. The keywords “purchase intention” and “social media platform” suggest a focus on leveraging social media for consumer behavior (Kurdi et al., 2022; S.-Z. Liang et al., 2022). Ethical concerns around online advertising and data collection are also hinted at by the keyword “privacy” (De Veirman et al., 2019). More specifically, the sixth cluster concentrates on TikTok's role in consumer behavior and emphasizes marketing strategies. Onikoyi et al. (2023) underline

gender's importance in content perception, implying gender-specific content could boost engagement and purchase intent. Liang et al. (2022) link higher TikTok content quality to increased engagement and purchase outcomes. Meanwhile, health-focused content affects health-conscious consumers' purchasing behaviors. The relevance of human-computer interaction (HCI) has grown in the digital age (Faklaris et al., 2020). An optimal HCI design on TikTok can improve user satisfaction and increase product/service endorsement (Q. Yang & Lee, 2022). For instance, live streaming represent an emerging trend that fosters direct brand-consumer interaction, influencing purchasing decisions (Pongratte et al., 2023). However, TikTok's advertising power has its challenges, including privacy. Lu et al. (2022) emphasize the delicate balance between personalized advertising and privacy invasion. In essence, the “consumer congruence” cluster sheds light on the symbiosis between TikTok's digital strategies and consumer behavior, presenting both the platform's potential and associated ethical dilemmas.

3.2.3.7. Internet meme. Cluster #6, titled “internet meme,” explores internet memes' impact on TikTok discussions. Keywords like “algorithm” and “memetics” indicate a blend of technological and cultural focuses regarding memes (Hautea et al., 2021; Zeng & Abidin, 2021). Additionally, “empowerment” and “networked publics” suggest memes' potential in driving social and political changes. Studies related to this cluster illuminate TikTok's relationship with memes. Key terms highlight the interplay between TikTok's technology and cultural narrative delivery. TikTok's algorithms push specific memes based on user interactions (Han & Kuipers, 2021; Zeng & Abidin, 2021). Memetics offers insights into why some memes gain widespread traction (Zeng et al., 2021). Furthermore, the transmedia nature of memes impacts their appeal and virality on TikTok, with musical ones being especially amplified (Kaye et al., 2022). Beyond entertainment, memes empower marginalized groups, enabling them to address significant topics in digestible formats (Matamoros-Fernández et al., 2022). The concept of “networked publics” describes online communities rallying around shared ideals (De Leyn et al., 2022). On TikTok, these communities use memes to amplify their messages and impact socio-political arenas. However, memes can also spread misinformation or be used for cyberbullying (Bozzola et al., 2022). Consequently, the use of TikTok involves discerning between memes as enlightening tools or misleading instruments. To summarize, the seventh cluster delves into memes' dual

role on TikTok: as cultural phenomena and powerful socio-political tools, exemplifying the central role of TikTok in contemporary digital dialogue.

3.2.3.8. News media. Cluster #7, labeled “news media,” probes the engagement of TikTok’s youth and Gen Z with news content. The keywords in the cluster hint at the potential psychological impact of news on these young users and their distinct consumption patterns (Vazquez-Herrero et al., 2022). The terms “platform vernacular” and “feminism” stress the role of TikTok in promoting diverse voices and addressing societal issues (Avdeeff, 2021; Karizat et al., 2021) (Avdeeff, 2021; Karizat et al., 2021). The emphasis on “feminism” reflects the platform’s potential as a space for discussing social and political issues, such as gender equality (Tang et al., 2021). Meanwhile, TikTok’s unique “platform vernacular” (Krutrok, 2021) enhances its appeal to its primary audience, making news consumption more relatable. While tailored to younger users, the curated news format of TikTok can have adverse effects on mental health due to the potential influx of distressing content. Gu et al. (2022) apply the technique of “latent profile analysis” to study varied user behaviors concerning news engagement on TikTok. Yet, issues concerning news authenticity remain, requiring vigilance from both creators and consumers. In conclusion, the final cluster underscores TikTok’s role as a platform for innovative presentation and advocacy, while also pointing out its challenges related to mental health and misinformation.

4. Discussion and agenda for future research

4.1. Discussion

4.1.1. Brief summary

Despite the significance of TikTok in the development of social media and digital culture, no study has provided a comprehensive overview of the research around the platform. This study aims to examine the current state of TikTok research by conducting a systematic literature review using bibliometric methods. As this approach is relatively new to the social media field, this study is the first to address such research questions regarding TikTok. A total of 402 articles were collected from the Web of Science Core Collection with adherence to a systematic review guideline. To perform the bibliometric analysis, the authors analyzed the descriptive statistics of the selected sample, article co-citations, and co-word networks. In the section of co-citation and co-word analyses, three visualization views were implemented with the support of CiteSpace: cluster views, timezone views, and timeline views. The analysis of these visualizations enables us to detect the pivotal points and the dynamics of the TikTok research field.

4.1.2. Insights from descriptive statistics

Through descriptive statistics, this article aims to identify the development of scholarly output, productive academic institutions and countries, leading journals, authors, and influential publications in TikTok research. The analysis showed an overall increase in the number of annual publications and citations from 2019 to 2022, with a surge occurring after 2020. One possible explanation for the heightened interest in TikTok research is the increasing popularity of the platform during the pandemic, which led to more users spending time online and engaging with social media platforms. During the pandemic, TikTok provided a source of entertainment and connection for users stuck at home (Basch, Hillyer, & Jaime, 2022; Huang et al., 2022; Li et al., 2021). Another reason for the increase in TikTok-related publications can be attributed to the rapid growth and evolution of the platform, which has seen it introduce new features, algorithms, and content policies that have attracted the attention of scholars (Chu et al., 2022; Gu et al., 2022; Ionescu & Licu, 2023). This trajectory not only sheds light on the positioning of TikTok in the broader digital culture but also suggests a shift

in the research community’s focus towards platforms that are changing the face of digital interaction.

As TikTok continues to evolve and shape society, scholars are likely to explore its various aspects and implications in more detail. The study also identified the top three productive academic institutions as the City University of New York, Columbia University, and William Paterson University. These institutions are located in the US, which has a robust academic tradition in media and communication research (Gray, 2021; Jaramillo-Dent et al., 2022). The position of the US as the most productive country in TikTok research can be attributed not just to TikTok’s considerable user base in the region but also to its vibrant academic ecosystem, which often pioneers studies on emergent media platforms (Rejeb, Rejeb, Appolloni, et al., 2023a). Additionally, the cultural fabric of the US emphasizes technological innovation and digital communication, fuels interest in platforms like TikTok, and encourages extensive research. This combined emphasis on technology and academia likely contributes to the US leading in TikTok-centric studies.

Moreover, the three most prolific journals were found to be International Journal of Environmental Research and Public Health, Frontiers in Psychology, and International Journal of Communication. Their involvement underscores the interdisciplinary nature of TikTok research, reinforcing its widespread relevance across various academic discourses. The research field with the most publications was identified as “communications,” followed by “psychology” and “neuroscience and neurology.” The interconnectedness of these disciplines presents a rich avenue for interdisciplinary collaboration in TikTok research (Rejeb, Rejeb, Appolloni, et al., 2023a). For instance, psychological insights into human behavior and cognition can be valuable perspectives to understand user engagement and content creation patterns on TikTok (Ferraz et al., 2022). Conversely, findings from communication studies regarding patterns of information dissemination and reception can offer fields such as sociology and psychology a deeper understanding of the social dynamics and influences at play on the platform. Furthermore, incorporating findings from neuroscience and neurology can shed light on the physiological impacts and neural processes stimulated by TikTok interactions (Martindale & Mink, 2022).

In terms of influential articles, the study identified several seminal works, including Wang (2020), De Veirman et al. (2019), and Kennedy (2020). Although recent, these publications have received a significant number of citations. Their high citation count underlines the academic and practical relevance of their findings in understanding TikTok’s societal and cultural implications. The study also found that a group of authors, including Basch, Fera, and Zeng, had made significant contributions to TikTok research by publishing multiple papers. Their consistent contributions highlight the growing cohort of dedicated TikTok researchers and further emphasize the significance of TikTok in the contemporary research panorama.

4.1.3. The evolution of TikTok in the academic discourse

Although TikTok was initially branded as a hub for short-term entertainment, it has rapidly evolved into a platform with substantial potential for diverse content dissemination. Comparatively, while platforms like Instagram and YouTube also serve as mediums for content sharing (Mostafa et al., 2022; Rejeb, Rejeb, Abdollahi, et al., 2022), TikTok’s emphasis on brevity and its unique algorithm sets it apart. Instagram, primarily known for visual content and aesthetic appeal, caters to longer-term engagement with posts and stories (Rahmawati et al., 2020). YouTube, on the other hand, is more conducive to longer video formats, allowing for in-depth exploration of topics (Mostafa et al., 2022). Twitter’s textual nature promotes dialogue and discussion but within a character limit, thereby restricting extensive discourse (J. Yu & Muñoz-Justicia, 2020).

Researchers and institutions alike are recognizing the potency of this platform (Rejeb, Rejeb, Appolloni, et al., 2023a) in moving beyond traditional methods to communicate science and knowledge. The current academic literature shows significant interest in TikTok publishing

strategies and the use of the app as a platform for scientific communication. According to several scholars (MacKinnon et al., 2021), the shift towards TikTok has roots in its unique format and expansive audience. The brief span of each video challenges content creators to convey complex information succinctly and engagingly. This constraint drives innovation and pushes scientists to distill their findings into core and digestible points. Rapid communication also resonates well with a generation that prefers bite-sized content, thereby leading to better engagement and recall (Basch, Fera, Pellicane, & Basch, 2022).

Moreover, TikTok's algorithm is built around promoting user engagement (Y. Q. Liang & Yoon, 2022) and providing a unique advantage to scientific communicators (Habibi & Salim, 2021). Instead of being limited by a pre-existing follower base, a scenario often seen on platforms like Instagram or YouTube, even new creators on TikTok can achieve significant reach if their content resonates with the audience. This democratization of content dissemination provides a level playing field and allows scientists and researchers, even from smaller institutions, to gain traction. Another driving factor behind the emerging status of TikTok as a scientific communication platform is its interdisciplinary audience. While Twitter serves a broader audience, they are often nested within specific interest niches, whereas TikTok boasts a diverse user demographic (Rejeb, Rejeb, Appolloni, et al., 2023a). According to (Hayes et al., 2020), this offers a golden opportunity for scholars to break the silos of academia and reach out directly to the general populace. Such outreach not only enhances public understanding of science but can also ignite interest and inspire future scientists. However, TikTok is not without its challenges for scientific communication. The very nature of short and snappy videos can oversimplify complex topics, thereby potentially leading to misinterpretation or misinformation (Boulianne & Lee, 2022). Therefore, scholars are tasked with striking a delicate balance between clarity, accuracy, and engagement.

4.1.4. The psychological implications of TikTok

Transmedia platforms represent an innovative frontier in the domain of storytelling and message conveyance. Rooted in the transmedia storytelling paradigm, these boards leverage the strengths of multiple media platforms to craft a cohesive and immersive narrative. In this regard, Vizcaíno-Verdú and Abidin (2022) elucidated that transmedia boards not only amplify reach by leveraging multiple platforms but also allow for tailored content that takes into account the unique attributes and audience demographics of each platform. The surge in interest around these boards indicates a recognition of their potential, especially in the digital age. TikTok's entry into this narrative universe adds a layer of dynamism. The short-video format of TikTok caters to the bite-sized consumption trend and makes it a potent tool in the transmedia board repertoire (Vizcaíno-Verdú & Abidin, 2022). However, the influence of the app extends beyond just being a storytelling medium since its deep penetration into younger demographics has raised pressing concerns and questions. Central to these concerns is the platform's psychological impact on its younger users, especially children (Pruccoli et al., 2022). Scholars have delved deep into this facet, with preliminary findings hinting at potential risks. Huang et al. (2022) studied the complexities of separation anxiety among children who are active TikTok users. The platform's addictive nature, combined with its algorithm-driven content delivery, can create a virtual cocoon, making children overly reliant on it for entertainment and social interactions. Bozzola et al. (2022) note that such dependence can exacerbate feelings of anxiety when separated from the platform or when unable to engage with it. This reaction is similar to the digital addiction seen with other platforms (Çimke et al., 2023; Karakose et al., 2023). The broader familial context is equally pertinent.

As TikTok becomes a part of the daily routines of families, its influence on family dynamics is undeniable. Extant works (Han & Kuipers, 2021; Huang et al., 2022; Kwan, 2022; X. Liu et al., 2022) show that scholarly debates have revolved around two primary dimensions:

TikTok's role as a communication and storytelling platform within families; and its consequent impact on mental health and inter-familial relationships. Each of these dimensions offers myriad perspectives that researchers have explored in depth. de Guzman et al. (2022) specifically focused on how families are using TikTok as a collaborative tool, often engaging in "family challenges" or shared storytelling that can foster a sense of unity and shared fun. Their research indicates that such collaborative content creation can serve as a bridge between generations, reducing the oft-cited 'digital divide'. Nevertheless, TikTok poses risks of familial tensions due to differences in digital literacy, encounters with unsuitable content, and varied perceptions of privacy and public sharing. Generational gaps in understanding and interpreting content and the sheer time spent on the platform are also potential catalysts for conflicts. Intense academic scrutiny has also been paid to the intricacies of TikTok's impact on mental health, with its myriad challenges from cyberbullying to the pressures of virality (J. Wang et al., 2022).

4.1.5. TikTok in the era of COVID-19

Based on the results of the co-citation analysis, it appears that TikTok use during the COVID-19 pandemic and its impact on public health is a heavily researched topic that has received a lot of attention from scholars. The fact that half of the 20 most co-cited articles focus on this point suggests that TikTok became increasingly used during the pandemic as a means of communication and information dissemination. Given the challenges posed by the pandemic and the need for public messaging and outreach, it is perhaps not surprising that scholars are interested in exploring the role of social media in these efforts. The findings from these studies suggest practical implications for public health policy and practice.

Understanding how people used TikTok during the COVID-19 pandemic and its influence on their health behaviors can help tailor public health messages. Platform users, especially those aged 18–24, were more likely to adopt preventive measures against COVID-19 after viewing content from trusted health organizations (Li et al., 2021). However, content from less reputable sources often led to misconceptions. Additionally, viral challenges on TikTok promoting healthy habits like hand-washing increased compliance with health protocols, especially among younger viewers. On the emotional front, content embedded with empathy, humor, and relatability influenced viewers' attitudes more profoundly. Using these insights, scholars and health professionals can optimize TikTok's reach to disseminate crucial health information and promote positive health behaviors. Initially, the co-word analysis confirms the finding of the co-citation analysis, which emphasizes the intersection of social media, COVID-19, and public health. Body image (Bissonette Mink & Szymanski, 2022; Maes & Vandenbosch, 2022; Pryde & Prichard, 2022), digital health (Basch, Hillyer, & Jacques, 2022; Hopfer et al., 2022; Lupton, 2021), health communication and education (Fowler et al., 2022; Fraticelli et al., 2021; Zhang et al., 2021), memes (Han & Kuipers, 2021; Vizcaíno-Verdú & Abidin, 2022; Zeng & Abidin, 2021), and tobacco (Marynak et al., 2022; Morales et al., 2022; Wu et al., 2022) also emerged as notable research areas based on co-citation and co-word analyses.

4.2. Future research directions

4.2.1. Health communication on TikTok

This study demonstrates that most of the research conducted on TikTok has focused on its effects on public health. In advancing this field, scholars could consider embracing mixed-methods research to offer both qualitative depth and quantitative breadth in understanding users' behaviors and perceptions. Basch, Fera, Pellicane, and Basch (2022) argue that TikTok can be an effective platform for disseminating public health information because even a small number of posts can generate a large number of views. Meanwhile, McCashin and Murphy (2022) suggest that health professionals and content creators can use TikTok to communicate brief visual content about various topics,

including COVID-19-related information, eating disorders, and acne. Therefore, it is important for future research to thoroughly examine the potential implications of TikTok use on mental health, especially among young users (De Veirman et al., 2019). Another possible direction is to explore cultural differences in TikTok usage for health information. This might involve examining how various users from various cultures use the platform differently to disseminate information and promote health behavior, and how cultural norms and values impact the effectiveness of health messaging (Anderson, 2020; Boatman et al., 2022; Southwick et al., 2021). Researchers also can investigate the quality and credibility of user-generated health information content on TikTok, and how user-content can be effectively moderated to prevent the spread of misinformation (Yeung et al., 2022). Additionally, researchers could explore how social media literacy and critical thinking skills impact the perception and use of health information on TikTok, and how these skills can be enhanced to improve health outcomes. Therefore, there is significant potential for future research to deepen our understanding of how TikTok can be leveraged to promote health and well-being, and to develop effective strategies for promoting the responsible and impactful use of the platform.

4.2.2. Exploration of functional tics and TikTok exposure

Previous research has noted that there has been an abrupt appearance of movements resembling tics during the pandemic (Hull & Parnes, 2021). This type of behavior is not typically seen in functional movement disorders across all ages. According to Martindale and Mink (2022), the reasons for this increase have been linked to both the psychological burden of the pandemic and the use of social media, which includes TikTok. To further understand these links, a mixed-methods approach combining both quantitative surveys and qualitative interviews could be employed. Using the diffusion of innovations theory, researchers can study how TikTok may accelerate or intensify the spread of such behaviors. To advance research in this direction, scholars can investigate the potential role of TikTok in the spread and perpetuation of functional tics (Hull & Parnes, 2021; Olvera et al., 2021; Zea Vera et al., 2022) and the effect of TikTok exposure on the development and severity of tics. Another avenue for consideration is the examination of the portrayal of functional tics on TikTok, including the prevalence of these movements in top videos and the influence of this exposure on users. Moreover, researchers can enrich the TikTok literature by exploring the quality of content related to functional tics and developing guidelines for promoting responsible and supportive content for users with tics and other movement disorders. Employing a Delphi method with experts in movement disorders and digital communication can aid in forming these guidelines.

4.2.3. Sociopolitical influence and cultural insights from TikTok content

The co-citation analysis underscores the importance of investigating TikTok's diverse effects on society, politics, and culture. For example, the role of TikTok in political mobilization and civic engagement (Meng & Leung, 2021), including its potential to foster new forms of political participation among young people, deserves further attention. Another avenue for future investigation is the impact of TikTok on social issues, including the role of the platform in promoting activism, social justice, and awareness of social issues (Sadler, 2022; Z. Yu, 2021; Zeng & Abidin, 2021). Additionally, researchers can explore the ways in which TikTok is shaping youth culture and identity the possible implications of this for mental health and well-being. Ethnographic studies, observing and engaging with young TikTok users in their natural settings, combined with identity theory, can yield rich insights into how the platform influences their sense of self and their interactions with others (Schel-lewald, 2021). Finally, when it comes to examining the evolution of TikTok's online community and its interplay with traditional media and education, a combination of network analysis and the media system dependency theory could be applied. This would allow researchers to understand the intricate dynamics between TikTok, traditional media

outlets, and educational institutions and how these relationships are influencing the broader cultural landscape (Civila & Jaramillo-Dent, 2022; Dekhil & Sarnou, 2021; Jia & Zhang, 2022; Y. Wang & Feng, 2021).

4.2.4. Platform navigation, user experience, and content dynamics

The linkage between TikTok's interactivity feature and its support of trendy content is a notable direction of social research. The findings of the bibliometric analysis highlight that TikTok's algorithm contributes to the prominence of popular content, which in turn increases the number of likes and shares (Habibi & Salim, 2021). The navigability affordance of TikTok has also shifted from browsing gratification to swiping gratification (Scherr & Wang, 2021). This feature provides users with a virtually endless stream of content, allowing them to escape into the platform's entertainment and stay up-to-date with the latest trends. Given its interactivity and navigability affordances, there is room for researchers to study the potential benefits and drawbacks of TikTok use for sharing information about health and medicine (Comp et al., 2021; Song, Xue, et al., 2021). This could involve exploring the effectiveness of health messaging on the platform, as well as the potential for misinformation and the spread of unverified medical advice (Szeto et al., 2021). Another direction is to explore the influence of TikTok on different industries and areas of life, such as tourism, food, and art (Du et al., 2022). Using the theory of planned behavior, researchers could decipher how TikTok content influences consumer intentions and subsequent actions in these domains. Furthermore, econometric modeling can offer insights into how shifts in consumer preferences driven by TikTok potentially affect sectoral economic outcomes. Lastly, to comprehend the overarching influence of TikTok on cultural orientations and preferences, cross-cultural comparative studies, underpinned by the cultural dimensions theory, can be instrumental. This would offer a lens to understand variances and commonalities in TikTok-induced cultural shifts across nations and societies (Ferraz et al., 2022; Hernández-Serrano et al., 2022).

4.2.5. User behavior, attachment, and social dynamics on TikTok

TikTok users can experience a profound sense of attachment to the platform (Zhu et al., 2022). Such attachment can be predicated on the establishment of social connections with other users, as well as the development of a sense of identification with the platform and its user community. The findings of the co-citation analysis suggest that social attachment serves as a key factor in explaining the strong bond between users and TikTok. To unearth the psychological intricacies shaping this bond, a psychoanalytic approach inspired by theories such as the uses and gratifications theory could be employed. This would offer a nuanced perspective on users' motivations and perceived rewards from the platform (Bucknell Bossen & Kottasz, 2020; Meng & Leung, 2021; Scherr & Wang, 2021). Further, scholars could delve into the impact of social attachment on user engagement and retention and the potential implications for mental health and well-being (McCashin & Murphy, 2022). The role of humor and camera view in shaping user experience on TikTok can be analyzed in detail to provide insights into the factors necessary to improve engagement and adoption (Y. Wang, 2020). Applying the technology acceptance model (TAM) in varied socio-economic cohorts can unravel the antecedents of TikTok adoption and sustained usage, shedding light on strategies for fostering responsible digital consumption (De Leyn et al., 2022).

4.2.6. Technical, ethical, and cultural considerations in TikTok usage

Based on the findings of the keyword co-occurrence analysis, several potential directions for future research on TikTok can be identified. First, future research could further explore the cultural and technical aspects of short video apps, particularly as TikTok continues to evolve and attract a diverse user base. Studies on the impact of TikTok on body image and mental health also warrant further investigation, particularly with a focus on promoting healthy lifestyles and behaviors (Pop et al.,

2021). In the epoch of 'fake news' and misinformation, comprehending the dynamics of public opinion molding on TikTok is imperative. Content analysis, combined with sentiment analysis tools, can dissect the spread and acceptance of misinformation and gauge its relation to phenomena like vaccine hesitancy (Basch, Meleo-Erwin, Fera, et al., 2021). Ethical concerns related to online advertising and data collection, as well as the legal and ethical issues related to TikTok, are also important areas for future research. Additionally, Internet memes are a cornerstone of contemporary digital culture that requires rigorous exploration on TikTok. The application of discourse analysis to selected TikTok memes can demystify their role in steering online dialogues and catalyzing societal or political metamorphosis (Rogers, 2021). Finally, understanding how young people engage with and consume news media on TikTok, particularly with a focus on the impact of news media on mental health and perceptions of social justice issues, is another promising area for future research. In short, the findings of the keyword co-occurrence analysis provide valuable insights into potential avenues for future research on TikTok.

Despite the numerous directions outlined for TikTok research, several potential obstacles warrant consideration. Exploring TikTok's cultural nuances is daunting due to its vast and diverse user base, which complicates the translation and interpretation of content across various cultural contexts. Studying its impact on mental health and body image presents another challenge, given the transient nature of its content and difficulties accessing real-time engagement metrics due to platform restrictions. Furthermore, as misinformation proliferates, discerning genuine content from manipulated or synthetic information is increasingly problematic (M. Liang, 2022). The opaqueness of TikTok's proprietary algorithms complicates any understanding of data collection and manipulation, raising ethical concerns (Rejeb, Rejeb, Appolloni, et al., 2023a). Investigating the role of internet memes on TikTok is tricky because of their rapid evolution, making real-time tracking arduous. Finally, as trends on TikTok ebb and flow quickly, capturing unbiased and comprehensive insights into youth engagement with news media on the platform can be challenging. It is paramount for scholars to be aware of and prepared for these obstacles when diving into future TikTok research.

5. Conclusion

The use of information and communication technologies has become increasingly significant in the digital era, and the emergence of TikTok has further accelerated this trend. While there has been considerable research on the implications of TikTok, there is a lack of comprehensive studies that examine the current state of TikTok research in the context of the rapidly evolving social media landscape. This research aims to fill this gap by conducting a systematic bibliometric review of the TikTok literature, providing a valuable resource for scholars, practitioners, and policymakers.

This study's findings suggest that TikTok can serve as a platform for promoting scientific knowledge and communication, with the potential to reach a wide and diverse audience. This has proved particularly important in the context of the COVID-19 pandemic, given the need for accessible and engaging forms of health communication. The study of transmedia storytelling on TikTok also has theoretical implications for media studies and narrative theory, as it highlights the potential for using multiple media platforms to convey complex narratives and messages. Beyond the numerous avenues for research into the diverse opportunities presented by TikTok, the platform also raises real-world challenges worthy of further investigation, particularly in the realms of mental health, digital communication, and public engagement. Our findings emphasize the dual-edged nature of TikTok's impact: while it serves as a potent channel for health communication and public awareness, especially in critical times such as pandemics, it also necessitates vigilant oversight due to its potential psychological repercussions on users, especially the younger demographic. This

understanding is crucial for parents, educators, and mental health professionals, as they navigate the complexities of integrating digital platforms into educational and developmental frameworks. From a policy standpoint, understanding TikTok's role in health communication can aid in crafting responsive and effective health campaigns tailored to the platform's unique dissemination style. For academia and the research community, our analyses provide a roadmap, pinpointing pivotal studies and offering cues for prospective research directions, collaboration opportunities, and funding ventures. Moreover, the synthesized insights can guide systematic reviews and meta-analyses in refining their search strategies, thereby elevating the caliber of evidence-based practices. In summary, while TikTok undeniably possesses a transformative potential in areas like health promotion and academic communication, harnessing its positives requires a balanced, informed approach, with a keen eye on mitigating its challenges. This holistic understanding is pivotal for educators, policymakers, and TikTok's own evolution as a platform of influence.

Despite its significant contributions, this study has a few limitations. One major constraint is the sole reliance on the Web of Science Core Collection. While this database is esteemed, it might not capture the entirety of TikTok-related research, especially those in non-traditional formats or from emerging research domains. This could mean that some vital perspectives or findings might be omitted, potentially skewing our understanding of the comprehensive TikTok research landscape. Another limitation pertains to the lack of comparative analysis between the identified clusters in our co-citation and co-word analysis. Such a comparative perspective would have allowed for a more nuanced understanding of the differences or prevalence of certain topics within the research landscape of TikTok. Without this comparative lens, our interpretations might be restricted, missing deeper insights into the juxtaposition of different research themes. Since this work used a single database as the source of data collection, further research efforts should aim to draw from multiple databases to ensure comprehensive and accurate comparisons. For example, researchers can consult the Scopus database, replicate the analysis, and compare the results with the findings of this study. Relying on one database might inadvertently introduce biases, affecting the breadth and depth of our survey. Additionally, the Web of Science Core Collection might hold certain biases in terms of geographic representation, academic disciplines, or publication types, which could affect the generalizability of our findings. This limitation suggests that our findings might be more representative of certain geographical areas or disciplines, potentially excluding other pivotal viewpoints or findings. It is important to acknowledge that the sample was limited to journal articles, which may have resulted in the exclusion of other potentially relevant sources of knowledge, such as conference proceedings, books, and chapters. Such omissions might lead to a narrowed understanding, missing innovative or alternative perspectives on TikTok research presented in other forms of academic outputs. Thus, future studies can include these forms of scientific knowledge to provide valuable insights and different perspectives on TikTok research.

CRedit authorship contribution statement

Abderahman Rejeb: Writing – review & editing, Writing – original draft, Methodology, Investigation, Data curation, Conceptualization. **Karim Rejeb:** Writing – review & editing, Writing – original draft, Methodology, Investigation, Formal analysis, Conceptualization. **Andrea Appolloni:** Writing – review & editing, Writing – original draft, Conceptualization. **Horst Treiblmaier:** Writing – review & editing, Writing – original draft. **Mohammad Iranmanesh:** Writing – review & editing, Writing – original draft.

Declaration of competing interest

The authors declare that they have no known competing financial

interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

No data was used for the research described in the article.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.digbus.2024.100075>.

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