RedFame

Studies in Media and Communication
Vol. 13, No. 4; December 2025
ISSN: 2325-8071 E-ISSN: 2325-808X
Published by Redfame Publishing
URL: http://smc.redfame.com

Pivotal Issues in Digital Film Technology and Its Development Trends: Mapping Scientific Research Trends

Filosa Gita Sukmono

Correspondence: Filosa Gita Sukmono, Department of Communication, Universitas Muhammadiyah Yogyakarta, Indonesia.

Received: May 25, 2025 Accepted: August 2, 2025 Online Published: August 6, 2025

doi:10.11114/smc.v13i4.7873 URL: https://doi.org/10.11114/smc.v13i4.7873

Abstract

The purpose of this research is to identify emerging trends in digital film technology. This study employs a qualitative research design using a literature-based methodology, with CiteSpace and VOSviewer as primary tools for bibliometric analysis. A total of 112 documents retrieved from the Scopus database were examined to map research trends in digital film technology. These documents were converted into CSV format and analyzed to identify patterns related to authorship, keywords, country of origin, and year of publication. The findings indicate that the volume of publications in this field has remained relatively stable over the past decade. Two major research clusters dominate the discourse: the technological impact on film production and the digital film industry ecosystem. Although these clusters encompass diverse themes, their intersections suggest growing collaboration in several areas of digital film technology. A key limitation of this study is its reliance on a single data source—Scopus—which may exclude relevant literature from other indexing platforms.

Keywords: bibliometric approach, digital film, technology, Scopus

1. Introduction

The rapid advancement of film technology has significantly transformed the global film industry, influencing every stage of production, from pre-production and filming to distribution and adaptation (Marcelina et al., 2023). In this context, Manovich (2001) introduced the concept of database cinema, which suggests that digital filmmaking enables new forms of expression by combining modular and non-linear storytelling in ways similar to database structures. Narrative structures and stylistic experimentation have increasingly been shaped by technological innovation, particularly in the realm of visual storytelling (Bordwell, 2007). Similarly, Jenkins (2006) highlights the role of audiences in the era of media convergence, underscoring their participation in the production and distribution of digital films. These developments raise critical questions about how technology influences narrative strategies, aesthetic styles, and distribution models in contemporary cinema.

The primary objective of this study is to identify and illustrate scientific trends in digital film technology over the past decade. Using a bibliometric approach, this research draws on Scopus-indexed data and analytical tools such as CiteSpace and VOSviewer to explore the evolution of scholarly discourse in this field. Central to this inquiry is understanding how developments in digital film technology are reflected in scientific publications and determining the dominant themes and research clusters that have emerged.

One of the most profound transformations driven by technological innovation is in film distribution. The shift from traditional theatrical screenings to digital platforms and streaming services has opened new opportunities for independent filmmakers (Cleve, 2006; Frey, 2015) This paradigm shift is marked by the growing dominance of digital distribution platforms and the diminishing reliance on conventional cinema releases. Services such as video-on-demand and streaming have enhanced efficiency, accessibility, and convenience for both producers and audiences. Consequently, these developments have reshaped industry practices and fueled the emergence of new phenomena, including changes in narrative structures, visual aesthetics, and audience engagement. These evolving practices reflect a dynamic interplay between technological innovation, creative expression, and cultural context—offering new opportunities while also introducing challenges that redefine modern filmmaking.

Despite the significance of these shifts, existing research often addresses only partial aspects of digital film technology, such as evolving distribution models (Kehoe & Mateer, 2015), cinematic aesthetics (Li, 2022), and the influence of artificial intelligence and blockchain on production (Alfaleh & Fayad, 2022; Su et al., 2019). However, a notable research gap persists:

there is a lack of systematic approaches that connect scientific developments and global collaboration in this domain. Many previous studies have been descriptive or limited to local case studies, with few employing bibliometric methods to identify long-term trends, clusters, or patterns in the field. Addressing this gap is the foundation of the present research.

Meanwhile, regional contexts illustrate additional complexities. For instance, debates continue over the role of digital technologies in shaping the Jordanian film industry (Alfaleh & Fayad, 2022). Core elements of digital cinematography—such as lighting, editing, and camera work—are central to these discussions. This paper also examines a representative example from this context: the Jordanian digital film Captain Abu Raed, analyzing its production and highlighting key technical aspects. Furthermore, the work of Kehoe and Mateer (2015) provides insight into how emerging digital technologies have transformed independent film distribution in the United Kingdom. Their study applies the concept of the value chain to understand how technological innovation has shifted the distribution market from being supply-driven to demand-driven. This shift enables independent distributors to break away from rigid, linear value chains and implement more flexible, film-specific release strategies.

To address these dynamics, this study is guided by the following research question: How have scholarly publications on digital film technology evolved, and what trends can be identified regarding key issues and innovations? Specifically, this research examines the evolution of academic discourse on digital film technology by focusing on emerging themes, dominant research areas, and patterns of collaboration over time.

2. Literature Review

2.1 General Overview of Digital Film Technology

The paradigm of filmmaking has shifted dramatically with the rise of digital technologies. The definition and practice of cinema have evolved from recording reality to visualizing data-driven and algorithmic constructions. Manovich (1999) argues that in digital culture, film is no longer regarded merely as a narrative medium. Instead, it operates within the logic of the database, where visual elements function as datasets that can be altered, combined, and customized through digital interfaces. This perspective is further expanded in his essay What is Digital Cinema? (Manovich, 1995), which asserts that digital cinema represents a new form of animation, in which recorded imagery constitutes only one component within a more complex composite process. Technologies such as 3D modeling, compositing, and digital painting enable the creation of "elastic realities," unrestricted by physical space. In *The Language of New Media* Manovich (2001) emphasizes the dialectical relationship between narrative and database structures and how these interactions reshape the logic and aesthetics of modern cinema. Consequently, digital film technology does more than provide new production tools; it challenges the foundational definition of film as an indexical art form, creating a transformative space between recording and simulation.

Digital technology encompasses all computer-based processes used to create or modify films (Kempeneer & Heylen, 2023). These technologies rely on digital electronics, converting images, text, sound, and other information into binary digits recognizable by electronic computers. These systems possess the capacity to calculate, process, store, transmit, and reprocess data (Hu, 2016). Broadly, two categories of technologies dominate digital filmmaking. The first category involves digital graphic processing technologies, including digital imaging, high-definition (HD) technologies, non-linear editing, and scene design. The second category relates to digital film transmission technologies, such as digital video, networking, digital distribution, and digital projection (Westerlund, 2019). Bordwell (2007) observes that narrative structures and editing techniques have also been influenced by digital media shifts, pushing cinema toward more experimental aesthetics. Meanwhile, Jenkins (2006) introduces the concept of media convergence, where the boundaries between producers and consumers blur, encouraging audiences to actively participate in the production and distribution of films.

Historically, technological breakthroughs have driven major shifts in the film industry, as evidenced by transitions from silent to sound cinema, from black-and-white to color, and later the adoption of television. Today, digitization dominates, altering how films are produced, stored, and consumed. Independent production, global audience access, and efficient distribution are among the most notable benefits (Macrì & Cristofaro, 2021; Nanda et al., 2018). However, Mulvey's (1975) critique of gender representation and power remains relevant in the digital era, where narrative control and visual aesthetics may perpetuate or amplify structural biases. Film technology has historically evolved in parallel with industry practices. Major technological milestones, such as synchronized sound, full-spectrum color, and adaptation to emerging audiovisual platforms—first television and later home video—marked critical turning points (Pardo, 2013). Over the past decade, digital technology has begun to redefine the film industry. Ulin (2019), notes that conventional distribution systems are being reconsidered, particularly regarding release windows and the sustainability of exclusivity periods.

Recent studies further reinforce this discourse. The emergence of streaming services has revolutionized film distribution and production, displacing analog systems with digital workflows (Gill & Tiwari, 2023). Digitization accelerates distribution, reduces production costs, and extends global reach. Yu (2025) affirms these findings, highlighting that technologies such as 5G, artificial intelligence (AI), and cloud computing have driven comprehensive transformations in production, online distribution,

and audience engagement. A systematic study by Tsiavos and Kitsios (2025) demonstrates that AI now permeates every stage of the film industry value chain, from scriptwriting to cinematography to data-driven marketing. Nevertheless, these advancements also raise ethical issues, including algorithmic bias, intellectual property disputes, and workforce displacement.

Geopolitical and regional disparities further shape the digital transformation of cinema. Paksiutov (2021) highlights differences between Asian and Western nations in accessing global distribution networks, noting that Hollywood dominance remains strong despite the rapid growth of Asian film industries. However, digital technology and over-the-top (OTT) platforms present opportunities for Asian countries to develop independent distribution systems. International Telecommunication Union (2021) reports on regional digitalization trends, drawing attention to persistent gaps in infrastructure and digital literacy across Asia-Pacific, which influence the pace of transformation within local film industries.

Overall, the digitalization of the film industry underscores the profound interconnection between cinema and technology (Bolin, 2016). According to Nanda et al. (2018), adopting digital technologies has substantially advanced the film sector, while rapid diffusion and iterative development of digital tools continue to fuel innovation and high-quality content production (Macrì & Cristofaro, 2021). Historically, technological innovations—from the printing press, which enabled newspapers and books, to telecommunications, which powered radio, film, and television—have reshaped media landscapes (Hanson, 2008). In this trajectory, digital technology provides filmmakers with unprecedented creative control compared to traditional methods. For example, the ability to create digital characters illustrates the enhanced capacity to manipulate visual imagery, alter appearances, facial expressions, gestures, and seamlessly integrate characters into backgrounds (Kehoe & Mateer, 2015).

Advanced image manipulation enables detailed character design within flexible digital cinematic frames. Digital replication techniques are widely applied to replace costly human extras (Chong, 2007) offering greater control over character presence. Methods such as digital masking—where an actor's face is composited onto a body double—along with green-screen compositing, facilitate seamless integration of characters into complex visual environments, supporting ambitious expressive goals (Fussfeld, 2014). These findings affirm that digital transformation in cinema extends beyond technical innovation, encompassing cultural, economic, and geopolitical dimensions. Consequently, strategies for developing digital film technologies must account for systemic and multi-level factors, including production capabilities, cross-regional distribution, and data-driven audience interaction.

3. Research Methodology

To map scientific trends in the field, this study employed a systematic literature review approach (Ellegaard & Wallin, 2015) to analyze the informational structure of scholarly publications and information systems. Specifically, the study utilized bibliometric analysis, a method widely recognized for its ability to identify research trends through systematic examination of published documents (Donthu et al., 2021); This research applied a qualitative bibliometric approach based on secondary data obtained from the Scopus database. Scopus was selected as the primary data source because it is one of the largest and most reputable indexing platforms for peer-reviewed scientific literature. Data were retrieved using the keywords "Digital Film Technology" and "Digital Film", covering the period from January 2013 to December 2022. The initial search yielded 112 articles, which formed the basis for the bibliometric analysis. Each record included comprehensive metadata, such as publication year, title, abstract, references, authorship, and affiliation details.

The search strategy followed the parameters illustrated in Figure 1. The query was structured as follows:

TITLE-ABS-KEY("Digital Film Technology" OR "Digital Film")

AND (LIMIT-TO(AFFILCOUNTRY))

AND (LIMIT-TO(LANGUAGE, "English"))

AND (LIMIT-TO(PUBSTAGE, "final"))

AND (LIMIT-TO(DOCTYPE, "cp" OR "ar" OR "ch" OR "re" OR "le"))

AND (LIMIT-TO(PUBYEAR, 2013-2022))

The selected document types included conference papers (cp), articles (ar), book chapters (ch), reviews (re), and letters (le) to ensure a comprehensive dataset representing different forms of scholarly output. The extracted data were downloaded in RIS and CSV (comma-separated values) formats from Scopus for subsequent analysis.

Bibliometric data were analyzed using multiple perspectives, including year of publication, document type, country of origin, and other relevant variables (van Eck & Waltman, 2010). To identify research hotspots and visualize keyword co-occurrence networks, the study employed VOSviewer and CiteSpace, two widely used tools for bibliometric mapping (Su et al., 2019), These tools facilitated the creation of bibliometric networks, cluster maps, and co-citation analyses to reveal dominant themes and emerging research areas in digital film technology (Page et al., 2021). Figure 1 illustrates the overall data collection and analysis workflow used in this study.

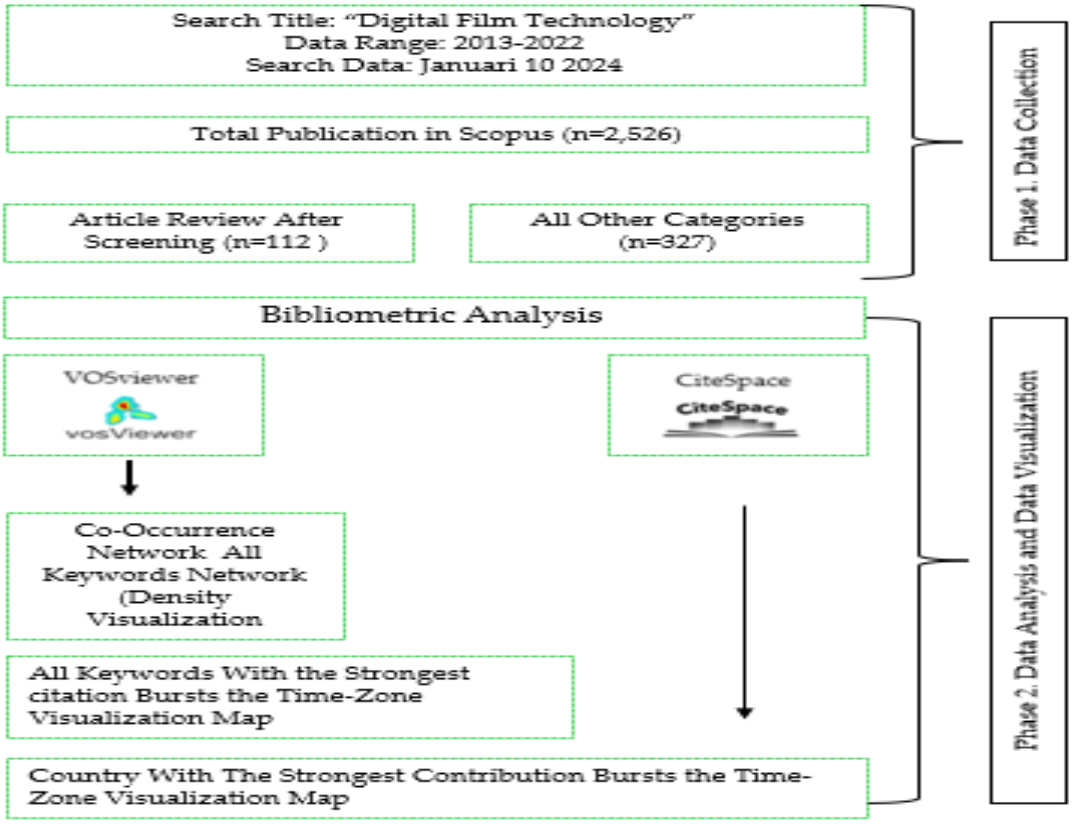

Figure 1. Flow of Data Collection and Data Analysis

4. Result and Discussion

4.1 General Information and Annual Publication Output

The Scopus database search identified 112 documents related to Digital Film Technology published between 2013 and 2022. These data serve as the foundation for analyzing key trends and providing significant insights into scholarly discourse on digital film. Additionally, this information helps to explain global publication patterns on digital film technology as indexed by Scopus, one of the world's leading scientific databases.

The purpose of this analysis is to understand how this topic has evolved within the global research landscape. Accordingly, this section maps publication trends by year, identifies key sources, and examines contributions by countries, authors, and institutional affiliations. Figure 2 presents the annual distribution of publications on Digital Film Technology from 2013 to 2022.

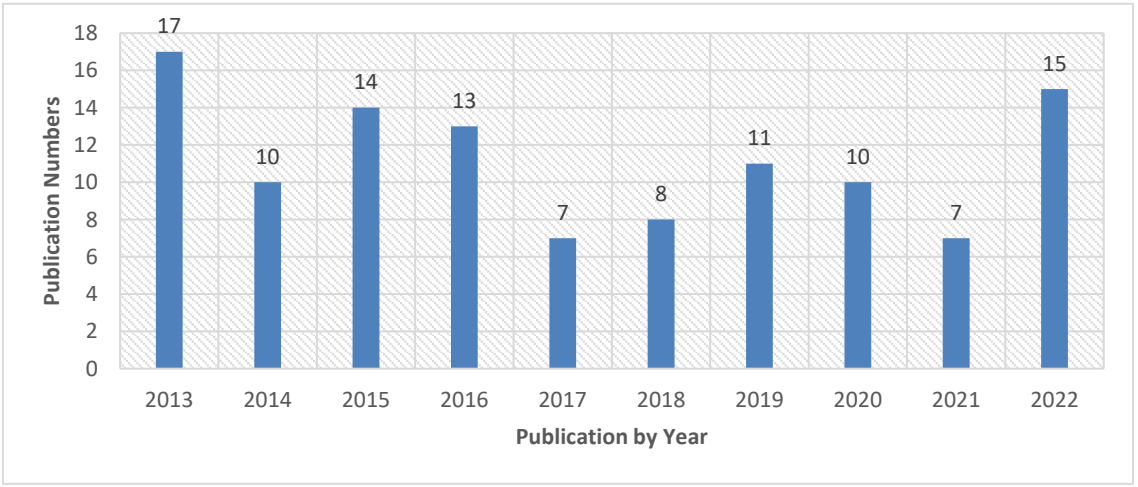

Figure 2. Document by years

As shown in Figure 2, the trend in Scopus-indexed publications between 2013 and 2022 demonstrates overall stability, with minor fluctuations. The highest number of publications occurred in 2013, with 17 documents, followed by 2022, which recorded 15 publications, marking it as the second-highest year. This consistency reflects sustained scholarly interest in digital film technology, likely driven by rapid global advancements in digital technologies and their integration into various domains of the film industry. The observed increase in recent years underscores the growing importance of topics such as immersive cinema, AI-driven production, and streaming-based distribution models.

Bordwell (2005) provides a critical lens through which to interpret these developments, particularly in relation to methodological transformations in film studies. In his article Film and the Historical Return, Bordwell critiques the dominant focus on normative calls—such as interdisciplinarity, rejection of linear narratives, and inclusion of non-Western voices—within the historiography of cinema, arguing that such discourse often lacks substantial methodological innovation. According to Bordwell, many essays in this tradition remain entangled in theoretical rhetoric rather than advancing empirical or data-driven approaches that could enrich film historiography. He advocates for a balanced integration of theory, methodology, and empirical evidence to ensure that the historical turn in film studies moves beyond ideological constraints toward concrete research practices. This argument resonates strongly with the present study, which leverages bibliometric analysis as a systematic, data-oriented method to trace scholarly trends in digital film research.

The rise of digital technology has also facilitated the emergence of immersive cinema, introducing new aesthetic criteria for performance and visual storytelling (Li, 2022). Contemporary expectations increasingly demand stylized, even exaggerated, forms of expression in hybrid formats, blending documentary realism with heightened romanticism and artifice. Performance norms have evolved accordingly: emotions must be layered and subtly conveyed, while actors require specialized training for green-screen and blue-screen techniques, particularly when performing in isolation within digitally constructed environments. Such developments illustrate the deep entanglement of performance practices with technological affordances, shaping a new aesthetics of digital cinema that reflects both local traditions—such as those in Chinese cinema—and global discourses.

Hu (2016) cautions, however, that despite the dominance of digital technology in the global film industry, it should be adopted judiciously. Traditional film technologies continue to play a crucial role in advancing cinematic art. While the digital revolution—hailed as the third major transformation in film history after the introduction of sound and color—is far from complete and still faces technical and cost-related challenges, its benefits are undeniable. Digitalization has tightened production chains, reshaped audiovisual consumption patterns, and opened possibilities for novel structures across pre-production, production, post-production, and distribution. These systemic changes not only redefine filmmaking practices but also highlight the need for continuous scholarly engagement with technological, aesthetic, and industrial dimensions of cinema.

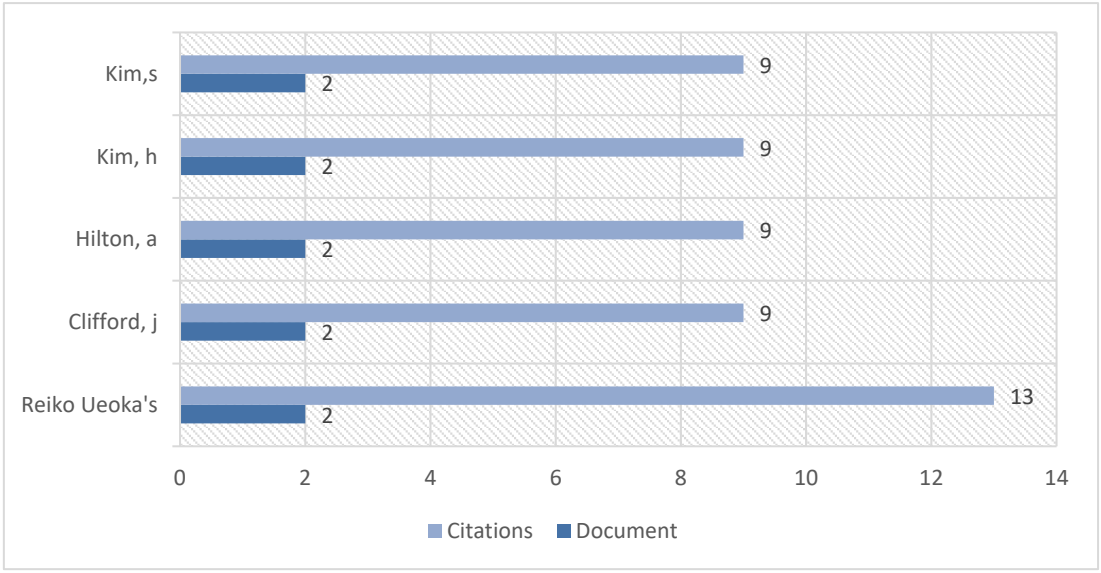

Figure 3. Contributions by authors

Source: VOSviewer, (2024)

Figure 3 presents the five authors with the highest citation counts in the field of digital film technology. Among them, Reiko Ueoka stands out as the most influential scholar, with 13 citations, indicating a significant contribution to this research domain over the past decade. This suggests that Ueoka has established expertise and recognition in the study of digital film technologies.

Table 1. Contribution by source

Source	Document	Citations
Lecture notes computer science	5	18
Journal of Scandinavian Cinema	3	8
International journal of media and cultural politics	2	1
Studies in Australasian Cinema	2	4

Source: VOSviewer (2024)

As shown in Table 1, the Lecture Notes in Computer Science series is the most prominent outlet for research on digital film technology, publishing five documents with a total of 18 citations. The Journal of Scandinavian Cinema follows with three documents and eight citations, while the International Journal of Media and Cultural Politics and Studies in Australasian Cinema contributed two documents each, with one and four citations, respectively. All four sources are indexed in Scopus and associated with high quartile rankings, underscoring their reputational standing and rigorous peer-review processes. Consequently, articles published in these journals are considered high-quality contributions to the scholarly discourse on digital film technology. These journals also provide valuable reference points for researchers aiming to explore or publish in this field.

Table 2. Contributions by country

Countries	Document	Citations
United Kingdom	20	150
United States	16	47
Australia	6	24
China	11	19
German	7	14
South Korea	5	11

Source: VOSviewer (2024)

As indicated in Table 2, the United Kingdom leads global research on digital film technology, with 20 documents and 150 citations, reflecting its significant academic engagement and influence in this area. The United States ranks second, contributing 16 documents with 47 citations, followed by Australia (6 documents, 24 citations), China (11 documents, 19 citations), Germany (7 documents, 14 citations), and South Korea (5 documents, 11 citations). The dominance of the United Kingdom suggests strong institutional support and scholarly interest in digital film technology research, possibly linked to its well-developed media and cultural studies infrastructure.

4.2 Trends in Digital Film Technology and Their Development

This section presents a visualization of research trends and density networks in the field of digital film technology. Trend network visualizations illustrate the progression of research over the past decade based on frequently occurring keywords, while density maps identify topics with significant potential for future exploration. In this study, each research publication analyzed through VOSviewer and CiteSpace included keywords that appeared at least twice to ensure reliability in mapping.

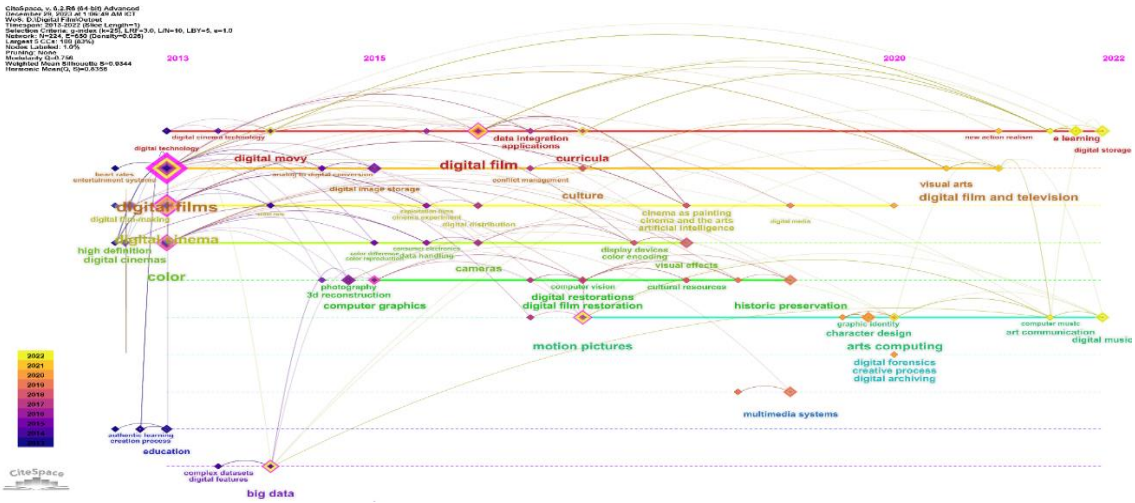

Figure 4. Trend Analysis of Digital Film Technology Research

The trend analysis conducted using VOSviewer and CiteSpace identified two dominant clusters in the evolution of research on digital film technology from 2013 to 2022. Cluster 1 focuses on technical aspects of film production, including projection systems, blockchain technology, and digital film creation processes. Cluster 2 centers on the transformation of the film industry, encompassing themes such as big data, digital features, and infrastructure for digital distribution.

These findings align with Manovich's concept of database cinema Manovich (1999; 2001), which posits that the structure of digital films increasingly depends on modular, data-driven configurations rather than linear narratives. This shift enables non-linear, collaborative visual manipulation, resulting in a more decentralized and flexible production model. Consequently, digital capabilities such as animation, visual effects, and immersive reality have introduced new forms of cinematic aesthetics, positioning film as a platform for continuous creative innovation (Li, 2022).

This cognitive and aesthetic transformation also affects how audiences engage with and interpret films. As Bordwell (2007), notes, digital cinema facilitates experimental narrative forms and aesthetic approaches that demand new interpretive strategies from viewers. This phenomenon relates closely to Jenkins' (2006) concept of media convergence, where audiences actively participate in the production and distribution ecosystem of digital content. Thus, digital technology not only transforms the medium of production but also reshapes the interaction between text, audience, and creator.

The keyword density visualization further reveals research gaps. Terms such as virtual reality, visual effects, film education, and digital storage remain underexplored, signalling substantial opportunities for future research. This observation supports Manovich's (2001) argument that digital media are inherently mutable, enabling dynamic configurations of interfaces and user experiences that can be continually examined by scholars and filmmakers. Overall, the bibliometric mapping suggests a notable shift in digital film technology research—from primarily technical concerns to more conceptual and practical issues—affirming that digital film functions not merely as a recording medium but as an evolving creative platform.

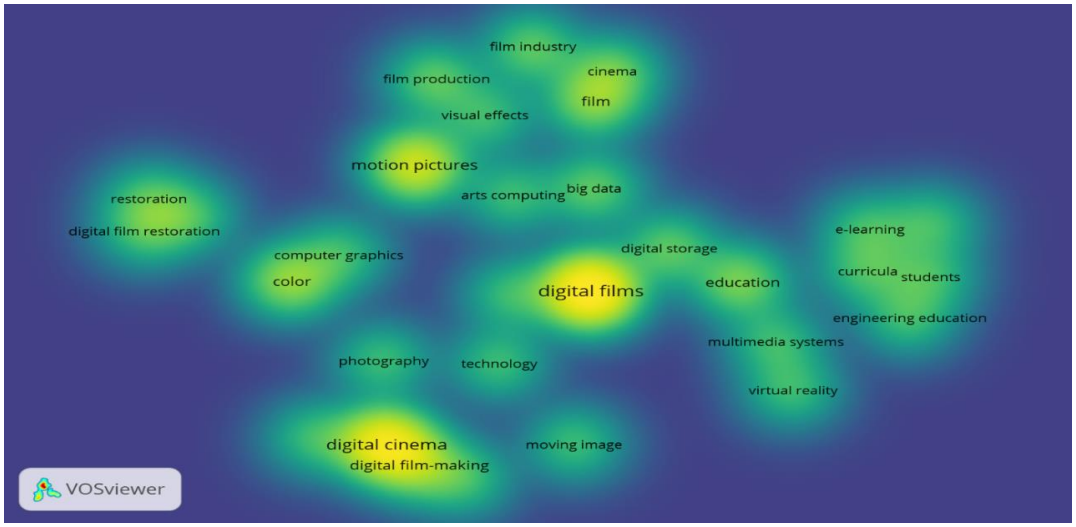

Figure 5. Keyword Density Visualization by VOSviewer

The density map generated by VOSviewer displays the frequency and prominence of keywords associated with digital film technology research published between 2013 and 2022 in Scopus-indexed sources. Keywords highlighted in yellow indicate higher research activity, while those with weaker yellow tones or absent highlights represent underdeveloped topics. Prominent keywords in the high-density zone include film production, multimedia systems, virtual reality, film industry, big data, digital storage, visual effects, and education. Although these terms are conceptually broad, their relatively low saturation in certain contexts suggests untapped potential for future research. These findings confirm that expanding scholarly inquiry into these areas could yield novel insights and contribute significantly to the advancement of digital film technology studies.

4.3 Country Collaboration Networks

The bibliometric analysis of international collaboration in digital film technology research reveals that countries with advanced technology adoption play a pivotal role in shaping this domain. According to VOSviewer's mapping, four major hubs dominate the network: the United Kingdom, the United States, the Netherlands, and Australia. These nations demonstrate strong inter-regional partnerships, extending collaboration to countries across Europe, Asia, Latin America, and Africa. This pattern reinforces the arguments by Pardo (2013) and Ulin (2019) that geopolitical configurations and cross-national business strategies significantly influence the dynamics of the global digital media industry.

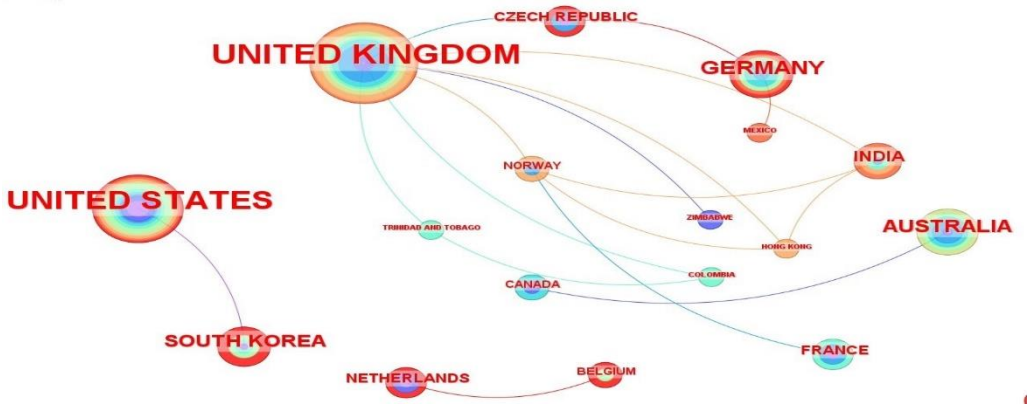

Figure 6. Country Collaboration Network

The dominance of Western nations within these collaborative networks reflects their technological and economic strength as well as their central position in global content production and distribution ecosystems. These findings are consistent with Paksiutov (2021) who argues that, despite Asia's rapid growth in film production, access to digital distribution infrastructure remains comparatively limited.

However, the rise of digital distribution platforms and cloud-based technologies has begun to create new opportunities for countries in Asia and the Global South to actively participate in digital film research and production ecosystems. Yu (2025) notes that emerging technologies such as 5G, artificial intelligence (AI), and edge computing have significantly enhanced the capacity for film production and online distribution in these regions, facilitating more efficient and cost-effective international collaborations. Similarly, Andrijana Cvetkovikj observes that Asia's film industry is at a critical juncture where technological innovation intersects with cinematic artistry. For independent studios and emerging markets, AI offers transformative potential—lowering production costs, attracting global investment, and enabling creative experimentation. This shift is further evidenced by the inclusion of AI-driven and immersive reality films in prestigious film festivals such as Venice and Cannes, signalling institutional recognition of technological innovation in cinematic expression.

Moreover, Jenkins (2006) underscores the importance of cultural convergence in defining the relationships among nations, businesses, and user communities in the digital era. International collaborations in this context involve not only cross-border production practices but also shared knowledge systems and ethical frameworks, fostering an interactive and participatory research environment. Mapping these collaboration networks highlights the underlying symbolic and technological power dynamics shaping the global creative economy. To ensure a more inclusive research ecosystem—one that reflects diverse perspectives, resources, and strategic objectives across regions—there is a pressing need for interdisciplinary and interregional approaches that democratize access to knowledge production in the digital film sector.

5. Conclusion

Although research on digital film technology has evolved significantly over the past decade, the quantitative pattern of publication has remained relatively stable, while conceptual and thematic orientations have undergone notable shifts. The findings identify two dominant clusters: the first focuses on technical aspects and technological innovations, such as digital projection, blockchain, and AI; the second explores the industrial dimension and digital distribution systems. These results reinforce the notion that digital cinema has transitioned into an expressive domain structured by database logic, moving away from traditional linear narrative forms.

Current digital film production is increasingly modular, non-linear, and conducive to complex visual manipulation, giving rise to new aesthetics grounded in visual realism and data-driven frameworks. As Bordwell (2007) argues, these methods expand the possibilities for narrative experimentation and audience interpretation. Moreover, understanding media convergence from a cultural and geopolitical perspective, as proposed by Jenkins (2006) is crucial for analyzing the circulation of meaning, cross-national production practices, and global audience engagement. These technological developments must be understood as a multicultural project shaped by economic, political, and representational dynamics, particularly in the context of international research collaborations and the emerging role of Asian nations in digital film production and distribution (Paksiutov, 2021; Yu, 2025).

In essence, digital cinema today is no longer merely a medium for moving images; it has become a creative and conceptual arena for reimagining cultural landscapes in the digital age. This study provides a foundational framework for further mapping of strategic trends and challenges in digital film technology, marking it as a key area for future scholarship in cinema, media, and technology studies.

6. Limitations and Recommendations for Future Research

This study relied exclusively on Scopus as its data source. While Scopus is one of the largest academic repositories, this approach restricts the inclusion of literature—particularly from the Global South, where publications often appear in regional or non-Scopus-indexed databases. Consequently, future research should triangulate multiple data sources, such as Google Scholar, Dimensions, and Web of Science, to provide a more comprehensive and representative overview of the field. Additionally, publications in non-English languages warrant closer examination, as they often capture local cultural practices and contextual insights that remain underrepresented in international scholarship.

To better understand the dynamic interplay between technology and production practices, future studies should consider mixed-method approaches by incorporating qualitative content analysis of digital films produced over the past decade. Such an approach would bridge the gap between bibliometric trends and actual cinematic practices, offering a more nuanced and critical understanding of the transformations shaping the contemporary digital cinema landscape.

Acknowledgments

The author would like to thank all parties who have helped in this manuscript research process and writing, especially our team of researchers.

Authors contributions

The author is responsible for the research, writing, and analysis presented in the article.

Funding

Not applicable

Competing interests

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.

Informed consent

Obtained.

Ethics approval

The Publication Ethics Committee of the Redfame Publishing.

The journal's policies adhere to the Core Practices established by the Committee on Publication Ethics (COPE).

Provenance and peer review

Not commissioned; externally double-blind peer reviewed.

Data availability statement

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

Data sharing statement

No additional data are available.

References

Alfaleh, A., & Fayad, A. (2022). The importance of modern digital technologies in the Jordanian film industry The movie "Captain Abu Raed" as a model. *Dirasat: Human and Social Sciences, 49*(2), 13-30. https://doi.org/10.35516/hum.v49i2.1726

Bolin, G. (2016). *Value and the media: Cultural production and consumption in digital markets*. Routledge.

Bordwell, D. (2005). *Film and the Historical Return*. https://www.davidbordwell.net/essays/return.php

Bordwell, D. (2007). *Poetics of Cinema*. Routledge. https://www.davidbordwell.net/books/poetics.php

Chong, A. (2007). *Digital animation (Vol. 2).* Bloomsbury Publishing. https://doi.org/10.5040/9781350088832

Cleve, B. (2006). *Film production management*. Taylor & Francis. https://doi.org/10.1016/B978-0-240-80695-2.50003-5

Donthu, N., Kumar, S., Mukherjee, D., Pandey, N., & Lim, W. M. (2021). How to conduct a bibliometric analysis: An overview and guidelines. *Journal of Business Research*, *133*, 285-296. https://doi.org/10.1016/j.jbusres.2021.04.070

Ellegaard, O., & Wallin, J. A. (2015). The bibliometric analysis of scholarly production: How great is the impact? *Scientometrics*, *105*(3), 1809-1831. https://doi.org/10.1007/s11192-015-1645-z

Frey, H. (2015). Applications and Developments of Thin Film Technology. In *Handbook of Thin-Film Technology* (pp. 1–3). Springer Berlin Heidelberg. https://doi.org/10.1007/978-3-642-05430-3_1

Fussfeld, C. (2014). The new language of the digital film. *Journal of Popular Film and Television, 42*(1), 47-58. https://doi.org/10.1080/01956051.2012.759898

Gill, G., & Tiwari, R. (2023). The impact of digital technology on film production and distribution. *International Journal of Creative Media Studies, 15*(1), 33-49. *https://doi.org/10.1386/nl_00035_1*

Hanson, E. C. (2008). *The information revolution and world politics*. Rowman & Littlefield Publishers.

Hu, K. (2016). *The effects of digital video technology on modern film*. Drexel University.

International Telecommunication Union. (2021). *Digital trends in Asia and the Pacific 2021 - UN-APCICT*.

Jenkins, H. (2006). *Where Old and New Media Collide*. NYU Press. http://www.jstor.org/stable/j.ctt9qffwr

Kehoe, K., & Mateer, J. (2015). The Impact of Digital Technology on the Distribution Value Chain Model of Independent Feature Films in the UK. *JMM International Journal on Media Management*, *17*(2), 93-108. https://doi.org/10.1080/14241277.2015.1055533

Kempeneer, S., & Heylen, F. (2023). Virtual state, where are you? A literature review, framework and agenda for failed digital transformation. *Big Data & Society*, *10*(1). https://doi.org/10.1177/20539517231160528

Li, Z. (2022). *The Development of Digital Technology and Changes in Performance Esthetics*. *2*(1), 149-164. https://doi.org/doi:10.1515/jcfs-2022-0018

Macrì, E., & Cristofaro, C. L. (2021). The Digitalisation of Cultural Heritage for Sustainable Development: The Impact of Europeana. In P. Demartini, L. Marchegiani, M. Marchiori, & G. Schiuma (Eds.), *Cultural Initiatives for Sustainable Development: Management, Participation and Entrepreneurship in the Cultural and Creative Sector* (pp. 373-400). Springer International Publishing. https://doi.org/10.1007/978-3-030-65687-4_17

Manovich, L. (1995). *What is Digital Cinema?* https://manovich.net/index.php/projects/what-is-digital-cinema

Manovich, L. (1999). Database as symbolic form. *Convergence*, *5*(2), 80-99. https://doi.org/10.1177/135485659900500206

Manovich, L. (2001). *The language of new media* (1st ed.). MIT Press. https://doi.org/10.22230/cjc.2002v27n1a1280

Marcelina, I., Odelia, A., & Nugraha, A. R. (2023). Analisis Perubahan Perilaku Netizen Terhadap Perkembangan Teknologi dalam Film Like & Share . *Prosiding Seminar Nasional Ilmu Ilmu Sosial (SNIIS)*, *2*, 1620–1630.

Mulvey, L. (1975). Visual Pleasure and Narrative Cinema. *Screen*, *16*(3), 6-18. https://doi.org/10.1093/screen/16.3.6

Nanda, M., Pattnaik, C., & Lu, Q. (Steven). (2018). Innovation in social media strategy for movie success. *Management Decision*, *56*(1), 233-251. https://doi.org/10.1108/MD-04-2017-0429

Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D.,… & Moher, D. (2021). The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *BMJ*, 71. https://doi.org/10.1136/bmj.n71

Paksiutov, G. D. (2021). Transformation of the global film industry: Prospects for Asian countries. *Russia in Global Affairs*, *2021*(2), 111-132. https://doi.org/10.31278/1810-6374-2021-19-2-111-132

Pardo, A. (2013). Digital Hollywood: How Internet and Social Media Are Changing the Movie Business. In *Handbook of Social Media Management* (pp. 327-347). Springer Berlin Heidelberg. https://doi.org/10.1007/978-3-642-28897-5_19

Su, X., Li, X., & Kang, Y. (2019). A Bibliometric Analysis of Research on Intangible Cultural Heritage Using CiteSpace. *Sage Open*, *9*(2). https://doi.org/10.1177/2158244019840119

Tsiavos, V., & Kitsios, F. (2025). The digital transformation of the film industry: How Artificial Intelligence is changing the seventh art. *Telecommunications Policy*. https://doi.org/10.1016/j.telpol.2025.103021

Ulin, J. C. (2019). *The Business of Media Distribution : Monetizing Film, TV, and Video Content in an Online World*. Routledge. https://doi.org/10.4324/9781351136624

van Eck, N. J., & Waltman, L. (2010). Software survey: VOSviewer, a computer program for bibliometric mapping. *Scientometrics*, *84*(2), 523-538. https://doi.org/10.1007/s11192-009-0146-3

Westerlund, M. (2019). The Emergence of Deepfake Technology: A Review. *Technology Innovation Management Review*, *9*(11), 39-52. https://doi.org/10.22215/timreview/1282

Yu, C. (2025). Research on the Transformation Paths, Opportunities and Challenges of the Film Industry in the Digital Age. *Communications in Humanities Research*, *69*(1), 189-195. https://doi.org/10.54254/2753-7064/2025.24745