



A Framework for AI-Driven Data Governance in Academic Libraries

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ABSTRACT	ARTICLE INFO
<p>Academic libraries are central to knowledge creation and dissemination in higher education. However, persistent challenges in service delivery continue to affect user satisfaction. This study examines how data governance and artificial intelligence (AI) can enhance the quality of library services in higher education institutions. Using a narrative literature review approach grounded in data management and service quality theories, the study conducted a bibliometric analysis of peer-reviewed publications from 2015 to 2024 retrieved from the Dimensions database. Findings reveal that implementing an integrated data governance framework supported by AI improves service efficiency, decision-making, and user experience. Nonetheless, varying scholarly views persist regarding the operational role of data governance in AI-driven systems within academic libraries. The study concludes that a cohesive framework integrating data governance and AI is vital for optimizing service quality. It recommends further investigation into data preprocessing and validation to advance library performance and contribute to the achievement of Sustainable Development Goal 4.</p>	<p>Article History: <i>Submitted/Received 05 Jul 2025</i> <i>First Revised 19 Jul 2025</i> <i>Accepted 19 Aug 2025</i> <i>First Available Online 01 Nov 2025</i> <i>Publication Date 01 Nov 2025</i></p> <hr/> <p>Keywords: <i>Artificial intelligence,</i> <i>Data governance,</i> <i>Data stewardship,</i> <i>Quality service delivery.</i></p>

1. INTRODUCTION

Quality service delivery to users in higher education libraries is important because they feel motivated and satisfied. However, sometimes there are poor service in these libraries and this could be attributed to lack of proper service delivery frameworks and improved technologies. It was for this reason that this study was found crucial and timely. Data, whether in structured or unstructured forms, is the representation of information that can be stored, communicated, interpreted, or processed by humans or automatically allowing knowledge to be extracted. Statistical data is defined as data that is used to generate statistics, even if there are many other types of data, such as digital or hard copy data, qualitative data, and quantitative data (Alem, 2020; Oh & Pyrczak, 2023). Although it can come from other sources, this kind of data usually comes from administrative, census, or survey sources.

The administration of institutional data's availability, security, consistency, usefulness, and quality is the main goal of data governance (DG). To facilitate and improve organizational effectiveness, DG codifies behavior around the definition, production, usage, storage, and destruction of data. The Supply Chain Resource Cooperative (SCRC) defines data governance as a framework of decision rights and responsibilities for all information-related processes. To manage information flow, data storage, retrieval, and application for intelligence and analytics applications, it delineates roles and responsibilities (SCRC, 2018).

The accountability and duty for data, as well as the procedures that guarantee efficient management and utilization of data assets, are known as data stewardship. Typical institutions experience an annual financial impact of \$9.7 million due to poor data quality (Forbes, 2017). These costs could be increased by opportunity expenses, reputational damage, and a lack of trust in the data. Poor data quality costs the US economy \$3.1 trillion annually (IBM, n.d.). The largest barriers to improving data governance practices in academic libraries are a lack of standards, experience, and data silos, according to a study conducted in the USA by SCRC on data governance, data quality, and artificial intelligence in the supply. Higher education libraries must train data analysts and subject matter specialists to collaborate in the application of analytical tools.

Previous research has looked at data stewardship demands within a particular scientific field, data stewardship expertise, and stewardship gap areas (Awada et al., 2022; Arend et al., 2022; York et al., 2018). Initiatives to strengthen data stewardship professions and competencies are also underway (Jetten et al., 2021; Whyte et al., 2023; Wildgaard & Rantasaari, 2022). However, the idea of data stewardship has not gotten enough attention in higher education libraries to fully clarify its impact on raising the standard of service delivery in libraries. Libraries must create an ethical AI governance framework culture that prioritizes user trust, equity, and fairness while addressing moral dilemmas with algorithmic bias, data protection, accountability, and transparency (Hodonu-Wusu, 2025; Matsieli, M., & Mutula (2025). The data management and quality service delivery theories guided this study. The trends in yearly scientific output in the fields of DG and AI are displayed in Figure 1.

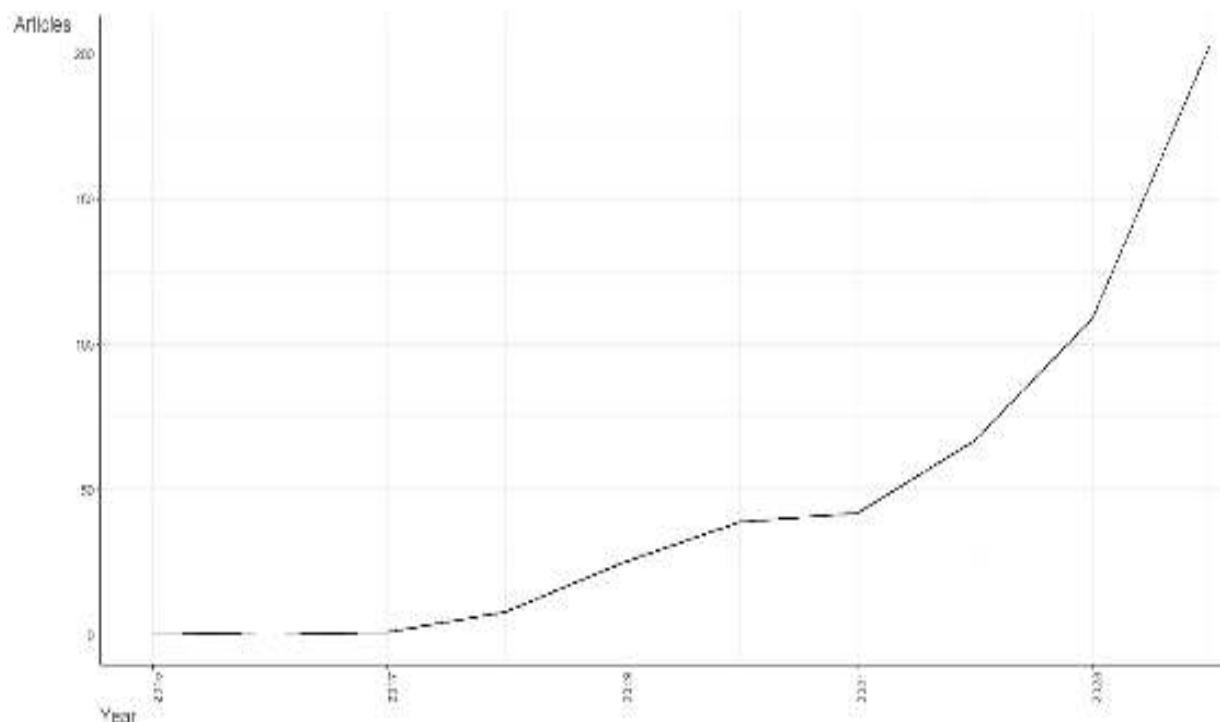


Figure 1. Annual Scientific Production of Publications in DG and AI
Source: Author's Research, 2024

The graph in Figure 1 illustrates that 2023 was the peak year of publications on the topic of DG and AI. Therefore, it can be established that 2023 has been the most active year in terms of publishing literature on DG and AI. The study therefore sought to explore and assess the influence of data governance in artificial intelligence with a view of developing a framework for augmenting the quality of service delivery in higher education libraries. This review has various sections that include methods and materials that elucidate the study strategies, the theoretical foundation of the study, the concepts of data stewardship, data governance, and artificial intelligence as well as the conclusions and areas for further research.

The data management and quality service delivery theories have been extensively applied in this study are data management theory and quality service delivery theory. First, data management theory. Edgar Codd created the theory of data management in 1970. This idea serves as the basis for the organization, curation, and preservation of access to a variety of data resources in higher education libraries, such as user data, institutional records, and research outputs. Libraries guarantee that data is gathered, stored, and made available in formats that facilitate scholarly endeavors by using data lifecycle management principles. While data quality and governance rules guarantee accurate, secure, and moral handling of sensitive data, metadata standards such as Dublin Core or MARC facilitate effective cataloging and resource retrieval (Avuglah, 2020; Cox et al., 2019). Libraries also employ data analytics, a branch of artificial intelligence, to improve decision-making. Examples of this include improving collections and customizing services to satisfy customer demands. The data management theory was found relevant to this study because it acknowledges the key themes of the review such as DG and AI as applied in higher education libraries.

The second theory of data management and quality service delivery is quality service delivery theory. Parasuraman, Zeithaml, and Berry created the theory of quality service delivery in 1985. Its main goal was to satisfy customer expectations by offering dependable, individualized, and effective services. This is improved by AI, which makes it possible to manage resources, engage users, and make decisions in novel ways (Prentice, Weaven, & Wong, 2020; Scharf & Dera, 2021). Among the main uses are AI-powered recommendation systems that examine user behavior to make pertinent resource recommendations, increasing user engagement and happiness.

By enabling conversational library system queries, Natural Language Processing (NLP) tools enhance search capabilities and facilitate more efficient and natural resource retrieval. AI automates tedious tasks like categorization, acquisitions, and circulation, freeing up employees to focus on value-added activities like research help. By employing AI models that predict trends in user demands, libraries may anticipate future requests and optimize collections. The standard of service delivery is raised by AI-powered solutions that provide 24/7 help for often-requested client questions, ensuring dependable and timely assistance (Avuglah, 2020; Cox et al., 2019). This theory supports the causality effect of this study since it acknowledges that the use of AI influences the quality of service delivery in higher education libraries.

2. METHODS

This study employed a narrative research design that generated both qualitative and quantitative data which drove this study. This review was advanced through the application of Bibliometric Mapping (BM). The intellectual, social, and conceptual framework of scientific study is presented and displayed visually through the use of BM (Gupta, Arora, & Chakravarty, 2021). Software like VOSviewer, the ScientoPy package for Python, and Bibliometrix and Biblioshiny for R are used in bibliometric analysis studies. Success in research, technology, and innovation depends on analyzing their quantitative components. The Biblioshiny package for R software is typically used in bibliometric literature to show data in a graphical format (Arumugam et al., 2021; Srisusilawati et al., 2021).

The Dimensions research database was used in this study because it remains a valuable and often preferred data source for bibliometric studies because of its citation data, reputation, comprehensiveness of analytical tools, and open source. The data extracted in the form of .CSV file for this study from the Dimension research database were extracted in 2024 and therefore covered the years ranging from 2015 to 2024. Therefore, the data downloaded from the Dimensions investigation was analyzed using Biblioshiny and Microsoft Excel.

A criterion for inclusion and exclusion of the article to consider for review was paramount. The study considered publications that were done in English and Non-English publications were excluded. It also factored in the relevant articles that explained the current state of data governance, data stewardship, and artificial intelligence for service delivery in higher education libraries. Moreover, included were peer-reviewed articles published in the Dimensions research database. Publication year (2015 OR 2016 OR 2017 OR 2018 OR 2019 OR 2020 OR 2021 OR 2022 OR 2023 OR 2024), publication type (Article OR chapter OR Proceeding) and ("Data governance" OR "Data Stewardship" OR "Artificial intelligence") AND ("Service delivery" OR "academic library").

3. RESULTS AND DISCUSSION

The study explored the influence of data governance in AI with a view of developing a framework for quality service delivery in higher education libraries. This was achieved by reviewing related and relevant literature on the concepts of data stewardship, governance, and AI in separate sections as described in 3.1, 3.2, and 3.3 respectively.

3.1 Data Governance

Data governance focuses on authority and decision-making over data-related issues within and between government and corporate organizations. A foundational text on data stewardship defines data governance as a system of decision rights and accountability for information-related processes, implemented in line with established models governing the types of data stored, the authority to access data, and the methods of accessing data (Janssen et al., 2020; Plotkin, 2021). The Data Management Body of Knowledge (DMBOK) defines data governance as "the exercise of authority, control, and shared decision-making (planning, monitoring, enforcement) over the management of data assets" (DAMA, 2017).

Strong leadership abilities are essential for overcoming obstacles and advancing knowledge management projects, particularly when it comes to proving value and adjusting to financial uncertainty. Leaders need to help their teams navigate difficult transitions, advocate for Knowledge Management (KM), and obtain funding (Lillard & Al-Suqri, 2019; Padeli, Pangil, & Kadir, 2025). Libraries can produce important insights for information literacy governance and training, which are essential for success in the big data era, by performing in-depth analytics on data and text (Ajibade & Muchaonyerwa, 2022; Akanbiemu, 2024). Although most companies believe that a data governance organization is desperately needed, very few institutions currently have one in place. Figure 2 illustrates the corresponding Author's Countries in the field of DG and AI.

Figure 2 established that India, the USA, China, the UK, Nigeria, Australia, South Africa, Canada, and Germany among others emerged as leading producers of data governance, data stewardship, and artificial intelligence articles, with well-known authors making significant contributions to the development of the area. Additionally, studies show that Sub-Saharan Africa is producing high-caliber DG and AI publications. Furthermore, studies indicate that a growing number of prominent and high-caliber DG and AI articles are coming out of Sub-Saharan Africa (Kwanya, 2021). Figure 3 illustrates the number of publications in each research category.

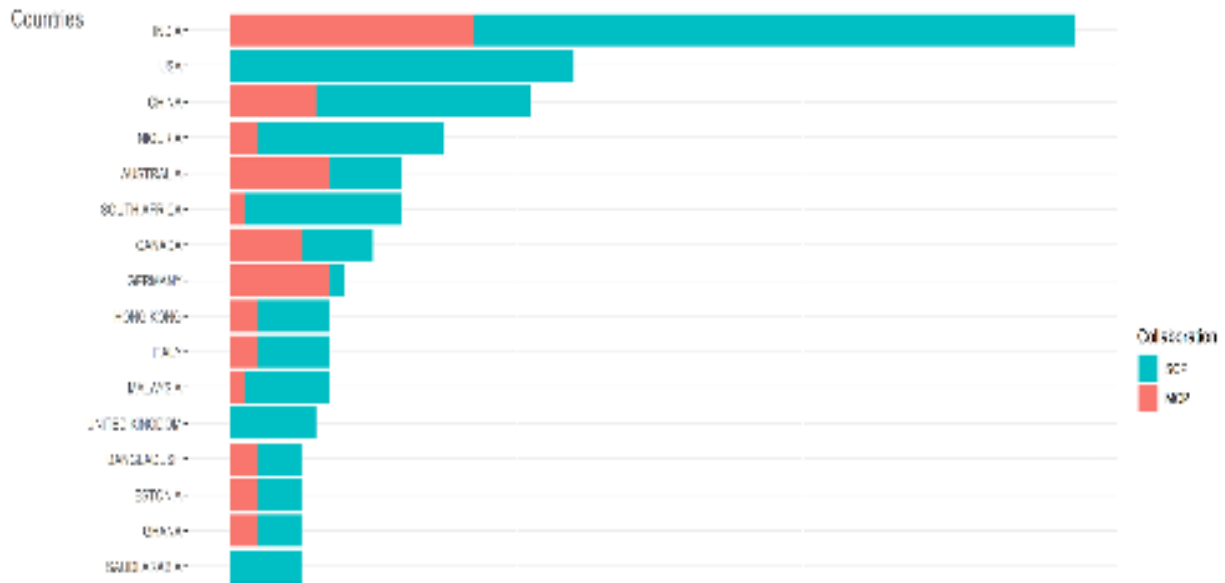


Figure 2. Corresponding Author’s Countries in DG and AI
Source: Author’s Research, 2024

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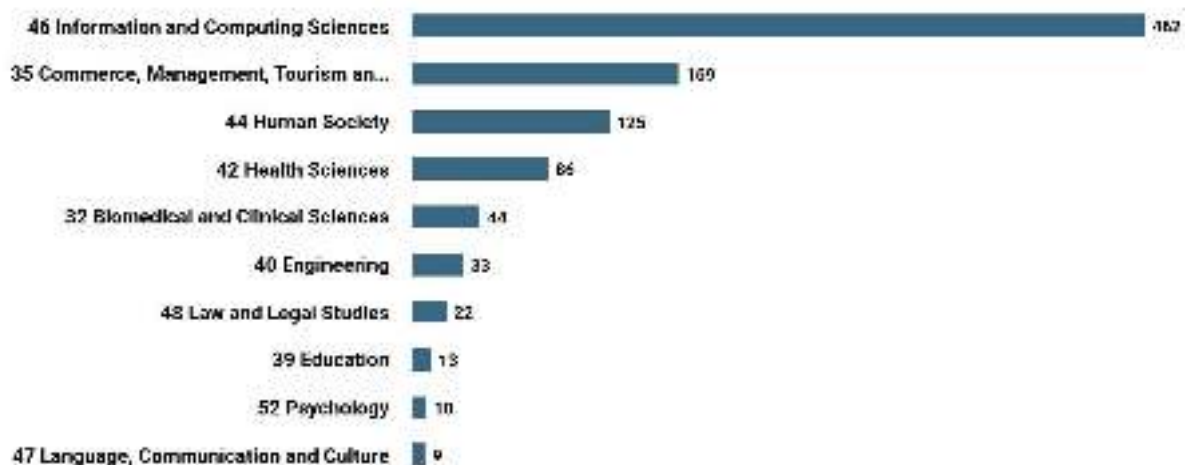


Figure 3. Number of Publications in Each Research Category
Source: Author’s Research, 2024

Figure 3 displays the results pertaining to the main research topics that influenced the literature on DG and AI from 2015 to 2024. Using the specified search method, 500 publications about DG and AI have been published over the last ten years and obtained from the Dimensions research database. With 462 publications, information and computing sciences came in first place, followed by commerce, management, tourism, and hospitality with 169 publications. Language, Communication, and Culture came in last with nine publications, while general psychology came in second with ten. Without a doubt, the great majority of scholars who write about DG and AI would like to publish their work in the field of library and information sciences.

Without a doubt, the great majority of scholars who write about DG and AI would like to publish their work in the field of library and information sciences. This is perhaps because, whereas psychology and language, communication, and culture may be more interested in the application and implementation of DG and AI, information and computing sciences are more concerned with the research process itself. The most pertinent DG and AI sources are shown in Figure 4.

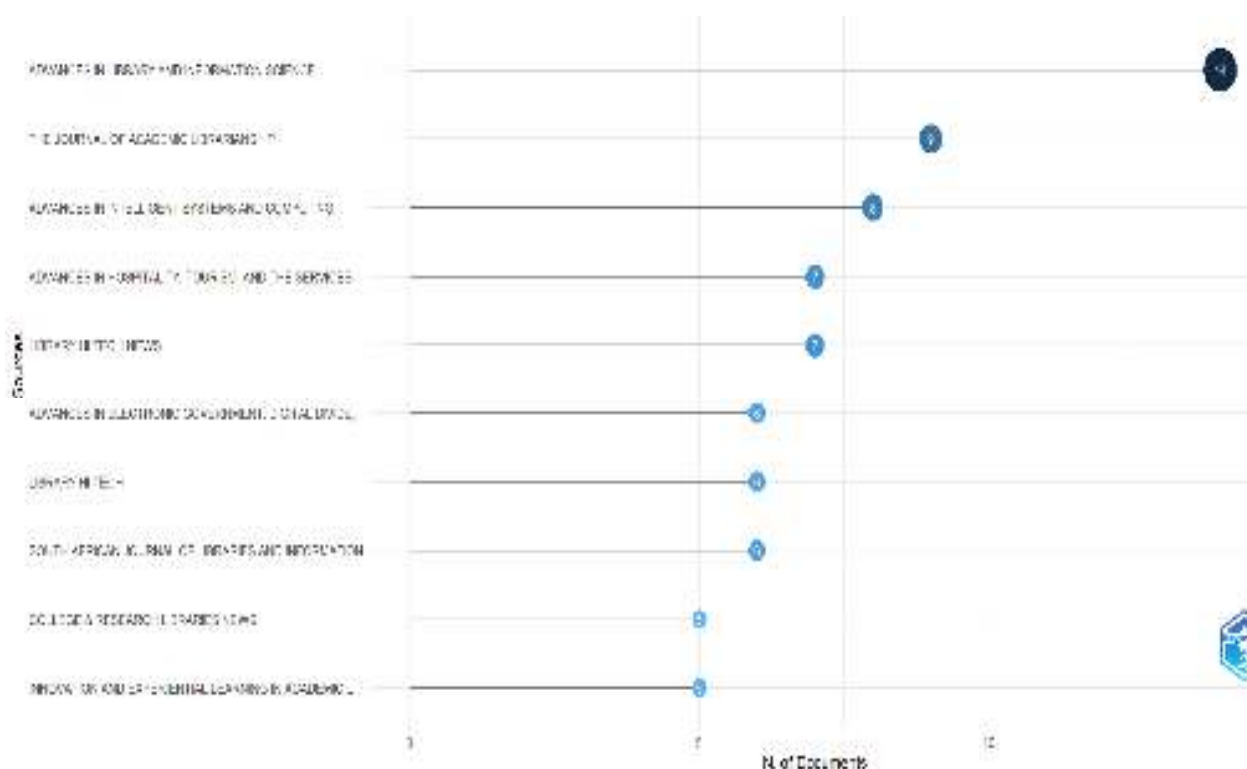


Figure 4. Most Relevant Sources in The Field of DG and AI
Source: Author’s Research, 2024

The top ten useful resources on DG and AI that were specifically dispersed between 2015 and 2024 are shown in Figure 4. Advances in Library and Information Science was the most widely published source, with 14 publications. The Journal of Academic Librarianship, which contains nine papers in the Dimensions research database, was another well-known source. With eight publications, Advances in Intelligent Systems and Computing comes next. The College and Research Libraries News and Innovation and Experiential Learning Academic Libraries included the fewest publications—five. Developments in the fields of DG and AI have

been greatly aided by advances in library and information science. The significance of DG and AI in furthering the study and development of DG and AI tools and systems has been brought to light in large part by these articles. A summary of the most referenced nations is shown in Figure 5.

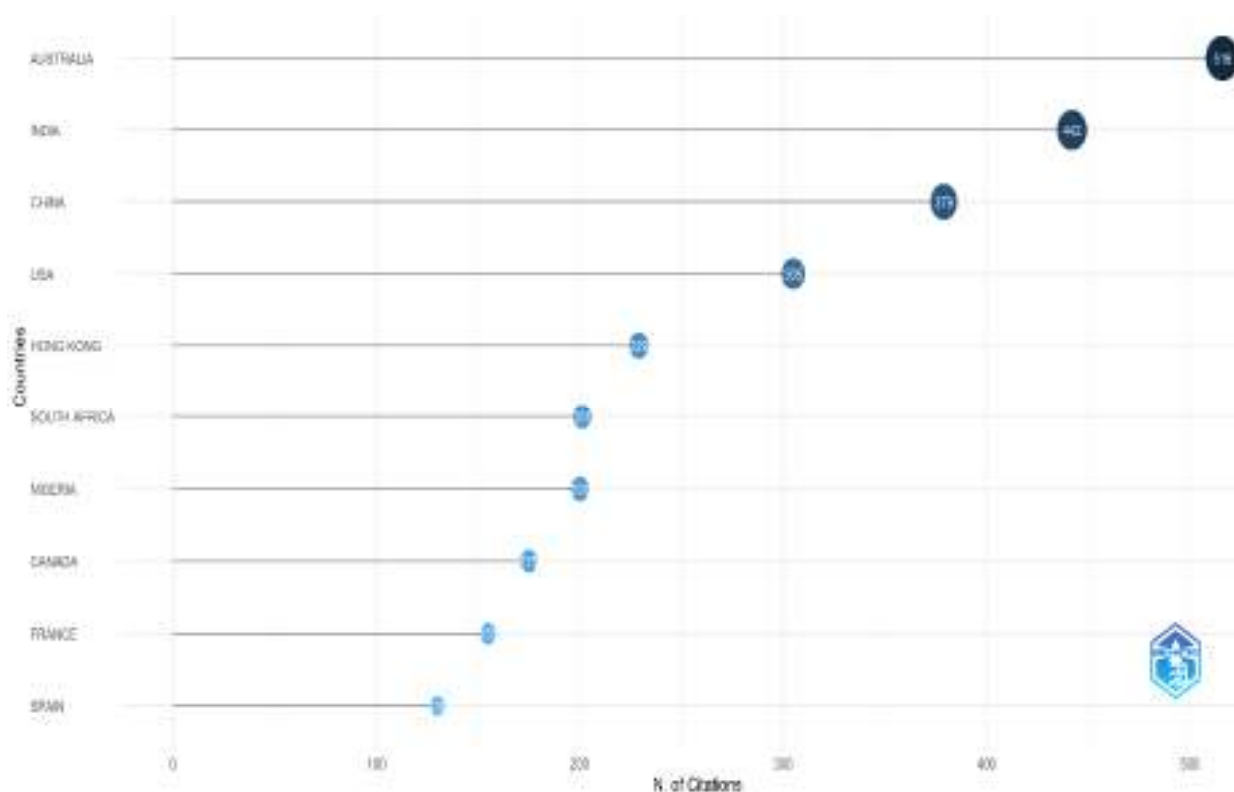


Figure 5. Most Cited Countries in DG and AI
Source: Author's Research, 2024

Figure 5 shows the most cited countries in this area of DG and AI with Australia being cited the highest (516 times), followed by India (442 times). The third one was China (379 times) and the fourth one was the USA (305). The second last cited country was France (159 times) and Spain (30 times) making it the last in the list. As can be deduced from this data, these four highest-ranking countries in the West and have developed. This implies that they have made advances in research and development in the field of DG and AI in academic libraries.

According to SCRC, ignorance of AI and related technologies may hinder learning and exploration. Ironically, businesses believe AI can address data quality problems, but they also believe that low data quality will prevent AI from becoming widely adopted anytime soon. As a method to enhance data quality, the Signal to Noise Ratio (SNR) in data is still not commonly employed and is not measured. Expectations and reality continue to diverge when it comes to deriving value from data.

Data quality is an urgent and expensive issue. According to a study on academic libraries as hubs for data quality conducted by Michael at Pennsylvania State University, the better the data quality situation in academic libraries, the sooner the libraries can become involved in the research process. In order to achieve data quality, a lot of the university's research, publishing, and teaching activities come together in the libraries, which are largely the hubs of campus life.

Sarsfield compared DG to an elephant in a dark room. Depending on where you touch it, you can perceive it. Data governance, data literacy, and data quality management, demonstrate that data governance shouldn't be optional because it aids in the success of enterprises by putting in place compliant and repeatable processes (Dorsey, 2025; Koltay, 2016). In the sense of monitoring, assessing, and supervising different organizational components, governance is related to the management of people, information technology, and other material resources.

Since there is data everywhere, DG operates horizontally. Data governance is a service that may be utilized in academic libraries as well because it is founded on defined, repeatable procedures and is intended to facilitate cost savings and transparency in data-related processes. Rules, regulations, standards, decision-making rights, accountability, and enforcement strategies are also included. As such, it would be a useful supplement to the library's current data quality policies, procedures, and resources. Negotiating large data challenges and managing change can both benefit from the application of data governance.

National governments are taking action to lessen policy silos and improve the coherence of data policies, programs, and initiatives in the public sector, according to OECD evidence (OECD, 2019). Government policies that address strategy, culture, ethics, roles, and settings, and the skills of individuals who can support an efficient data ecosystem are necessary to mitigate the dangers. These policies must have a longer-term focus. For interoperability to be possible under the new digital data governance, consistent guidelines and standards are needed.

In other instances, policy elements pertaining to data are a component of larger digitalization, AI, and digital government initiatives. In fact, according to data from the 2019 OECD Digital Government Index, 82% of nations embed data as part of more general related policies (such open data or digital government), whereas just 12% of countries have a single dedicated data policy (or plan) (OECD, 2021). According to the Development Cooperation Report, the OECD examined the role of national statistical systems in the data revolution and concluded that a more productive and moral approach is achieved by stepping up planning and production efforts, promoting robust data dissemination, and effectively communicating the value of data to both partners and citizens (OECD, 2017).

The Data Science Campus of the Office for National Statistics in the United Kingdom serves as a venue for data experimentation, talent development, and public-private sector cooperation (OECD, 2018). The adoption of open data policies and data skills in the public sector in Mexico was greatly aided by the INEGI (OECD, 2016). The Data Strategy Roadmap for the Federal Public Service, which advocates for a whole-of-government approach to digital and data concerns, is being continuously greenmended by Statistics Canada in close collaboration with two central government organizations.

3.2 Data Stewardship

Academic and research organizations are increasingly encouraging data stewardship through means to enhance data stewardship competencies. Research infrastructure data stewardship has also been studied (Borgman et al., 2019; Wendelborn, Anger, & Schickhardt, 2023) The organization of institutional data stewardship initiatives in higher education institutions is not covered by the aforementioned literature, despite their importance.

University staff members with direct operational-level accountability for managing one or more forms of institutional data are known as data stewards. Implementing data standards, keeping an eye on data quality, and responding to questions regarding data are the

responsibilities of data stewards. Through established security and permission protocols and educational initiatives, data stewards protect the data from misuse and unlawful access. They approve the usage of data in their functional domains and keep an eye on it to ensure that the right data is accessed. Establishing policies for the gathering, analysis, reporting, and use of institutional data; developing and maintaining core metadata; recording regulations and standards; handling problems with data quality and integrity; and carrying out operational data governance tasks are all examples of data stewardship (SCRC, 2018).

Libraries' commitment to patron privacy and their current data handling practices in learning analytics projects may not be as protected as they think, according to a critical review of data management practices in academic library learning analytics conducted by (Briney, 2019). Therefore, if libraries want to perform learning analytics research ethically, they must invest in staff training and infrastructure in security, modern anonymization techniques, and data privacy policies. Additionally, learning analytics programs may incorporate library employees who have received data management training. According to Gartner, one-third of Fortune 100 companies will encounter "an information crisis, due to their inability to effectively value, govern and trust their enterprise information."

Because ethical operation fosters the trust, social license, and public support required for statistical activity, sound data stewardship helps society and advances the common good (Hassani & MacFeely, 2023; O'hara, 2019). By facilitating reuse and reducing data misuse, it gives statisticians access to data that is already present in the ecosystem. Additionally, it makes it easier to share data and employ new, complementary data sources. Through time and money savings, a reduction in response burden, a rise in data value, and improved communication of that value to citizens, all of this either directly or indirectly boost engagement and public trust.

Data stewardship reflects the principles of fair information practices and is concerned with the science and practice of gathering data for analysis. To ensure that data assets are of high quality, easily accessible, and used appropriately, data stewardship is a collection of data management techniques and mechanisms that include acquisition, storage, protection, aggregation, deidentification, and procedures for data release, use, and re-use. A data steward's loyalty is to the interests of the people and organizations whose data are stored in and managed by the system; this is meant to convey a fiduciary (legal or ethical trust) relationship with data (Plotkin, 2021).

The essential, practical component of data governance is data stewardship. This data governance strategy formally establishes responsibility for overseeing information resources on behalf of others and, in the case of the government, for the public interest. The rules, guidelines, and values specified by data governance are put into practice by data stewardship. Although the extent of data governance and stewardship is comparable, they are not interchangeable. Data managers are not the only ones who carry out data governance (Ladley, 2019; Plotkin, 2021). Although their relationship is mutually enabling and partly cyclical, it is crucial to distinguish between them from a philosophical and practical standpoint.

Data integrity in the framework of internal data governance and management, with a focus on technical competence, has historically been the main goal of data stewarding or data stewardship activities. Nonetheless, professionals in academic, commercial, and public data concur that this limited understanding is no longer enough (Verhulst, 2021). NSOs and public governance organizations alike must rethink data stewardship to a function and role encompassing a wider range of purposes and responsibilities in light of the rapidly increasing

proliferation of data, the growing demand for, and potential for, data sharing and collaboration

Data stewardship functions are in charge of gathering, storing, managing, and using data. This duty can be divided into three primary responsibilities: sharing, ethics, and teamwork (Verhuulst, 2021). Data ethics are a top priority for experts in data governance and data management. According to the Economic Commission (2020b) and StatCan (2020a), data ethics is the knowledge that enables one to obtain, use, interpret, and ethically disseminate data, including identifying ethical and legal issues (such as security, biases, privacy, confidentiality, and public support or social acceptability).

In addition to making sure that social license, legal, and regulatory requirements are followed, data stewards are in charge of making sure that data entry, acquisition, quality, interoperability, and general management meet the needs of consumers, citizens, businesses, organizations, or governments (Ladley, 2019; Plotkin, 2021).

3.3 Artificial Intelligence

In an effort to improve processes, services, and procedures with customer pleasure as the primary goal, numerous firms have been implementing digital and information technology transformations during the past ten years. These kinds of technical changes also did not leave higher education libraries behind. AI and knowledge organizations come together to create a dynamic environment where new technology meets traditional library practices, changing how materials are accessible, categorized, and used (Coombs *et al.*, 2020). AI-powered technologies including Machine Learning (ML) algorithms, Natural Language Processing (NLP), and semantic analysis have given libraries access to previously unheard-of capabilities for indexing, categorizing, and retrieving information resources.

This automation not only increases the accessibility and discoverability of knowledge assets, but it also speeds up library operations, enabling users to find relevant materials and resources more rapidly. AI-driven information organization in academic libraries improves sustainability by maximizing environmental impacts, reducing operating costs, and promoting resource efficiency. By using AI technology to improve the sustainability of their information management procedures, libraries can better align with global efforts to conserve resources and reduce carbon footprints (Akter, 2024; Hodonu-Wusu, 2025).

AI-powered citation analysis, author profiling, and research impact evaluation tools facilitate the identification of novel trends, interdisciplinary connections, and cooperative prospects (Khalifa & Albadawy 2023). Long-term processes for knowledge generation and sharing are supported by these AI-driven insights, which also help researchers, libraries, and institutions make well-informed decisions, encourage multidisciplinary discourse, and enhance information transmission.

AI-driven recommendation engines, tailored search interfaces, and adaptive learning platforms enhance user engagement, promote lifelong learning, and enable fair access to information resources for all stakeholders (Marzuki *et al.* 2023; Owan *et al.*, 2023). As AI technologies change information access, privacy, and decision-making processes, ethical frameworks and regulations are required to ensure responsible AI deployment (Osasona *et al.*, 2024).

Libraries should be proactive in educating, lobbying, and developing policies to encourage the responsible use and use of AI, given its impact on knowledge organization systems, content recommendations, and information retrieval algorithms (Hodonu-Wusu, 2025). Artificial intelligence (AI) has a substantial impact on how knowledge is arranged in academic

libraries by improving the effectiveness and accuracy of information retrieval. Incorporating sustainable development into library operations fosters inclusive, resilient, and environmentally conscious communities—all of which are pertinent in a variety of ways (Kalisdha, 2024; Mensah, 2019).

In essence, libraries promote lifelong learning and information literacy, which in turn promote sustainable development. By providing access to a range of resources, such as books, digital materials, and educational programs, they allow people to acquire knowledge and skills that support environmentally conscious living, sustainable lifestyles, and responsible citizenship. To comprehend user behavior, interaction patterns, and information literacy requirements, libraries are currently using data mining and analytics tools (Ajibade & Muchaonyerwa, 2022); Ogunmodede et al., 2023).

In an effort to automate and improve library knowledge management through artificial intelligence, smart systems, expert systems, and robots are being investigated more and more (Qhal, 2023). Automation and robots can do monotonous jobs like book shelving and sorting, increasing accuracy and efficiency. A crucial element in this process is integrating big data into knowledge management, which allows libraries to leverage enormous volumes of data to enhance decision-making, customize user experiences, and streamline operations (Ajani et al., 2024).

Organizational performance can be improved by using big data analytics to support knowledge management initiatives (Tran, 2023). Libraries must improve their technological expertise and capacity to take advantage of new opportunities in library data analytics, particularly in the digital age (Akanbiemu, 2024; Salman et al., 2022). Furthermore, by allowing enterprises to gather, store, and evaluate enormous volumes of data for risk assessment and mitigation, big data analytics can mediate corporate risk management (El Khatib et al., 2023).

To estimate future usage trends and the demand for different library services and resources, predictive analytics models are used. Libraries can improve user experience, reduce resource waste, and increase operational efficiency by forecasting demand (Aldoseri et al., 2024; Arowoogun et al., 2024). To endow librarians with the skills they need in data analysis, data visualization, data interpretation, and analytics tools and software, libraries may need to fund workshops or professional development programs.

Data ownership and intellectual property, data privacy and security, data type and technology, and institutional frameworks for ethical governance are all important governance factors (Timotijevic et al., 2022). Businesses that use big data analytics have to deal with moral conundrums pertaining to data privacy, openness, and other moral considerations in data processing. When gathering, sending, storing, and using big data, principles including data security, privacy, and ethics are crucial considerations (Yallop et al., 2021; Yang et al., 2019).

Big data analytics is a useful tool for managing and creating knowledge, allowing businesses to extract useful information from both structured and unstructured data sources (Wang & Wang, 2020). Big data analytics is expanding due to the development of technologies like the Internet of Things (IoT), especially in the fields of smart manufacturing, personalized healthcare, and libraries. Addressing issues like data privacy and security, guaranteeing data quality and integrity, and creating sophisticated analytics methods for managing intricate and varied data sets could be the main areas of future study in big data analytics and knowledge management (Madanayake & Egbu, 2019; Venkatraman et al., 2023).

3.4 A Framework For Quality Service Delivery In Libraries

The several elements that must function together for this implementation architecture to be successful are shown in Figure 6. These elements include the quality of service provided by higher education libraries, consumers of the library, the theoretical framework, data governance, and artificial intelligence.

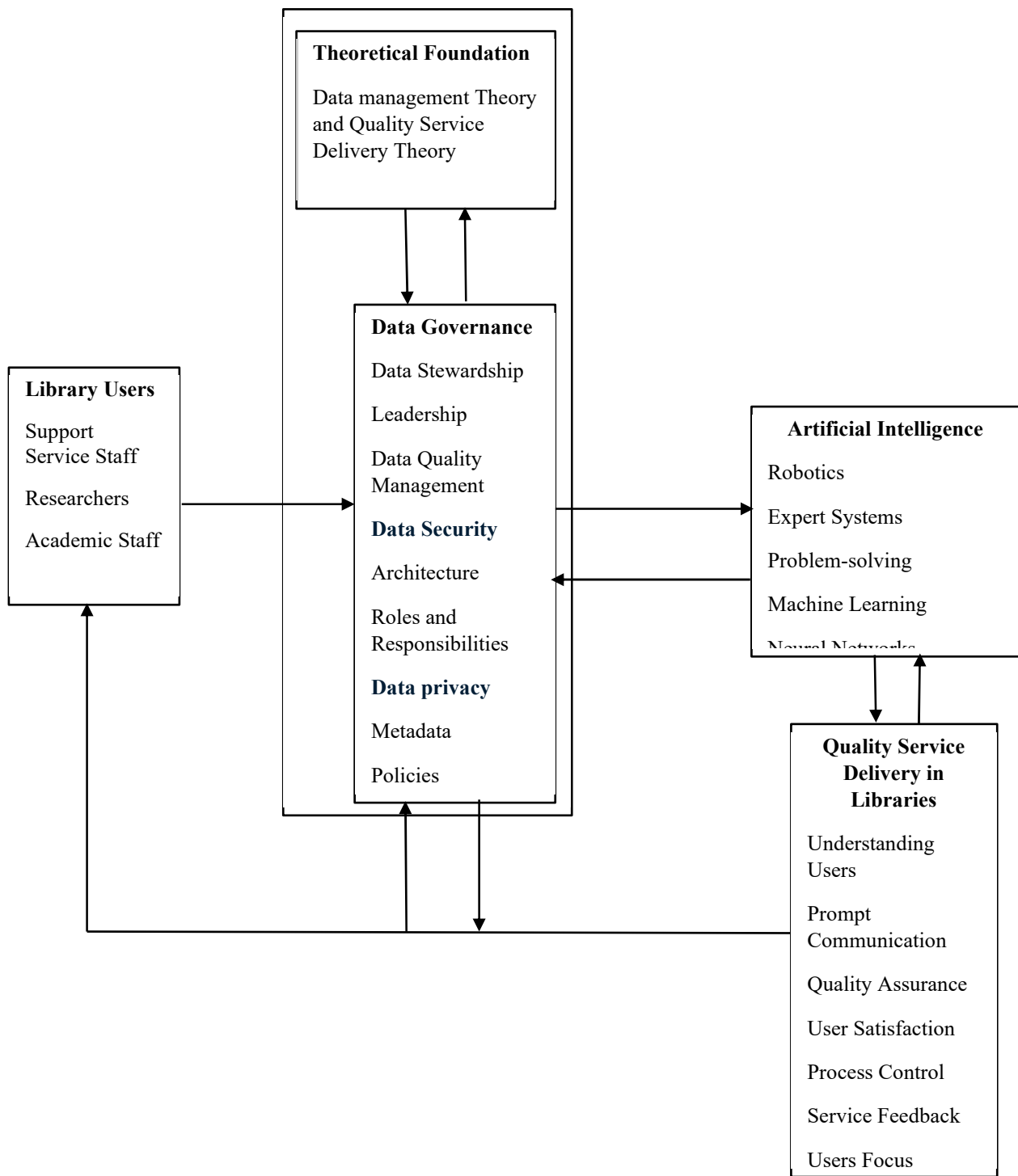


Figure 6. A framework for Implementing Data Governance and Artificial Intelligence
Source: Author’s Research, 2024

Figure 6 shows an implementation framework for data governance in artificial intelligence for improving the quality of service delivery in higher education libraries. This diagram established the relationships among the various variables that were used in developing this framework. The library system has users like academic staff, researchers and support service staff. The data management and quality service delivery theories were found influential to this study. Data governance has several components such as data stewardship, leadership, data quality management, data security, architecture, roles and responsibilities, data privacy, metadata as well as policies that are derived for rules, procedures, standards and legal entities. Artificial intelligence could be applied in the library as robotics, expert systems, problem-solving, machine learning and neural networks in carrying out various operations and responsibilities. When all these components are well implemented, the quality of service delivery in higher education libraries will be appreciated.

4. CONCLUSION

The objective of this review was to explore and assess the influence of data governance in artificial intelligence with a view of developing a framework for augmenting the quality of service delivery in higher education libraries. The results of this investigation confirmed that data governance facilitates standardized, repeatable processes, which in turn lowers expenses and boosts higher education libraries' productivity. The application of data governance in artificial intelligence can enhance the caliber of data and service provision in libraries serving higher education. To effectively manage risks that may come from noncompliance with information policies or a lack of control, data governance should prioritize the implementation of risk-mitigating measures.

Furthermore, artificial intelligence (AI) has transformed academic libraries by offering strong tools that improve user experience, optimize resource consumption, and streamline operations. In libraries, cutting-edge technologies like machine learning and natural language processing are utilized to enhance search capabilities, automate processes, and offer data-driven insights for well-informed decision-making, thus ensuring that digital transformations are implemented efficiently and effectively to ensure quality service delivery in higher education libraries. As the volume and complexity of scholarly knowledge continue to increase, artificial intelligence is predicted to play a bigger role in academic libraries.

Libraries may improve performance and reinvent their infrastructure, services, and resources by utilizing big data analytics which is a subset of AI. These issues are the cause of low-quality data and imply that the resources required to address them are not being provided to data and analytics jobs. There are some points of contention regarding the function of data governance in higher education institutions and its proper place in the business. These results support the ideas of quality service delivery and data management.

The inadequacy of research on data governance and artificial intelligence for enhancing academic library service delivery in higher education institutions is confirmed by this review. In order to improve data quality hubs, the study suggests more research in the areas of data governance, artificial intelligence, data quality, data stewardship, and data pretreatment and validation procedures. The creation of long-lasting platforms with all the characteristics of globally reputable repositories—secure, guided by explicit use standards, and guaranteeing integrity and confidentiality—is essential to the future of African data repositories. To stay up

with the quickly changing technological world, libraries need to acquire new skills and take the lead in AI administration.

By following these standards and principles, the academic and research community can employ AI to promote innovation, improve scholarship, and address challenging global issues in a more inclusive, significant, and cooperative manner. By providing intuitive user interfaces, thorough documentation, and understandable explanations of how AI algorithms work, what data they utilize, and the conclusions they draw, you can ensure that AI systems are accessible and comprehensible. Encourage library users to understand and have confidence in AI technologies. The results offer useful suggestions for libraries looking to use AI as a strategic tool for user empowerment and long-term knowledge organization.

In addition to offering thorough accounts of three different data stewardship programmes, this paper adds to the body of knowledge on data stewardship by pointing out the potential organizational effects of the research contexts. Models for setting up data stewardship initiatives are scarce. Libraries should make investments in strong IT infrastructure that can manage massive data volumes and enable cutting-edge analytics tools. This infrastructure should include the storage options, processing power, and network capabilities required for big data processing and analysis. To guarantee the responsible gathering, storing, and use of data, libraries should set up explicit data governance policies and processes. Establishing data ownership, access controls, quality standards, and privacy safeguards for sensitive data will help achieve this. Collaboratively, cross-functional teams may find ways to apply big data analytics and put solutions in place that tackle issues facing the entire library.

5. AUTHORS' NOTE

The authors declare that there is no conflict of interest regarding the publication of this article. Authors confirmed that the paper was free of plagiarism.

6. REFERENCES

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