

Inclusive Knowledge Commons: MIT Open Scholarship, UNESCO Open Science, the UN SDGs and Chattampi Swamikal's Vision in Comparative Perspective

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Abstract

This paper examines debates on open access and open science through a comparative historical lens, bringing into dialogue MIT's Open Scholarship framework, UNESCO's Open Science agenda aligned with the United Nations Sustainable Development Goals (SDGs), and the thought and practice of Chattampi Swamikal (1853–1924), a central figure of the Kerala Renaissance. While early discussions of open scholarship focused on technical, institutional, and economic challenges within digital research systems, recent discourse foregrounds inclusivity, linguistic diversity, community engagement, and knowledge as a global public good. The paper argues that these ethical commitments have a clear historical antecedent in Swamikal's late nineteenth-century conception of knowledge as a social responsibility. Drawing on his writings and pedagogical initiatives—especially his advocacy of vernacular education, critique of caste-based monopolies over learning, and commitment to public dissemination—the study interprets contemporary open access and open science as institutional continuations of an earlier emancipatory epistemology. On this basis, the paper proposes policy directions for an inclusive knowledge commons integrating infrastructure, governance, incentives, linguistic accessibility, and ethical engagement. It concludes that sustainable and equitable open access requires not only technological and policy reforms, but an ethical reorientation toward knowledge as a shared civilizational trust. By situating open knowledge within a longer ethical genealogy, the paper reframes it as a historically grounded project rather than a purely digital or institutional innovation.

Keywords: Open Access, Open Science, Knowledge Commons, Unesco, MIT, Chattampi Swamikal, SDGs, Epistemic Justice, Vernacular Scholarship

Introduction

Questions of access to knowledge have emerged as one of the defining intellectual and policy challenges of the contemporary world. Advances in digital technologies have made the large-scale dissemination of scholarly work technically feasible. However, access to scientific and scholarly knowledge remains deeply uneven, shaped by paywalls, linguistic barriers, institutional hierarchies, and global inequalities. In response, movements for open

access and open science have gained momentum across disciplines and regions, seeking to reconfigure research publishing to align public investment with public benefit. These debates, however, are often framed narrowly in terms of infrastructure, sustainability, and efficiency, leaving the deeper ethical and historical dimensions of openness insufficiently examined.

The MIT white paper 'Access to Science and Scholarship: Key Questions about the

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Future of Research Publishing' (MIT Press, 2023) represents one of the most significant recent institutional engagements with these challenges. Produced by a working group of faculty and publishing professionals, the document diagnoses structural problems in contemporary research publishing, including the misalignment between public funding and restricted access, the concentration of control within commercial publishing ecosystems, and incentive systems that privilege prestige over public value. Rather than prescribing a single solution, the report advances a set of critical questions concerning governance, sustainability, and the responsibilities of research institutions toward society at large (Brand and Sharp, 2023). In doing so, it explicitly frames scholarly knowledge - particularly publicly funded research - as a public good whose circulation should serve the common interest. At the beginning of the twenty-first century, Peter Suber articulated a compelling critique of the commodification of knowledge, calling for its recognition as a public good, mainly where scholarship is produced with public funds or voluntarily shared by its authors (Suber, 2012).

At the global level, these concerns are articulated normatively through UNESCO's 'Recommendation on Open Science', adopted in 2021, which defines open science as an inclusive and equitable system designed to make scientific knowledge openly available, accessible, and reusable for all (UNESCO, 2021). The Recommendation emphasises linguistic diversity, societal engagement, and dialogue with indigenous and local knowledge systems, situating open science within a broader ethical commitment to equity and participation. This framework is further reinforced by the United Nations Sustainable Development Goals (SDG), particularly those related to quality education, reduced inequalities, innovation, and strong institutions, which collectively position access to knowledge as a prerequisite for sustainable and democratic development (United Nations, 2015). Together, the MIT white paper, UNESCO Open Science, and

the SDGs reflect a growing global consensus that access to knowledge is not merely a technical or economic issue, but a matter of social justice and collective responsibility.

Despite the growing consensus around openness, much of the global discourse on open access and open science remains implicitly technocratic, Anglophone, and institution-centred. Ethical questions are often treated as normative add-ons rather than as constitutive elements of knowledge infrastructures. This paper intervenes in this debate by arguing that openness cannot be fully understood without engaging with historical and vernacular traditions that framed knowledge explicitly as a moral and social commons.

This paper argues that these contemporary frameworks can be more fully understood - and critically strengthened - when read alongside earlier intellectual traditions that treated knowledge as a moral and social commons rather than a proprietary resource. In this context, the thought and practice of Chattampi Swamikal (1853–1924), a major figure of the Kerala Renaissance, offer a striking and underexplored point of comparison. Writing and teaching in late nineteenth- and early twentieth-century South India, Swamikal challenged caste-based monopolies over learning, rejected the confinement of scriptural and philosophical knowledge to elite groups, and insisted on the ethical necessity of vernacular access to knowledge. His polemical work, *Vedadhikara Nirupanam*, directly contested the denial of educational rights based on caste, while his historical and philosophical writings in Malayalam exemplified a deliberate strategy of public pedagogy (Chattampi Swamikal, 1890).

Although separated by more than a century from contemporary debates on open science, Swamikal's interventions raise fundamentally similar questions: Who has the right to knowledge? (Vivekanandhan, 2007) In what language should knowledge circulate? Moreover, what social responsibilities accompany scholarship? (Sreenathan, 2025) Recent scholarship has

increasingly recognised Swamikal as a thinker whose work anticipated modern concerns with the democratisation of knowledge and epistemic justice, situating him within a broader global history of challenges to intellectual exclusion (Raman, 2025). His emphasis on intelligibility, ethical responsibility, and social relevance stands in productive contrast to contemporary open access models that risk equating openness solely with digital availability.

By bringing MIT's open scholarship framework, UNESCO Open Science, and the UN Sustainable Development Goals into dialogue with Swamikal's vision, this paper proposes a comparative and genealogical approach to open access. It contends that modern open science initiatives represent not a radical rupture from the past, but a new institutional articulation of older ethical commitments to inclusivity, intelligibility, and shared intellectual authority. At the same time, this comparison reveals important tensions. While contemporary frameworks excel in addressing infrastructure and policy, they often under-theorize language, pedagogy, and community engagement - domains in which Swamikal's praxis remains especially instructive.

The central claim of this paper is that a genuinely inclusive knowledge commons requires more than open licenses and digital repositories. It demands an ethical reorientation toward knowledge as a shared civilizational trust, sustained by linguistic plurality, social accountability, and participatory institutions. Through a comparative reading that spans global policy documents and indigenous intellectual history, this study seeks to contribute to ongoing debates on open science by grounding them in a broader moral and historical perspective. In doing so, it argues that the future of open scholarship depends as much on ethical imagination as on technological innovation.

The effectiveness of open science policies ultimately depends on the institutional actors that translate abstract principles into

durable scholarly practices. In this context, libraries and knowledge intermediaries play a strategic role in operationalising inclusive open science by mediating between global policy frameworks and local, situated epistemic communities. Through their expertise in metadata curation, multilingual access, preservation, and community engagement, these institutions function as key infrastructures for sustaining the knowledge commons over time.

Knowledge as a Commons

The concept of knowledge as a commons provides the central theoretical lens through which this paper brings contemporary open scholarship frameworks into dialogue with earlier ethical traditions. In contrast to proprietary models that treat knowledge as a commodity and to narrow statistical models that locate control exclusively within public institutions, the commons framework emphasises shared stewardship, collective benefit, and social responsibility. Knowledge, in this view, is neither privately owned nor merely administratively managed, but sustained through practices of openness, participation, and mutual accountability. This conceptualisation has become foundational to contemporary open-access and open-science discourses, particularly in debates surrounding publicly funded research.

While open access is often equated with free availability, the concept of a knowledge commons implies a more demanding framework of shared governance, collective responsibility, and normative commitments. Unlike public goods managed solely by states, commons depend on participatory stewardship and culturally embedded norms of use and care. Importantly, conceiving knowledge as a commons also entails recognising the role of intermediating institutions and practices that sustain access over time. Commons do not persist through openness alone, but through stewardship, maintenance, and ethical governance, often carried out by professional communities whose work remains invisible within policy narratives.

Within modern scholarship, the idea of a knowledge commons has been articulated through theories of commons-based peer production and collective governance of shared intellectual resources. Scholars such as Elinor Ostrom have demonstrated that commons are not inherently chaotic or unsustainable, but can flourish when supported by appropriate norms, institutions, and participatory mechanisms (Ostrom, 1990). Applied to knowledge, this insight challenges the assumption that exclusivity and enclosure are necessary for quality, innovation, or sustainability. Instead, it suggests that openness can coexist with rigour, and that shared access can enhance rather than diminish intellectual vitality.

Following Hess and Ostrom's seminal work, it is important to distinguish analytically between knowledge as a commons, knowledge as a public good, and open access as a policy or licensing condition. While knowledge is often described as a public good due to its non-rivalrous nature, the commons framework foregrounds governance, collective stewardship, and the institutional arrangements that manage shared resources over time. Open access, in this sense, does not automatically constitute a commons, but represents one possible mechanism through which commons-based knowledge governance may be enacted.

The MIT white paper implicitly adopts this commons-oriented logic when it frames access to science and scholarship as a question of public responsibility rather than market efficiency alone. By repeatedly emphasising that much scholarly research is publicly funded and socially motivated, the report positions restricted access as a structural contradiction within the contemporary publishing ecosystem (Brand and Sharp, 2023). Although the paper does not explicitly use the language of the commons, its emphasis on shared governance, experimentation with non-commercial models, and alignment of incentives with public good outcomes reflects a commons-based orientation toward knowledge production and dissemination.

UNESCO's 'Recommendation on Open Science' makes the commons dimension explicit by defining open science as a collective enterprise grounded in equity, inclusion, and shared benefit. The recommendation stresses that scientific knowledge should be openly shared not only among researchers, but also with educators, policymakers, and the wider public, and that openness must be attentive to power asymmetries across regions, languages, and epistemic traditions (UNESCO, 2021). In this sense, UNESCO's framework expands the idea of the knowledge commons beyond academic publishing to include education, citizen science, and engagement with indigenous and local knowledge systems. Openness, here, is inseparable from justice and pluralism.

This global normative framing resonates strongly with the United Nations Sustainable Development Goals, which implicitly treat knowledge as a shared resource essential for human development. Goals related to education, innovation, inequality, and institutional integrity presuppose the free circulation of reliable knowledge as a condition for social progress (United Nations, 2015). From this perspective, barriers to access are not merely technical inefficiencies but structural impediments to development and democratic participation. The knowledge commons thus becomes a cornerstone of sustainable futures rather than a peripheral concern of academic policy.

When read against this contemporary backdrop, the work of Chattampi Swamikal can be understood as an early ethical articulation of the knowledge commons, grounded not in digital infrastructure but in social critique and pedagogical practice. Swamikal's sustained opposition to caste-based restrictions on learning rested on the conviction that knowledge - particularly philosophical, historical, and scriptural knowledge - was a shared human inheritance rather than the exclusive property of any social group (Chattampi Swamikal, 1890). His insistence on writing and teaching in

Malayalam, the local language of the region where he lived and worked, further embodied a commons-oriented approach, transforming elite knowledge into a publicly accessible resource embedded in everyday language and experience (Sreenathan, 2025).

Unlike modern institutional frameworks, Swamikal did not operate through formal policy instruments or publishing platforms. However, his methods - public debate, vernacular authorship, itinerant teaching, and ethical critique - functioned as mechanisms of commons creation in a deeply stratified society. Recent scholars have noted that his work represents a form of epistemic resistance that sought to dismantle both material and symbolic barriers to knowledge (Sreenathan, 2025). In this sense, Swamikal's praxis complements contemporary open science initiatives by foregrounding dimensions of accessibility - language, intelligibility, and social legitimacy - that cannot be resolved by openness of access alone.

Taken together, these perspectives suggest that the knowledge commons is not a static structure but a historically evolving project shaped by ethical commitments, institutional arrangements, and cultural contexts. Contemporary open scholarship frameworks provide the technical and policy scaffolding necessary for large-scale openness. At the same time, Swamikal's vision supplies a moral vocabulary that anchors openness in questions of dignity, equality, and collective flourishing (Raman, 2025). Understanding knowledge as a commons thus requires integrating infrastructure with ethics, and access with responsibility, across both global and local traditions.

MIT Open Scholarship Framework

MIT's Open Scholarship framework refers to a comprehensive institutional vision and set of guiding principles for open access to research, centred on scholar control over intellectual outputs, equitable access to knowledge, and the development of sustainable, non-extractive models of scholarly communication.

This framework has been operationalised through a range of policy and infrastructural initiatives, including the Framework for Publisher Contracts (2019), which mandates author copyright retention and text and data mining rights, experimental models such as Direct to Open (D2O) for open monographs, and the activities of the Centre for Research on Equitable and Open Scholarship (CREOS).

The MIT white paper on Access to Science and Scholarship (MIT White Paper 2023) emerges from a moment of growing institutional unease with the structures governing scholarly communication. Rather than treating open access as a settled solution, the report frames the future of research publishing as an open problem requiring sustained inquiry, experimentation, and institutional responsibility. Produced by a cross-disciplinary working group, the document reflects MIT's long-standing commitment to openness while acknowledging the complexity of translating that commitment into durable publishing practices (Brand and Sharp, 2023).

At the core of the MIT framework is a diagnosis of systemic misalignment within the contemporary publishing ecosystem. The report observes that although universities, public agencies, and philanthropic bodies provide the vast majority of funding for research, control over dissemination is often concentrated in commercial publishing entities whose business models depend on exclusivity and scarcity (Brand and Sharp, 2023). This arrangement, the authors argue, creates a structural contradiction in which publicly funded knowledge is rendered inaccessible to many of the very communities that support its production. By articulating this contradiction, the report reframes access not as a marginal technical issue but as a central question of institutional ethics and governance.

A distinctive feature of the MIT white paper is its refusal to endorse a single dominant model of open access. Instead, it advances a pluralistic approach that recognises the

diversity of disciplines, publication formats, and scholarly communities. The report raises critical questions concerning the sustainability of author-pays models, the governance of open infrastructures, and the long-term preservation of scholarly records (Brand and Sharp, 2023). In doing so, it implicitly challenges the assumption that openness can be achieved solely through market mechanisms or uniform mandates, emphasising the need for collective experimentation and adaptive institutional frameworks instead.

The MIT framework also foregrounds the role of incentives in shaping scholarly behaviour. It notes that academic reward systems - particularly those tied to prestige, impact metrics, and journal hierarchies - often undermine commitments to openness by discouraging scholars from publishing in accessible venues (Brand and Sharp, 2023). This insight aligns the report with broader critiques of metric-driven academia and underscores the importance of aligning evaluation practices with social and public values. Openness, in this view, cannot be sustained unless institutions reconsider how scholarly excellence is defined and rewarded.

While the MIT white paper is primarily concerned with the technical and economic dimensions of publishing, it nevertheless gestures toward a broader ethical horizon. The repeated emphasis on public good, shared responsibility, and institutional stewardship reflects an understanding of knowledge as a collective resource rather than a private asset (Brand and Sharp, 2023). Although the language of the commons remains implicit, the framework's call for shared governance, non-profit infrastructures, and public accountability situates it squarely within a commons-oriented conception of scholarship.

At the same time, the MIT framework reveals certain limitations characteristic of contemporary institutional approaches to openness. The report essentially assumes a global scholarly audience already institutionally situated within research ecosystems and devotes relatively little

attention to questions of language, pedagogy, or community-based knowledge circulation. This omission is not accidental but structural, reflecting the constraints of policy-oriented documents produced within elite research environments. When read alongside UNESCO Open Science and the vernacular interventions of Chattampi Swamikal, these silences become analytically productive, highlighting the need to supplement institutional reforms with socially grounded measures of inclusion.

Nevertheless, the significance of the MIT white paper lies in its articulation of open scholarship as a matter of institutional self-reflection rather than technological inevitability. By framing the future of research publishing as a set of ethical and governance questions, the report invites universities to reconsider their role as custodians of knowledge in an increasingly unequal global landscape. In this respect, the MIT framework provides the infrastructural and policy-oriented foundation for a more expansive and socially embedded vision of the knowledge commons.

From a global perspective, however, the MIT framework remains silent mainly on linguistic plurality and asymmetries of epistemic power. While it acknowledges public responsibility, it implicitly assumes participation within well-resourced, English-speaking academic ecosystems. This limitation is not incidental but reflects the structural location of elite research universities within global knowledge hierarchies.

UNESCO Open Science and UN Sustainable Development Goals

While the MIT open scholarship framework represents a leading institutional response within the global research university system, UNESCO's 'Recommendation on Open Science' (UNESCO, 2023) is the first international standard-setting instrument on open science. It situates openness within a broader international normative and developmental architecture.

The core difference between the 2021 and 2023 UNESCO Recommendations is not found in a new set of recommendations in 2023, as the 2021 UNESCO Recommendation on Open Science remains the official international standard-setting instrument, defining open science, its values, and its guiding principles. Instead, the focus has shifted from the 2021 establishment of the comprehensive framework to the 2023 emphasis on implementation, monitoring, and addressing real-world challenges encountered by Member States. The 2023 efforts, primarily outlined in the 'UNESCO Open Science Outlook' report, stress the immediate necessity for countries to establish robust national policy frameworks and invest significantly in equitable open science infrastructures, along with human resource capacity building to bridge digital and knowledge divides. Key areas of attention in 2023 that received less detailed focus in the original framework include the proactive mitigation of unintended consequences—such as the rise of predatory publishing, the shifting of costs from readers to authors, and issues related to intellectual property and data ownership—and the critical need to develop a concrete, shared monitoring framework. This monitoring system, developed in 2023, represents a vital operational difference, as it prepares for the mandatory reporting cycle on the Recommendation's implementation starting in 2025. Furthermore, specific supplementary guidance, such as the recommendations for Open Data for Artificial Intelligence, emerged in 2023 to address technological developments within the broader open science mandate.

Adopted by consensus in 2021, the Recommendation marks a significant shift in how access to knowledge is framed at the global governance level. Rather than treating open science as an optional innovation or efficiency-enhancing reform, UNESCO defines it as a guiding principle for equitable knowledge production and dissemination across societies (UNESCO, 2021).

Central to UNESCO's articulation of open science is an explicit commitment to inclusivity. The Recommendation emphasises that open science must address structural asymmetries between the Global North and Global South, between well-resourced institutions and marginalised communities, and between dominant and non-dominant languages of scholarship (UNESCO, 2021). In this framework, openness is inseparable from epistemic justice. Access is not measured solely by the availability of digital content, but by the capacity of diverse social actors to meaningfully engage with, interpret, and contribute to scientific knowledge. This emphasis marks a departure from earlier open-access discourses that focused primarily on costs and licensing.

UNESCO further expands the scope of open science by explicitly recognising the value of indigenous, local, and traditional knowledge systems. The Recommendation calls for respectful dialogue between scientific and non-scientific forms of knowledge, resisting epistemic hierarchies that privilege formal academic production over lived and community-based expertise (UNESCO, 2021). This pluralistic stance reframes the knowledge commons as a space of encounter rather than homogenization, where openness entails ethical responsibility toward difference rather than mere information circulation.

Aligning open science with the United Nations Sustainable Development Goals reinforces this expansive vision. Capacity-building in this context must therefore be understood not only as technical training, but as the cultivation of institutional cultures and professional competencies capable of sustaining openness over time. Without such mediating capacities, global norms risk remaining aspirational rather than transformative. Although the SDGs do not explicitly articulate a doctrine of open access, they presuppose the free flow of reliable knowledge as a foundational condition for achieving targets related to education, health, environmental

sustainability, innovation, and democratic governance (United Nations, 2015). In particular, SDG 4 on quality education, SDG 9 on industry, innovation, and infrastructure, SDG 10 on reduced inequalities, and SDG 16 on strong institutions collectively underscore the role of accessible knowledge in enabling informed participation and evidence-based decision-making (United Nations, 2015).

Open Access (OA) serves as the critical operational mechanism that translates the political intent of the United Nations Sustainable Development Goals (SDGs) into tangible social outcomes, acting as a foundational strategy for development, particularly in the Global South. By eliminating the financial and permission barriers inherent in traditional publishing models, OA ensures that the reliable flow of knowledge—presupposed by the SDGs—becomes an active reality, thereby multiplying the impact of scientific output on the most vulnerable populations. In the context of SDG 4 on Quality Education, OA is indispensable for institutions in developing countries, offering immediate, cost-free access to high-quality, peer-reviewed educational and research materials, thereby directly helping to close the crucial knowledge and capacity gap that perpetuates global inequality. Furthermore, OA acts as a powerful engine for SDG 9 (Industry and Innovation), allowing local researchers, entrepreneurs, and Small and Medium-sized Enterprises (SMEs) in emerging economies to rapidly access, reuse, and adapt scientific findings to build context-specific solutions and resilient technological infrastructures, circumventing the debilitating cycle of subscription dependency. This action directly tackles SDG 10 (Reduced Inequalities) by democratising scientific discourse, ensuring that a researcher or policymaker in an African or Latin American nation operates on an equal footing with their counterparts in the Global North, enabling equitable participation in global problem-solving. Finally, in supporting SDG 16 (Strong Institutions), the commitment to

Open Access enhances transparency and accountability within developing governments by making the evidence base for crucial decisions—such as those related to public health, climate resilience, or resource management—publicly accessible and verifiable, thereby fostering informed decision-making and public trust essential for sustainable governance.

Within this framework, barriers to knowledge access assume a moral and political dimension. Restricted access to scientific and scholarly outputs is no longer simply inefficiency within academic systems, but a structural impediment to sustainable development and social inclusion. UNESCO's emphasis on capacity-building, open educational resources, and public engagement reflects an understanding that openness must be supported by social infrastructures that enable communities to use and generate knowledge, rather than remain passive recipients (UNESCO, 2021).

When read alongside the MIT white paper, UNESCO Open Science introduces dimensions that remain underdeveloped in institution-centric models. Whereas the MIT framework focuses primarily on publishing systems, incentives, and governance within research ecosystems, UNESCO foregrounds language, education, and societal participation as constitutive elements of openness. This difference is not contradictory but complementary. Together, the two frameworks reveal the necessity of integrating technical reform with cultural and pedagogical strategies if open scholarship is to achieve its stated goals.

The resonance between UNESCO's approach and the thought of Chattampi Swamikal becomes particularly evident at this juncture. Swamikal's insistence on vernacular scholarship, his critique of epistemic exclusion, and his engagement with non-elite audiences (Sreenathan, 2025) anticipate UNESCO's contemporary emphasis on linguistic diversity and dialogue with local knowledge systems. Although articulated in vastly different historical contexts, both frameworks converge on the

principle that knowledge acquires public value only when it is intelligible, accessible, and socially embedded. In this sense, UNESCO Open Science provides a global policy language through which Swamikal's ethical vision can be reinterpreted and extended in the present.

By embedding open science within the SDGs, UNESCO ultimately reframes access to knowledge as a civilizational responsibility rather than a sector-specific reform. The knowledge commons is no longer confined to academic institutions but has become a shared horizon linking research, education, culture, and development. This expanded framing sets the stage for a comparative analysis in which modern policy instruments and historical ethical practices can be understood as mutually illuminating contributions to the long struggle for inclusive knowledge.

The normative strength of the UNESCO Recommendation lies in its ethical inclusiveness; its primary weakness lies in implementation. Without enforceable mechanisms, funding commitments, or evaluation frameworks, open science risks remaining aspirational, particularly in contexts marked by infrastructural scarcity and linguistic marginalisation.

While global frameworks like UNESCO's establish the normative 'what' and 'why' of open science, they often lack the historical grounding to explain how these principles manifest in contexts beyond Western institutions. To understand shifts in the idea of openness as a deeply rooted social imperative, it may be helpful to consider regional intellectual histories in which similar ethical battles were fought a century ago.

Chattampi Swamikal and the Renaissance in Kerala

While contemporary frameworks such as MIT's open scholarship proposals and UNESCO Open Science provide institutional and global perspectives on open access, understanding the ethical and social dimensions of knowledge requires engagement with historical intellectual

traditions. In the late nineteenth and early twentieth centuries, Chattampi Swamikal (1853–1924), a seminal thinker of the Kerala Renaissance, articulated a vision of learning that resonates powerfully with modern concerns regarding inclusivity, vernacular access, and the social responsibility of scholarship (Raman & Sulochana, 2010).

The comparison between Swamikal and contemporary open science frameworks is not intended as an anachronistic equivalence, but as a genealogical exercise. It highlights how ethical commitments to accessibility, intelligibility, and social responsibility precede and exceed modern institutional forms. Swamikal's praxis thus functions as a critical mirror through which contemporary openness can be evaluated, rather than as a historical curiosity.

Swamikal's work emerged in a context of entrenched social hierarchies, in which upper-caste communities monopolised access to sacred texts, philosophical discourses, and historical knowledge. In response, Swamikal systematically challenged these restrictions, arguing that knowledge is a shared human inheritance and that its ethical value depends on its accessibility to all members of society (Raman, 2025). His treatise, *Vedadhikara Nirupanam*, explicitly contested the denial of Vedic study to lower-caste communities, framing the question of learning not merely as a technical matter of instruction but as a moral imperative with direct implications for social justice (Suresh Madhav, 2025).

A distinctive feature of Swamikal's approach was his deliberate use of the vernacular. By writing and teaching in Malayalam rather than Sanskrit or other elite scholarly languages, he expanded the audience for philosophical, historical, and spiritual knowledge, enabling engagement by communities previously excluded from formal learning (Sreenathan, 2025). This strategy reflected an understanding of language as a crucial mechanism of epistemic inclusion, prefiguring contemporary debates on linguistic accessibility in open science. By situating knowledge in the linguistic and

cultural contexts of his audience, Swamikal ensured that scholarship was intelligible and socially embedded rather than abstract and inaccessible.

Beyond his writings, Swamikal's pedagogical practice exemplified an ethic of communal and public learning. He conducted itinerant teaching, participated in public debates, and encouraged critical reflection among students from diverse backgrounds (Achuthsankar, 2025). This practice extended the concept of the knowledge commons beyond textual production to embodied and relational forms of learning, demonstrating that access encompasses not only materials but also opportunities for engagement, interpretation, and dialogue.

Scholars have increasingly recognised Swamikal as a pioneer in epistemic democratisation (Suresh Madhav, 2025). His insistence on social accountability, vernacular education, and ethical engagement anticipates key principles of contemporary open-access and open-science movements (Jagathsimhan Nair, 2023). By foregrounding intelligibility, participation, and moral responsibility, Swamikal provides an ethical complement to the technical and policy-oriented frameworks represented by MIT and UNESCO. Unlike institutional mandates or digital infrastructures, his interventions relied on cultural and social leverage, highlighting the enduring importance of context, pedagogy, and social legitimacy in any effort to broaden access to knowledge.

The Kerala Renaissance, of which Swamikal was a central figure, provides the broader cultural and intellectual backdrop for his innovations (Raman, 2010). This period saw an interrelated series of reforms in education, social practice, and spiritual thought, characterised by challenges to hierarchical knowledge structures, an embrace of vernacular culture, and an emphasis on rational inquiry (Govinda Pillai, 2017). Within this milieu, Swamikal's work exemplifies the ethical grounding of knowledge as a public good, demonstrating that efforts to expand access must address both structural and normative dimensions

simultaneously. His thought thus offers a historically grounded model for understanding open scholarship as a project that integrates technical, institutional, ethical, and social concerns.

By situating Swamikal within both the Kerala Renaissance and contemporary discourses on open science, this paper foregrounds a sustained concern with equitable access to knowledge. Swamikal's interventions demonstrate that openness is not merely a procedural or technological achievement, but a moral and social commitment—one that demands sustained attention to language, pedagogy, and the empowerment of historically marginalised communities (Achuthsankar, 2025). This historical perspective provides the foundation for a comparative analysis of how institutional, global, and grassroots approaches to open access can productively inform and reinforce one another.

The Ethical Bridge: From Swamikal's Emancipatory Epistemology to Sustainable Open Access

The alignment of contemporary Open Access (OA) frameworks with the Sustainable Development Goals (SDGs) is not merely a modern convergence of policy and technology; it is, fundamentally, a re-articulation of perennial ethical principles concerning the social responsibility of knowledge. Our idea argues that the ethical assumptions underlying these contemporary frameworks have a striking antecedent in Chattampi Swamikal's late-nineteenth-century insistence on the social responsibility of knowledge.

Swamikal's vision, characterised by his fierce critique of caste-based monopolies over learning and by his commitment to popular knowledge traditions, education, and public dissemination, directly prefigures the core emancipatory goals of modern OA. Where Swamikal advocated for breaking down rigid social barriers—institutionalised through caste and exclusive scriptural knowledge—to allow all citizens, regardless of birthright, to access learning, modern Open Access

seeks to break down equally rigid economic and institutional barriers (the paywall) to knowledge access, irrespective of geographical location or institutional wealth. This historical-ethical linkage provides a profound justification for OA's role in achieving the SDGs. The spirit of SDG 10 (Reduced Inequalities), which demands universal inclusion, is mirrored in Swamikal's battle against knowledge exclusion. Similarly, his commitment to making complex knowledge accessible through vernacular languages finds its modern institutional counterpart in the principle of Linguistic Accessibility—a critical dimension of Open Science and Open Knowledge—that is essential for empowering local communities and securing the efficacy of SDG 4 (Quality Education) in diverse, developing contexts. In this light, Open Access, Open Science, and Open Knowledge are interpreted not as mere technological trends, but as modern institutional expressions of an earlier emancipatory epistemology. The success of the SDGs, especially in developing nations, therefore depends on adopting the “ethical reorientation” articulated by Swamikal: treating knowledge not as a private commodity or an institutional prerogative, but as a shared civilizational trust. This principle dictates that the scientific output, which can mitigate poverty, cure disease, and foster democratic governance (the very targets of the SDGs), must be intrinsically, immediately, and equitably available to all. It is this fundamental ethical shift, spanning over a century, that policy recommendations must now integrate with technological infrastructure, governance, and incentives, ensuring that sustainable and equitable Open Access truly serves as a foundation for global human development.

Convergences and Divergences Across Time and Context

Based on the MIT Open Scholarship framework, UNESCO Open Science and the SDGs, and the ethical and pedagogical interventions of Chattampi Swamikal, we can now conduct a comparative analysis that

illuminates both convergences and divergences across these distinct temporal and institutional contexts. Such a comparison can highlight the complementary strengths of technical, policy-oriented, and ethical approaches to open access, while also identifying areas where contemporary frameworks can benefit from historical and social insight.

A clear point of convergence among the three cases is the recognition of knowledge as a public good. The MIT white paper frames publicly funded research as inherently social in its purpose, insisting that its circulation should serve the public interest rather than narrow commercial agendas (Brand and Sharp, 2023). UNESCO extends this logic globally, linking access to knowledge with the realization of sustainable development, equity, and human rights (UNESCO, 2021). Swamikal's writings and teaching similarly assert that knowledge, whether scriptural, philosophical, or historical, belongs to society at large and must be made accessible to all, irrespective of caste or social status (Raman, 2025). Across all three contexts, the ethical imperative to share knowledge underpins the rationale for openness, even as the mechanisms and scale of dissemination differ.

A second point of convergence lies in attention to governance and responsibility. MIT emphasises institutional oversight, incentive alignment, and experimental models for sustainable publishing (Brand and Sharp, 2023), while UNESCO stresses the role of national and international frameworks, capacity-building, and inclusive policy in ensuring equitable participation (UNESCO, 2021). Swamikal's approach, though informal and culturally situated, similarly foregrounds social accountability: scholars and teachers bear a moral responsibility to expand access, nurture understanding, and cultivate critical reflection among learners (Raman, 2025). Together, these perspectives illustrate that open access is not merely a technical or procedural issue but a question of governance and ethical stewardship at all levels, from local to global.

Despite these convergences, notable divergences reveal important gaps in contemporary frameworks that historical practice can help address. MIT's institutional approach is heavily centred on the structural and economic dimensions of publishing, often presuming access to resources, English-language literacy, and participation in formal research networks (Brand and Sharp, 2023). UNESCO's framework broadens the lens to include equity and local knowledge, but implementation depends heavily on national capacities and policy adoption (UNESCO, 2021). Swamikal, by contrast, emphasises the role of vernacular language, cultural embeddedness, and pedagogical practice as central mechanisms of inclusion, demonstrating that meaningful access requires not only technical availability but also intelligibility, social legitimacy, and participatory engagement (Sreenathan, 2025).

Language and pedagogy, therefore, emerge as key dimensions along which the differences become most evident. Whereas documents from MIT and UNESCO primarily focus on distribution, licensing, and governance, Swamikal's interventions emphasise translation, vernacular literacy, and community-based pedagogy as integral to the formation of a knowledge commons. This emphasis is evident in his vernacular translations of Nijanandha Vilasam (Sundara Swamikal, 1880), Ozhivil Odukkam (Kannudaya Vallalar, 1851), Advaitha Chintha Paddhathi (Chattampi Swamikal, 1915), Christhumathasaram (Chattampi Swamikal, 1889), and Vedantasram (Chattampi Swamikal, 1897). These historical perspectives highlight that open access initiatives cannot be assessed solely in terms of digital accessibility or institutional policy frameworks; they must also be evaluated by how effectively knowledge is rendered intelligible, usable, and socially meaningful.

Finally, the scale and scope of each approach differ. MIT operates at the level of research universities and formal scholarly infrastructures; UNESCO functions at the global and policy level, linking knowledge

access to development outcomes; Swamikal's praxis operates at the grassroots, embedded in everyday communities, languages, and cultural practices (Suresh Madhav, 2025). Despite these differences, a comparative reading demonstrates that these scales are mutually reinforcing. Institutional and global frameworks provide the infrastructure and policy scaffolding necessary for widespread dissemination. At the same time, Swamikal's ethical and pedagogical practices ensure that knowledge circulation remains socially meaningful and inclusive.

The above comparative analysis can reveal that open scholarship benefits from a multi-scalar, multi-dimensional approach. Institutional and policy innovations, as articulated by MIT and UNESCO, are necessary but insufficient for a genuinely inclusive knowledge commons. The historical example of Chattampi Swamikal illustrates that ethical grounding, linguistic inclusivity, and community engagement are essential complements to technical and policy-oriented solutions. Integrating these elements across temporal and contextual divides offers a robust vision for open access that is simultaneously practical, ethical, and socially transformative.

The comparative analysis thus suggests that inclusion operates at multiple levels: infrastructural, linguistic, pedagogical, and ethical. Neglecting any one of these dimensions risks producing partial forms of openness that expand access in principle while limiting participation in practice.

Language, Access, and Epistemic Justice

A critical dimension of open scholarship that emerges from the comparative analysis is the role of language in shaping access to knowledge, along with the attendant questions of epistemic justice. While institutional and global frameworks such as the MIT Open Scholarship proposals and UNESCO Open Science establish mechanisms for broad dissemination, they often assume a literate, resource-equipped, and English-dominant scholarly audience

(Brand and Sharp, 2023). Such assumptions risk reproducing structural inequalities by privileging knowledge production and circulation within already dominant epistemic communities, leaving marginalised linguistic and cultural groups effectively excluded.

Linguistic accessibility is increasingly recognised within epistemic justice scholarship as a precondition for meaningful participation in knowledge production. Open science initiatives that neglect translation, vernacular scholarship, and cognitive accessibility risk reproducing colonial patterns of epistemic dominance under the guise of openness.

Chattampi Swamikal's interventions, in contrast, foreground language as a constitutive element of access and inclusion. His deliberate use of Malayalam instead of Sanskrit, as seen above in philosophical, historical, and scriptural writings, exemplifies the principle that intelligibility is inseparable from accessibility (Sreenathan, 2025). For Swamikal, knowledge loses its social and ethical value if it remains incomprehensible to the communities it is intended to serve (Gopinatha Pillai, 2024). This attention to linguistic accessibility anticipates contemporary debates in open science about the limits of Sanskrit or English-centric publishing models, the need for translation, and the ethical obligations of scholars to make research intelligible across linguistic and cultural boundaries (UNESCO, 2021).

The intersection of language and epistemic justice also entails questions about whose knowledge counts and who participates in knowledge production. UNESCO explicitly recognises the importance of engaging indigenous, local, and community-based knowledge systems in open science, highlighting that epistemic diversity strengthens both scientific innovation and societal relevance (UNESCO, 2021). Swamikal's critique of caste-based knowledge monopolies reflects a similar concern: he sought to democratise

epistemic authority, ensuring that social hierarchies did not determine who could generate, interpret, or apply knowledge (Vivekanandhan, 2007). In this sense, linguistic inclusion and epistemic justice are deeply intertwined, shaping both the reach and legitimacy of knowledge within society.

Institutional open access initiatives, including MIT's framework, address these concerns primarily through infrastructural mechanisms - such as open repositories, digital accessibility, and licensing policies - but often without accompanying strategies for cultural or linguistic inclusion (Brand and Sharp, 2023). The combined insights from UNESCO and Swamikal suggest that a more comprehensive model must integrate infrastructure with pedagogy, translation, and participatory engagement. In practical terms, this might involve funding for vernacular translations of research, development of community repositories, and support for open textbooks that reflect local epistemologies (Achuthsankar, 2024).

Moreover, attention to epistemic justice emphasises that access is not a purely technical issue but a moral and social obligation (Harikrishnan, 2025). Knowledge that is freely available but unintelligible to broad constituencies perpetuates existing inequalities. By foregrounding the social and ethical dimensions of linguistic accessibility, both Swamikal's praxis and UNESCO's policy instruments expand the conception of the knowledge commons beyond material availability to include cognitive, cultural, and social intelligibility (Chattampi Swamikal, 1890).

In sum, language is both a medium and a metric of epistemic justice. Institutional frameworks provide the structural scaffolding for open scholarship, but it is through attention to vernacular intelligibility, translation, and participatory knowledge practices that openness becomes meaningful. Integrating these dimensions ensures that open science does not merely circulate information but fosters genuinely inclusive understanding, enabling knowledge to function as a socially embedded public good.

Infrastructure and Incentives

Contemporary scholarship often treats incentives and infrastructure as separate but complementary levers for achieving openness. Digital repositories, licensing policies, and publication platforms are designed to reduce barriers to access, while incentive structures - career advancement, metrics, and recognition - shape scholarly behaviour. However, a closer ethical examination reveals that incentive structures themselves are deeply entangled with questions of epistemic justice, responsibility, and the moral purposes of knowledge production (Brand and Sharp, 2023). Without addressing these underlying norms, reforms in infrastructure risk produce formal access without substantive engagement or ethical alignment.

The MIT white paper highlights the misalignment between current reward systems and the goals of open access (Brand and Sharp, 2023). Scholars are frequently evaluated based on journal prestige, citation metrics, and grant acquisition rather than the public value, accessibility, or societal impact of their work. (Brand and Sharp, 2023). Such systems create structural disincentives for scholars to prioritise openness, collaboration, or translation of research into accessible forms. From an ethical standpoint, this misalignment raises profound questions: can scholarship be considered socially responsible if its production is guided primarily by personal gain, professional advancement, or institutional prestige rather than the broader public good?

UNESCO's framing of open science provides a normative corrective, emphasising that open knowledge entails obligations as well as rights (UNESCO, 2021). Access is not simply a matter of distribution but also of social accountability: those who produce knowledge are ethically bound to ensure its intelligibility, reach, and relevance. Incentive structures that ignore these obligations risk perpetuating inequities, privileging a minority of resource-rich scholars while marginalising those whose knowledge needs

or linguistic competencies differ (UNESCO, 2021). In this sense, incentives are not merely pragmatic tools; they are instruments through which ethical values are enacted or undermined.

The historical example of Chattampi Swamikal illuminates an alternative model of scholarly responsibility. Swamikal's pedagogy, public debates, and vernacular authorship reveal an intrinsic link between scholarly authority and social accountability (Sreenathan, 2025). In his practice, the value of knowledge was inseparable from its accessibility and social utility. Scholars were morally obliged to disseminate insights beyond elite circles, cultivate understanding, and foster critical engagement among learners (Sulochana, 2024). By contrast, modern reward structures often prioritise quantifiable outputs over the cultivation of understanding, effectively decoupling access from moral responsibility. (UNESCO, 2021)

A philosophical critique of contemporary publishing models reveals that the current incentive structure reproduces epistemic hierarchies and social inequities. Exclusivity is rewarded with prestige and advancement, while openness, translation, and public engagement frequently remain undervalued (Powell, 2020). According to Brian A. Nosek and colleagues, academic incentive structures focus on publishing in high-profile venues and novel results, which reinforces exclusivity and prestige rather than rewarding practices that advance open, collaborative, and transparent research. (Nosek et al., 2012). Such structures threaten to render open access a procedural formality rather than a substantive ethical commitment. From an ethical perspective, meaningful openness requires recalibrating incentives to recognise activities that advance inclusivity, intelligibility, and societal benefit, rather than mere productivity or reputation.

Reconceptualising publishing models through an ethical lens implies several key shifts. First, evaluation of scholarly work must integrate social and moral dimensions alongside traditional metrics. Second, infrastructure should be designed not only

for technical accessibility but for pedagogical and cultural intelligibility. Third, institutions must cultivate norms that link scholarly authority with moral responsibility, echoing Swamikal's integration of access, ethics, and pedagogy (Harikrishnan, 2024). By bridging infrastructure with ethics, the scholarly ecosystem can transform open access from a formal condition into a genuinely socially meaningful practice.

The technical scaffolding provided by modern repositories remains a silent infrastructure unless it is animated by a pedagogical ethic. Swamikal's itinerant teaching demonstrates that access is not merely the delivery of a document, but the active cultivation of a community's capacity to interpret and critique that document. Modern incentive structures must therefore evolve to reward the labour of 'translation'—both linguistic and conceptual—that makes open data truly usable.

From the above, we can understand that rethinking incentives is not simply a matter of policy engineering; it is a question of moral imagination. Aligning reward structures with the ethical purpose of knowledge requires recognising that scholarship is a social and civilizational endeavour whose legitimacy rests on its capacity to advance human understanding and promote equitable participation. Integrating these ethical principles into publishing models ensures that openness transcends technical availability to encompass intelligibility, relevance, and justice.

Inclusive Knowledge Commons: Policy Implications

Building on the comparative and ethical analyses of MIT's open scholarship framework, UNESCO Open Science, and Chattampi Swamikal's vision, it becomes clear that a genuinely inclusive knowledge commons requires integrating technical infrastructure, policy innovation, and ethical responsibility. Contemporary institutional frameworks provide critical mechanisms for access and dissemination, yet, as we have seen in the above discussion, meaningful

openness depends on social intelligibility, linguistic diversity, and participatory engagement. The policy implications discussed below are derived from this synthesis and offer actionable strategies for bridging the institutional, global, and grassroots dimensions of open access.

First, the governance of scholarly infrastructure must align with ethical and social objectives. Institutional and national policies should explicitly recognise public funding for research as a mandate for open access, while ensuring that dissemination mechanisms - repositories, digital archives, and licensing frameworks - prioritise both technical accessibility and usability (Brand and Sharp, 2023). Policies should encourage experimentation with plural publishing models, including non-profit platforms, community-managed repositories, and open peer review systems, thereby reflecting the MIT recommendation for adaptive and sustainable governance (Brand and Sharp, 2023).

Second, linguistic and cultural inclusion must be a core component of open knowledge strategies. UNESCO emphasises engagement with local, indigenous, and non-dominant knowledge systems, a principle that can be operationalized through translation funds, vernacular open textbooks, and multilingual repositories (UNESCO, 2021). Swamikal's example demonstrates that the social value of knowledge is inseparable from intelligibility; policies should therefore support scholarship in vernacular languages, ensuring that global and local knowledge are mutually accessible and socially relevant (Sreenathan, 2025).

Third, academic incentive structures should be realigned to recognise ethical and social contributions. Evaluation metrics must reward activities that enhance accessibility, pedagogical effectiveness, and societal impact alongside traditional measures of publication quantity and prestige (Brand and Sharp, 2023). This includes recognising authorship in translation projects, community-oriented dissemination of research, and the creation of open educational resources, thereby integrating

the ethical imperatives exemplified in Swamikal's pedagogical practice with contemporary institutional frameworks.

Fourth, capacity-building and participatory engagement are essential to ensure that openness translates into meaningful use. Training programs for scholars, information service professionals, Knowledge Managers, librarians, and policymakers should emphasize open scholarship ethics, equitable knowledge sharing, and community collaboration (UNESCO, 2021). Moreover, participatory mechanisms - such as co-created repositories, citizen science initiatives, and community review boards - can enhance legitimacy and inclusivity, ensuring that knowledge is co-produced rather than merely disseminated.

Finally, policy integration must align with global sustainability objectives. By linking open scholarship initiatives to the United Nations Sustainable Development Goals, institutions and governments can frame access to knowledge as both a human right and a development strategy (United Nations, 2015). This approach positions open science not merely as a reform within academia but as a civilizational commitment to social equity, education, innovation, and democratic participation.

All these make it clear that creating an inclusive knowledge commons demands a multi-scalar, multi-dimensional strategy that combines infrastructure, policy, ethics, and pedagogy. Institutional reforms such as MIT's open scholarship models provide the necessary technical and governance frameworks, UNESCO offers a global normative vision for equitable participation, and Swamikal's interventions illuminate the moral and pedagogical principles that ground openness in social justice. Integrating these dimensions yields a robust policy framework: open scholarship must be technically accessible, ethically responsible, linguistically inclusive, socially accountable, and aligned with sustainable development. Only through such a holistic approach can knowledge truly function as a shared commons that empowers all members of society.

Ethical Mediation and the Sustainability of Openness

Sustaining an inclusive knowledge commons over time requires attention to ethical mediation as much as to technological innovation. Open infrastructures, policies, and licenses do not operate in a vacuum; they depend on institutional actors who interpret, maintain, and adapt them within specific cultural and social contexts. Without such mediation, openness risks becoming brittle, vulnerable to enclosure, neglect, or misuse.

This insight reinforces the paper's central argument: openness is not a static condition achieved through policy declarations or technical implementation, but a continuous ethical practice. Chattampi Swamikal's emphasis on responsibility, intelligibility, and public accountability highlights the importance of moral agency in sustaining knowledge as a shared resource. Contemporary open science initiatives, whether institutional or global, can draw on this insight to ensure that openness remains resilient, inclusive, and socially grounded.

Therefore, the long-term success of Open Access in advancing the SDGs—particularly in development contexts—hinges on cultivating this 'ethical muscle' within research institutions and funding bodies. This continuous moral vigilance is essential to counter the commercial pressures and proprietary tendencies that perpetually threaten to re-enclose the knowledge commons, betraying the emancipatory vision shared by Swamikal and the modern development agenda.

Open Knowledge as a Shared Civilizational Trust

The project of open knowledge is fundamentally a moral and cultural undertaking that transcends technical reform or institutional optimisation. While the MIT Open Scholarship framework provides the necessary policy scaffolding and governance models for sustainable dissemination, and the UNESCO/SDG alignment establishes a global normative imperative for equity, these

frameworks are incomplete without a deep-rooted ethical grounding.

The historical praxis of Chattampi Swamikal serves as a vital anchor for this modern discourse. His insistence on vernacular authorship, public pedagogy, and the moral responsibility of the scholar demonstrates that knowledge attains its actual value only when it is intelligible and socially accountable. The vision of Swamikal reveals that technical accessibility alone cannot resolve epistemic injustice; a genuinely inclusive commons requires dismantling linguistic and social monopolies to ensure that knowledge serves the marginalised as effectively as it serves the elite.

To move forward, the global research community must adopt a multi-scalar strategy that integrates three distinct strands: infrastructure, linguistic inclusivity, and ethical alignment. The project involves a three-pronged approach: 1. Developing non-profit, sustainable platforms that return control to scholars, 2. Prioritising translation and vernacular scholarship to bridge the ‘intelligibility gap’, and 3. Reforming incentive structures to reward social impact and public engagement alongside traditional prestige metrics.

Reclaiming open knowledge as a civilizational trust requires more than building open repositories; it demands a continuous ethical practice that treats knowledge not as a private credential but as a shared inheritance dedicated to human progress. Without this reorientation, open science risks becoming a more efficient system for circulating information while leaving structural inequalities untouched.

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Acknowledgements and AI Use Disclosure

This paper was authored by a self-selected group of scientists and scholars supporting CIRD and the journal *Informatics Studies*. The authors gratefully acknowledge the individuals who provided constructive feedback and intellectual input during the preparation of the manuscript, particularly Prof. Sreenathan (Malayalam University); Sathikumar C R, Former, Head, LISD, Kerala Legislature, India; Chithra J S (CIRD); Dr Pankaj Kumar Ojha (Banda University); Dr Suresh Madhav (NSS College, Pandalam); Swami Sarvathmanandha Theerthapada (Edappavur Ashram); Gireeshkumar T K (Banaras Hindu University) and Dr. M Jayapradep, CSA, Vaikkam, Kerala. Responsibility for the content, interpretations, and conclusions of this paper rests solely with the named authors.

In accordance with journal policies on the responsible use of artificial intelligence tools, the authors disclose that OpenAI's ChatGPT-5 was used as an assistive tool during the writing process, including for structuring the manuscript, refining language, and supporting the identification of comparative and thematic perspectives. The AI tool did not generate original research data, conduct analyses, or determine conclusions, and it does not qualify for authorship. The authors, who take full responsibility for the accuracy, originality, and integrity of the work, made all substantive intellectual contributions, interpretations, and final editorial decisions.