

Research in Digital Methods: Global Production, Key Actors, and Field Tensions from a Bibliometric Perspective *

Investigación en métodos digitales: producción global, actores clave y tensiones en el campo desde una perspectiva bibliométrica

Pesquisa em métodos digitais: produção global, atores-chave e tensões no campo a partir de uma perspectiva bibliométrica

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Abstract:

Digital methods have emerged as a critical approach for investigating social phenomena in environments deeply mediated by digital technologies. Although they are often associated with digital humanities or computational social sciences, they constitute a growing area of research. Based on 831 publications retrieved from Scopus, Web of Science, and SciELO, this study identifies the main thematic lines, key authors, institutions, and countries contributing to the field. The results show sustained growth since 2017, a high concentration of publications in Q1 journals, and a notable citation impact. They also highlight the centrality of the Global North, limited participation from the Global South, and the coexistence of critical, computational, and exploratory approaches. Far from presenting a homogeneous identity, digital methods emerge as a constellation of research practices, marked by epistemic, geographic, and linguistic tensions. This study thus offers an empirical overview of their consolidation as an interdisciplinary field.

Keywords: Digital Methods, Bibliometric Analysis, Computational Social Sciences, Digital Humanities.

Resumen:

Los métodos digitales se han consolidado como un enfoque clave para investigar fenómenos sociales en ambientes significativamente mediados por tecnologías digitales. Aunque son frecuentemente asociados con las humanidades digitales o las ciencias sociales computacionales, constituyen un campo de investigación en expansión. A partir del análisis de 831 publicaciones recuperadas de Scopus, Web of Science y SciELO, este estudio identifica las principales líneas temáticas, autores, instituciones y países involucrados. Los resultados muestran un crecimiento sostenido desde 2017, una alta concentración en revistas Q1 y un impacto científico notable. También, evidencian la centralidad del Norte Global y una limitada participación del Sur Global, así como la coexistencia de enfoques críticos, computacionales y exploratorios. Lejos de ser un campo homogéneo, los métodos digitales se presentan como una constelación de prácticas de investigación atravesadas por tensiones epistémicas, geográficas y lingüísticas. Este estudio ofrece así una visión empírica de su consolidación como campo interdisciplinario.

Palabras clave: métodos digitales, análisis bibliométrico, ciencias sociales computacionales, humanidades digitales.

Resumo:

Os métodos digitais consolidaram-se como uma abordagem central para a investigação de fenômenos sociais em contextos profundamente mediados por tecnologias digitais. Embora frequentemente associados às humanidades digitais ou às ciências sociais computacionais, constituem um campo de pesquisa em expansão. A partir da análise de 831 publicações recuperadas das bases Scopus, Web of Science e SciELO, este estudo identifica as principais linhas temáticas, autoras(es), instituições e países envolvidos. Os resultados revelam um crescimento contínuo desde 2017, uma alta concentração em periódicos Q1 e um impacto científico significativo. Também evidenciam a centralidade do Norte Global e a participação limitada do Sul Global, assim como

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a coexistência de abordagens críticas, computacionais e exploratórias. Longe de configurar um campo homogêneo, os métodos digitais se apresentam como uma constelação de práticas de pesquisa atravessadas por tensões epistêmicas, geográficas e linguísticas. Este estudo oferece uma visão empírica de sua consolidação enquanto campo interdisciplinar.

Palavras-chave: métodos digitais, análise bibliométrica, ciências sociais computacionais, humanidades digitais.

Introduction

Over the past decade, digital methods have gained prominence in social and humanities research, in response to an environment increasingly mediated by digital technologies. Far from representing a mere methodological update, these methods entail an epistemological shift that challenges traditional frameworks for observing, collecting, and analyzing social phenomena across various disciplines, including history, literature, and information science. Their interdisciplinary nature explains their presence in an expanding array of fields. Indeed, the term ‘digital methods’ is also used in contexts unrelated to the social sciences and humanities, as evidenced in the literature.

Digital methods are often situated within a broader research sphere that encompasses digital humanities, computational social sciences, and studies related to digital culture and social media (Carrozza & Santos Pereira, 2015). Although their definition remains contested (Rogers, 2023; Hampton, 2017; Schoon et al., 2020), there is growing recognition of their value as an emerging and interdisciplinary field with inquiry practices that go beyond the instrumental use of online tools, engaging instead with and through digital infrastructures as sites of knowledge production (Rogers, 2009; Marres, 2017). The field has undoubtedly gained momentum through the work of research groups such as the Digital Methods Initiative (DMI) at the University of Amsterdam, a wide range of graduate programs, and an extensive body of indexed scholarly output. The latter is precisely the focus of this study.

This article offers a bibliometric and critical exploration of the global research outputs on digital methods, based on a corpus of 831 publications in sources indexed in Scopus, Web of Science, and SciELO. Using a search strategy centered on the explicit use of the term “digital methods”, the study examines historical trends, major research topics, and the key actors driving scholarly production in the field. The central research question guiding this work is: How is the field of digital methods configured in terms of its channels of scholarly communication, thematic priorities, and networks of collaboration?

The structure of the article is organized into six sections. Following this introduction, the article presents the theoretical and empirical background that frames the study. Given the limited number of bibliometric analyses focused specifically on digital methods, this section offers a review of the most relevant existing literature, followed by an exploration of adjacent work in digital humanities and computational social sciences. The subsequent section details the methodology, including the construction of the database and inclusion criteria. The results and discussion section provides an in-depth analysis of publication trends, journals, thematic areas, and co-authorship networks among authors, institutions, and countries. The article concludes with a critical reflection on the geographic and epistemic asymmetries that characterize the field, followed by a set of recommendations and future lines of research.

Background

Bibliometric studies are a valuable tool to understand the structure, transformation, and trends of a field (Glänzel, 2012), especially one as diverse and dynamic as digital methods. These studies involve the quantitative analysis of scholarly output to reveal patterns in research (Garfield, 1955; Groos & Pritchard, 1969). Using techniques such as co-citation analysis (Small, 1980; Small, 1973) and keyword co-occurrence (Leydesdorff & Welbers, 2011), bibliometric methods help to uncover emerging themes and knowledge gaps

(Glänzel, 2012), making them particularly useful for investigating hybrid fields such as the one addressed in this article.

The notion of digital methods is far from settled, and multiple definitions coexist. Rogers (2013) emphasizes that, to employ them, it is essential to work with the “native” digital objects and devices of the web, reconstructing or repurposing them for research practices oriented toward conducting social inquiries online. Within this approach, the principle of following the medium is central: The internet is conceived not only as a communication space but also as a source of data, a methodological strategy, and a technical resource. This perspective requires remaining attentive to the changing infrastructures of the digital environment and reflecting critically on the instability, availability, and biases of digital objects.

According to Ruppert et al. (2013), digital methods are shaping a new ontology of the social, which makes it necessary to critically revisit their theoretical and ontological assumptions, while reconfiguring methodologies in the social sciences. These authors propose analyzing them through the concept of digital devices, which builds on key debates from Science and Technology Studies (STS). Said approach seeks to understand how these devices, conceived as agents, shape the social world, while also being shaped by it.

Further building on debates in STS, Marres (2015) highlights how digital media environments actively shape what is studied, for instance, in the mapping of controversies. Rather than treating bias as a flaw, she proposes an affirmative approach that sees it as integral to the research process. Similarly, Marres and Weltevrede (2013) analyze web scraping as a digital method, showing how tools external to the social sciences can be repurposed for research purposes (as suggested by Rogers), while also blurring the boundary between method and object.

Other scholars broaden the definition. Hampton (2017) conceives digital methods as techniques that explore the relationship between digital technologies and the social world, including both online and offline phenomena. His review combines traditional methods such as ethnography, interviews, and surveys with natively digital approaches such as web scraping and the use of APIs, thus rejecting overly restrictive definitions. Finally, Schoon et al. (2020) call for a decolonization of digital methods, situating Africa as an epistemic site and emphasizing qualitative and mixed approaches. Their proposal illustrates how the field can be reframed from perspectives that challenge hegemonic understandings.

Although digital methods have not been extensively examined from a bibliometric perspective, Carrozza and Santos Pereira (2015) provide foundational insights. These authors analyzed the role of digital technologies in the social sciences, with a particular focus on digital methods within the humanities and social sciences. Drawing on references extracted from Web of Science, they examined the intellectual traditions underpinning the field and employed tools such as Sciencscape, Table2Net, and Gephi to construct their corpus.

According to their findings, digital social research began to gain visibility in the literature around 2010, although the specific term “digital methods” only emerged toward the end of the period analyzed. They later constructed a subset of data focused explicitly on digital methods within the framework of STS, identifying keywords such as data visualization and social networks. Articles in this corpus were not limited to methodological discussions, as it also included those that contributed to broader areas within the social sciences, for example, when digital methods were employed in diverse case studies. These authors identified three primary domains in which digital methods were being developed: STS, information visualization, and media studies.

They also highlighted four leading European centers as key pioneers in the development of digital methods: The Digital Methods Initiative (DMI) in Amsterdam, Netherlands; Médialab-SciencesPo in Paris, France; Density Design at the Politecnico di Milano, Italy; and the Centre for the Study of Invention and Social Process (CSISP) at the University of London, United Kingdom. According to the authors, three major intellectual currents and scientific debates have significantly shaped the concept of digital methods: Actor-Network Theory; discussions on the performativity of methods, emerging at the intersection of sociology

and STS; and the conceptual contrast between the virtual and the digital in media studies. Prominent contributors to this theoretical development include Bruno Latour, Tommaso Venturini, Richard Rogers, and Noortje Marres.

To expand the bibliometric background of this study, we also reviewed research on the broader field of digital humanities. While not all methods used in digital humanities qualify as digital methods per se, this literature provides a useful reference for identifying shared trends. Among the earliest bibliometric studies in this area are those by Tang (2017), who examined the intellectual cohesion of the field through network analysis, and Wang (2018), who analyzed scholarly output in digital humanities using Web of Science, documenting its rapid growth and identifying its main publication channels and influential actors.

In more recent years, other studies (Chansanam et al., 2022; Gupta and Chakravarty, 2021; Alvite Díez & Barrionuevo, 2020) have sought to identify leading contributors, disciplines, and research topics. Similarly, Amanullah (2023) focused on the interdisciplinary nature of the field, confirming the links established between the natural sciences and the social sciences. Additional studies have examined the coverage of digital humanities across bibliographic sources such as Dimensions, Web of Science, Scopus, Microsoft Academic Graph, and Crossref (Spinaci et al., 2022).

In terms of research themes, these studies have identified both established and emerging areas, such as the management and analysis of digital collections, the use of technologies for documenting and preserving cultural heritage, and the application of data visualization methods and social network analysis. One notable study by Li and Yan (2023) analyzed emerging technologies in this domain and argued that these technologies represent potentially transformative innovations in specific areas. Using artificial intelligence, they identified scientific method entities (SMEs) as a strategy to extract and classify emerging technologies in the context of digital humanities. According to the authors, digital humanities is an interdisciplinary field whose methods are drawn from disciplines such as literature (close and distant reading), history, archival studies, statistics, and mathematics. Their emphasis lies particularly in the use of artificial intelligence, geographic information systems (GIS), and traditional methods from the humanities and social sciences.

More specialized studies have focused on subfields such as visualization in digital humanities (Benito-Santos & Sánchez, 2020), digital cultural heritage (Münster, 2019; Jiang, 2025), digital culture (Osiński, 2023), and even representations of Islam in the digital sphere (Wahid, 2024). These prior analyses have identified influential contributors, often based in North America and Europe, while also documenting meaningful contributions from other regions and highlighting transnational collaborations. Recurring themes include text processing tools, GIS, artificial intelligence, and debates surrounding metadata and ontologies.

Other relevant research examples are bibliometric studies of computational social sciences, such as that by Purnomo et al. (2022), which analyzed articles published in Scopus from 2010 to 2020. Among their key findings was a steady increase in publication volume, although the growth rate began to slow after 2015. They found that scientific production was concentrated in a limited number of countries, with the United States and China as the main contributors, and they identified a prevailing critical perspective in how big data is approached.

In sum, although bibliometric studies on digital humanities and related domains exist, there is currently no up-to-date overview focused specifically on research output in digital methods as an emerging and interdisciplinary field. There is also a need for a broad definition that accommodates the diverse understandings of digital methods across the globe. A general analysis exploring the historical development, dominant research topics, and key contributors to the field of digital methods would thus offer valuable insights into its current state and potential future directions.

Methodology

This study was conducted as an exploratory bibliometric analysis using the databases Web of Science, Scopus, and SciELO. These sources were selected based on their relevance, structured metadata, and broad linguistic and geographic coverage, in alignment with the study's wide-ranging scope. The inclusion of SciELO was specifically intended to give greater visibility to Spanish-language scholarly production and research from Ibero-America.

To identify scholarly output related to digital methods, we designed a search strategy aimed at retrieving all publications that explicitly address digital methods from a social sciences or humanities perspective. The search queries were defined as follows:

- Scopus: TITLE-ABS-KEY ({"digital methods"}) AND (TITLE-ABS-KEY ({humanities} OR {social}))
- Web of Science Core Collection: "digital methods" (All Fields) AND ("humanities" OR "social") (All Fields)
- SciELO: Citation Index: "digital methods" (Topic) OR "metodos digitales" (Topic) AND "humanities" (Topic) OR "social" (Topic)

For the SciELO Citation Index, the search strategy required a different approach. Given its distinctive coverage of Ibero-American scholarship, we included search terms in both English and Spanish to ensure linguistic representativeness and to capture relevant regional contributions that might otherwise be overlooked.

It is important to note that the literature has already pointed to the challenges of searching and retrieving publications on interdisciplinary topics (such as digital humanities), which may also apply to digital methods. Different approaches exist for identifying them explicitly or implicitly. According to Li et al. (2024):

Authors who are concerned with conceptual discussions of DH identities and general approaches tend to explicitly apply the phrase digital humanities, while authors engaging more with implicit DH research tend to focus on a specific aspect—whether it be a discipline-oriented or methodological approach. (p. 729)

This study adopts a strategy focused solely on explicitly labeled publications. This decision reflects the aim of analyzing a corpus of works that self-identify as part of the field of digital methods. By avoiding restrictions to specific definitions, theories, or dominant tools commonly associated with digital methods, this approach allows for the analysis of a broader variety of perspectives. It also makes it possible to highlight non-hegemonic or non-traditional approaches that nonetheless claim to be part of the field, thereby expanding or challenging existing definitions. The decision to focus on explicit terminology also acknowledges the multiplicity of definitions that exist within the social sciences and humanities without privileging any single one.

The inclusion of the terms "social" and "humanities" was made to exclude publications from disciplines that use the term "digital methods" in unrelated contexts, without a social or humanistic focus. A preliminary pilot search revealed that the expression "digital methods" is also used in disciplines unrelated to the social sciences or humanities, for instance, in reference to purely computational or technical procedures. The inclusion of the terms "social" and "humanities" was therefore necessary to exclude such records and to ensure that the final corpus reflected a social and humanistic orientation. We acknowledge that alternative strategies could offer different results. However, for this exploratory study, we opted for a comprehensive approach that captures the diversity of uses while ensuring that all included documents explicitly align with the domain under study. No filters were applied regarding publication year or document type.

The search was conducted on May 1, 2025, and yielded 701 results from Scopus, 525 from Web of Science, and 23 from SciELO. Bibliographic data from the three databases was then analyzed to identify duplicates, using the title and DOI of the publications. A manual review of the resulting unique entries was conducted

based on abstracts, leading to the exclusion of 10 non-relevant documents where the term “digital methods” was used in reference to purely computational or technical procedures. In total, 831 unique publications were identified in an Excel database, of which 685 (82%) were indexed in Scopus, 420 (51%) in Web of Science, and 32 (3%) in SciELO. Because citation databases such as Scopus, Web of Science, and SciELO update their records continuously, the coverage for 2025 should be understood as partial at the time of retrieval. The year 2025 was nevertheless included to provide a timely snapshot of the field and to capture emerging thematic trends.

The dataset of 831 publications includes the basic metadata provided by each database, but it also incorporates additional variables such as the OECD Field of Science (FOS) for each document (using a mapping dictionary to harmonize the classification schemes of different sources), the Field-Weighted Citation Impact (FWCI) from Scopus via SciVal, and the best quartile of each journal based on Scimago Journal Rank. Information on authors, institutions, and countries was also normalized.

The assignment of FOS areas facilitated the analysis of the interdisciplinary field of digital methods. Meanwhile, the use of the FWCI for documents indexed in Scopus provided a normalized measure of academic impact. This indicator adjusts citation counts relative to global averages by field, year, and document type. A FWCI of 1.0 indicates performance at the global average; values above 1.0 reflect higher-than-expected citation impact, while values below 1.0 suggest lower impact. It should be noted, however, that this metric is available exclusively for Scopus records, which account for the majority of the publications in the dataset. It cannot be used to extract conclusions about the documents available only in Web of Science and SciELO. Together, these variables offered key insights into the thematic scope and academic impact of the corpus, helping to identify the most relevant areas and contributions within the field.

Finally, Table2Net (developed by Sciences Po) and Gephi were used to generate co-authorship networks for authors, institutions, and countries, which enable the characterization of academic communities according to the structure and intensity of their collaborative interactions, as reflected in co-authored publications (Newman, 2004). In addition, a co-occurrence network of author-defined keywords was constructed to identify thematic clusters and examine how the field is conceptually structured, as proposed by Van Eck and Waltman (2010).

The present study presents several limitations that must be acknowledged. First, the study is limited to scientific output indexed in Web of Science, Scopus, and SciELO, which may exclude research on digital methods disseminated through non-indexed journals, books, theses, reports, and other alternative or regionally oriented publication channels. This is particularly relevant given the strong presence of such formats in the social sciences and humanities. Additionally, two of the selected databases tend to favor English language publications, which may lead to an underrepresentation of contributions produced in other languages. Although our sources were selected to ensure metadata quality and the reliability of normalized indicators, we acknowledge that future research could incorporate additional sources such as Crossref, OpenAlex, or Dimensions to broaden coverage and mitigate these biases. Despite these limitations, the dataset provides a robust and comparable foundation for identifying global trends, thematic structures, and key actors in the scientific production on digital methods.

Finally, in line with current transparency standards, we state that no generative artificial intelligence tools were used in the writing of the manuscript. All research stages were carried out by the authors using the methods and software described above.

Results and Discussion

The temporal analysis shows a sustained increase in scholarly output on digital methods, with a clear inflection point beginning in 2017. Although there are records dating back to 2004, these early documents

appear to reflect isolated initiatives rather than a consolidated field or established methodology. It is only in the second half of the 2010s that publication activity intensifies, likely as a result of multiple converging factors which include the mass adoption of digital infrastructures and data sources, which enable new ways of investigating social phenomena. The proliferation and consolidation of definitions, authors, and schools of thought related to digital methods highlighted by Carrozza and Santos Pereira (2015) is also consistent with this pattern (Figure 1).

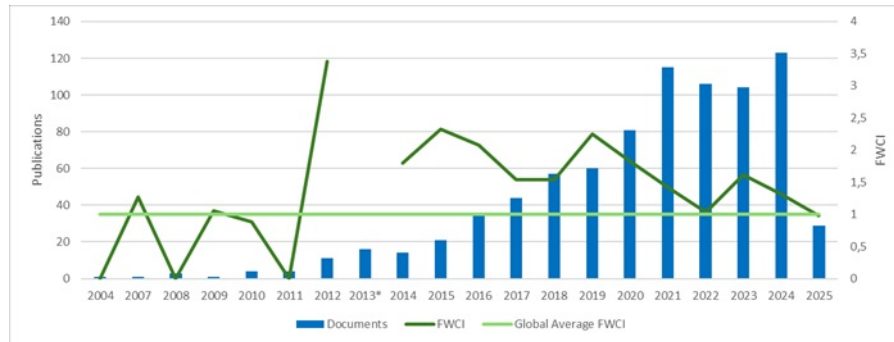


FIGURE 1.
Publications and Field Weighted Citation Impact (FWCI) of scientific output on digital methods over time

Note. The FWCI is an average calculated for documents in journals indexed in Scopus.

*The outstanding FWCI value for 2013 (7.15) is not displayed in the figure, as it represents an outlier that distorts the scale of the series. The value has been omitted from the visualization to allow clearer comparison of the overall trend.

Source: Data from WoS, Scopus, and SciELO, 2025.

The Field-Weighted Citation Impact (FWCI) likewise reveals a sustained trajectory of above-average impact (Figure 1). While exceptionally high peaks are observed in 2012 and 2013, these appear to be outliers. For over a decade, the FWCI has remained consistently above 1.0, indicating that publications on digital methods have, on average, received more citations than similar outputs, considering their date of publications, type and research area. This stability is particularly noteworthy given the progressive increase in publication volume, suggesting that the field's growth has not come at the expense of scholarly impact. Although a slight decline in FWCI is observed in recent years, it remains within a competitive range, reinforcing the notion that digital methods is a field in expansion and of growing interest.

To complement the quantitative analysis, a keyword co-occurrence network was constructed based on the full set of publications. This visualization (Figure 2), developed using VOSviewer, identifies not only the most frequent terms but also their groupings within the analyzed corpus (Romero Pérez & Pulido-Rojano, 2018). By focusing on keywords defined by the authors themselves, the representation offers an internally situated view of how the field defines itself. The resulting structure highlights a diverse thematic landscape that reinforces the interdisciplinary nature of digital methods. As such, the term “digital methods” appears as a central node, linking multiple semantic clusters.

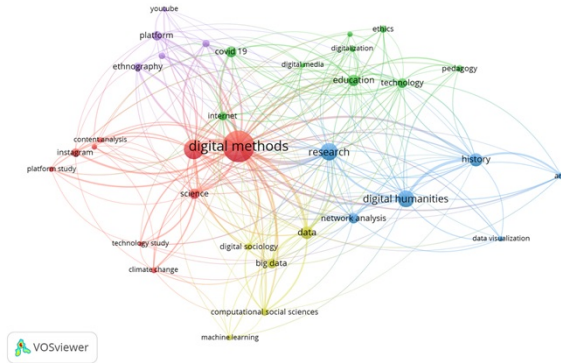


FIGURE 2.

Co-occurrence network of keywords in digital methods research

Note. A VOSviewer corpus text file was constructed by merging all author keywords from the three databases.

The network was generated using the full counting method and applying a minimum threshold of six occurrences, which yielded 72 terms. A thesaurus was constructed to unify similar terms, such as 'social media platform' and 'social media.' VOSviewer's standard clustering algorithm identified five clusters. Default layout and clustering parameters were retained, with only minor visual adjustments to improve readability.

Source: Data from WoS, SciELO and Scopus using VOSViewer, 2025.

One major cluster, marked in purple, includes concepts such as “platform”, “Facebook”, “YouTube”, and “ethnography”. This grouping suggests a sociotechnical orientation focused on the analysis of digital platforms as both object and site of research. It aligns with traditions in digital media studies and methods such as digital ethnography. This cluster resonates with the performativity of methods, where platforms are sites of data collection, but also shape the very practices of inquiry. By contrast, the yellow cluster includes terms such as “big data”, “machine learning” and “computational social sciences”, indicating a more technical and quantitative orientation that intersects with data science and computational research, as described by Purnomo et al. (2022) and Li and Yan (2023), who highlight the convergence of computational and social science methods. The red cluster brings together terms such as “Instagram”, “disinformation” (a node without a visible label) and “content analysis”, pointing to the challenges of studying content and misinformation in highly mediated environments, in topics such as those related to science and climate change.

A fourth cluster (blue) connects “digital humanities”, “history”, “arts”, “network analysis”, and “data visualization”, illustrating both the field’s proximity to digital humanities and its separate character. This supports what Liu and Anikin (2024) and Alvite Díez and Barrionuevo (2020) argue: that technologies such as visualization, semantic annotation, and artificial intelligence extend beyond traditional digital humanities and permeate other disciplines. Finally, the green cluster features terms such as “ethics”, “education”, “internet” and “digitalization”, suggesting an agenda centered on the impact of digital technologies on educational environments, as is also discussed by Georgopoulou et al. (2024). The distribution and connectivity of these nodes further indicate a coexistence between critical and technical approaches, reinforcing the idea that digital methods do not constitute a homogeneous field, but rather a constellation of interrelated agendas, tools, and objects of study in ongoing dialogue and tension.

Regarding publication channels (Table 1), scientific production on digital methods is somewhat concentrated in a small group of high-impact academic journals published in the Global North. Leading outlets include *Social Media + Society*, *Information, Communication & Society*, *New Media & Society*, and *Big Data & Society*. These journals, most of them indexed in Scopus and WoS and classified as Q1, are published by major editorial groups with strong ties to Anglo-American social sciences, especially SAGE and Routledge. They exhibit outstanding impact indicators, as reflected in citation counts in Web of Science and Scopus, as well as elevated FWCI values, particularly for *New Media & Society* (FWCI: 4.05) and *Information, Communication & Society* (FWCI: 3.59).

TABLE 1.
Main journals publishing scientific output on digital methods

Source	Publisher	Best Q in SJR	Country	Documents	Citations in WoS	Citations in Scopus	FWCI Scopus
<i>Social Media + Society</i>	SAGE Publications Ltd	Q1	United Kingdom	24	384	400	2.51
<i>Information Communication & Society</i>	Routledge	Q1	United Kingdom	16	515	591	3.59
<i>New Media & Society</i>	SAGE Publications Ltd	Q1	United Kingdom	13	721	820	4.05
<i>ACM International Conference Proceeding Series</i>	Association for Computing Machinery	-	United States	13		45	0.26
<i>Big Data & Society</i>	SAGE Publications Ltd	Q1	United Kingdom	10	129	156	2.59
<i>CEUR Workshop Proceedings</i>	CEUR-WS	-	Germany	9		12	0.35
<i>Italian Sociological Review</i>	QuEdit	Q3	Italy	8		32	0.57
<i>Convergence-The International Journal Of Research Into New Media Technologies</i>	SAGE Publications Inc.	Q1	United Kingdom	8	147	197	2.43
<i>Sociological Review</i>	SAGE Publications Inc.	Q1	United Kingdom	7	268	354	3.74
<i>Frontiers In Sociology</i>	Frontiers Media SA	Q1	Switzerland	6	10	18	4.51
<i>Social Sciences-Basel</i>	Multidisciplinary Digital Publishing Institute (MDPI)	Q2	Switzerland	6	15	29	5.09
<i>Humanities & Social Sciences Communications</i>	Springer Nature	Q1	United Kingdom	6	65	5	0.93
<i>Digital Humanities Quarterly</i>	Alliance of Digital Humanities Organisations	Q2	United States	6	4	6	0.12
<i>Digital Scholarship In The Humanities</i>	Oxford University Press	Q1	United States	6	1	21	0.72
<i>International Journal Of Communication</i>	University of Southern California	Q1	United States	6	221	277	2.46

Note. Only journals with more than five publications are shown.

Source: Data from WoS, Scopus, and Scielo, 2025. Quartiles were retrieved from Scimago Journal Rank.

As shown, the leading journals address a broad spectrum of topics, ranging from social networks and big data analysis to critical reflections on digital infrastructures, algorithms, and data governance. While conference proceedings are present—evidenced by the number of documents published in *ACM International Conference Proceeding Series*, for instance—these publication channels tend to exhibit lower FWCI. This may reflect a segmentation between technical communication channels (from fields like engineering) and those with a more critical orientation, which are more highly valued in the social sciences.

While a set of core journals has been identified, it is important to note that these outlets are not dedicated exclusively to digital methods. Rather, they encompass broader thematic scopes that intersect with the field. As such, it seems that, despite the increasing visibility and legitimacy of digital methods, the field has not yet

reached a level of consolidation that would support the establishment of a specialized journal focused solely on this topic.

This editorial landscape thus reflects both the consolidation of specific publication channels, and the coexistence of differentiated circuits in terms of audience and formats. The concentration in high-impact journals may be interpreted as an indicator of the field's growing academic legitimacy, but it also raises questions about the geographic, linguistic, and epistemic biases embedded in such publication practices. This makes it particularly relevant to analyze the presence of other document types beyond journals.

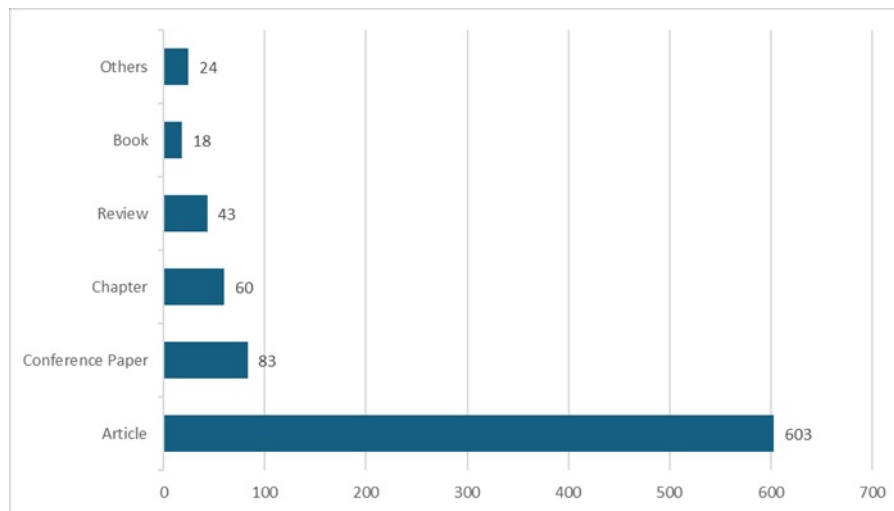


FIGURE 3.

Document types of scientific output on digital methods

Note. Others include documents type with less than 10 documents, including: Editorial, Book, Review, Editorial Material, Note, Meeting Abstract, Conference Review, Correction, and Erratum.

Source: Data from WoS, Scopus, and SciELO, 2025.

The distribution of document types (Figure 3) shows a clear predominance of journal articles, which represent over 70% of the total documents identified. This is unsurprising, given the central role that this format plays in global academic publishing dynamics reflected in Scopus and WoS. However, the presence of other types of scholarly outputs is significant and includes book chapters (60 documents), full-length books (18), and especially conference proceedings (83), which constitute the second most frequent document type.

The presence of book chapters and monographs reflects the field's engagement with more expansive scholarly formats (often suited for conceptual or methodological depth) and its alignment with publication practices typical of the social sciences and humanities, where such formats are highly valued. Notably, the inclusion of these document types in databases like Web of Science and Scopus indicates an increasing visibility of publication models that go beyond the journal article. Conference proceedings also play a notable role in the field of digital methods. Conferences often serve as preliminary spaces for the dissemination of ideas, data sources, tools, or emerging methodologies before they are formally consolidated through peer-reviewed publications, thus reflecting the novelty and experimental nature that characterizes this approach, particularly in domains such as engineering and applied computer science.

This distribution of document types reveals a tension between two modes of scholarly communication: one linked to disciplinary stability and consolidation (e.g., indexed journal articles and book chapters), and another more exploratory, represented by conference presentations and literature reviews. This coexistence reinforces the notion that digital methods function not as a closed school of thought, but as a flexible intersection of diverse epistemic communities.

Regarding the language of publication (Figure 4), the dominance of English is overwhelming, accounting for approximately 90% of all documents. This confirms what has been widely documented in the literature

about the role of English as the lingua franca of global science, at least in sources such as Scopus and WoS. At the same time, it raises questions about the conditions of participation, and visibility of knowledge produced in other languages and contexts.

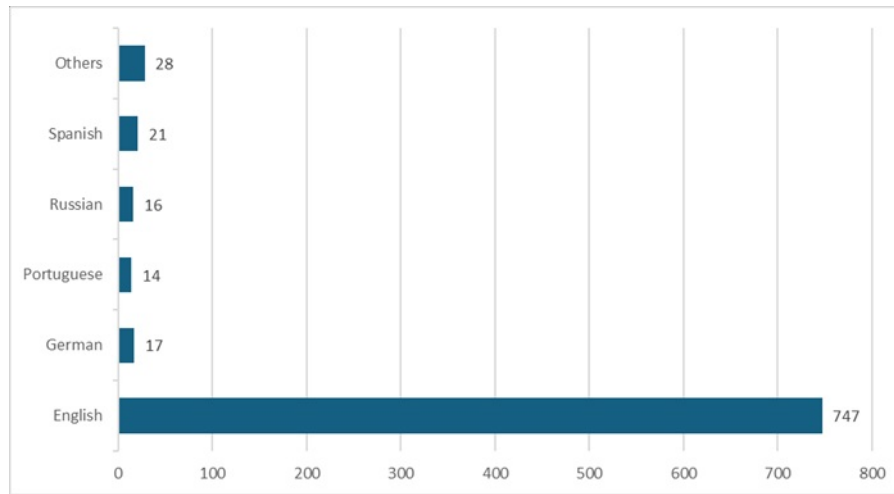


FIGURE 4.

Languages of scientific output on digital methods

Note. Others include languages with less than 10 documents, such as Bosnian, Bulgarian, Chinese, Dutch, Estonian, French, Hungarian, Italian, Lithuanian, Polish and Turkish.

Source: Data from WoS, Scopus, and SciELO, 2025.

That said, it is notable that the corpus also includes documents in other languages such as Spanish, German, Russian, and Portuguese. These publications may reflect more localized knowledge production processes, often linked to national or regional research networks, which do not necessarily aim for visibility within Anglo-American academic circuits. Noteworthy among these are contributions by Ortega Gutiérrez and Caloca Lafont (2017), and Schoon et al. (2020), who—writing from Latin America and Africa, respectively—seek to challenge hegemonic definitions of digital methods and bring them closer to local contexts.

The following distribution of documents by field of science (Figure 5), as grouped using the OECD classification, shows a strong concentration in the social sciences (45%) and humanities (24%). This supports the idea that interest in digital methods has taken root primarily in disciplines such as communication, sociology, political science, and cultural studies—fields in which digital platforms, big data, and artificial intelligence have significantly reshaped both research objects and analytical tools. This distribution could be partially shaped by the search strategy, which explicitly included social and humanistic perspectives.

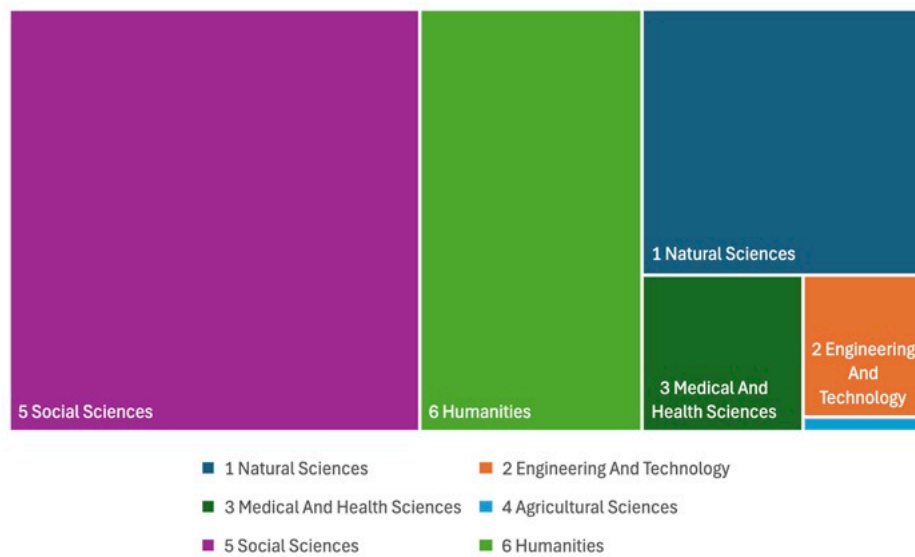


FIGURE 5.

FOS areas of scientific output on digital methods

Note. To assign journals to OECD fields, mapping dictionaries were used to align the subject categories of Web of Science and Scopus with the revised Field of Science and Technology (FOS) classification from the Frascati Manual. It is worth noting that some journals may be associated with more than one field.

Source: Data from WoS, Scopus, and SciELO, 2025.

The natural sciences (236 documents) and medical and health sciences (80) are the next most represented fields, followed by engineering and technology (54). This landscape reinforces the idea that digital methods are not the exclusive property of any single field or discipline (such as digital humanities or computational social sciences). Rather, they constitute a shared epistemological and methodological repertoire that is adapted and reinterpreted according to research questions, terminologies, and academic communities of multiple domains. The interdisciplinary nature of these methodologies presents both opportunities and challenges that should be further studied.

In terms of journal impact (Figure 6), the distribution of documents according to the quartile of the journals in which they were published shows a clear trend toward high-impact outlets. While in the early 2010s most documents were published in journals without assigned quartiles or with unavailable data, starting in 2012, there has been a notable increase in publications appearing in Q1 and Q2 journals. This trend became especially pronounced after 2016 and continues consistently through 2024. Meanwhile, Q3 publications are present but more moderate in number, and Q4 publications are marginal.

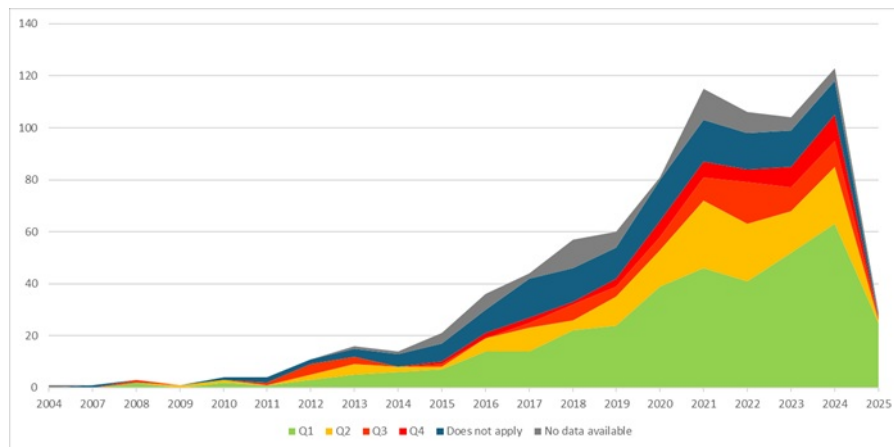


FIGURE 6.

Distribution of scientific output on digital methods by journal quartile

Note. Quartile rankings were assigned based on each journal's best quartile in the Scimago Journal Rank (SJR). The label 'Does not apply' refers to document types other than journals, while 'No data available' indicates journals not indexed in the SJR. Data for 2025 was incomplete at the time of analysis.

Source: Data from WoS, Scopus, and SciELO, 2025.

Across the full period analyzed, Q1 journals account for the largest proportion of publications, with 366 documents, equivalent to approximately 44% of the total. As expected, this group also accumulates most citations received in both Scopus and Web of Science and has the highest average FWCI score (2.49). These findings suggest a progressive orientation of research output toward more visible and impactful publication channels. Nevertheless, as previously noted, a relevant share of documents continues to be published in non-indexed journals or outlets without assigned quartile information.

An essential component of the analysis involves identifying the key actors responsible for research on digital methods. The examination of the most productive authors in the field (Table 2) confirms, on one hand, the continued influence of foundational figures and, on the other, the emergence of an academic core with a strong European presence. Notably, Richard Rogers (11 publications, FWCI 3.02), Tommaso Venturini (11 publications, FWCI 2.09), and Noortje Marres (6 publications, FWCI 1.46) stand out as leading contributors, three of the intellectual references previously identified by Carrozza and Santos Pereira (2015). Their continued relevance reflects the ongoing influence of perspectives rooted in Actor-Network Theory, the performativity of methods, and digital media studies.

TABLA 2.
Most productive authors in digital methods research

Author	Documents	FWCI	Current affiliation	Country of affiliation
Rogers, Richard	11	3.02	University of Amsterdam	Netherlands
Venturini, Tommaso	11	2.09	CNRS, University of Geneva	France, Switzerland
Caliandro, Alessandro	10	1.39	University of Pavia	Italy
Coromina, Òscar	6	0.29	Universitat Autònoma de Barcelona	Spain
Marres, Noortje	6	1.46	University of Warwick	United Kingdom
Ben-David, Anat	5	3.85	Open University of Israel	Israel
Bounegru, Liliana	5	1.59	King's College London	United Kingdom
Burgess, Jean	5	2.97	Queensland University of Technology	Australia
Gandini, Alessandro	5	1.02	University of Milan	Italy
Gerlitz, Carolin	5	1.27	University of Siegen	Germany
Gray, Jonathan W. Y.	5	1.41	King's College London	United Kingdom
Helmond, Anne	5	0.68	Utrecht University	Netherlands
Rieder, Bernhard	5	1.14	University of Amsterdam	Netherlands
Valerio-Ureña, Gabriel	5	0.37	Instituto Tecnológico y de Estudios Superiores de Monterrey	Mexico

Note. Only authors with more than 5 publications are shown. The FWCI is an average calculated for documents published in sources indexed in Scopus.

Source: Data from WoS, Scopus, and SciELO, 2025.

Most of the top-ranked authors are affiliated with institutions that are home to well-established digital methods research labs, such as King's College London, Utrecht University, Queensland University of Technology, and the University of Milan. This suggests a close relationship between institutional and individual leadership within the field. The presence of Gabriel Valerio-Ureña (5 publications, FWCI 0.37), affiliated with the *Tecnológico de Monterrey* in Mexico, is the only representation from the Global South among the most prolific authors.

Institutional co-authorship patterns across digital methods research further reveal global collaboration dynamics that are nonetheless marked by asymmetries. Overall, authors from approximately 1,048 institutions—including universities, corporations, hospitals, NGOs, and other organizations—contributed to the publications analyzed. However, when looking at the most productive institutions, the data shows a clear concentration in the Global North (Table 3).

TABLE 3.
Main institutions of scientific output on digital methods

Normalized Institution	Country	Documents	FWCI
University of Amsterdam	Netherlands	41	4.54
King's College London	United Kingdom	23	2.14
University of Sheffield	United Kingdom	23	3.24
University of Milan	Italy	16	1.80
University of Glasgow	United Kingdom	15	3.47
Queensland University of Technology	Australia	12	3.20
University of Naples Federico II	Italy	12	1.70
University of Oxford	United Kingdom	12	3.43
York University	Canada	12	1.73
University of Cambridge	United Kingdom	11	2.57
University of Leeds	United Kingdom	11	1.56
Coventry University	United Kingdom	10	0.96
Instituto Tecnológico de Estudios Superiores de Monterrey	Mexico	10	0.41
University of Copenhagen	Denmark	10	1.65
University of Liverpool	United Kingdom	10	1.68

Note. Only the 15 most productive institutions are shown. The FWCI is an average calculated for documents published in sources indexed in Scopus.
Source: Data from WoS, Scopus, and SciELO, 2025.

The University of Amsterdam leads the field with 41 publications and an outstanding FWCI of 4.54. Several UK-based institutions also stand out in terms of volume and impact, including King's College London, the University of Glasgow, the University of Oxford, the University of Sheffield, the University of Cambridge, and the University of Leeds. This British predominance reflects the ongoing influence of research traditions rooted in Science and Technology Studies (STS). Italy is also represented by the University of Milan (linked to DensityDesign Lab) and the University of Naples Federico II.

Beyond Europe, the Queensland University of Technology in Australia (FWCI 3.20) and York University in Canada (FWCI 1.73) are notable for their contributions. Additionally, the Tecnológico de Monterrey in Mexico, while having a relatively low FWCI (0.41), has published 10 documents on digital methods in both English and Spanish. This level of output signals active participation, even if mainly through local or regional journals. Such emerging Latin American engagement highlights the need to strengthen regional capacities for both conceptual development and empirical research in digital methods.

An institutional co-authorship network generated using modularity analysis (Figure 7) offers a deeper view of the global collaborative structure around digital methods research. Unlike the previous table listing

only the 15 most productive institutions, this network includes all those with at least four publications in the corpus. The resulting structure reveals a broader diversity of actors and a more geographically distributed presence. In total, 14 clusters were identified, each representing more or less cohesive collaborative communities. This confirms that, while the field remains concentrated in the Global North, there is active participation from institutions in Latin America, Asia, Africa, and Eastern Europe.

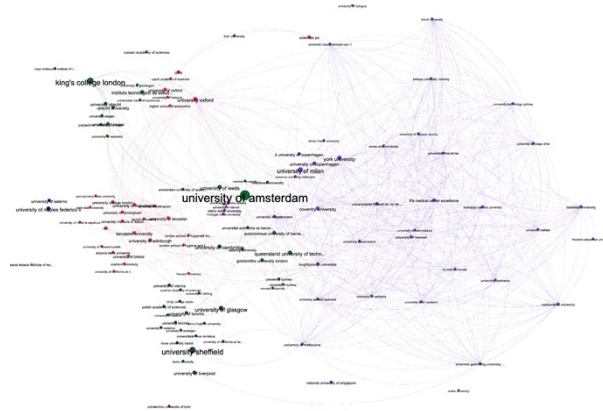


FIGURE 7.

Network of institutional co-authorships in scientific publications on digital methods

Note. Only institutions with more than four documents are included. The network layout was generated using the ForceAtlas2 algorithm with the following parameters: scaling = 4.0; gravity = 1.0; strong gravity enabled; threads = 7; LinLog mode, hub dissuasion, and overlap prevention activated; edge weight influence = 1.0. Performance settings included tolerance (speed) = 1.0, approximation = 1.2, and approximation of repulsion enabled. The resulting network comprised 119 nodes and 649 edges. Node size was proportional to occurrence count, and colors indicate community detection results (modularity = 0.384).

Source: Data from WoS, Scopus, and SciELO, 2025 using Gephi.

The network reveals several interconnected clusters organized around prominent academic hubs. The University of Amsterdam holds a highly central position, acting as a bridge across multiple communities. King's College London also stands out, forming part of a dense UK-centered cluster. The University of Milan, which maintains connections with both British and Dutch institutions, is the most prominent Italian node.

The network also highlights the presence of several peripheral communities, some of which are geographically cohesive. Such is the case of the purple cluster that brings together Brazilian, South African, and Southeast Asian universities. These institutions demonstrate strong regional or thematic collaboration patterns. Examples include the Universidade Federal do Rio de Janeiro, Universidad de Santiago de Chile, Johannes Gutenberg University Mainz, and the University of the Philippines, all of which participate in more regionally oriented or South-South collaborations. Interestingly, the FIFA Medical Centre of Excellence also appears in this cluster, suggesting the incorporation of digital methods into less traditional domains within the field.

In contrast, the absence of French institutions among the most productive and their peripheral role in the collaboration network is striking, especially considering the historical influence of Médialab-SciencesPo, founded by Bruno Latour, in the early formation of the field. This absence could reflect changes in the lab's research agenda or a shift toward publication channels not indexed in Web of Science or Scopus.

Finally, the geographic analysis of scholarly production (Figure 8) reveals a strong concentration of documents in countries such as the United States, the United Kingdom, Germany, and the Netherlands, consistent with findings by Wang (2018) and Chansanam et al. (2022) in their studies on digital humanities. This concentration may reflect not only the research capacity of their academic systems but also their central role in international collaboration networks, editorial infrastructures, and access to competitive funding.

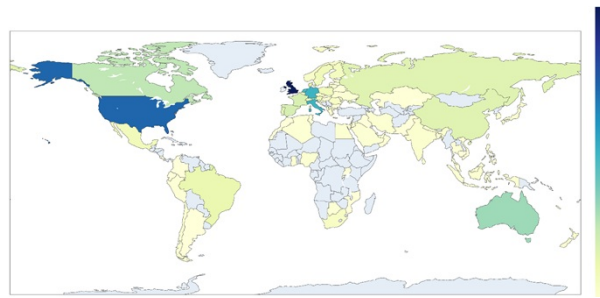


FIGURE 8.

Map of countries co-authoring scientific output on digital methods

Note. This map shows the distribution of countries that have co-authored scientific publications on digital methods. Color intensity reflects the number of publications associated with each country, with darker tones indicating higher publication volume. Countries with no recorded publications in the dataset appear in gray.

Source: Data from WoS, Scopus, and SciELO, 2025. Made using Python and the `plotly.express` and `geopandas` libraries.

In Latin America, countries such as Brazil, Mexico, Colombia, and Argentina stand out, although their overall publication volumes are considerably lower than those of European and Anglophone countries. Meanwhile, only a few African and Southeast Asian countries are represented in the dataset. This underscores persistent asymmetries in the creation or circulation of scientific knowledge in these regions, patterns that may be partially explained by language barriers or the limited coverage of these regions in the databases analyzed. These disparities deserve further investigation in future research.

The co-authorship network among the most productive countries (Figure 9), reveals two major clusters. The first cluster, represented in red, includes Western and Central European countries with strong academic traditions (such as the United Kingdom, Germany, Italy, France, and the Netherlands) alongside the United States and Canada as key collaborators. These countries not only have larger node sizes, indicating higher publication volumes, but also greater connectivity, suggesting intense collaboration within the group and a coordinating role in the field. Interestingly, Peru is also part of this central cluster, one of the few Latin American countries partially integrated into the core of the network.

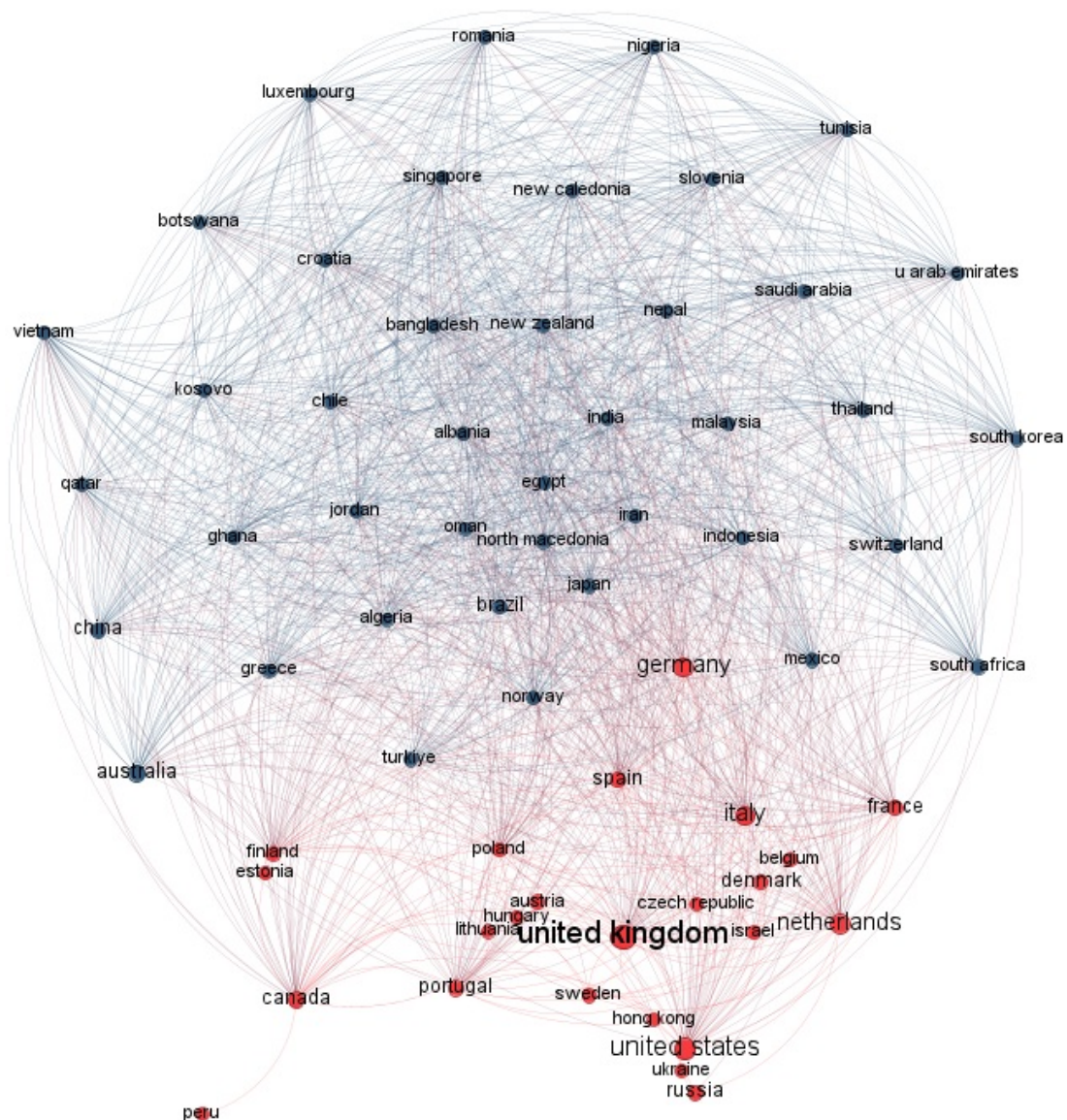


FIGURE 9.

Co-authorship network of countries in scientific publications on digital methods

Note. Only countries with more than three documents are included. The network layout was generated using the ForceAtlas2 algorithm with the following parameters: scaling = 13.0; gravity = 4.0; threads = 7; LinLog mode, hub dissuasion, and overlap prevention activated; edge weight influence = 1.0. Performance settings included tolerance (speed) = 1.0, approximation = 1.2, and approximation of repulsion enabled. The resulting network comprised 65 nodes and 1,409 edges. Node size was proportional to occurrence count, and colors indicate community detection results (modularity = 0.047).

Source: Data from WoS, Scopus, and SciELO, 2025 using Gephi.

The second cluster, shown in blue, includes a more diverse set of countries primarily from Asia, Africa, and Eastern Europe, including China, India, Nigeria, Vietnam, Saudi Arabia, Egypt, Romania, and Slovenia. While these countries have lower centrality compared to the first group, this cluster reflects emerging South-South connections and the rise of collaborative dynamics in historically underrepresented regions. Notably, Australia—despite its high production volume in other networks—appears grouped in this second cluster, which may indicate a collaboration structure oriented more toward the Pacific and Southeast Asia. No Latin American countries—beyond Mexico, Brazil, Chile, and Peru—appear. Overall, the network illustrates an internationalized yet geographically uneven field, where research output is concentrated in a small number of

Global North countries, while other regions, although present, tend to occupy peripheral or less integrated positions within global collaborations.

Conclusions

This study confirms that digital methods constitute a growing and diverse scientific field. Its disciplinary boundaries are porous, and its applications extend well beyond the framework of digital humanities and computational social sciences. Contrary to reductionist views that subsume digital methods entirely within those categories, the field represents a methodological and epistemic intersection that bridges disciplines as diverse as sociology, engineering, medicine, and computer science. As Carrozza and Santos Pereira (2015) argue, the genealogy of digital methods is rooted in traditions that combine methodological performativity with the legacy of STS and digital media research. However, its contemporary development reveals an increasingly widespread appropriation by broader scientific communities.

From a quantitative standpoint, there has been steady growth in the scholarly output on digital methods, with a significant inflection point after 2017 and a sustained level of citation impact above the global average. This trend suggests not only increasing output, but also progressive legitimization of the field, particularly in high-impact journals indexed in Scopus—such as *New Media & Society* and *Information, Communication & Society*—where the FWCI exceeds a value of 3.0. The high concentration of publications in Q1 and Q2 journals reinforces this interpretation, even though a journal explicitly dedicated to digital methods as a field has yet to emerge.

However, this process of consolidation is not without tensions. Despite the inclusion of Scopus and SciELO to broaden the dataset, the mainstream bias of indexed scientific production persists, with a marked predominance of publications in English and a geography still strongly centered in the Global North. Many of the contributions come from foundational figures in the field—such as Richard Rogers, Tommaso Venturini and Noortje Marres—who continue to shape the field's output and visibility, while new voices are also present. Notably absent from the top ranks, however, are the authors affiliated with Médialab SciencesPo, one of the field's foundational schools.

At the institutional level, the University of Amsterdam and King's College London stand out, with specialized research labs serving as key academic nodes. In contrast, participation from actors in the Global South remains marginal. The Tecnológico de Monterrey (Mexico), with a substantial number of publications but limited impact, represents one of the few exceptions. These asymmetries echo recent studies (Spinaci et al., 2022; Amanullah, 2023) that underscore the need to strengthen strategies for geographic, epistemic, and linguistic inclusion in the field, at least as reflected in prestigious data sources such as WoS and Scopus. Such efforts would enable digital methods to be reimagined from new contexts and local problematics.

The analysis of document types reveals a coexistence of traditional formats (such as journal articles, book chapters, and monographs) with more exploratory channels of scholarly communication, including conference papers. This heterogeneity reinforces the idea that digital methods operate as a boundary-crossing field, one that is open to experimentation and initial modes of academic validation.

The keyword co-occurrence identifies five well-differentiated thematic clusters: (1) sociotechnical studies centered on digital platforms, often employing ethnographic and qualitative methods; (2) computational approaches focused on big data, machine learning, and quantitative modeling in social contexts; (3) research situated within the digital humanities, emphasizing network analysis, visualization, and cultural artefacts; (4) a line of work exploring the role of digital technologies in education, institutional knowledge production, and digitalization processes; and (5) the challenges of studying content and misinformation in highly mediated environments. The coexistence of these thematic fronts confirms that rather than being defined by a single

dominant theory or methodology, digital methods emerge as a dialogic network of practices shaped by research objects and available tools.

In summary, this bibliometric study demonstrates that digital methods constitute an expanding interdisciplinary field that has gained both visibility and recognition in international academia. Nonetheless, the field still faces challenges related to geographic, epistemological, and linguistic inclusion. One of the primary tensions lies in the very term “digital methods,” whose definition remains contested (Schoon et al., 2020). This plurality of meanings reflects not only the conceptual richness of the term, but also the need to approach it as a situated and diverse research field.

Recommendations and Future Research Directions

Based on the findings of this first exploratory approach to research on digital methods, several strategic avenues for future investigation in the field are proposed.

First, future research should seek to expand the scope of analyzed scholarly outputs. It is valuable to incorporate document types that are often excluded from databases such as WoS and Scopus, but that remain of great importance for social science and humanities research. These include theses, technical reports, books, and grey literature. Such sources may contain innovative, locally grounded, or non-hegemonic perspectives on digital methods that are not captured by conventional metrics. Databases such as Crossref, OpenAlex, or Dimensions could be considered for this purpose.

There is also a need to foster studies that deepen the conceptual dimension of digital methods, particularly in non-Anglophone contexts. Doing so would advance toward more inclusive, multilingual, and contextually grounded definitions. Given the field’s current dominance by Global North perspectives and English language scholarship, efforts to theorize digital methods from diverse epistemic traditions are essential to ensure broader representation and relevance.

Finally, there is a pressing need to investigate in greater depth the actual approaches, methodologies, and tools employed in works that explicitly identify themselves as digital methods research. While related fields such as digital humanities have already been analyzed from this perspective (e.g., Alvite Díez & Barrionuevo, 2020; Liu & Anikin, 2024; Lin & Yan, 2023), the field of digital methods lacks a systematic mapping of its dominant methodological traditions and practices.

In this regard, constructing a systematic conceptual matrix to classify digital methods, considering variables such as ontological positions, the status of research objects, criteria of validity, and normative dimensions, would provide a valuable analytical tool for future investigations. Addressing this gap would contribute to a clearer understanding of how digital methods are applied in practice, and how they differ (or converge) across disciplines and regions.

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Notes

- * Research paper

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