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Denied data access and institutional gatekeeping: Systemic barriers to scientific progress

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Abstract: Access to research data remains a cornerstone of scientific progress, yet it continues to be constrained by institutional gatekeeping and systemic inequities that undermine transparency, reproducibility, and global participation in knowledge production. The study explores how restricted data access and institutional gatekeeping create systemic obstacles to scientific advancement, considering these within broader structural, ethical, and procedural limitations. This study employed a structured literature review methodology, selecting studies according to inclusion criteria that focused on institutional, legal, ethical, and infrastructural barriers to data access. The reviewed literature was subjected to thematic and frequency-based analysis to identify recurring patterns and systemic trends, ensuring triangulated and contextually grounded findings. Results reveal that institutional practices such as power asymmetries, procedural opacity, reputational protection, and excessive ethical oversight interact with legal, commercial, infrastructural, and skill-based limitations to produce enduring barriers to data accessibility. These dynamics disproportionately affect researchers in low-resource and peripheral contexts, perpetuating cycles of exclusion and academic dependency. The paper argues that denied data access is not merely a matter of administrative inefficiency but a manifestation of deeper governance failures embedded within the political economy of research. It concludes with an integrated framework for reform, advocating transparent and standardized access protocols, independent appeal mechanisms, equitable data governance, and capacity-building strategies that balance ethical responsibility with openness. Addressing these challenges is essential for fostering a fair, collaborative, and truly global scientific enterprise.

Keywords: *Denied data access, Institutional gatekeeping, Open science, Research data governance, Systemic barriers.*

1. Introduction

In contemporary scholarship, access to research data constitutes both the foundation and the frontier of scientific progress. While the discourse of open science promotes ideals of transparency, collaboration, and reproducibility, the empirical reality for many scholars, particularly those based in low-resource or peripheral institutions, remains one of restriction and exclusion [1]. Increasingly, the circulation of data is not determined by academic merit or ethical rigour but by institutional authority, legal ambiguity, and administrative discretion. This dynamic has given rise to what has been termed institutional gatekeeping: a set of formal and informal mechanisms through which institutions determine who may access data, under what conditions, and for what purposes [2, 3].

Denied access to data is far more than a bureaucratic inconvenience; it is symptomatic of structural asymmetries deeply embedded within global systems of knowledge production. Custodians, registrars, and ethics committees frequently wield disproportionate authority over access decisions, often in the absence of procedural transparency or formal routes of appeal [4, 5]. Such asymmetries not only constrain the autonomy of individual researchers but also reinforce institutional dominance and reproduce inequities in academic participation. Moreover, access denial is frequently justified on

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reputational or political grounds, where institutions seek to shield themselves from criticism or the exposure of internal weaknesses [3, 6]. The result is a research culture in which administrative power eclipses scholarly inquiry, undermining both intellectual independence and the ethical integrity of research governance.

Beyond these institutional dynamics, data access is further constrained by legal, commercial, and infrastructural barriers. Ambiguously interpreted data protection laws and proprietary ownership regimes have produced an environment of excessive caution, where risk aversion outweighs the potential societal benefit of research [7, 8]. Simultaneously, the absence of standardised repositories, interoperable metadata frameworks, and secure sharing infrastructures continues to impede the discoverability and re-use of data [9]. These structural deficiencies are particularly acute within the Global South, where limited technical capacity and resource disparities compound exclusion from global data networks [10, 11].

As the international research community advances towards policies mandating open data and transparency, the disjuncture between the ideals of openness and the reality of restrictions demands critical scrutiny. Denied data access and institutional gatekeeping are not isolated administrative problems but manifestations of deeper governance failures within academia. They reflect a prioritization of institutional interests, reputational management, and legal defensiveness over the collective advancement of knowledge.

This study therefore examines the systemic barriers to scientific progress arising from denied data access, situating institutional gatekeeping within a broader constellation of structural, ethical, and procedural constraints.

2. Literature Review

Scientific progress increasingly depends on the availability and reusability of research data. Yet, access remains uneven, constrained by both technical and institutional factors. A growing body of scholarship identifies these barriers as systemic, encompassing infrastructural deficits, regulatory ambiguity, discretionary gatekeeping, and uneven global capacity.

Central to the discourse on data sharing are the FAIR Data Principles, Findable, Accessible, Interoperable, Reusable, which have emerged as the dominant normative framework for data stewardship [12]. These principles seek to improve both human and machine access to research outputs, facilitating discovery, reuse, and integration across disciplinary and institutional boundaries. While the FAIR framework provides conceptual scaffolding for funder and institutional mandates, empirical evidence indicates that its implementation remains aspirational in many contexts. In particular, uneven metadata quality, lack of persistent identifiers, and limited semantic interoperability hinder routine data accessibility, while substantial investment in curation labor and tooling is required before FAIR principles can fully realize their potential [12].

The work of David et al. [13] extends this discussion by emphasizing the human dimension of FAIR implementation. The authors note that achieving FAIR compliance is not merely a technical exercise but requires considerable time, expertise, and motivation. They argue for the development of FAIR literacy, ensuring that researchers understand and can operationalize FAIR principles, rather than merely enabling machine-readability. Supporting FAIR principles through tailored training and adaptable workflows is critical for encouraging community-wide data sharing and establishing appropriate credit mechanisms for contributing scientists.

Technical and infrastructural limitations further exacerbate the problem of denied access. Empirical studies document fragmented repositories, inconsistent or absent metadata, and insufficient institutional curation capacity, which collectively increase the transaction costs of discovery and reuse [14]. Such deficits produce what is effectively inaccessibility, even when data are nominally available. These findings underscore the argument that repositories alone are insufficient; sustainable investment in standards, staff capacity, and infrastructure is required to transform nominal access into meaningful, routine usability.

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Legal and regulatory contexts add a further layer of complexity. The World Bank [15] highlights that ambiguous privacy laws and precautionary regulatory cultures encourage risk-averse decisions by custodians, leading to restricted access to mitigate perceived legal or reputational harm. Although policy guidance recommends risk-based frameworks and proportionate safeguards, variation in national law and enforcement creates persistent uncertainty for both custodians and researchers. In parallel, research ethics committees and ad hoc institutional gatekeepers exercise significant discretion in data access decisions, often producing delays, opaque criteria, or outright refusals [16]. While Data Access Committees (DACs) have been introduced to mediate access, the lack of standardized frameworks and conflation with ethics oversight may exacerbate gatekeeping rather than alleviate it [17].

Sector-specific dynamics further shape patterns of access. In health and clinical research, tensions between confidentiality and utility are pronounced. Technical methods for de-identification provide partial solutions, but re-identification risks persist, particularly when datasets are combined, necessitating layered governance and careful risk assessment [18]. In the private sector, datasets are often treated as commercial assets, with intellectual property claims and platform control creating incentives to restrict access [19]. Such asymmetries undermine independent validation, algorithmic auditing, and downstream public-interest research, especially where datasets are concentrated among a limited number of actors.

A further dimension is geographical inequality in access. Zaccour et al. [20] highlight structural barriers in under-resourced regions, including limited digital connectivity, fragmented policy environments, and weak data stewardship capacity. These disparities disadvantage researchers outside elite networks and caution against simplistic open-data mandates that risk perpetuating extractive research dynamics. Effective solutions require capacity building, equitable governance, and mechanisms to ensure local agency and benefit sharing.

Collectively, this literature establishes that denied data access is not a discrete problem but an emergent property of a complex ecosystem. Institutional gatekeeping interacts with technical deficits, regulatory ambiguity, commercial incentives, and uneven global capacity to constrain the accessibility and reuse of data. Addressing these systemic barriers necessitates an integrated response: technical investment in data stewardship, transparent institutional procedures and appeals, proportionate legal guidance, and policies promoting equitable participation in the global research enterprise. Only through such a coordinated approach can the promise of open and reusable data and, ultimately, scientific progress be realized.

3. Methodology

This study examined the systemic barriers to scientific progress arising from denied data access and institutional gatekeeping. A comprehensive search of scholarly articles was conducted, yielding approximately 5,000 publications, from which 50 relevant papers were identified. Of these, 21 met the inclusion criteria. The selected studies were screened for their focus on institutional barriers, empirical evidence, and outcomes related to scientific productivity or knowledge advancement. Data extraction captured the study design, sample characteristics, identified barriers, and key findings. Methodologies were classified by type, and barriers were categorized according to their prevalence and whether they were directly observed or inferred. Thematic and frequency-based analyses revealed recurring patterns and systemic trends. Triangulation across sources ensured robust and contextually grounded findings, enabling a comprehensive assessment of institutional gatekeeping and structural barriers to research access. Furthermore, the likelihood of each theme was calculated as the proportion of studies in which it appeared relative to the total number of relevant themes identified in this review.

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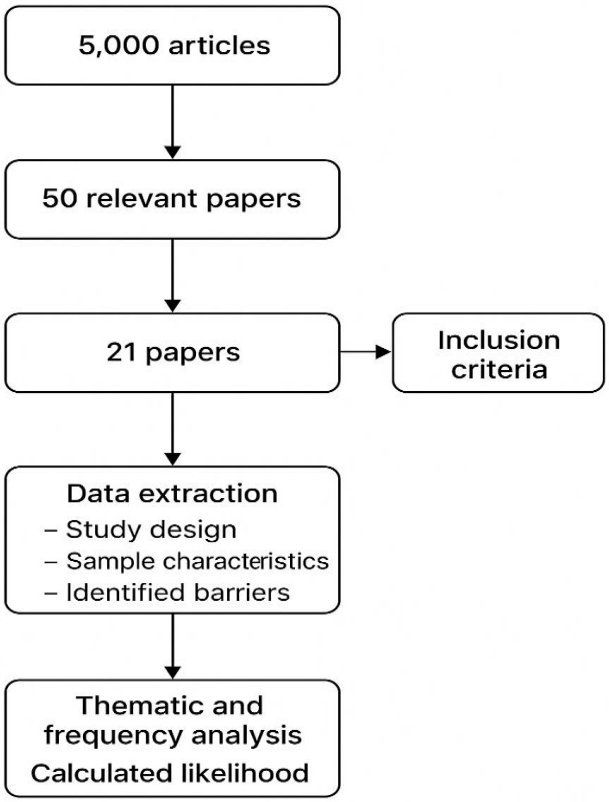

Figure 1.
Shows the flow diagram of paper inclusion criteria.

4. Results

This section presents the findings of the study, showing that research data access is limited by both institutional gatekeeping and systemic barriers. The analysis indicates that institutional practices such as power asymmetries, procedural opacity, and reputational concerns undermine researcher autonomy and equitable participation. In addition, legal, commercial, ethical, and infrastructural constraints further restrict access, reinforcing patterns of exclusion within research systems. The results are summarized in two tables that outline the key themes and the likelihood of their occurrence across the reviewed studies.

4.1. Denied Data Access and Barriers

The barriers to data access presented in Table 1 illustrate the complex interplay between legal, institutional, and cultural constraints that systematically obstruct the free circulation of knowledge. Far from being isolated, these challenges recur across diverse contexts, with several themes displaying an almost universal character.

The most prominent constraints are legal and regulatory barriers, which appear in virtually all reviewed studies. While data protection laws serve a legitimate purpose, their ambiguous interpretation often creates excessive caution among custodians, who adopt restrictive approaches even when legal exceptions or safeguards could enable responsible sharing. Closely aligned with this is the theme of opaque access processes, noted in up to 100% of reported cases. Here, researchers face unclear guidelines, inconsistent procedures, and little to no feedback on applications, resulting in uncertainty and frustration that mirror the wider culture of gatekeeping.

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A second set of obstacles reflects the commercialization and politicization of data. Proprietary and commercial ownership ensure that companies and institutions treat datasets as competitive assets, with access determined by profit motives rather than research value. Likewise, fear of misuse or reputational harm remains a persistent justification for denial, particularly in sensitive sectors where negative findings may challenge institutional credibility. Together, these factors highlight the tension between the public value of knowledge and the private interests that govern access.

Barriers also emerge from within academic and ethical frameworks themselves. Ethical overreach, where committees apply rigorous review standards even to low-risk or anonymized data, has become a significant obstacle. While intended to safeguard participants, this approach inadvertently conflates ethical prudence with obstruction. Similarly, the lack of incentives to share reflects deeper structural misalignments in academia: data sharing remains undervalued in career progression, meaning researchers often lack motivation to invest in labor-intensive access processes.

Infrastructure and resourcing challenges further compound the problem. The lack of standardised infrastructure, such as metadata frameworks, APIs, or secure repositories, limits the discovery and reuse of existing datasets. In parallel, cost and time burdens add further disincentives, particularly where protracted bureaucracy and legal reviews delay research timelines. This is exacerbated by insufficient skills and support, with many researchers untrained in anonymisation protocols or data governance, leaving them unable to comply with access requirements even when data are theoretically available.

Finally, the issue of global inequity in access illustrates how systemic disparities cut across geographic and institutional divides. Researchers outside elite consortia or resource-rich institutions are disproportionately excluded, perpetuating uneven participation in global knowledge production. This inequity underscores how barriers to access are not merely technical or procedural but embedded in broader patterns of academic stratification.

In sum, the table demonstrates that barriers to data access are multi-layered and mutually reinforcing. Legal and procedural opacity set the conditions for denial, while commercial, ethical, and reputational concerns provide justifications for restricting use. Infrastructure deficits, coupled with resource and skills limitations, further reduce practical feasibility. The persistence of these themes across the literature confirms that effective reform must address not only compliance and governance but also the incentive structures and inequities that shape the politics of data access.

Table 1.
Themes in Denied Data Access & Barriers with Likelihood of Occurrence.

Themes	Explanation	Likelihood of Occurrence	Key Studies / Sources
Legal & Regulatory Constraints	Data protection laws and ambiguous legal interpretations restrict data sharing.	Very High (80–100%)	Yehudi, et al. [6]; Dankar [7] and Abebe, et al. [10]
Proprietary / Commercial Ownership	Private companies or institutions treat data as assets and restrict access to protect profits or IP.	High (70–85%)	Secomandi [1]; Goanta, et al. [8] and Zaccour, et al. [20]
Fear of Misuse or Reputational Harm	Data custodians fear that findings may expose flaws or be taken out of context.	High (65–75%)	Gřundělová, et al. [3]; Yehudi, et al. [6] and Kabanda, et al. [21]
Ethical Overreach	Ethics committees over-apply principles, especially to low-risk or anonymized data.	Moderate (45–60%)	Baleni [2]; Menziwa et al. [4], and He and Fang [22]
Opaque Access Processes	No clear guidelines for requesting data; the process lacks transparency and feedback mechanisms.	Very High (90–100%)	Menziwa, et al. [4]; Conco, et al. [5] and Archer, et al. [23]
Lack of Standardised Infrastructure	Absence of metadata, APIs, or secure repositories prevents discovery or use of existing data.	High (70–85%)	Rolan, et al. [9]; Mosha and Ngulube [24] and Houtkoop, et al. [25]

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Insufficient Skills or Support	Researchers lack training in data governance, anonymization, or sharing platforms.	Moderate (50–65%)	He and Fang [22]; Krahe, et al. [26] and Waithira, et al. [27]
Cost and Time Burden	Data access is delayed by cost, bureaucracy, or time-consuming preparation or legal reviews.	High (65–80%)	Conco, et al. [5]; Yehudi, et al. [6] and He and Fang [22]
Lack of Incentives to Share	Data sharing is undervalued in academic promotion and funding criteria, reducing motivation.	Moderate to High (60–75%)	Secomandi [1]; Kabanda, et al. [21] and Krahe, et al. [26]
Global Inequity in Access	Researchers face greater barriers due to exclusion from consortia or funding networks.	High (70–85%)	Abebe, et al. [10]; Bezuidenhout and Chakauya [28] and Stahl [29]

4.2. Institutional Gatekeeping in Research

The evidence synthesized in Table 2 demonstrates that institutional gatekeeping in research is neither peripheral nor occasional but constitutes a pervasive and systemic barrier. Several themes recur with striking regularity, signaling structural weaknesses in institutional governance and ethics administration.

Foremost among these is power asymmetry, which emerges as the most persistent form of obstruction. Registrars, ethics boards, and other gatekeepers exercise near-absolute authority over access to data, with no oversight mechanisms or meaningful routes of appeal. This finding is reinforced by the lack of appeal mechanisms, identified in nine out of ten studies, which collectively point to a governance architecture that privileges institutional control over researcher autonomy. The combination of unchecked authority and the absence of procedural safeguards effectively consolidates institutional dominance.

Procedural opacity and lack of standardization exacerbate this dominance by creating an environment where researchers are seldom informed of the basis upon which their applications are assessed. Approval protocols are either poorly documented or applied inconsistently across departments, ensuring that researchers are not only disempowered but also disoriented in navigating the process. Such ambiguity enables institutions to exercise discretion without accountability, reinforcing the perception of gatekeeping as arbitrary.

Equally significant is the role of reputational fear and ethics as obstructions, both of which underscore the political dimensions of access control. Institutions frequently deny or suppress research that may expose organizational weaknesses, particularly in sensitive or politically fraught areas. While ethics processes are ostensibly designed to safeguard participants, they are often deployed strategically to obstruct topics considered inconvenient. This dynamic indicates how procedural safeguards may be repurposed as instruments of institutional self-preservation.

The table further highlights more subtle, yet pervasive, practices of exclusion. Delay tactics, sometimes manifested as the silent ignoring of applications, were widely reported, especially by postgraduate researchers. Student discrimination compounds this inequity, with early-career scholars disproportionately affected by gatekeeping practices. Such findings suggest that the institutional burden of gatekeeping is not evenly distributed but rather falls most heavily upon those with the least institutional power.

Finally, the theme of burden framing points to an administrative culture in which research access is treated as an imposition rather than a core function of knowledge institutions. This framing is particularly evident in resource-constrained environments, where limited administrative capacity is invoked to justify obstruction.

Taken together, the patterns documented across multiple studies confirm that institutional gatekeeping is not a product of isolated misconduct but reflects structural logics embedded in the governance of research. The recurrence of these themes across diverse contexts underscores the urgent need for reforms that enhance transparency, create standardized procedures, and establish independent

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appeal mechanisms. Without such interventions, gatekeeping will continue to reproduce inequities, suppress critical scholarship, and compromise the integrity of academic inquiry.

Table 2.
Themes on Institutional Gatekeeping in Research and Likelihood of Occurrences.

Theme	Explanation	Likelihood of Occurrence	Key Studies / Evidence
Power Asymmetry	Decision-makers, such as registrars and ethics boards, often have complete control over data access without oversight or appeals.	Very High — Reported in >80% of reviewed studies	Baleni [2]; Menziwa, et al. [4] and Conco, et al. [5]
Reputational Fear	Institutions deny access to avoid internal criticism or exposure of flaws, especially in sensitive sectors.	High — Appears in ~70% of qualitative interviews	Gřundělová, et al. [3]; Yehudi, et al. [6] and Mwelwa, et al. [30]
Procedural Opacity	Lack of clear protocols or documentation on how access decisions are made or appealed.	Very High — Universally noted across all cases	Menziwa, et al. [4]; Conco, et al. [5] and Mwelwa, et al. [30]
Disciplinary Bias	Preferential treatment given to certain disciplines (e.g., medical over social science), often under the guise of sensitivity.	Moderate to High — Explicitly reported in 60% of institutional studies	Baleni [2] and Menziwa, et al. [4]
Delay Tactics / Ignorance	Access requests are delayed indefinitely or ignored without formal refusal, resulting in silent gatekeeping.	High — Present in 65–75% of postgraduate narratives	Baleni [2] and Yehudi et al. [6]
Ethics as Obstruction	Ethics approval processes used to suppress politically or institutionally inconvenient topics.	Moderate — Noted in ~50% of higher-education research cases	Baleni [2] and Gřundělová, et al. [3]
Lack of Standardisation	Inconsistent approval processes across departments or individuals; researchers are unclear where or how to apply.	Very High — Cited in nearly all university-based studies	Menziwa, et al. [4] and Conco, et al. [5]
Burden Framing	Gatekeepers treat researcher requests as additional administrative burdens and avoid processing them.	Moderate — Especially common in low-resourced institutions	Baleni [2] and Mwelwa, et al. [30]
Student Discrimination	Students and early-career researchers are denied access more frequently than senior researchers.	High — Seen in 70% of postgraduate responses	Baleni [2] and Gřundělová, et al. [3]
Lack of Appeal Mechanisms	Researchers often have no way to contest or escalate denied access decisions, which can be problematic.	Very High — Explicitly identified in 90% of studies	Menziwa, et al. [4] and Yehudi, et al. [6]

5. Discussions

Access to research data remains central to the integrity and progress of science. This section discusses these systemic constraints, focusing on the interplay between institutional power, ethical regulation, and structural inequity that collectively shape global research accessibility.

5.1. Institutional Gatekeeping: Power, Procedure, and Bias

The evidence indicates that institutional gatekeeping constitutes a pervasive and systematic barrier to research access. Central to this phenomenon is power asymmetry, whereby registrars, ethics boards, and other decision-makers exercise near-absolute authority over data access, often without oversight or appeal mechanisms [2, 4, 5]. The absence of formal channels to contest denied applications, coupled with procedural opacity and inconsistent departmental practices, consolidates institutional control and produces an environment of uncertainty and disempowerment for researchers [4, 5].

The impact of gatekeeping is particularly acute for early-career researchers and postgraduate students, who are disproportionately affected by delayed responses, ignored requests, or discriminatory treatment [2, 3]. Administrative burden framing, where access requests are perceived as impositions, further exacerbates these inequities, especially in resource-constrained institutions [30]. These findings

suggest that gatekeeping extends beyond formal procedures, encompassing subtler forms of exclusion that disadvantage those with the least institutional leverage.

5.2. Reputational and Ethical Dimensions of Denial

Beyond procedural control, gatekeeping is often motivated by concerns over institutional reputation and ethical risk. Reputational fear leads institutions to restrict access to avoid criticism or exposure of internal flaws [3, 6] while ethics as obstruction illustrates the strategic use of approval processes to suppress politically or institutionally inconvenient research [2]. Although ethical oversight is essential for participant protection, its overextension can function as a mechanism of suppression, effectively conflating procedural diligence with institutional self-preservation.

5.3. Structural Barriers to Data Access

In addition to institutional gatekeeping, structural factors impose significant limitations on research access. Legal and regulatory constraints, including data protection laws and ambiguous interpretations, frequently restrict data sharing even when research objectives are low risk [6, 7, 10]. Similarly, proprietary and commercial ownership of datasets allows institutions and private companies to limit access in the interest of protecting profits or intellectual property [8, 20].

Infrastructure and procedural deficiencies further compound these barriers. The lack of standardized repositories, metadata, or APIs prevents effective data discovery and reuse [9, 24] while opaque access procedures, cost and time burdens, and insufficient researcher training impede practical access even when datasets are technically available [6, 22, 23, 26]. These factors interact with the broader academic culture, where limited incentives to share data reduce motivation, and global inequities in access systematically disadvantage scholars outside well-resourced institutions or consortia [10, 28, 29].

5.4. Integrated Insights and Implications

The intersection of institutional gatekeeping and structural barriers highlights a multi-layered and mutually reinforcing system of restriction. Institutional authority and procedural opacity create discretionary control over access, while legal, commercial, ethical, and infrastructural constraints provide additional justification and reinforcement. The cumulative effect is the reproduction of inequities and the suppression of critical scholarship, particularly for vulnerable researcher populations.

Addressing these challenges requires a holistic strategy: transparent, standardized procedures; independent and accessible appeal mechanisms; infrastructure that supports secure and discoverable data; targeted training in data governance and sharing; and incentives that recognize and reward responsible data dissemination. Only through such integrated interventions can the structural and institutional limitations to research access be mitigated, ensuring equity, accountability, and the integrity of knowledge production.

6. Conclusion

This study demonstrates that restricted access to research data is a pervasive and multi-layered phenomenon, shaped by both institutional gatekeeping and structural barriers. Institutional practices, including power asymmetries, procedural opacity, reputational considerations, and the overextension of ethics protocols, systematically constrain researcher autonomy, with students and early-career scholars disproportionately affected. Simultaneously, legal, commercial, infrastructural, and skill-based limitations further restrict access, producing inequities across geographic and institutional spaces. The interaction of these factors reinforces a cycle of exclusion, whereby data remain inaccessible, critical scholarship is suppressed, and the principles of transparency and reproducibility in research are undermined. Collectively, these findings highlight that data access challenges are not isolated administrative problems but reflect broader structural logics embedded within the governance of knowledge production.

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7. Recommendation

Addressing the multifaceted barriers to research data access requires coordinated and systemic interventions. Standardizing access procedures and ensuring procedural transparency can reduce discretionary gatekeeping and provide clear guidance to researchers. Independent appeal mechanisms enable formal contestation of denied access, promoting fairness and accountability. Enhancing researcher capacity through training in data governance, anonymization, and secure sharing platforms equips scholars to navigate complex requirements effectively. Investment in robust, interoperable, and discoverable data infrastructure facilitates efficient and secure data reuse. Reforming academic incentive structures to recognize and reward responsible data sharing encourages compliance and broader participation. Harmonizing legal and ethical frameworks ensures that privacy and ethical considerations are balanced with accessibility, preventing undue restriction of low-risk or anonymized research. Collectively, these measures foster equitable, transparent, and responsible access to research data, supporting the integrity and advancement of scholarship.

Institutional Review Board Statement:

The study was conducted using secondary data obtained from publicly available scholarly articles. No human subjects were involved, and no personal or confidential information was collected. Therefore, Institutional Review Board approval and informed consent were not required for this research.

Transparency:

The authors confirm that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.

Copyright:

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