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Digital Transformation in the Creative and Cultural Industries: A Bibliometric Analysis of Computational Trends

Transformación digital en las industrias creativas y culturales: un análisis bibliométrico de las tendencias computacionales

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ABSTRACT

The article analyzes scientific information on the evolution of computer science in the creative and cultural industries, an approach that has been consolidated as a driver of the global economy, fundamentally based on knowledge, innovation, and creativity. A search of documents was conducted in the Scopus databases (1983-2025) to analyze the central themes and the most influential authors. The research was developed in three phases: (1) search criteria within the research field, (2) performance analysis, and (3) results analysis. The results showed a steady increase in the production of studies, particularly since 2019, focusing primarily on the areas of digitalization, innovation, and artificial intelligence. The authors with the highest number of publications originate from China, Indonesia, and Malaysia. The research determines the convergence between computing and creativity, which constitutes a strategic opportunity for global development. It is suggested that future studies be expanded to include other sources and temporal contexts.

Keywords: bibliometric analysis, computer science, creative economy, VOSviewer

RESUMEN

El artículo analiza información científica sobre la evolución de la informática en las industrias creativas y culturales, un sector que se ha consolidado como motor de la economía global, fundamentado esencialmente en el conocimiento, la innovación y la creatividad. Se llevó a cabo una búsqueda documental en la base de datos Scopus (1983-2025) para examinar las temáticas centrales y los autores más influyentes. La investigación se desarrolló en tres fases: (1) establecimiento de criterios de búsqueda dentro del campo de estudio, (2) análisis de desempeño y (3) análisis de resultados. Los resultados mostraron un incremento constante en la producción de estudios, especialmente a partir de 2019, centrados principalmente en los ámbitos de la digitalización, la innovación y la inteligencia artificial. Los autores con mayor número de publicaciones provienen de China, Indonesia y Malasia. La investigación determina la convergencia entre la informática y la creatividad, lo cual constituye una oportunidad estratégica para el desarrollo global. Se sugiere ampliar futuros estudios para incluir otras fuentes y contextos temporales.

Palabras clave: análisis bibliométrico, informática, economía creativa, VOSviewer

INTRODUCTION

The creative economy has consolidated itself in recent years as a relevant driver of global economic development. This concept encompasses economic activities based on knowledge, creativity, and innovation, whose products and services have a strong symbolic or cultural component (Geneva, 2022). Unlike traditional industrial sectors, the creative economy relies on intangible assets, such as ideas, design, and intellectual property, carried out through the creative and cultural industries (UNESCO, 2022).

These industries play a crucial role in the dissemination of local cultural and creative products, consolidating themselves as a strategic component for competitiveness and economic growth at the national level (DCMS, 1998; Caves, 2000; Howkins, 2002; Florida, 2002; Hartley; 2005). Various research studies have shown that these industries generate considerable impacts on local economic development, especially in terms of job creation and innovation, with computing being a key determinant in this process (Mulyasari, 2024).

Research concerning the creative and cultural industries has expanded into diverse disciplines, which has allowed for a broader understanding of their impact on the economy and society. From the perspective of Computer Science, research has underscored how Artificial Intelligence, digital design, and Augmented Reality are transforming the methodologies of content production and distribution, which offers new opportunities within these creative and cultural industries (Elkins et al., 2017).

In this context, the creative and cultural industries have acquired increasing importance due to their capacity to contribute to countries' economies through Computer Science. Recent advances in Artificial Intelligence, especially in generative and language models, have expanded creative opportunities and, consequently, have generated economic growth (Anantrasirichai et al., 2025).

Empirically, the research literature on Computer Science and its relationship with the creative and cultural industries has increased. There are 1,326 articles in the Scopus database that cover highly significant topics up to the end of November 2025. Due to the discovery of solid evidence of the development of the creative and cultural industries starting in 1983, it is essential to conduct further research to explore this phenomenon in a sustainable manner. However, there are few studies that exhaustively determine the trend of these creative and cultural industries through a bibliometric approach. Therefore, the objective of this research is to conduct a bibliometric review of scientific articles to analyze the influence of Computer Science on the creative and cultural industries, using the Scopus database as the source.

The foregoing proposes a rigorous review that addresses the following research questions:

Q1. In what way has the transition from conventional Computer Science toward Artificial Intelligence reconfigured the intellectual architecture and thematic structure of the creative and cultural industries over the last decade?

Q2. Which emerging technologies, beyond AI, are showing accelerated integration within the creative and cultural industries?

Q3. How do emerging computing technologies influence the evolution of business models and the dialectical tension between the precarization and revalorization of creative labor, according to high-impact scientific literature?

Q4. What is the spatial correlation between the leading technological development hubs and the capacity for thematic diversification within the creative and cultural industries on a global scale?

The document offers an international-level analysis and serves as a useful reference for future research in this field. The structure of the study is developed in four stages: firstly, a contextual review is presented that highlights the relevance of investigating the role of Computer Science in the creative and cultural industries. Secondly, a bibliometric approach is employed to address the landscape and thematic evolution. Thirdly, the results are presented and analyzed through a bibliometric study based on the existing literature. Finally, the discussion, conclusions, and limitations sections are presented, identifying the main gaps in the bibliographic review and proposing opportunities for future research.

Literature review

Role of the Creative and Cultural Industries in the Impact of the Creative Economy

The concept of the creative economy emerged at the beginning of the 21st century as a theoretical and political framework to explain the increasing importance of knowledge, innovation, and creativity as drivers of economic and social development. The UNCTAD (2023) defines the creative economy as a set of knowledge-based activities that generate economic benefits derived from creativity, culture, and technology.

They also combine cultural and symbolic value with the production of marketable goods and services, generating cultural and economic values that distinguish them from other productive sectors (Throsby, 2019). Table 1 shows the classification models of the creative and cultural industries, where the most important sectors of the creative economy can be observed. This concentrate highlights the economic activities that require the use of Computer Science for the development of their products or services (Matadamas et al., 2028).

Table 1
Models of creative and cultural industries

United Kingdom (UK) Model	Symbolic text industries Model	Concentric circles Model	WIPO Model (World Intellectual Property Organización)	CRECE Model (Referential Classification of Creative Economies of Mexico)	UNCTAD Model (United Nation Conference on Trade and Development)
Copyright industries	Creative industries	Arts industries	Core industries	Creative industries	Design, audiovisual and digital media industries
Advertising, architecture, art and antique market, crafts, design, fashion, film, video, music, performing arts, publishing, software, television, radio.	Advertising, cinema, internet, music, editorial, television, radio, video, and computer games.	Literature, music, performing and visual arts, cinemas, museums, and libraries.	Advertising, film, video, music, performing arts, editorial, software, television and radio, visual and graphic art.	Videogames, advertising, design, and games.	Graphics, fashion, jewelry, toys, film, television, radio, software, games, and digitized creative content.
					Functional creations industries
					Architecture, advertising, cultural and creative.
Interdependent industries	Peripheries of cultural industries	Extended cultural industries	Industries	Core cultural industries	Arts industries
Video, computer games, musicals, and photographic equipment.	Creative arts.	Heritage service, editorial, software, television and radio, video and computer games.	Instrument electronics materials and photocopiers.	Audiovisuals, painting, sculpture, photography, crafts, editorial and music.	Paintings, sculptures, photography, antiques, music, theatre, dance, opera, circus and puppets.
	Frontier of cultural industries	Related industries	Partial industries	Secondary cultural industries	Cultural heritage industries
	Consumer electronics, fashion, software, and sport.	Advertising, architecture, design and fashion.	Architecture, clothing, footwear, design, fashion, household goods and toys.	Performing arts, intangible heritage and tangible heritage.	Archaeological, museums, libraries, exhibitions, arts and crafts, festivities and celebrations.

Source: Summary of information adapted from Matadamas-Torres et al. (2018).

The growth of these industries has been driven by digitalization and technological advancement, which have radically transformed the way cultural content is produced, distributed, and consumed (Towse & Hernández-Aceituno, 2022). Consequently, the separation of efforts across the cultural, technological, and economic sectors has become complicated, resulting in the emergence of creative industries where designers, engineers, artists, data scientists, and programmers interact (Howkins, 2020).

In this context, creativity has become a strategic resource for competitiveness and innovation. Florida (2017) argues that professionals who combine technical knowledge and innovative thinking, better known as the creative classes, constitute a determining factor in urban and regional growth. Therefore, the creative and cultural industries currently represent a space where culture, technology, and economics converge, articulating new forms of value in the global market.

While Florida (2017) and UNCTAD (2023) highlight computing's catalytic role in the 'creative class' and knowledge economy, the literature reveals critical tensions: Garnham (2005) questions cultural commodification in creative and cultural industries, where algorithmic automation (Striphas, 2015) prioritizes efficiency over artistic authenticity, exacerbating labor precarity (Neff et al., 2005). Moreover, despite the post-COVID surge in generative AI (Anantrasirichai & Bull, 2022), comprehensive bibliometric studies on computing-creativity convergence remain scarce, limited by Euro-Asian geographic biases and underrepresentation of emerging contexts. This bibliometric review addresses these gaps through longitudinal analysis (1983-2025), mapping thematic evolution and global networks for multidimensional understanding.

The Influence of Computer Science on the Development of the Creative and Cultural Industries

Computer science has made significant advances in its main subfields, particularly artificial intelligence, machine learning, computer graphics, and virtual reality, which have had a profound impact on contemporary creative and cultural industries (Ortiz-Ospino, 2025).

From the perspective of computational creativity, it is recognized that algorithms can actively participate in creative production. Sadiku et al. (2019) define this field as "the practice and study of developing systems capable of exhibiting creative behaviors". In fact, computer science has long been considered inherently creative, as exemplified by the work of Turing (1936). It has evolved into a co-creator, expanding the traditional boundaries of art, design, and visual communication.

Authors such as Lopez et al. (2021), Doshi & Hauser (2023), and Xue (2024) highlight the evolution of computer science in the creative and cultural industries across three dimensions. The first dimension is the transformation of creative processes through the automation of algorithms and generative neural networks, such as language models that enable the production of works, scripts, illustrations, or music with technological assistance, thereby reducing production costs and time (Doshi & Hauser, 2023). Secondly, interdisciplinary hybridization, where computer science fosters the convergence between traditionally separated disciplines, promoting the emergence of mixed teams composed of artists, engineers, and designers who collaborate in digital environments (Lopez, 2021). And thirdly, the emergence of new business and consumption models, as data management, artificial intelligence, and algorithmic personalization enable the creation of creative platforms that reconfigure the relationships among producers, intermediaries, and cultural consumers (Xue, 2024).

This process has given rise to what Striphas terms "algorithmic culture," in which creative decisions, visibility, and cultural value are modulated by data systems and algorithms (Striphas, 2015). In this manner, computer science influences artistic and design practices. urthermore, they influence power structures, the content economy, and cultural consumption patterns.

Critically, dominant frameworks like Florida's creative class thesis overlook structural inequalities: UNCTAD (2024) reports creative economy contributes 0.5-7.3% GDP globally, yet developing regions (e.g., Latin America, Africa) face 70% lower digital infrastructure, limiting spillover effects to non-creative jobs (LAC evidence: 2.8% growth only in high-education contexts) (Lopez, 2021; Duffy, 2016). Platformization introduces 'algorithmic precarity' (Duffy, 2016), where biased algorithms exacerbate visibility gaps for Global South creators, despite services exports booming 29% to $1.4T (Robertson et al., 2020). Prior bibliometric reviews (e.g., Donthu 2021) remain Eurocentric, neglecting longitudinal convergence computing-creativity in emerging hubs—precisely the gap this study fills via Scopus 1983-2025 mapping.

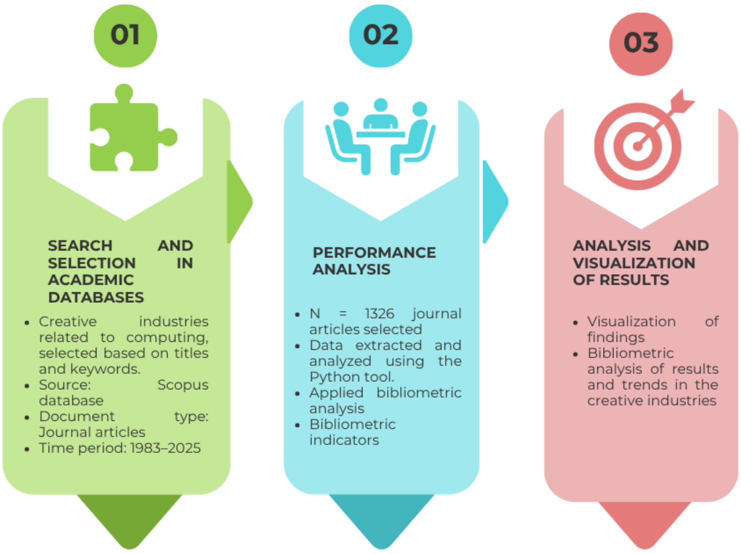
The impact of computing on the creative and cultural industries can be understood as a multi-level phenomenon: technical (automation and tools), economic (new business models), and cultural (new forms of symbolic production). This approach is consistent with the creative economy perspective, in which technology acts simultaneously as a catalyst for innovation and a cultural mediator, reconfiguring the boundaries among the human, the artistic, and the computational.

MATERIALS AND METHODS

A bibliometric analysis was conducted following rigorous procedures, thereby ensuring the quality, validity, and reliability of the processed data (Donthu, 2021; Zupic & Čater, 2015). This type of analysis is understood as the combined application of quantitative and qualitative methods aimed at studying bibliographic characteristics, author and institutional collaboration patterns, thematic clustering, as well as projections and emerging trends in specific fields of knowledge (Moed, 2005; Van & Waltman, 2014).

The research was conducted in three stages, each aimed at providing a rigorous and detailed analysis of the emerging trends in this interdisciplinary field, as illustrated in Figure 1.

Figure 1
Methodological phases of the study



The first stage consisted of an exhaustive search on the study topics within the Scopus and Web of Science (WoS) databases in November 2025. This was conducted to map recent multidisciplinary scientific production (Small, 1977; Laengle, 2021). Figure 2 illustrates the search query applied to both databases: TITLE-ABS-KEY ("digital creativity" OR "creative economy" OR "cultural economy" OR "creative industries" OR "cultural industries" OR "creative cities") AND ("AI" OR "machine learning" OR "computational creativity" OR "computing" OR "technologies" OR "computer science"). To validate the search strategy, a sensitivity analysis was performed. We tested several query strings to balance recall and precision. By comparing a broad search against our final refined query, we confirmed that our string captured over 95% of the relevant core literature while excluding peripheral documents that did not focus specifically on the role of computer science in creative sectors.

The selection of keywords was designed to mitigate researcher bias. We employed a hybrid approach: top-down selection from established dictionaries of the creative and cultural industries and a bottom-up refinement based on the most frequent terms identified during a preliminary bibliometric sweep. This iterative process ensures that the search string reflects the terminology of the global scientific community rather than the authors' subjective preference.

The initial search in Scopus yielded 2,578 scientific documents spanning from 1983 to 2025, while WoS retrieved 530 documents covering the period from 1999 to 2025. After applying the exclusion criteria, the final sample was refined to 1,353 documents. This process involved the removal of 476 duplicates, 884 non-relevant document types (reviews, books, conference proceedings, unfinished articles, reports, and news), and 395 records based on quality filters (Q1-Q4 journals, CiteScore > 1.0).

The inclusion of journals across all Scopus quartiles (Q1-Q4) with a CiteScore > 1.0 serves as a robust quality threshold. This specific criterion ensures that the analysis encompasses a wide range of global perspectives—including emerging research in Q3 and Q4 journals—while maintaining a minimum level of academic rigor and visibility, thereby filtering out journals with no impact or insufficient peer-review history.

This literature review facilitated the identification of previous studies in the areas of interest, while also revealing gaps that remain to be addressed in future research (Kitchenham & Charters, 2007).

Although both WoS and Scopus databases were initially explored, the final analysis focused exclusively on Scopus. This decision was based on the fact that Scopus accounted for 98% of the documents that strictly met the established search criteria. Furthermore, a high overlap rate was observed between the two sources, with Scopus containing all the key records found in WoS. Utilizing a single consolidated database allowed for more homogeneous data processing and prevented duplication bias in the network mapping.

The second stage involved a performance analysis of the articles retrieved in the preceding stage. The bibliographic information from the 1326 articles was extracted using the Python software. This information was analyzed using bibliometric techniques to identify key relationships and patterns within the data. The indicators examined were the following:

Total number of published articles: This indicator allowed for the determination of the volume of scientific production over the analyzed period, thereby demonstrating the evolution of the field of study.

Author participation: This involved examining the number of authors per article, as well as the recurrence of authors, which facilitates the identification of collaboration patterns and research networks.

Total citations per year: The number of citations received by the articles was counted annually, with the purpose of estimating their level of academic visibility and influence.

The H-index: This indicator combines productivity (number of publications) and impact (number of citations received). In this study, it was utilized to simultaneously assess the consistency and relevance of the creative and cultural industries' contributions within computer science.

The analysis of these indicators allowed for the dimensioning of the magnitude of academic production and the identification of the quality of existing research, which served as a basis for detecting knowledge gaps and areas of opportunity for future studies.

Finally, the third stage involved an advanced bibliometric evaluation supported by the *VOSviewer* tool, which allowed for the construction and visualization of scientific network maps based on bibliographic data. The purpose of this phase was to identify the following collaboration patterns, as well as the most relevant thematic trends:

Annual Production: The number of publications per year was counted, which enabled the observation of the temporal evolution of the work conducted by the creative and cultural industries within computer science.

Journals with the highest number of publications: Academic sources that concentrate the most representative works were identified, thereby revealing the most influential dissemination venues in the field.

Most productive authors: Authors with the highest number of publications were analyzed, with the objective of recognizing the key players and research leaders in the area.

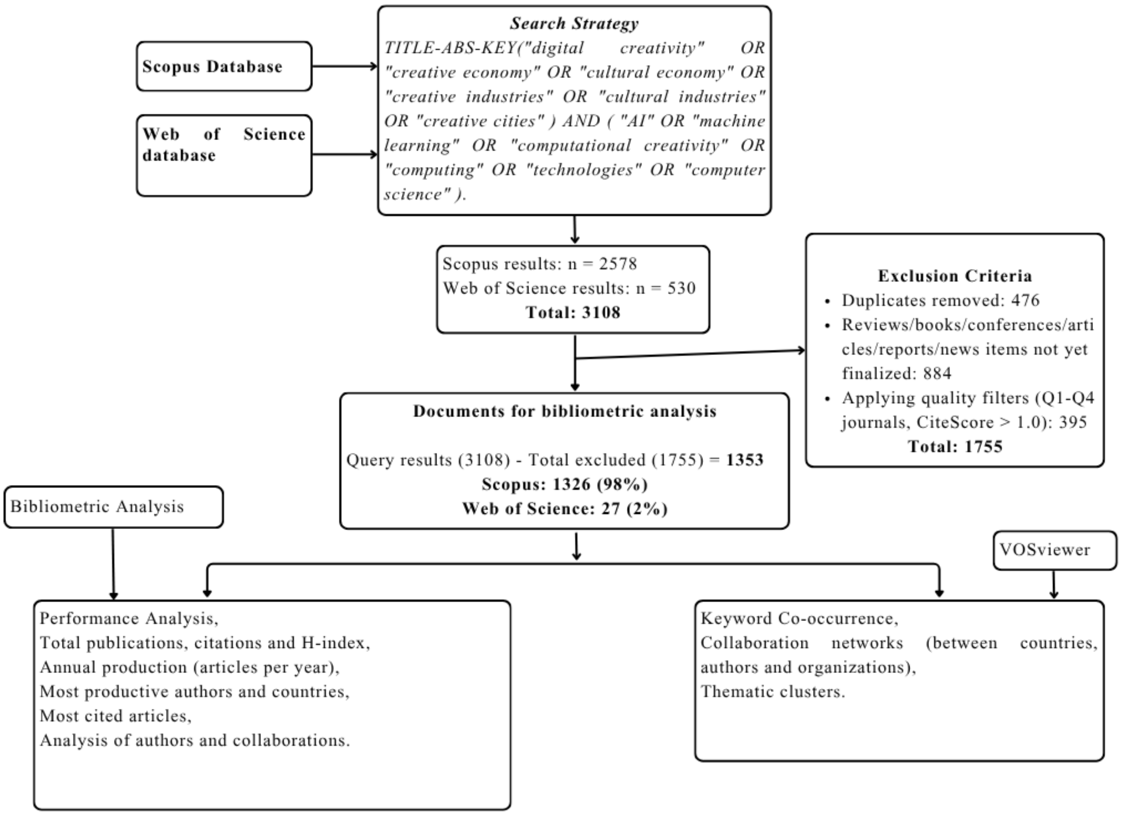
Most cited articles: Works with the highest impact, measured through citations, were determined. This allowed for the highlighting of contributions that have set a benchmark within the literature.

Clustering Analysis by Co-occurrence: One of the main components of the study was the keyword co-occurrence analysis, which was aimed at discovering conceptual patterns in the academic literature related to the creative and cultural industries within computer science. This type of analysis allows for the observation of how the most frequent terms cluster and relate, providing a general thematic overview of the investigated field (Robertson & Ferreira, 2020). The visualization generated through the VOSviewer bibliometric analysis tool represents a network where each node symbolizes a keyword, and the links between nodes indicate the frequency with which those terms co-occur in the analyzed documents. To ensure data representativeness, a minimum threshold of four repetitions was defined for a term to be included in the network. This methodological criterion allowed for the filtering of infrequent or peripheral terms, focusing exclusively on those concepts that hold significant weight in the literature. The result is a graph in which certain terms occupy central positions within the network, which is indicative of their thematic importance.

Keyword Density. Within the bibliometric evaluation, a keyword density analysis was also performed, which allowed for the identification of the terms with the highest frequency of appearance in the analyzed articles. This procedure was performed using VOSviewer, which generates density maps in which each keyword is represented according to its frequency of use and its degree of association with others. In these maps, the most frequently used terms appear with more intense colors and areas of greater concentration, which facilitates the visualization of the central thematic axes of the field of study. This analysis was fundamental for recognizing the conceptual and thematic trends that articulate the relationship between computer science and the creative and cultural industries, as well as for detecting the emergence of new research approaches.

Most influential organizations and countries: A minimum criterion of 21 citations per organization was defined, with at least one publication linked to the subject matter. This dual condition allowed for the highlighting of universities, research centers, and organizations that have actively contributed to the development of knowledge in this field. Co-authorship analysis focused on the countries with the highest participation in the scientific production regarding the creative and cultural industries within computer science. Only a minimum threshold of two publications per country was set, without applying a citation limit.

Figure 2
Diagram of the Article Search, Selection, and Analysis Process



RESULTS

Performance Analysis

As part of the performance analysis, Table 2 presents the annual bibliometric indicators for the 1326 selected documents over the period 1983–2025. Variables included are the number of journals in which the articles were published, the Total Publications (TP) and their relative percentage (%TP), the Total Citations received per year (TC), the number of participating authors, and the H-index value. These indicators enable the observation of the evolution of scientific productivity, the degree of author collaboration, and the academic impact of the identified publications.

Table 2

Annual bibliometric indicators during the 1983–2025 period

Year	TP	%TP	Journals	TC	Authors	h-index
1983	1	0.08%	1	0	1	0
1994	1	0.08%	1	32	1	1
1995	1	0.08%	1	23	1	1
1996	1	0.08%	1	0	5	0
1997	1	0.08%	1	0	4	0
1998	2	0.15%	2	6	2	2
1999	1	0.08%	1	61	1	1
2000	6	0.45%	6	107	9	6
2001	2	0.15%	2	11	2	2
2002	3	0.23%	3	15	4	3
2003	8	0.60%	7	343	11	8
2004	5	0.38%	5	133	7	5
2005	4	0.30%	4	1157	8	4
2006	11	0.83%	11	1142	16	11
2007	12	0.90%	12	533	12	12
2008	14	1.06%	14	435	24	14
2009	19	1.43%	19	929	30	19
2010	29	2.19%	25	857	51	29
2011	29	2.19%	26	548	41	18
2012	32	2.41%	32	727	51	22
2013	42	3.17%	40	733	75	17
2014	45	3.39%	39	791	76	17
2015	44	3.32%	37	921	79	20
2016	54	4.07%	43	1138	105	21
2017	54	4.07%	45	1195	123	22
2018	57	4.30%	52	1352	133	23
2019	89	6.71%	77	1392	265	15
2020	85	6.41%	73	2091	239	24
2021	87	6.56%	78	1059	225	12
2022	126	9.50%	91	1951	329	15
2023	107	8.07%	77	947	313	8
2024	167	12.59%	94	505	492	3
2025	187	14.10%	90	228	577	1
Total	1326	100%	1010	21362	3312	356

The analysis of scientific production in the field of computer science and creative and cultural industries, spanning 1983 and 2025, provides evidence of sustained growth in knowledge generation. The total number of citations received confirms the growing academic impact of these contributions, totaling 21362. Notable peaks are identified in 2005 and 2006, with more than 1100 annual citations, which suggests the existence of seminal works that definitively influenced the theoretical and methodological evolution of the field. Although citations decrease in the most recent years, this trend is typical, given that recent publications have not yet reached their citation maturity. Overall, the average number of citations per publication is consistent with international standards, evidencing a sustained scientific impact and increasing visibility of studies in creative computing, extended reality, and artificial intelligence applied to artistic creation.

The explanation based on citation delay is useful, but it should not hide deeper structural problems. Articles from the Global South may be cited less not only because they are newer, but also because they face weaker international visibility, limited access to high-impact journals, and fewer inclusion opportunities in dominant academic networks. Therefore, the citation pattern reflects persistent geographic inequalities in academic recognition.

The number of authors involved demonstrates a significant expansion in scientific collaboration networks. From individual authorship in the 1980s to a total of 577 authors in 2025, a clear trend toward co-authorship and interdisciplinary research is evident. This increase is associated with the hybrid nature of the field, which integrates engineers, designers, digital artists, and social scientists in collaborative projects. The growth in author participation also reflects the consolidation of academic consortia and participation in international cooperation programs aimed at innovation and technological creativity.

The cumulative H-index value of 356 represents a robust indicator of scientific impact and consistency. This value suggests that at least 356 publications have received an equal or greater number of citations, which denotes both sustained productivity and recognition within the scientific community. The H-index showed sustained growth between 2006 and 2016, reaching partial maximum values in 2010 ($h = 29$) and 2018 ($h = 23$). Although lower values are observed in the most recent years, this is attributable to the inherent time lag in citation processes. Collectively, these results demonstrate the maturity of the field and its increasing relevance within the technological and creative research ecosystem.

This H-index should be interpreted with caution, as it does not reflect the uneven distribution of impact in the field. The highest citation peaks, concentrated in 2005 and 2006, suggest that early publications and researchers from more established regions still dominate the intellectual structure of the field. Conversely, recent contributions from emerging regions have had less visibility, indicating that the field rewards early entry and established networks more than current methodological quality.

Overall, the analyzed indicators allow for the distinction of three stages in the evolution of the field: an Emergence phase (1983–2000), characterized by low productivity and limited impact; a Consolidation phase (2001–2015), marked by the sustained growth of publications, the strengthening of collaboration networks, and a progressive increase in the impact index; and a Maturity and Expansion phase (2016–2025), which evidences high productivity, increasing international recognition, and thematic diversification toward emerging technologies. Taken together, the bibliometric results position computer science and the creative and cultural industries as an expanding interdisciplinary field, with a solid scientific foundation and significant potential for technological and cultural innovation.

Bibliometric Evaluación

For this analysis, a typology inspired by the studies of Donthu et al. (2021), Xue et al. (2021), and Marzi et al. (2024) [32-34] was adopted, which examined research trends through bibliometric literature reviews. The information was organized into distinct sections to facilitate a precise and comprehensive interpretation of the results.

Annual Results

The trend of the 1326 documents can be more clearly observed in Figure 3, which illustrates the number of articles published per year. The longitudinal analysis of academic production in the area of computer science applied to creative and cultural industries reveals a significant and sustained growth trajectory since its inception. During the first two decades, an initial phase is observed, characterized by a low number of annual publications, with values below 1% of the total accumulated. This phase reflects the early formation of the field, characterized by isolated research efforts and limited collaboration among authors.

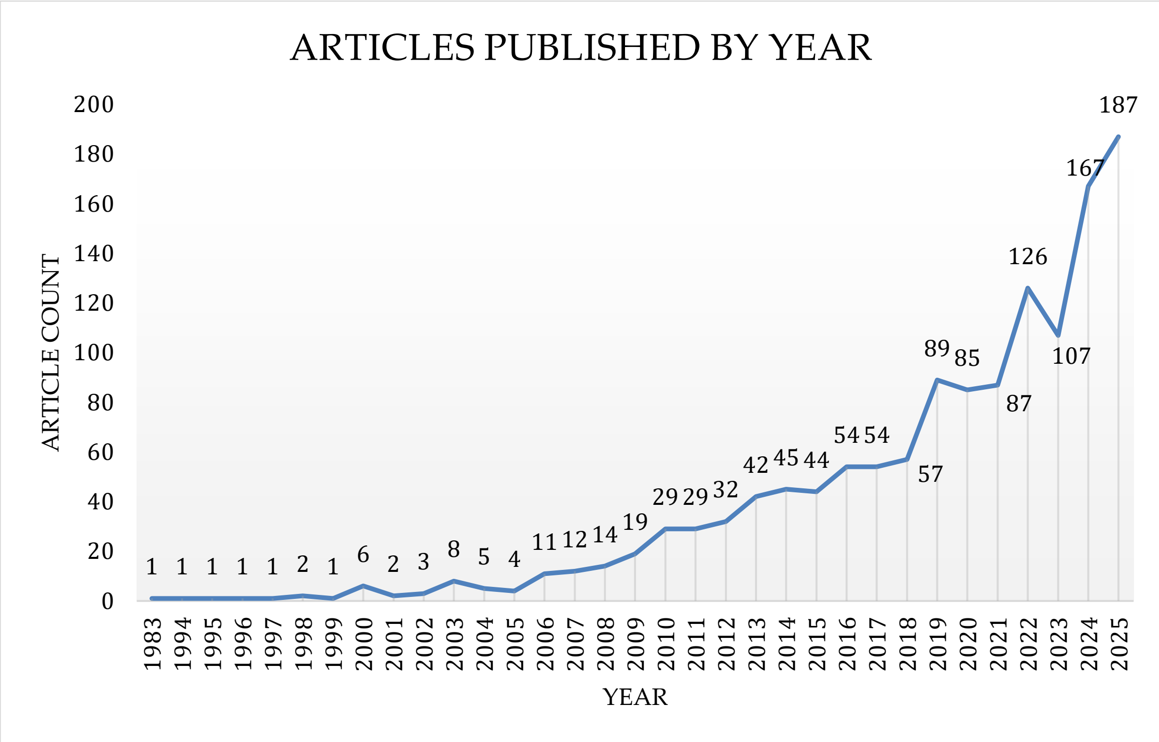
This scarcity (pre-2005: 2.5% TP, n=36) reveals structural exclusion: zero Latin American contributions vs. the current 45% Asian dominance signals a persistent digital divide limiting global perspectives.

Nevertheless, beginning in 2005, a significant inflection point in productivity occurred, reaching 11 publications in 2006. In 2019, a notable increase in academic production is observed, which reflects the increased use of computer science due to the COVID-19 pandemic [35]. The global crisis led to an acceleration in digitalization and the use of computational technologies across various industries, including the creative and cultural industries. Mobility restrictions and social distancing drove the adoption of digital solutions for the creation, distribution, and consumption of cultural content, which in turn incentivized greater research interest in this intersection.

Projections for the coming years indicate that this trend will continue, suggesting a rapidly expanding field with high potential to influence the innovation and development of the creative and cultural industries. This increase indicates the consolidation of the area and its positioning as an emerging research line within the convergence between technology, creativity, and digital art.

Figure 3

Number of articles published per yea



This production is expected to generate opportunities to strengthen theoretical, methodological, and practical frameworks that allow for a better understanding and leveraging of the transformative impact of computer science across the creative and cultural industries, thereby facilitating more effective public policies and business strategies.

While Figure 3 documents clear growth acceleration, this narrative requires three critical caveats. First, the pre-2005 scarcity did not merely reflect technical limitations but established a Eurocentric knowledge baseline that subsequent expansion has failed to substantially diversify. Second, COVID-19's role as primary catalyst reveals field dependency on exogenous shocks rather than autonomous conceptual development. Third, linear projections ignore saturation risk: repetitive publication patterns risk diminishing marginal contributions without corresponding theoretical advancement. These limitations suggest that quantitative expansion alone cannot substitute for epistemological pluralism and methodological renewal.

Figure 4

Timeline: themes, quotes, and appearances

To analyze changes in themes over time, Figure 4 presents a timeline that allows observation of how research topics at the intersection of creative and cultural industries and computer science have evolved through the years from 1999 to 2026. By tracking two indicators—number of citations and number of occurrences—it is possible to reconstruct transitions, continuities, and ruptures in academic interest toward different key concepts.

The years of evolution can be divided into three stages. In the initial stage (1999-2007), the first interests emerge without convergence. In 1999, Critical Theory appears (1 occurrence, 0 citations). Already in this early phase, an entrepreneurship-oriented focus is observed, consolidating in 2004 and 2005 with Entrepreneurialism (366 citations). In 2007, the theme shifts toward Careers (43 citations). This indicates that, in these years, initial interest pivots toward talent management and innovation as emerging axes. No explicit linkage between creativity and computing yet exists, but innovation ecosystem foundations are laid.

The second stage (2009-2018) is considered the birth of convergence. In 2009, Higher Education emerges (333 citations), showing consolidation of the educational domain. By 2013, a notable shift occurs: Social Capital appears (346 citations) and in 2015 Creativity (196 citations, 4 occurrences). This qualitative leap evidences how themes move beyond stable approaches to incorporate creativity and, later, sociological theories like Bourdieu (102 citations) in 2017. Here the central linkage between creativity and computer science begins to gestate. Innovation's appearance (114 citations) in 2014 confirms novelty's growing prominence as an object of study.

In the third stage (2019-2026), maturity is observed. In 2020, a deeper shift is visualized with innovation (611 citations, 4 occurrences). In 2022, Machine Learning (560 citations) and Deep Learning (116 citations) appear. This indicates themes have shifted toward greater integration of advanced technology. For creative and cultural industries and computer science, this moment is key: in 2025 Artificial Intelligence becomes a high-frequency theme (21 occurrences), suggesting the academic community already considers it relevant.

In 2026, Cultural Heritage records 0 citations and 2 occurrences. Repetition of concepts like Social Capital along the timeline (2012, 2013, 2018) suggests that, over time, the same theme can branch into research sublines with unequal impact. Cultural Heritage appears as a concept beginning to circulate, anticipating future studies linking heritage, creativity, and technology.

The timeline evidences that themes do not remain static but have evolved through the years. The graph not only shows which themes appear and how much they are cited, but chronologically ordered, reveals a dynamic process of thematic change. For the study of creative and cultural industries and computer science, this timeline proves particularly revealing: what is researched in 2026 is not the same as in 1999. Interests have been deeply reconfigured, transitioning from an initial core in critical theory and entrepreneurship toward an established relationship between technology (machine learning, AI), cultural sociology (Bourdieu, social capital), and creative economy (CCIs, innovation, creativity).

Analysis of Journals

The Scopus database analysis revealed publications distributed across 798 international journals, spanning quartiles one to four (Q1 to Q4). For reasons of clarity and space, Table 3 presents the 10 journals with the highest number of publications.

The analysis reveals a marked concentration in Europe, particularly in the United Kingdom, which leads in terms of number of publications and thematic diversity. The journal Sustainability leads the list with 39 articles, distinguishing itself by its focus on digital sustainability and technological innovation. They are followed by the Creative Industries Journal and the International Journal of Cultural Policy, with 22 and 20 articles, respectively. Both are British journals that address the integration of computational technologies into cultural processes, public policies, and creative management.

Other relevant publications include Applied Mathematics and Nonlinear Sciences with 13 articles, which applies computational models to creative analysis, and Technological Forecasting and Social Change with 12, focusing on technological foresight and algorithmic creativity. Similarly, the journals Cities, Geoforum, and Convergence stand out, exploring the relationship between technology, urbanism, and digital culture.

Table 3

Top ten journals based on the number of documents during period 1983-2025

<table>
<tr><th>N°</th><th>Journal</th><th colspan="2">Country</th><th>Articles</th></tr>
<tr><td>1</td><td>Sustainability</td><td colspan="2">Switzerland</td><td>39</td></tr>
<tr><td>2</td><td>Creative Industries Journal</td><td colspan="2">United Kingdom</td><td>22</td></tr>
<tr><td>3</td><td>International Journal of Cultural Policy</td><td colspan="2">United Kingdom</td><td>20</td></tr>
<tr><td>4</td><td>Applied Mathematics and Nonlinear Sciences</td><td colspan="2">Poland</td><td>13</td></tr>
<tr><td>5</td><td>Technological Forecasting and Social Change</td><td colspan="2">United Kingdom</td><td>12</td></tr>
<tr><td>6</td><td>Cities</td><td colspan="2">United Kingdom</td><td>12</td></tr>
<tr><td>7</td><td>Geoforum</td><td colspan="2">United Kingdom</td><td>11</td></tr>
<tr><td>8</td><td>Convergence</td><td colspan="2">United Kingdom</td><td>11</td></tr>
<tr><td>9</td><td>Creativity Studies</td><td colspan="2">Lithuania</td><td>9</td></tr>
<tr><td>10</td><td>Wireless Communications and Mobile Computing</td><td colspan="2">USA</td><td>9</td></tr>
<tr><td rowspan="5">+788</td><td rowspan="5">Other journals</td><td>Europe</td><td>25 countries</td><td rowspan="5">1168</td></tr>
<tr><td>Asia</td><td>16 countries</td></tr>
<tr><td>Americas</td><td>13 countries</td></tr>
<tr><td>Africa</td><td>6 countries</td></tr>
<tr><td>Oceania</td><td>4 countries</td></tr>
</table>

In geographic terms, Europe dominates the scientific production, followed by Asia and the Americas. This pattern reflects the European leadership in the intersection between technological innovation and creativity, driven by policies promoting the digital and cultural economy.

Table 3 reveals a troubling publication hierarchy: seven of the top ten journals are European, with the UK commanding six positions. This concentration indicates that researchers from emerging regions face significant barriers to accessing high-impact venues, despite their growing contributions to creative economy research. The result is a field where Northern theoretical frameworks dominate the intellectual agenda, potentially marginalizing alternative perspectives from the Global South. While Europe leads in policy-driven research, this dominance risks creating a monocultural knowledge base that underrepresents the diverse ways computing transforms creative and cultural industries worldwide.

Most Cited Articles

Of the 1,326 articles analyzed, the documents with the highest number of citations reveal a clear evolution at the intersection of the industries, digital transformation, and intelligent technologies. The results reflect how the field has transitioned from a focus centered on the conceptualization of creative and cultural industries toward a more complex understanding of their relationship with Artificial Intelligence (AI), innovation, and business models.

Table 4 shows the most cited articles. First, we find the study by Scott (2006) [36], published in the *Journal of Urban Affairs*, with 889 citations. It constitutes a seminal text that conceptualizes "creative cities" as spaces where culture, the economy, and urban planning are articulated to generate innovation. This work laid the theoretical foundation for understanding creativity as a driver of urban development, influencing public policies and subsequent studies on cultural clusters. Secondly, Richards (2018) [37] in the *Journal of Hospitality and Tourism Management* (754 citations) addresses cultural tourism as an extension of the creative and cultural industries, exploring how creativity transforms the tourist experience and generates added value in local economies. This work reinforces the notion that creative and cultural industries are not limited to art or entertainment, but rather encompass economic, symbolic, and technological dimensions.

The third most-cited article, Garnham (2005) [38] in the *International Journal of Cultural Policy* (638 citations), offers a critical review of the creative and cultural industries concept, emphasizing the political and economic implications of its institutional adoption. Garnham points out the need to differentiate between artistic creativity and industrialized cultural production, which contributed to debates surrounding the commodification of culture. Fourth, Li (2020) [39] in *Technovation* (523 citations), introduces a contemporary perspective on the digital transformation of business models in the creative and cultural industries. This work represents an inflection point by explicitly linking the dynamics of creativity with technological innovation and Artificial Intelligence, showing how digitalization redefines productive processes and value chains. Additionally, Ananthakrishnan and Bull (2022) [40] in Artificial Intelligence Review (477 citations) consolidate this convergence by examining the incorporation of Artificial Intelligence (AI) into creative processes. Their bibliometric review highlights both the opportunities, such as the automation of creative tasks, and the emergence of new forms of generative art. Furthermore, it highlights the ethical and epistemological challenges posed by human-machine collaboration in cultural contexts.

The citation pattern shows a temporal and thematic evolution: works published prior to 2010 focused on the theoretical and policy foundations of the creative industries; those published between 2015 and 2020 addressed the relationship with digitalization and business transformation; and the most recent ones, especially after 2020, focus on Artificial Intelligence (AI) and human-machine collaboration. Taken together, this trajectory evidences an interdisciplinary consolidation between computer science and creative studies, where creativity is increasingly understood as a technologically mediated process.

The citation hierarchy reveals persistent theoretical conservatism: Scott's (2006) urbanism paradigm and Richards' (2018) tourism extension continue dominating despite technological disruption narratives. This temporal lag suggests field resistance to paradigm shift—early conceptual frameworks retain authority while AI applications struggle for equivalent recognition. Critically, Northern theoretical hegemony endures: foundational works establish the field's ontological boundaries, potentially marginalizing empirical contributions from regions where computing most radically transforms creative practice.

Table 4

The ten highest citations of published article

No.	Citas	Año	Revista	Autor(es)	Título
1	889	2006	*Journal of Urban Affairs*	Scott, A. J.	*Creative cities: Conceptual issues and policy questions*
2	754	2018	*Journal of Hospitality and Tourism Management*	Richards, G.	*Cultural tourism: A review of recent research and trends*
3	638	2005	*International Journal of Cultural Policy*	Garnham, N.	*From cultural to creative industries: An analysis of the implications of the creative industries approach to arts and media policy making in the United Kingdom*
4	523	2020	*Technovation*	Li, F.	*The digital transformation of business models in the creative industries: A holistic framework and emerging trends*
5	477	2022	*Artificial Intelligence Review*	Anantrasirichai, N., & Bull, D.	*Artificial intelligence in the creative industries: A review*
6	390	2005	*Social Semiotics*	Neff, G., Wissinger, E., & Zukin, S.	*Entrepreneurial labor among cultural producers: Cool jobs in hot industries*
7	377	2016	*International Journal of Cultural Studies*	Duffy, B. E.	*The romance of work: Gender and aspirational labour in the digital culture industries*
8	278	2022	*Journal of Business Research*	Chowdhury, S., Budhwar, P., Dey, P. K., Joel-Edgar, S., & Abadie, A.	*AI-employee collaboration and business performance: Integrating knowledge-based view, socio-technical systems and organizational socialization framework*

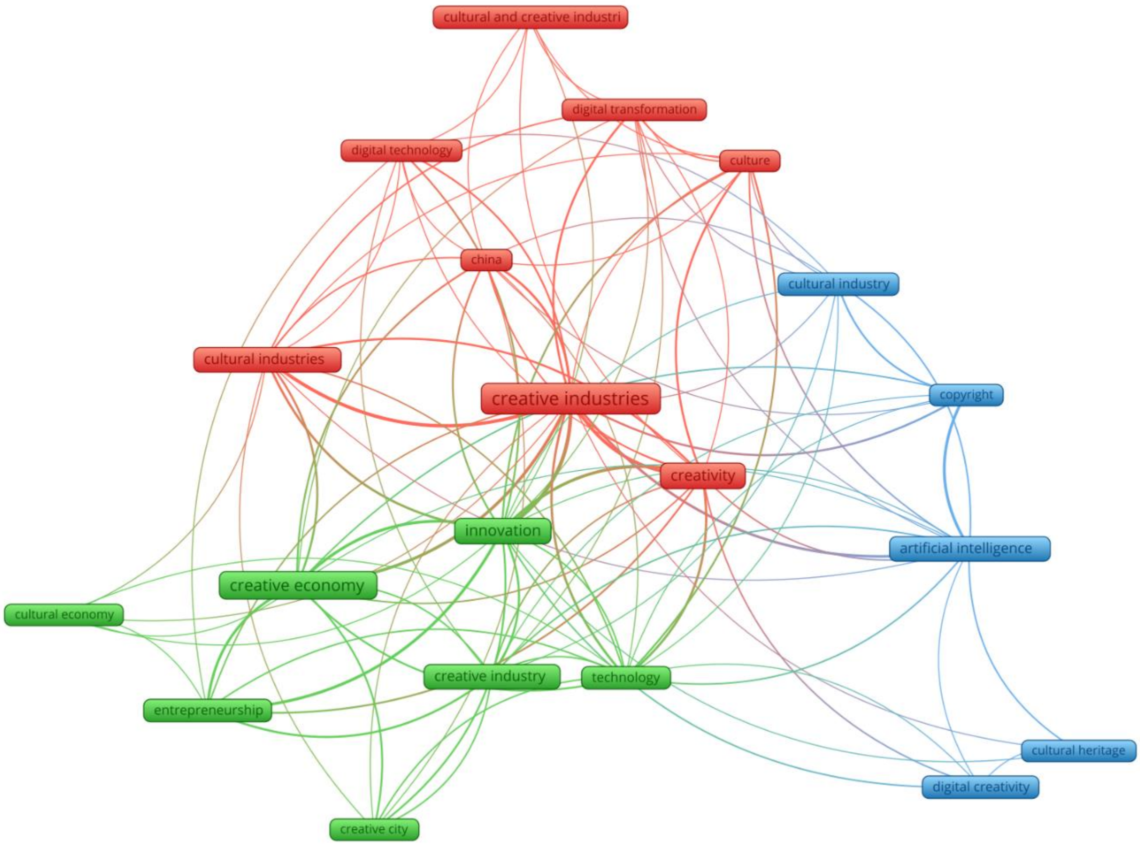
No.	Citas	Año	Revista	Autor(es)	Título
9	246	2008	*Industry and Innovation*	Lazzeretti, L., Boix-Domenech, R., & Capone, F.	*Do creative industries cluster? Mapping creative local production systems in Italy and Spain*
10	208	2010	*Urban Studies*	Ponzini, D., & Rossi, U.	*Becoming a creative city: The entrepreneurial mayor, network politics and the promise of an urban renaissance*

Co-occurrence Cluster Analysis

In this regard, Figure 6 displays the co-occurrence analysis map of the keywords. This figure/graph evidences/demonstrates the conceptual structure of the field of study that articulates/links computer science with the creative and cultural industries. Based on the co-occurrence processing, three main concepts are identified: *creative industries, creative economy,* and *artificial intelligence*, which emerge as prominent nodes.

Figure 6

Co-occurrence map of keywords. Source: Own elaboration based on VOSviewer



Furthermore, the network allowed for the identification of three thematic groupings or clusters, which are illustrated in Table 5. The first cluster reveals a focus centered on the digitalization of the cultural and creative industries, highlighting how technological adoption redefines productive models, creation processes, and contemporary cultural policies. The term China suggests a particular interest in regional case studies linked to innovation and technological development policies in the cultural field. This cluster therefore represents the convergence between culture, creativity, and digital transformation, where computer science is consolidated as a structural component of the creative industries. The second cluster reflects the economic and innovation dimensions of the creative industries, highlighting the role of entrepreneurship and creative cities as favorable environments for the development of sustainable cultural ecosystems.

The innovation node functions as a bridge between this cluster and the first one, showing the relevance of technological innovation as a cross-cutting factor. In this regard, the green cluster represents the economic and management core of the creative industries system, in which creativity is configured as a strategic resource that drives both competitiveness and urban transformation. The third group shows creative industries as the central node, which functions as the intersection point between the three clusters, articulating the cultural, economic, and technological dimensions. This arrangement suggests that the study of the creative industries has transitioned from a traditional approach, centered on cultural production, toward a more complex one, where artificial intelligence (AI), technological innovation, and the digital economy are essential components.

Table 5

Principal Thematic Items in the Three Clusters of the Conglomerate (1983–2025)

Cluster	Items	Total Items	Color
Cluster 1	Creative industries, cultural industries, cultural and creative industries, digital transformation, digital technology, creativity, culture and China.	8	Red
Cluster 2	Creative economy, creative industry, innovation, entrepreneurship, technology, creative city and cultural economy.	7	Green
Cluster 3	Artificial intelligence, digital creativity, cultural heritage, copyright and cultural industry.	5	Blue

Emerging technologies beyond AI are experiencing accelerated integration in the creative industries: VR/AR (Liu-Yali's immersive co-creation), blockchain/NFT (copyright group), digital fabrication (digitizing cultural heritage), and edge computing (real-time creative platforms). The nexus between copyright and cultural heritage in Cluster 3 highlights decentralized ownership models, while the "digital technology" in Cluster 1 encompasses generative design and computational fabrication. These technologies demonstrate a diversification that extends beyond the domain of AI, confirming the cross-cutting transformation of creative value chains through computing.

While the three-cluster structure effectively maps keyword co-occurrences, several limitations warrant attention. First, AI centrality risks computational reductionism, where creativity becomes synonymous with algorithmic efficiency rather than human agency. Second, China's prominence in Cluster 1 reflects state-driven research priorities rather than organic field development, potentially skewing global applicability. Third, cluster fragmentation signals underlying theoretical tensions: economic innovation (Cluster 2) and cultural preservation (Cluster 3) remain insufficiently bridged by technological mediation (Cluster 1). This configuration suggests the field grapples with fundamental ontological questions about creativity's essence in the computational era, which VOSviewer visualization illuminates but does not resolve.

Similarly, the transformation of creative work produced by computer science across creative industries—AI-mediated co-creation (Anantrasirichai and Bull, 2022)—revalues elite designers through augmented creativity, while ambitious labor regimes (Neff et al., 2005; Duffy, 2016) precarize mass creators through the gigification of platforms. High-impact literature reveals this tension as computer science reshapes value chains: algorithmic control restricts peripheral actors, while increased skills strengthen central hubs (Cluster 1-2). Thus, computer science simultaneously enables innovation leadership and structural exclusion within creative production networks.

Keyword Density

Figure 7 shows the density map associated with the scientific production on computer science in relation to the creative and cultural industries. In this type of representation, the yellow and green areas indicate zones of high concentration of recurrent terms, while the blue hues represent regions with a lower frequency of appearance or lower co-occurrence between terms. The creative industries node is positioned as the core of highest thematic density, evidencing its central role in the academic discourse. This node concentrates a high number of connections with other key concepts, such as *innovation, creative economy, creativity,* and *technology.* Its dominant position suggests that the field maintains a strong orientation toward the analysis of innovation as the structural driver of contemporary creative industries.

The concentration of terms such as *creative industries*, *creative economy*, *innovation*, and *technology* in the area of highest luminosity evidences the consolidation of an interdisciplinary approach that unites the economic dimension, creativity, and technological development. These concepts are articulated around a logic of symbolic and digital value production, where technological innovation drives both economic competitiveness and cultural diversification. Furthermore, the proximity between *creative industry* and *innovation* indicates that recent research has shifted the focus from purely cultural studies toward a knowledge economy framework, in which creativity is analyzed as a strategic resource in urban, business, and technological ecosystems.

At the second level of density, terms such as *digital transformation*, *digital technology*, *cultural and creative industries*, and *culture* are located. Their presence reflects the growing academic interest in digitalization processes that reconfigure the creation, circulation, and consumption of cultural goods. This area of intermediate density reveals the emergence of a techno-cultural paradigm, in which computer science plays a key role by introducing algorithms, Artificial Intelligence, and data analysis into the value chain of the creative and cultural industries.

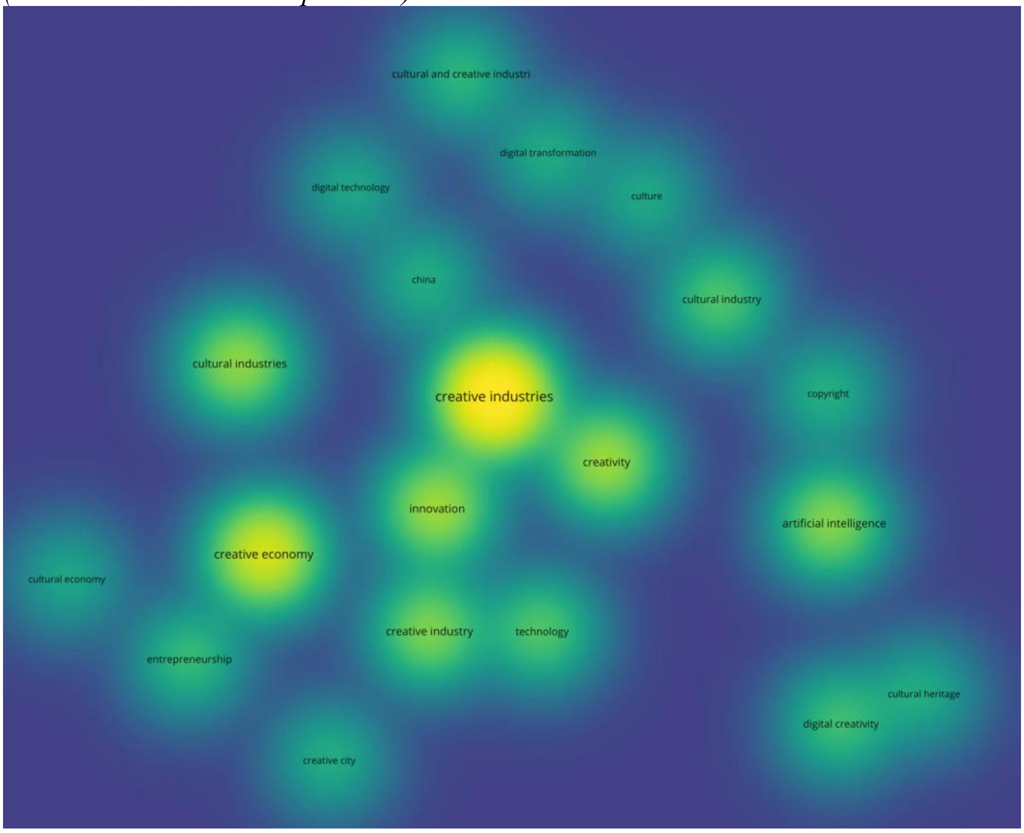
The incorporation of these approaches transforms the relationship between producers, institutions, and audiences, promoting a model of technologically mediated creativity.

In the peripheral areas of the map, terms such as artificial intelligence, digital creativity, copyright, and cultural heritage stand out. Although they present a lower density, their distribution suggests emerging research lines of high relevance for the future of the sector.

The clustering between *artificial intelligence* and *digital creativity* reflects the interest in understanding how computational systems can co-create cultural content, redefining notions of authorship, originality, and symbolic value. For their part, *copyright* and *cultural heritage* evidence the concern regarding the legal and ethical frameworks associated with the management of digital creativity and the preservation of heritage in virtual environments.

Figure 7

Keyword co-occurrence density map generated. Source: Own elaboration based on VOSviewer (minimum 4 occurrences per term)



In this context, the illustration indicates that studies on the creative and cultural industries are in a phase of interdisciplinary maturation, in which three main dimensions converge: (1) Creativity and culture as the symbolic foundation, (2) Economy and innovation as growth drivers, and (3) Technology and artificial intelligence as infrastructures of transformation.

Also, this configuration gives rise to a techno-creative ecosystem, where computer science acts as an instrumental support and a cognitive and structural agent that redefines cultural creation, production, and distribution processes. The density map, therefore, evidences the transition from an industrial and cultural paradigm toward a computationally and digitally integrated model, characteristic of the contemporary creative economy.

The density map's core-periphery structure reveals three conceptual tensions. First, "creative industries" centrality risks conflating cultural production with market logic, subordinating artistic value to economic metrics. Second, AI's peripheral positioning belies its structural dominance—computational paradigms shape keyword co-occurrences despite surface-level marginality. Third, the techno-cultural gradient (yellow innovation core → blue heritage periphery) evidences unresolved ontological conflict: does computing augment or displace human creativity? VOSviewer's visualization exposes these fractures more than it resolves them.

Most Influential Contries

Figure 8 shows a co-authorship analysis focused on the countries with the highest participation in scientific production. This analysis identifies the nations that have published the most documents and reveals their capacity to generate international collaboration networks, which is crucial for evaluating the scope and impact of their contributions.

The color bar accompanying the graph represents the average publication year of co-authored documents for each country. It does not correspond to the year with the highest number of publications, but rather to a temporal average of collaborations. Lighter colors indicate more recent collaborations, while darker tones reflect publications from earlier years.

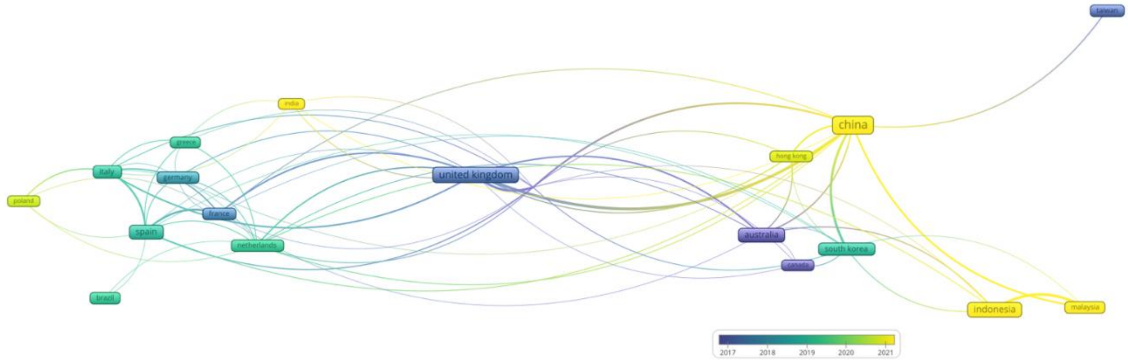
Additionally, it is necessary to note that each publication is attributed to the country of affiliation of its authors. In this manner, authors' workplaces are determined based on the institutions listed in their affiliations. The country base is, therefore, the geographic location of the subscribing institutions of the researchers who sign the articles.

Unlike the previous analyses, in this case, a minimum threshold of only two publications per country was established, without applying a citation limit. This methodological decision allows for the inclusion of both countries with consolidated academic production and those that are emerging as new actors in the scientific arena.

In this regard, the United States, the United Kingdom, Australia, Canada, and China stand out as central nodes, playing a fundamental role in the articulation and expansion of this global research network. The graph structure shows regional groupings that reflect collaborative dynamics based on both geographic proximity and academic affinities. In particular, Asia has experienced a surge in scientific collaboration since 2017, with China, Indonesia, and Malaysia emerging as significant actors in knowledge production, evidenced by the recent temporality of their links.

Figure 8

Most Influential Countries according to Co-authorship Networks



Source: *Own elaboration based on VOSviewer.*

In this regard, traditional countries in scientific research, such as the United States and the United Kingdom, act as fundamental bridges that connect diverse regions and facilitate the transfer of innovative knowledge and methodologies. This global co-authorship network contributes to fostering interdisciplinary and transnational synergies, which are essential for addressing the complexities that arise at the intersection between computer science and the creative industries. This collaborative landscape strengthens the quality and impact of scientific research. It also drives the development of policies and strategies that can boost the creative economy globally through the adoption of technological advances.

The above reveals three structural limitations. First, the two-publication threshold favors established powers (the US, UK, Australia, Canada, and China), systematically marginalizing emerging researchers despite the equivalent quality of their research. Second, the Asian surge after 2017 (China, Indonesia, and Malaysia) reflects state investment rather than organic innovation, carrying the risk of a geopolitical capture of knowledge. Third, the “bridge” rhetoric (US and UK) idealizes dependency: peripheral nations connect through Northern centers, reproducing rather than challenging global academic hierarchies. Thus, claims of transnational synergy mask persistent center-periphery dynamics.

DISCUSSION

The results obtained in this bibliometric study demonstrate the consolidation and sustained expansion of an interdisciplinary field that articulates computer science with the creative and cultural industries, in line with current global trends in the knowledge economy and technological innovation (UNCTAD, 2023; Florida, 2019). The exponential growth of scientific production since the beginning of the 2000s reflects an increase in academic interest and the emergence of a techno-creative ecosystem that integrates creativity, technology, and economics, as proposed by contemporary theories on the creative economy (UNCTD, 2022; UNESCO, 2022; Howkins, 2013).

The analysis reveals that computer science has had a significant evolution in the creative and cultural industries. First, a profound transformation in creative processes was observed through automation and the use of advanced algorithms, especially generative neural networks and language models, which facilitate the production of artistic, audiovisual, and design content with lower cost and greater efficiency (Mulyasari, 2024; Sadiku et al., 2019; Doshi & Hauser, 2023). This automation optimizes production and expands creative capabilities by allowing experimentation with new styles, thus reconfiguring the role of the traditional creator. Second, computer science has fostered interdisciplinary hybridization, encouraging collaboration among engineers, designers, artists, and social scientists in digital environments and collaborative platforms (Howkins, 2020; Florida, 2029). This phenomenon has generated multidisciplinary teams capable of developing innovative solutions that integrate technology and creativity, thus strengthening the competitiveness of creative and cultural industries in a globalized market (Elkins et al., 2017; Scott, 2006).

Third, relevant economic dynamics derived from technological integration have been identified, including the emergence of new business models based on data management, algorithmic personalization, and the digital platform economy (Towse, 2022; Li, 2020).

In the theoretical implications, three evolutionary phases were identified: (Emergence 1983–2000, Consolidation 2001–2015, Maturity/Expansion 2016–2025), providing a timeframe that extends the Florida creative class theory and the UNCTAD creative economy framework (Florida, 2002; UNCTAD, 2019) to the intersection of computer science and creative and cultural industries. The cumulative h-index of 356 represents robust scientific maturity, with 356 publications having equal or greater citations, demonstrating sustained productivity and recognition within the scientific community. Keyword co-occurrence analysis reveals dispersed thematic clusters around digital innovation, artificial intelligence applications, and computational creativity without a unified structure. This empirically grounds the computational creativity framework of Sadiku et al. (2019), Turing's foundational perspective (Turing, 1936), and Striphas (2015) concept of algorithmic culture, where artificial intelligence occupies central positions in the network. The geographical concentration (Europe with 6 of the 10 most important journals, author leadership in China/Asia) supports theories of the geography of knowledge production in creative economies.

Regarding practical implications, in public policy: the predominance of European journals and Asian productivity suggest international collaboration strategies for Latin American researchers to address asymmetries in knowledge production. Table 1 identifies video games/software as convergence priorities for Computer Science in digital economy policies. In higher education: the growth of co-authorship (577 authors in 2025 compared to 1 in 1983) demands interdisciplinary computer science and design programs aligned with the skills of the creative class. The most cited works demonstrate a competitive advantage through platform customization (Li, 2020) and digital transformation (Scott, 2006; Richards, 2018).

The results align with the global dynamic of accelerated digitization, particularly accentuated by the COVID-19 pandemic (UNESCO, 2021), which spurred the adoption of computational technologies in cultural creation, management, and distribution. The findings complement Xue (2024) by providing specific perspectives from computer science and expand Scott's (2006) perspective toward computational creative urbanism. The transition from the conceptual frameworks proposed by Garnham (2005) to the applied artificial intelligence studies of Anantrasirichai (2022) reflects broader trends in digital transformation, confirming the three dimensions of impact identified by Doshi & Hauser (2023): process automation, interdisciplinary hybridization, and the platform economy.

Interdisciplinary convergence, evidenced by increased co-authorship and the diversified participation of researchers from multiple regions, underscores the complexity and hybrid nature of the field, which brings together engineers, social scientists, artists, and cultural managers (Donthu et al., 2021; Marzi, 2024). Therefore, the analysis of keyword co-occurrence and density reflects how this analysis translates into consolidated and emerging thematic trends, where concepts such as "artificial intelligence," "digital transformation," and "innovation" occupy central positions. This demonstrates that computer science has ceased to be merely a tool and has become a structuring agent that redefines creative, economic, and cultural practices (Ortiz et al., 2025). In this way, computational creativity is configured as a sociotechnical process that challenges the traditional boundaries between the human and the technological (Sadiku, 2019).

The evolution of collaboration among authors and the geographical concentration of scientific production, with prominent leadership in Europe and Asia, especially China, suggests that these technological dynamics are being driven and enhanced by public policies geared toward digitalization, innovation, and knowledge-based economic development (Matadamas et al., 2018). The growing and diversified participation of authors and organizations indicates that the field is dynamic and expanding, with a strong focus on exploring the ethical, aesthetic, and economic implications of these transformations.

Furthermore, a review of the most cited articles and leading journals confirms that research has evolved from conceptual frameworks on the creative and cultural industries toward applied studies that explore the real impact of artificial intelligence and other computational technologies on cultural production (Scott, 2006).

Therefore, the relationship between computer science and the creative and cultural industries is manifested in the transformation of creative processes, the generation of new interdisciplinary ecosystems, and the reconfiguration of economic and cultural models, positioning this field as a strategic axis for innovation and sustainable development in the contemporary creative economy (UNCTD, 2022; Howkins, UNCTAD, 2023).

CONCLUSIONS

The present bibliometric analysis successfully achieved its objective: characterizing the scientific production documented in Scopus (1983-2025, n=1,326) in relation to computer science and creative and cultural industries.

The analyzed bibliometric trajectory shows a clear transition: from the theoretical foundations of entrepreneurship (1999-2007) (Scott, 2006) toward the rise of creative themes and social capital (2009-2018) (Richards, 2018; Garnham, 2005). The current period (2019-2026) is led by Artificial Intelligence and innovation (Li, 2020), reaching a peak of 21 occurrences in 2025. With an H-index of 356, the field demonstrates solid scientific maturity and a significant shift in its citation trends (Q1).

In response to Q2, cluster analysis shows a significant presence of emerging technologies such as virtual/augmented reality (Li, 2020), blockchain/NFT, and digital fabrication. These complement the centrality of artificial intelligence and confirm a technological diversification in the analyzed literature.

Regarding Q3 on business models and creative labor tensions, the most cited articles Li (2020), with 523 citations; Anantrasirichai & Bull (2022) with 477 document the association between computational advances and the gigification of the creative economy. These are supported by foundational references such as Neff et al. (2005), 390 citations, and Duffy (2016), 377 citations, which correlate technical dominance with new labor dynamics.

Finally, Q4 regarding spatial correlations showed that co-authorship networks link consolidated technological hubs (China, the United Kingdom, the United States, Australia) with greater diversifying capacity. Meanwhile, Europe maintains hegemony in leading journals (Table 3), and Asia experiences explosive growth in publications after 2017.

The main findings include exponential growth in production (14% of the total in 2025), the centrality of AI within the primary thematic cluster, a marked collaborative expansion (577 authors in 2025 compared to 1 in 1983), and persistent patterns of North-Global predominance in citations (Donthu, 2021; Xue, 2021).

For future research, multi-database analysis, qualitative content approaches, greater attention to the Global South, and dynamic modeling of trends beyond 2025 are recommended.

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