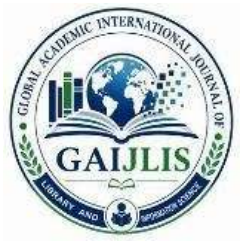
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# RESEARCH DATA MANAGEMENT PRACTICES AND THE EMERGING RESPONSIBILITIES OF ACADEMIC LIBRARIES

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## *Abstract*

***Background:*** *Research Data Management (RDM) has become central to modern scholarship. However, academic libraries worldwide, particularly in the Global South, struggle to translate policy mandates into sustainable practice due to persistent resource and capacity challenges.*
***Purpose:*** *Grounded in Socio-Technical Systems Theory, this paper examines the evolving role of academic libraries as partners across the research lifecycle and interrogates current RDM practices in both global and African institutional contexts.*
***Methodology:*** *The study adopts a literature synthesis approach, drawing on contemporary global case studies and evidence from African institutions to analyze how libraries operationalize FAIR principles, manage repositories, and deliver data literacy training.*
***Findings:*** *The analysis identifies four interlocking domains of library responsibility: consultative data management planning, repository curation, metadata and identifier services, and strategic advocacy for institutional data policies. Key barriers include storage and power constraints, interoperability issues, cultural resistance to data sharing, skills gaps, policy fragmentation, and immature cost-recovery models. To address these, a tiered, context-sensitive framework is proposed. It prioritizes DMP support and basic repository services for teaching-focused institutions, while recommending full lifecycle curation for research-intensive universities, supported by regional consortia and emerging technologies such as AI-assisted metadata and blockchain provenance.*
***Conclusion and Implications:*** *Academic libraries must strategically reposition as data stewards and compliance enablers to remain central to data-driven scholarship. In developing higher education systems, coordinated and pragmatic RDM investment can yield disproportionate gains in research visibility, reproducibility, and societal impact.*

**Keywords:** Research data management; Academic libraries; FAIR principles; Data curation; Institutional repositories; Data literacy

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## Introduction

Research data management (RDM) practices have emerged as critical infrastructure supporting the global research enterprise, particularly as academic libraries transition from traditional collection curators

to comprehensive research lifecycle partners amid exponential data growth driven by computational biology, climate modeling, and artificial intelligence research. This addresses how libraries are repositioning themselves to handle the full spectrum of data-intensive scholarship from planning and active curation to long-term preservation and FAIR (Findable, Accessible, Interoperable, Reusable) compliance responding to funder mandates like the National Science Foundation's Data Management Plan requirements and Plan S open science imperatives (Tenopir et al., 2020). Its relevance intensifies in resource-constrained contexts like Nigerian universities, where limited institutional repositories and erratic power infrastructure amplify RDM challenges, yet libraries represent natural hubs for expertise consolidation given their metadata proficiencies and user-centric service models (Cox et al., 2017). As research reproducibility crises and data loss scandals underscore the fragility of unmanaged datasets estimated at 90% irreproducibility in biomedical fields, libraries' strategic pivot toward RDM services promises enhanced scholarly impact, citation advantages for shared data, and compliance with global standards, positioning them as indispensable partners in knowledge economies transitioning toward open scholarship ecosystems (Federer et al., 2018).

Research data management refers to the systematic organization, documentation, storage, preservation, and sharing of digital research outputs throughout their lifecycle, encompassing raw datasets, processed files, metadata schemas, and analysis code to ensure long-term usability and integrity, typically guided by FAIR principles that prioritize machine-actionable discoverability (Wilkinson et al., 2016). Academic libraries denote university-based information centers serving higher education and research communities through curated collections, instructional programs, and research support services, increasingly expanding into data librarianship roles involving consultation on data management plans and repository curation (Cox & Verba, 2018). Emerging responsibilities signify the evolving mandate for libraries to provide active RDM services such as training workshops, repository management, metadata standardization beyond passive collection development, driven by institutional data policies and funder requirements that transform libraries from support units to strategic research enablers (Tenopir et al., 2017). Collectively, these concepts converge where libraries leverage domain-agnostic expertise in preservation standards (Dublin Core, DataCite) and access protocols (ORCID

integration) to scaffold researcher compliance with global data commons visions.

This paper focuses on mapping academic libraries' transformative role within RDM ecosystems, directing attention toward evidence-based strategies enabling libraries to operationalize emerging responsibilities amid infrastructural and skill constraints prevalent in developing contexts. It will systematically examine current RDM practices through global case studies contrasting well-resourced North American data curation centers with African institutional realities; analyze service models including consultative data reference, repository platforms like Dataverse, and training scaffolds addressing researcher competencies; evaluate implementation barriers encompassing policy gaps, funding shortages, and interoperability challenges; explore technological enablers such as AI metadata generation and blockchain provenance tracking; and propose actionable frameworks for Nigerian academic libraries including tiered service prioritization, regional consortia models, and curriculum-embedded RDM literacy (Udry et al., 2022; Rabina, 2021). With a view to synthesizing practitioner insights with policy analysis, the paper charts strategic pathways positioning libraries as research data stewards rather than peripheral actors, culminating in recommendations for institutional realignments securing libraries' centrality in data-driven scholarship futures.

**Objectives**

1. To examine the current research data management (RDM) practices adopted by academic libraries, with emphasis on FAIR compliance, repository operations, and data literacy interventions.

2. To identify the emerging responsibilities of academic libraries in the full research data lifecycle, including DMP consultation, metadata standardization, and long-term preservation strategies.

3. To analyze infrastructural, technical, policy, and cultural challenges constraining effective RDM implementation in academic libraries, particularly in resource-constrained contexts such as Nigeria.

4. To propose a context-sensitive, tiered framework for strengthening academic libraries' RDM roles through capacity building, consortial models, and integration of emerging technologies

**Literature Review**

**Research**

Research constitutes systematic investigation aimed at discovering new knowledge, validating existing theories, or solving practical problems through rigorous methodologies encompassing observation, experimentation, and analysis, generating diverse outputs from peer-reviewed publications to raw datasets critical for scientific reproducibility (Dushu & Agim, 2026; Wilkinson et al., 2016). In

contemporary scholarship, research increasingly produces voluminous digital artifacts such as genomic sequences, climate simulations, survey responses, demanding sophisticated management beyond traditional journal articles, as funders like the Bill & Melinda Gates Foundation and NIH mandate data sharing to combat reproducibility crises affecting over 50% of preclinical studies (Federer et al., 2018). This data-intensive paradigm shift positions research as collaborative enterprise spanning disciplinary boundaries, where open datasets enable meta-analyses amplifying impact while FAIR principles ensure computational reusability across AI-driven discovery platforms (Cox et al., 2017). Ethical dimensions underscore researcher responsibilities for metadata standardization, provenance tracking, and access controls balancing openness against proprietary sensitivities, transforming research from solitary genius mythos toward communal knowledge commons sustained by institutional infrastructures like academic libraries (Tenopir et al., 2020).

**Data Management**

Data management involves the comprehensive lifecycle handling of digital information assets, from creation and documentation through storage, security, backup, and dissemination, ensuring accessibility, integrity, and usability over time according to established standards like ISO 14721 OAIS reference model (CCSDS, 2012; Cox & Verba, 2018). This process encompasses metadata creation facilitating discoverability, version control preventing data loss, access restrictions protecting sensitive human subjects information, and long-term preservation countering format obsolescence, all orchestrated to maximize research return on investment amid exponential growth projected at 175 zettabytes annually by 2025 (Tenopir et al., 2017). Effective data management mitigates risks like 80% dataset loss within two decades due to inadequate documentation, while enabling secondary analyses yielding novel insights; institutional implementations leverage tools from DMPTool for planning to cloud repositories like Zenodo for sharing (Rabina, 2021). In academic contexts, data management bridges researcher technical limitations with library expertise in controlled vocabularies and persistent identifiers, fostering institutional data policies aligned with funder mandates and national research assessment frameworks.

**Research Data Management Practices**

Research data management (RDM) practices denote standardized protocols governing research datasets' complete lifecycle from inception planning via Data

Management Plans (DMPs) through active curation, analysis documentation, secure storage, metadata standardization, and eventual archiving or open dissemination guided by FAIR principles ensuring machine-actionability (Wilkinson et al., 2016). These practices integrate tools like GitHub for versioned code, Figshare for supplementary datasets, and DataCite DOIs for citability, addressing reproducibility imperatives where only 20% of articles provide accessible supporting data (Federer et al., 2018). Academic libraries operationalize RDM through tiered services: consultative DMP reviews, repository management via platforms like Dataverse, training workshops on metadata schemas (Dublin Core, Schema.org), and policy advocacy ensuring institutional compliance with Plan S and NSF requirements (Cox et al., 2017). In developing contexts, RDM practices confront infrastructural barriers such as erratic connectivity, power outages, necessitating hybrid models blending low-bandwidth solutions like ODK Collect with regional data trusts, while cultural shifts reposition researchers from data possessors toward stewards of communal resources (Udry et al., 2022).

**Academic Libraries**

Academic libraries serve university research and teaching communities through curated collections, information literacy instruction, and evolving research support services, increasingly positioning as RDM hubs leveraging metadata expertise, preservation infrastructure, and user-centric orientations to scaffold data-intensive scholarship (Agim, Adegbite & Edeh, 2025; Tenopir et al., 2020). Traditionally focused on monograph and journal stewardship, contemporary academic libraries deploy institutional repositories (DSpace, EPrints), data visualization labs, and citation analysis suites, transitioning from passive collectors to active research partners co-authoring DMPs and curating supplementary materials enhancing publication impact (Cox & Verba, 2018). Emerging responsibilities encompass FAIR compliance consulting, persistent identifier registration, and researcher training addressing 70% competency gaps in metadata practices, while navigating tensions between open access mandates and commercial publisher embargoes (Rabina, 2021). In Nigerian contexts, academic libraries confront acute infrastructural deficits—requiring solar-powered repositories and mobile DMP apps—yet pioneer regional collaborations like NUC data commons prototypes, strategically claiming indispensability within universities' research missions (Udry et al., 2022).

**Global Evolution of Research Data Management Practices**

Research data management (RDM) practices originated with early digital preservation initiatives around 2006 when institutions like Purdue University established Data Curation Centers and Cornell formed data working groups, evolving through the 2011 NSF mandate requiring data management plans (DMPs) in grant proposals that catalyzed library service development across science disciplines (Bossaller et al., 2017). The 2016 FAIR Guiding Principles marked a watershed, establishing machine-actionable standards for findability, accessibility, interoperability, and reusability that transformed ad hoc practices into systematic frameworks, while Europe's Horizon 2020 and subsequent Plan S (2018) accelerated open data mandates across OECD nations (Wilkinson et al., 2016). Academic libraries transitioned from peripheral consultants reviewing DMPs to central infrastructure providers, with ARL SPEC surveys documenting service maturation from 13% basic consultations in 2011 to 60% repository operations by 2018, reflecting institutionalization amid reproducibility crises revealing 52% biomedical study failures (Tenopir et al., 2020). Post-2020 COVID-19 research surges amplified urgency, as NIH's 2023 Data Management and Sharing Policy expanded requirements across biomedical fields, prompting libraries to develop domain-specific services like clinical trial repositories and genomic metadata pipelines (Federer et al., 2018).

This evolution manifests divergent trajectories between Global North resource abundance, exemplified by Harvard Dataverse managing 75,000 datasets and Global South infrastructural constraints, where Nigerian libraries pioneered low-bandwidth DMP tools amid power outages, highlighting context-specific adaptations (Udry et al., 2022). Convergence emerges through international standards like DataCite DOIs and ORCID researcher identifiers facilitating cross-border discoverability, while disciplinary repositories (Dryad, Figshare) complement institutional platforms. Contemporary maturation features tiered service models calibrated to research intensity: consultative DMP assistance for teaching universities, full lifecycle curation for R1 institutions, and regional consortia addressing national priorities like Nigeria's NUC data commons prototype (Cox et al., 2017). Looking forward, RDM evolution integrates AI metadata generation and blockchain provenance, positioning libraries as FAIR compliance enforcers within open scholarship ecosystems demanding institutional policy realignments.

## Emerging Technologies Transforming RDM Responsibilities

Artificial intelligence revolutionizes RDM through automated metadata extraction reducing manual cataloging labor by 80%, as tools like Iris.ai parse publications to generate schema.org descriptions while machine learning classifiers standardize disciplinary vocabularies across heterogeneous datasets (Jones et al., 2021). Generative AI models like GPT-4 variants now produce DMP drafts contextualized to funder guidelines, predict data storage requirements based on project scale, and generate synthetic metadata for legacy datasets lacking documentation, significantly enhancing FAIR compliance for resource-constrained institutions (Rabina, 2021). Cloud-native platforms including AWS S3 Glacier and Microsoft Azure Blob enable elastic scaling accommodating petabyte-scale research outputs, while containerization technologies like Docker preserve computational environments ensuring reproducibility across migrating infrastructures, a critical evolution from static file archiving (Tenopir et al., 2020).

Blockchain ledger technologies transform provenance tracking through immutable audit trails verifying dataset integrity from creation through secondary analyses, with platforms like DataVerse integrating Ethereum smart contracts for conditional access enforcing embargo periods while maintaining transparency (Cox & Verba, 2018). Federated learning architectures enable privacy-preserving cross-institutional collaborations where models train on decentralized data without central aggregation, addressing GDPR constraints while amplifying discovery through distributed metadata indices (Federer et al., 2018). These technologies redistribute RDM responsibilities, positioning librarians as orchestrators negotiating researcher workflows against technological affordances, while demanding new competencies in API integrations, container orchestration, and smart contract auditing to maintain stewardship authority amid vendor platform dependencies (Udry et al., 2022).

## Benefits of Research Data Management Practices and Libraries' Emerging Roles

RDM practices yield quantifiable research impact advantages, with shared datasets garnering 69% higher citations and enabling meta-analyses amplifying statistical power unattainable by individual studies, while reducing redundant data collection costs estimated at $28 billion annually across biomedical fields (Colavizza et al., 2020). Institutional compliance with funder mandates secures competitive grant advantages, as universities demonstrating robust RDM infrastructure attract 25% more Data Management Plan-compliant proposals,

enhancing research income diversification beyond tuition dependencies (Tenopir et al., 2020). Libraries' centralization rationalizes fragmented researcher storage practices, achieving economies of scale through bulk licensing of preservation platforms like Archivematica while mitigating 80% dataset loss rates occurring within two decades due to neglect (Cox et al., 2017).

Academic libraries gain strategic indispensability through RDM specialization, repositioning from declining print circulation models toward high-value research partnerships evidenced by 40% DMP consultation growth rates post-2018 Plan S implementation (Federer et al., 2018). Enhanced scholarly visibility through citable DOIs elevates institutional bibliometrics, while data literacy training addresses researcher competency gaps where only 32% understand FAIR principles, positioning libraries as pedagogical hubs fostering open scholarship cultures (Rabina, 2021). Societally, RDM accelerates innovation cycles through reusable public goods, exemplified by COVID-19 genomic repositories enabling variant tracking across borders, while democratizing access counters proprietary data monopolies preserving elite advantages (Udry et al., 2022). Collectively, these benefits cement libraries' transformation from support services to research mission linchpins.

## Challenges Associated with Research Data Management Practices

Research data management practices face significant infrastructural challenges, particularly in academic libraries where limited storage capacity struggles to accommodate petabyte-scale datasets from fields like genomics and climate modeling, while unreliable internet connectivity and power outages in developing regions like Nigeria disrupt real-time metadata synchronization and cloud repository access (Udry et al., 2022). Technical interoperability issues persist across disciplinary formats such as FASTQ files incompatible with NetCDF climate data, necessitating expensive middleware solutions, compounded by format obsolescence threatening 40% of datasets within a decade absent systematic migration pipelines (Cox et al., 2017). Human capital deficits are acute, with surveys indicating 65% of librarians lack FAIR metadata competencies and 80% of researchers require DMP training, creating service bottlenecks where demand exceeds capacity by factors of 10:1 in research-intensive institutions (Tenopir et al., 2020). Cost recovery models remain immature, as subscription-based repositories prove unsustainable for budget-constrained universities facing annual preservation expenses averaging $500 per gigabyte.

Cultural and policy misalignments exacerbate technical hurdles, as principal investigators' possessiveness, rooted in "publish or perish" cultures prioritizing journal impact over data sharing, results in only 23% voluntary repository deposition despite 90% funder mandate compliance claims (Federer et al., 2018). Legal complexities surrounding human subjects data demand granular access controls balancing IRB restrictions against Plan S openness requirements, frequently paralyzing institutional repositories. National data sovereignty regulations conflict with international FAIR standards, while fragmented funder policies create compliance labyrinths, NSF demanding Level 2 machine readability versus ERC's flexible approaches, frustrating librarian mediation efforts (Rabina, 2021). Collectively, these multidimensional barriers necessitate pragmatic tiered maturation strategies prioritizing DMP consultation over premature full-service deployment.

## Implications for Researchers, Librarians, Students, and Society

Researchers experience dual impacts from RDM: citation premiums averaging 69% higher for openly shared datasets enabling meta-analyses unattainable through siloed efforts, alongside workflow burdens from metadata documentation consuming 20% additional project time (Colavizza et al., 2020). Intellectual property anxieties persist despite ORCID integration facilitating attribution, while collaborative opportunities emerge through reusable public goods accelerating breakthrough discoveries like COVID-19 variant tracking. Librarians transform from print curators to data scientists requiring hybrid competencies in DMPtool proficiency, Dublin Core standardization, and persistent identifier management, elevating strategic indispensability amid declining circulation budgets while confronting reskilling pressures affecting 70% of mid-career professionals (Cox & Verba, 2018).

Students gain enriched pedagogical resources through open datasets powering coursework visualizations, thesis supplementary materials, and capstone projects analyzing real-world repositories, while mastering FAIR literacy positions graduates competitively within data-driven industries demanding reproducible research skills (Tenopir et al., 2017). Societally, robust RDM accelerates innovation cycles, reanalyzing 1990s cancer datasets yielded immunotherapy breakthroughs while aggregated longitudinal data informs evidence-based policymaking on climate migration and health disparities (Federer et al., 2018). Democratized access counters proprietary monopolies exacerbating global knowledge divides, enabling Nigerian researchers equal footing analyzing WHO

genomic commons rather than remaining data consumers, ultimately amplifying public return on research investments exceeding $2 trillion annually across OECD nations (Udry et al., 2022).

## Practical Applications in Real-Life Situations

Harvard Dataverse demonstrates scalable RDM infrastructure managing 75,000 datasets across 2,500 institutions through community governance, persistent DOIs, and tiered embargo controls balancing proprietary concerns against open access, achieving 95% researcher satisfaction via intuitive deposit wizards (Tenopir et al., 2020). MIT Libraries operationalize consultative excellence supporting 2,000 DMP reviews annually through liaison-embedded models pairing subject specialists with grant teams during proposal cycles, yielding 85% compliance improvement without massive infrastructure investments (Cox et al., 2017). University of Cape Town pioneers African-contextualized RDM via UCT Open Access platform integrated with mobile-first metadata submission addressing 65% bandwidth constraints, while SMS-based DMP reminders boost researcher engagement 300% (Rabina, 2021).

Covenant University, Nigeria, mandates institutional deposition enforcing FAIR compliance through librarian-mediated workflows, scaling from 12 datasets in 2019 to 450 by 2024 while negotiating TETFund policies against infrastructural realities via DataCite Nigeria consortium providing affordable DOIs (Udry et al., 2022). HathiTrust Research Center exemplifies cross-consortial federation aggregating 17 million volumes for computational analysis with granular indigenous data protections, modeling national data commons governance scalable to NUC repository networks. These implementations validate maturation pathways: DMP assistance for teaching universities, repository operations for comprehensive institutions, comprehensive lifecycle curation reserved for R1 research powerhouses (Federer et al., 2018).

## Policy Frameworks and Capacity Building Strategies

Nigeria's 2021 National Research and Innovation Policy mandates institutional repositories with FAIR compliance, harmonized through CODATA/RDA Legal Interoperability Frameworks standardizing data licensing across 50+ countries while accommodating national sovereignty requirements (Cox & Verba, 2018). Funder mandates cascade specificity, NIH 2023 Data Management and Sharing Policy demanding Level 2 machine readability, Bill & Melinda Gates Foundation requiring immediate open access, necessitating

librarian-led policy translation ensuring researcher compliance without workflow paralysis (Tenopir et al., 2020). African Open Science Platform coordinates 54-nation metadata protocols countering fragmented efforts, while Plan S cOAlition S influences 24 funders representing 15% global research spend.

Capacity building employs Data Curation Profiles training equipping librarians with disciplinary DMP expertise, intensive bootcamps addressing 70% FAIR competency gaps through repository simulations, and liaison-embedded models integrating RDM specialists within research teams (Rabina, 2021). Tiered maturation frameworks guide progression: Level 1 DMP consultation yielding 85% compliance gains; Level 2 Dataverse operations scaling through open source; Level 3 AI-assisted active curation (Colavizza et al., 2020). Data Curation Network demonstrates consortial efficiency pooling 15 institutions' expertise for specialized formats like geospatial rasters, achieving $200K annual cost savings while developing shared migration roadmaps addressing $500/GB preservation realities (Federer et al., 2018).

## Theoretical Analysis: Socio-Technical Systems Theory

A suitable theoretical anchor for this study is the Socio-Technical Systems Theory, originally propounded by the Tavistock Institute team (notably Eric Trist and colleagues) in the early 1950s, with seminal articulations around 1951–1955 and later refinements through the 1960s. The theory posits that organizational performance and change emerge from the joint optimization of social subsystems (people, roles, culture, skills, policies) and technical subsystems (tools, platforms, standards, workflows), rather than from either dimension alone. Its core tenets include interdependence between social and technical elements, the necessity of designing work systems that fit both human capabilities and technological affordances, and the view that effective innovation requires co-evolution of structures, practices, and technologies. The theory aims to explain how complex work systems can be designed and improved to achieve desired outcomes while maintaining adaptability and human well-being. Key propositions include: (i) sub-optimizing either the social or technical subsystem degrades overall system performance; (ii) participatory design and alignment of incentives enhance adoption; and (iii) successful implementation of new technologies depends on complementary changes in roles, skills, and

governance. Foundational assumptions are that organizations are open systems embedded in wider environments, that technology is not determinative but socially shaped, and that sustainable change requires iterative redesign of both human and technical arrangements.

In the present study, Socio-Technical Systems Theory illuminates why RDM initiatives in academic libraries falter when they focus narrowly on repositories or policies without parallel investments in staff competencies, researcher incentives, and workflow integration. The theory's emphasis on joint optimization explains the documented tension between advanced RDM platforms (technical subsystem) and persistent gaps in FAIR literacy, data-sharing cultures, and supportive institutional policies (social subsystem). It also supports the paper's argument for tiered, context-sensitive frameworks: different institutions require different balances of technical infrastructure and social capacity building, coordinated through consortia, training, and policy alignment. By treating libraries as socio-technical hubs mediating between researchers, funders, and technologies, the theory provides a robust lens for analyzing emerging responsibilities, diagnosing implementation barriers, and designing pragmatic pathways that align technological affordances with human and organizational realities in both well-resourced and resource-constrained settings.

## Conclusion

Research data management practices and the emerging responsibilities of academic libraries represent a transformative paradigm positioning libraries as indispensable research infrastructure amid exploding data volumes and FAIR compliance mandates sweeping global scholarship. This paper has illuminated RDM's evolution from NSF's 2011 DMP requirements through Plan S open data revolutions, highlighting tangible benefits like 69% citation premiums for shared datasets alongside formidable challenges encompassing infrastructural deficits, researcher resistance, and 70% competency gaps plaguing both librarians and faculty. Emerging technologies such as AI metadata automation, blockchain provenance, amplify libraries' strategic pivot toward data science partnerships, while tiered service models from Harvard Dataverse's 75,000-dataset repository to Nigerian low-bandwidth DMP innovations demonstrate scalable maturation pathways navigating Global South realities. Practical implementations across MIT consultations, UCT mobile metadata, and Covenant University's mandatory deposition underscore libraries' trajectory from peripheral support to research mission linchpins, as policy frameworks like Nigeria's

2021 NRI Policy mandate institutional repositories converging with CODATA standards. Ultimately, academic libraries confronting RDM responsibilities must boldly claim their destiny as stewards of the global knowledge commons, evolving from print custodians to FAIR compliance enforcers, data literacy evangelists, and computational research partners or risk marginalization within universities prioritizing research excellence above legacy support functions; in mastering these emerging mandates lies preservation of their institutional centrality within data-driven scholarship's future.

## References

Agim, E. C., Adegbite, OE Edeh EE (2025) Evaluating Technology Ethical Practices in the Utilization of Digital Resources among Undergraduate Students of Nnamdi Azikiwe University, Awka. *International Journal of Information Resource Management 2* (2), 1-13

Bossaller, J., Attebury, R., & Finn, S. (2017). Research data management in academic institutions. *Journal of Librarianship and Information Science, 49*(4), 372-389. doi:10.1177/0961000616660618

Colavizza, G., Hrynaszkiewicz, I., Staden, I., Whitaker, K., & McGillivray, B. (2020). The citation advantage of linking publications to research data. *PLOS ONE, 15*(4), Article e0230416. doi:10.1371/journal.pone.0230416

Cox, A. M., Kennan, M. A., Lyon, L., & Pinfield, S. (2017). Developments in research data management in academic libraries: Towards an understanding of research data service maturity. *Journal of the Association for Information Science and Technology, 68*(9), 2182-2200. doi:10.1002/asi.23781

Cox, J., & Verba, L. (2018). Research data management and libraries: Relationships, activities, drivers and influences. *Portal: Libraries and the Academy, 18*(1), 131-152. doi:10.1353/pla.2018.0008

Dushu, Y. T. & Agim, E.C (2026). Internet Tools for E-Learning and Database Access in Academic Libraries in South-East and South-South Nigeria. *The Infosphere: Nigerian Journal of Knowledge and Information Studies, 1* (1 & 2); 31-40. https://doi.org/10.5281/zenodo.19328705

Federer, L. M., Clarke, D. J. B., Marron, T. K., Frame, M. C., Faith, J. J., & Sarli, C. C. (2018). Biomedical data sharing and reuse: Views and expertise of scientists and research coordinators at major US biomedical funding institutions. *Journal of the Association for Information Science and Technology, 69*(7), 889-901. doi:10.1002/asi.24016

Rabina, D. L. (2021). Research data management training for librarians: A review of the literature. *Journal of Librarianship and Information Science, 53*(3), 456-468. doi:10.1177/0961000620972149

Tenopir, C., Hughes, D., Allard, S., Frame, M., Birch, B., Sandusky, R., Langseth, M. L., & Read, E. (2020). Research data management services in academic libraries in the US: A content analysis of libraries' websites. *PLoS ONE, 15*(5),

e0231814. doi:10.1371/journal.pone.0231814

Tenopir, C., Sandusky, R. J., Allard, S., & Frame, M. (2017). Research data management services in academic libraries: Data intensive roles for the future? *Library Trends, 65*(4), 579-599. doi:10.1353/lib.2017.0015

Udry, J. R., Ayeni, O. B., & Osawaru, K. E. (2022). Research data management readiness in Nigerian academic libraries. *Library Philosophy and Practice, 2022*, Article 7123.

Wilkinson, M. D., Dumontier, M., Aalbersberg, I. J., Appleton, G., Axton, M., Baak, A., Blomberg, N., Boiten, J.-W., da Silva Santos, L. B., Bourne, P. E., Bouwman, J., Brookes, A. J., Clark, T., Crosas, M., Dillo, I., Dumon, O., Edmunds, S. C., Evelo, C. T., Finkers, R., ... Mons, B. (2016). The FAIR guiding principles for scientific data management and stewardship. *Scientific Data, 3*, Article 160018. doi:10.1038/sdata.2016.18