The Rise of Digital Humanity: A Global Assessment of Infrastructure, Scholarship, and Cultural Work

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Abstract- **The term "digital humanity" (DH) describes how traditional approaches in humanities are combined with computational techniques, digitization, and data-driven applications. Using three perspectives: institutional infrastructure, scholarly output, and methodological practices in cultural heritage and humanities computing, this article explores the global growth of DH. The report, which is based on extensive bibliometric research and publicly available data, shows that DH centres are expanding rapidly worldwide, that the number of publications is increasing, and that interdisciplinarity is growing. It also discusses technological advances, ethical dilemmas, and the impacts on marginalized regions especially those in the Global South. Finally, the study argues that DH represents a shift in the creation, distribution, and management of cultural information rather than merely a collection of tools.**

Index-Terms: Digital Humanity; Digital Humanities; Bibliometric Analysis; Cultural Heritage; Institutional Infrastructure; Interdisciplinary Research

I. INTRODUCTION

Since the early twenty-first century, humanities research has undergone a remarkable evolution. The advancement of digital technologies, such as high-resolution scanning, optical character recognition, data visualisation, and web platforms, has prompted scholars and cultural institutions to incorporate these tools into their practices for archiving, analysing, and sharing cultural artefacts, historical texts, and literary collections. This intersection of digital technology and humanities research is increasingly recognised as a vibrant field known as Digital Humanities.

Digital Humanities not only enhances traditional humanities scholarship but also fundamentally redefines its principles. By enabling extensive digitisation, computational analysis, and broad access, Digital Humanities offers opportunities to restore lost heritage, analyze textual trends over centuries, engage communities in archival projects, and rethink concepts of authorship, preservation, and knowledge dissemination. However, as the field expands, it also raises important questions about equity, representation, and control of digital cultural memory.

The objective of this study is to deliver a data-driven examination of the current global landscape of Digital Humanities. By assessing institutional frameworks, publication trends, and methodological practices using reliable bibliometric sources, this paper outlines the present state of Digital Humanities. It emphasises both the achievements of Digital Humanities as a scholarly movement and the systemic challenges that influence its future development.

II. LITERATURE REVIEW

The field of Digital Humanities has evolved significantly over the past few decades, moving from early text-encoding practices to a diverse interdisciplinary domain that integrates computational tools with humanistic inquiry (Dalbello, 2011). What initially began as efforts to digitize manuscripts and printed materials, alongside the development of markup systems to enable machine processing, has now expanded into a broad spectrum of methods including text mining, visualization, spatial analysis, machine learning, and multimodal cultural analytics (Sula, 2013; Liu, 2013). Scholars continue to debate whether this expansion merely provides enhanced research instruments or fundamentally transforms humanistic questions and methodologies. On one side, proponents highlight the potential to process millions of documents, uncover hidden patterns, and democratize access to cultural materials through large-scale digitization efforts (Fenlon et al., 2024; Kale, 2024). Conversely, critics caution that increasing reliance on computational metrics may risk overshadowing the interpretive depth and critical reflection that traditionally characterize the humanities (Liu, 2012; Li & Zeng, 2022). The earliest attempts to measure and map the intellectual structure of Digital Humanities emerged more than a decade ago. These foundational studies traced the genealogy of the field and identified growing clusters of activity across continents, revealing that innovation was no longer confined to a few technologically advanced institutions but was instead expanding globally (Dalbello, 2011; Basak & Roy, 2023). Visual mappings of DH centers, research networks, and publication trends demonstrated that collaborative initiatives between universities, libraries, museums, and technology industries played a key role in this expansion (Sula, 2013). Recent scientometric studies based on large academic databases further show a sharp rise in DH publications, especially from the early 2010s onward, coinciding with the spread of open-access platforms, interdisciplinary research funding, and digitally oriented scholarly communication practices (Basak & Roy, 2023; Silber-Varod & Geri, 2025). These studies also illustrate increasing intersections with fields such as computer science, media studies, linguistics, and geography, highlighting the widening methodological reach of DH (Fenlon et al., 2024; Mauro, 2024). Digital Humanities has also been increasingly

influential in domains related to cultural heritage, archaeology, architecture, and public history. Digital reconstruction technologies, interactive museum systems, and virtual reality environments have enabled scholars and the public to experience cultural artifacts and historical spaces in new ways (Kale, 2024).

Three-dimensional modelling and environmental simulations contribute not only to academic analysis but also to the preservation of endangered heritage sites by predicting climate-related risks (Fenlon et al., 2024). Public engagement has expanded significantly through community-based digital projects such as crowdsourced transcription, participatory mapping, and open cultural repositories, which invite non-specialists to collaborate in interpreting and preserving cultural memory (Puspitasari et al., 2025; Sanguiné, 2025).Within literary studies, the shift from traditional close reading to computational distant reading has introduced new analytical possibilities. Scholars employ algorithms and visualization tools to detect stylistic patterns, thematic distributions, and historical trends across vast corpora an approach that complements but does not replace interpretive reading (Puspitasari et al., 2025).

This dual orientation—balancing computational realism with humanistic interpretation has generated new methodological debates about the epistemological foundations of the field (Mauro, 2024). Collectively, these developments underscore that Digital Humanities has grown from a small community of early adopters into a global, interdisciplinary enterprise. It integrates advanced technologies with cultural inquiry, enhances public participation, and reshapes conversations about how human identity, culture, and memory are understood in an increasingly digital world (Fenlon et al., 2024; Liu, 2013). As the field continues to evolve, it demonstrates both the transformative potential and the conceptual challenges posed by digital innovation across the humanities.

III. GLOBAL INFRASTRUCTURE OF DIGITAL HUMANITY

One of the earliest and most frequently cited attempts to map DH infrastructure is the "Quantifying Digital Humanities" infographic produced by UCLDH, which identified 114 physical DH centres across 24 countries by 2012. Among these, the United States accounted for 44 centres, followed by Germany (14), Australia (7), Canada (5), the Netherlands (2), Japan (2), and other countries combined. This distribution reflects a concentration of DH infrastructure in regions with strong funding ecosystems, robust digital infrastructure, and established academic–technology collaborations.

Table.1: Number of DH Physical Centres across Countries

Country	Number of DH Centres
United States	44
Germany	14
Australia	7
Canada	5
Netherlands	2

Japan	2

Source: UCL Centre for Digital Humanities (2012 infographic)

More than ten years later, that 2012 count is obviously outdated. Informal updates and regional surveys indicate that the real figure has grown considerably since then new labs, research groups, and degree-granting programmes have sprung up on every inhabited continent. Yet no single, publicly available directory has replaced the original infographic as a comprehensive global reference point. The rapid spread of these dedicated centres and institutes signals something deeper than a passing academic fashion. Digital Humanities has become embedded in the institutional fabric of universities, libraries, and cultural organisations. Many of these units now serve multiple roles simultaneously: they preserve and expand digital collections, develop new computational tools, train the next generation of scholars through master's and doctoral programmes, and reach beyond campus walls with public exhibitions, crowdsourcing initiatives, and community partnerships. In Europe and North America especially, it is now common for a single centre to house a major text-encoding project, host summer schools on data visualisation, and collaborate with national libraries on mass-digitisation efforts. At the same time, the continuing concentration of infrastructure in wealthier nations raises important questions about equity and representation. Large parts of Africa, Latin America, South and Southeast Asia, and the Middle East still have very few formally recognised DH centres. Limited funding, uneven internet access, language barriers, and differing research priorities all contribute to this imbalance. As a result, the voices, histories, and cultural materials of entire regions risk being underrepresented or represented only through the lenses and priorities of institutions located elsewhere. Addressing these disparities has become one of the most pressing challenges for the field as it moves toward greater maturity and global reach.

IV. SCHOLARLY PRODUCTION AND EXPANSION IN DIGITAL HUMANITIES

The rapid increase in scholarly work provides another key measure of the field's advancement, beyond simple institutional growth. A major 2023 bibliometric study titled "Digital humanity at global scale" (Barbecho et al.) used Scopus records to estimate that the total worldwide body Source: Barbecho et al. (2023), "Digital humanity at global scale"

Table 2. Worldwide Scholarly Output in Digital Humanities

Metric	Value
Total global DH publications	≈53000
Proportion contributed by the top 10 countries	≈70%
Leading disciplinary categories	Computing, Cultural Heritage, Digital Libraries, Humanities

Source: Barbecho et al. (2023), "Digital humanity at global scale"

These results clearly show that Digital Humanities has moved from a narrow specialisation to a well established academic field. The strong concentration of output in just a few countries also highlights continuing geographical imbalances, yet the sheer volume of work confirms the discipline's maturity.

Further support comes from Web of Science studies of cultural heritage research, which document explosive growth since the early 2000s. A large scale review covering 2000 to 2020 revealed that many disciplines now produce large numbers of publications that depend heavily on digital methods and tools.

Table 3. Disciplinary Breakdown of Cultural Heritage Research (2000–2020)

WoS Category	Publications	Percentage
Humanities and Multidisciplinary	2410	8.86%
Archaeology	2169	7.97%
Environmental Sciences	1663	6.11%
Architecture	1652	6.07%
Materials Science, Multidisciplinary	1586	5.83%
Computer Science, Information Systems	1475	5.42%
Geosciences, Multidisciplinary	1475	5.42%
Art	1440	5.29%
Imaging Science & Photographic Technology	1354	4.98%
Environmental Studies	1336	4.91%

Source: Web of Science bibliometric study

V. METHODS AND TECHNOLOGIES IN DIGITAL HUMANITIES

The expansion of infrastructure and the increase in publications highlight the widespread integration of digital techniques. Scholarship in Digital Humanities (DH) typically utilizes various computational and digital methods for examining culture and heritage. Common practices include digitization through scanning and Optical Character Recognition, database development, textual analysis using corpus linguistics and text mining, geospatial mapping with Geographic Information Systems, 3D modeling for reconstruction, data visualization, and online dissemination. Digitization enhances preservation and access, allowing items like rare manuscripts, delicate palm-leaf collections, and colonial documents—previously restricted to select scholars—to be accessed by a broader audience. Approaches like text mining and corpus analysis facilitate extensive linguistic and literary studies across long time frames. GIS and 3D modeling support architectural and spatial research of heritage sites, enabling virtual reconstructions and immersive views of historical locations. Data visualization aids in presenting intricate historical trends such as trade routes, migration patterns, and demographic shifts in an understandable manner.

Recent bibliometric analyses indicate a growing number of DH publications authored by scholars from computer science and STEM disciplines, reflecting a shift in the field's disciplinary dynamics. This evolution suggests that DH is emerging not only as a humanities discipline but also as a hybrid field where computational skills are increasingly valued.This methodological expansion has tangible implications. Projects that once required extensive time, such as cataloging and translating oral literature, can now be completed in a fraction of that time through digital recording, crowdsourced transcription tools, and collaborative environments. Cultural institutions can create engaging virtual exhibitions, archives can provide remote access, and researchers can engage in comparative studies across diverse languages, regions, and historical contexts.

VI. ETHICAL, ACCESSIBILITY, AND EQUITY ISSUES IN DIGITAL HUMANITIES

Despite the significant potential of Digital Humanities (DH), there are serious concerns regarding fairness, representation, and the protection of cultural independence due to the unequal worldwide spread of necessary infrastructure and resources. The fact that most DH centers are located in wealthier nations implies that a vast array of languages, local historical records, and non-Western cultural legacies are poorly represented in the world's digital archives. This inequality introduces a bias into the formation of digital cultural memory, favoring those areas with the financial capacity to digitize and disseminate their materials. Furthermore, a trend toward computational and STEM-focused research methods in recent DH publications could potentially sideline traditional humanities approaches. This shift raises alarms about a change in what constitutes acceptable humanities scholarship (an epistemic shift), possibly leading to the simplification of complex cultural contexts into mere data points. Scholars fear this could result in a diminished focus on deep interpretation, community-held knowledge, and nuanced local understanding. Crucially, matters of digital ownership, data governance, community approval, and cultural appropriation are also significant. The digitisation of heritage materials particularly those from Indigenous or underrepresented groups—demands meticulous negotiation, informed consent, and established guidelines for how they are portrayed. Failing to implement these precautions means DH efforts risk perpetuating historical patterns of knowledge extraction, even when framed as acts of preservation. Finally, widespread access remains a hurdle. Although DH offers a pathway to democratizing knowledge, inadequate internet service, a lack of necessary technology, or insufficient funding in many parts of the world means that the benefits of digitisation may be limited to a small, privileged global segment.

VII. THE GLOBAL SOUTH AND DIGITAL HUMANITY: OBSTACLES AND THE ABSENT MAP

The underrepresentation of Global South institutions is one of the most obvious omissions in the current DH data. Asia, Africa, and Latin America are rarely listed as centers in publicly accessible global surveys (such as the UCLDH infographic); bibliometric studies indicate that the United

States, the United Kingdom, Germany, and other Western nations dominate (Barbecho et al., 2023). The lack of finance, low institutional priority, technological obstacles, and the lack of official DH-center classification are structural limitations that account for this absence. Because of this, a large number of DH activities in Global South contexts continue to be dispersed, small-scale, unofficial, or unrecorded, making them essentially invisible to international surveys and bibliometric databases. In regions with rich yet vulnerable cultural heritage, such as South Asia, Southeast Asia, and Africa, the lack of visibility presents significant risks. In the absence of local digitization, community driven archiving, and capacity building, much of this heritage remains susceptible to decay, loss, or neglect. Furthermore, insufficient formal recognition restricts access to funding, academic training, and collaborative opportunities, thereby perpetuating global disparities in digital heritage representation

VIII. DIGITAL HUMANITIES: A MANAGEMENT AND INSTITUTIONAL PERSPECTIVE

From an organizational management standpoint, Digital Humanities (DH) signifies a shift similar to digital transformation efforts found in businesses or government agencies. The establishment of a DH center necessitates careful planning, resource management, cross-disciplinary collaboration, skill development, and sustainable governance. Initially, institutions need to define their objectives, which might include digitizing archives, preserving cultural heritage, creating digital libraries, or offering DH-related courses. They must budget for essential hardware like scanners and servers, software such as database systems and OCR tools, personnel including archivists and librarians, and ongoing maintenance for data storage and access. Furthermore, successful DH initiatives require cohesive teams comprised of humanities scholars, librarians, IT professionals, metadata specialists, and project managers. The collaboration among these roles mirrors the cross-functional teamwork found in corporate projects. Proper governance is essential to maintain metadata standards, ensure data privacy, implement access policies, and guarantee long-term viability. Additionally, DH calls for strategic planning regarding access and community engagement. For example, centres might opt to create open-access digital archives, engage with local stakeholders, develop educational initiatives, or collaborate with museums. These decisions influence the overall impact and outreach of DH projects. Therefore, integrating Digital Humanities into an institution is not just a technical endeavour; it represents an organisational transformation that requires effective leadership, meticulous planning, and ongoing resource allocation.

IX. ASSESSMENT AND FUTURE DIRECTIONS IN DIGITAL HUMANITIES

The data clearly demonstrates that Digital Humanities (DH) has successfully become a prominent academic and cultural field, showing a significant increase in its supporting infrastructure, research output, diversity of methods, and formal institutional acknowledgment. With over 100 established DH centers worldwide (based on 2012 figures) and an estimated 53,000 publications by 2023, DH

is now firmly integrated into the structure of academic and cultural practice. However, this expansion is not balanced. The establishment of institutions is heavily concentrated in affluent, Western nations, leaving the Global South inadequately represented. The majority of published research originates from Western institutions, suggesting that even though cultural heritage is global, digital cultural memory is still focused in a small number of regions. Additionally, the growing focus on computational techniques poses a risk of marginalizing traditional, interpretative humanities methodologies. These dynamics provoke essential inquiries: Who determines which materials are digitized, which languages and cultural expressions are safeguarded, and whose heritage gains entry into the global digital collection? For DH to realize its potential as a force for democratization, targeted action is essential to include underrepresented cultures, collaborate with local communities, and develop capabilities in regions lacking resources. From an administrative perspective, organizations planning to adopt DH must approach it as a key strategic commitment, not just a minor, supplementary activity. Maintaining a sustainable DH center demands consistent resources for funding, staff, training, adherence to metadata standards, and long term maintenance treating it as an investment in infrastructure rather than relying on sporadic grants.

X. CONCLUSION

Digital Humanities represents one of the most profound shifts in cultural scholarship and heritage conservation in the 21st century. The evidence confirms a distinct path of growth: increased institutional presence, higher publication volume, broadening methodologies, and greater formal recognition. Yet, this upward trajectory is accompanied by important responsibilities. To ensure that DH genuinely achieves a global reach meaning it is inclusive, fair, and culturally diverse stakeholders must recognize and address the fundamental inequalities in funding, infrastructure, and representation. Institutions in regions that are currently underrepresented require support; the active involvement of communities must be prioritized; and governance of DH must place metadata standards, ethical consent, accessibility, and long term sustainability at its core. It is only through these actions that Digital Humanities can fulfill its ultimate promise: to preserve and make cultural heritage accessible not only for those who already have resources, but for all communities worldwide, regardless of their financial status, language, or geographical location.

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