

Career in data librarianship for library and information science (LIS) professionals in Nigeria

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Abstract

With the high rate of unemployment presently experienced in Nigeria, library and information professionals can expand their employment chances by creating jobs for themselves. One career option which is largely unexplored in Nigeria is data librarianship. This paper highlights data librarianship as a career opportunity for library and information science professionals in Nigeria. The paper adopted a narrative literature research design. From the literature, the concepts of data librarianship and data librarian were defined. The paper examines some factors that make a career in data librarianship for LIS professionals in Nigeria worthwhile. It also highlights some responsibilities of data librarians and some of the training needs of data librarians. The paper concludes by noting that the high level of unemployment in Nigeria makes it imperative that information professionals explore opportunities for self-employment, observing that advancements in technology have opened up opportunities that have hitherto not been explored. Finally, the paper proffers some useful recommendations including the introduction of data librarianship into the Nigeria LIS curricula and the development of skillsets by librarians to enable them to position themselves for a successful career in data librarianship.

Keywords: Data librarianship, data librarian career opportunities, data service, librarianship and librarians, library and information science professionals, Nigeria

Introduction

Advances in information technology and the open-access movement/advocacy in its various forms create opportunities for librarians to carve a niche in specialised fields such as data services. The need for data services arises from the rapid transformations that are currently going on in society which have come with shifts in all spheres of life. For instance, some years ago, the hype was the information age however, today, the place of big data in research for the transformation and development of society is the buzzword (Khan and Yunfei, 2018). As a result, it is no longer fashionable for governmental or non-governmental organisations to plan based on gut feelings rather, it is expected that planning for development, welfare, or other purposes will be based on evidence. Evidence is hinged on the scientific enquiry which seeks to know the what, how, when

and where of phenomena, and data are used to answer the queries.

Invariably, there is no way that the desired developmental or welfare outcomes will be achieved in society without research and data. That is why big data is currently the most sought-after commodity in the competitive corporate world. UNESCO (2021) posits that significant development will be achieved in developed and developing countries if “scientists, researchers, academicians, engineers, and policymakers have easy access to trustworthy data.” In essence, easy access to data is a stimulus for research that encourages creativity and innovation.

Today also, technological advances mean that there are already large volumes of data in electronic forms and thus have opened the way for e-research or the use of information and communication technology to facilitate research. Furthermore, the

nature of scientific research in the twenty-first century as observed by NSFP cited in Kar et al (2020) is more collaborative and data intensive. The implication is that massive amounts of born-digital and digitised data are being created at a rapid rate in a wide range of ways. According to NSFP, digital data are the product of research and serve as the foundation for new theories that further advance knowledge and encourage innovation. As data is re-used and shared, larger amounts are being produced for additional analyses and interpretation. To that extent, data will continue to grow. Given these changes, the need for professionals with data-handling competencies will increase.

Data librarianship as a career is not out of place for library and information science professionals given that the traditional areas in librarianship such as reference service, and support to academic researchers position librarians to play this role (Semeler and Pinto, 2020). Additionally, librarians, especially academic librarians, “have long provided services to find and access research outputs, [and to that extent are] a natural fit to manage inputs such as data” (Fuhr, 2022).

As information professionals, librarians provide information services to an array of users including researchers, and today, “there is a growing demand for data services and research data management at libraries/information centres in universities, government public institutions and corporations” (AFLIA LETIS, 2022). Unfortunately, AFLIA LETIS (2023) further observes that while there is a high demand for data services across many libraries and information centres in institutions in Africa, there is a shortage of data librarians with the necessary skill sets to meet this demand.

The dearth of employment opportunities in Nigeria puts a demand on individuals including library and

information science professionals, to leverage their skills and competencies for job creation for themselves. Gaining the necessary skills and competencies in data services will open new career options for library and information science professionals in Nigeria and enable them to exploit the opportunities provided by big data. They can become data librarians.

This paper focuses on data librarianship as a career opportunity for library and information science professionals in Nigeria. The need for this study stems from the obvious dwindling employment opportunities for graduates including graduates of LIS in Nigeria. Additionally, Federer (2018) posits that data librarianship is an emerging field. In Nigeria, there is a dearth of literature on data librarianship. However, Anyaoku (2019) conducted research on data librarianship to determine medical librarians’ awareness of open data, perceptions, and services in medical libraries in Nigeria. In the same vein, Ohaji et al (2019) in their paper titled “The Role of a Data Librarian in Academic and Research Libraries” presented “a role blueprint to facilitate an understanding of the academic and research librarian's role in research data management and e-research.” However, Ohaji’s study focused on the dimensions of the role of a data librarian in New Zealand research organisations. To that extent, this paper will further add to the literature emanating from Nigeria/Nigerians.

The paper aims to highlight data librarianship as a career opportunity for library and information science professionals in Nigeria. the paper employed a narrative literature research design to investigate and highlight the significance of data librarianship as a viable career opportunity for library and information science (LIS) professionals in Nigeria. The research primarily focused on the critical analysis of existing literature, scholarly

articles, reports, and relevant documents related to data librarianship and the LIS profession in the Nigerian context. Specifically, the objectives of the paper are to define the concept of data librarianship, define the concept of data librarian, highlight the responsibilities of data librarians, explore the skills and competencies needed for a career in data librarianship and highlight the training needs of data librarians.

Definition of concept of data librarianship

For a very long time, human beings have generated data from the activities that they have engaged in. However, the sheer amount of data that is linked to digital technology that is generated today from the activities of human beings is enormous (Semeler and Pinto, 2020). Today, data has become a major tool and resource and no meaningful research can be carried out without data in one form or another. As a result, there is a growing push for data storage and preservation. Thompson (2017) explains that “in addition to the clear need for better techniques for data storage and access, regulatory frameworks have played a role [in the growth of data for research. Consequently, “many government bodies, funding agencies, and academic journals are mandating data preservation and sharing as part of a general push for greater academic transparency in research.” The need for these regulatory frameworks is to ensure that data is shared and that research can be replicable. This is among the reasons that data librarianship is today considered an important service that librarians and information centres should render to their communities.

Tracing the history of data librarianship or data service across countries, Thompson (2017) explains that its origins in “Canada and the U.S. often began with the need to deliver what were then

considered large quantities of government data on tape to local researchers.” The founding of national data archives in Europe and parts of Africa facilitated data service in those areas. In China, it arose from the need to track and manage the quantities of datasets that were produced by faculty members. This is a need that universities around the globe are grappling with.

However, a major event in the history of data librarianship was the Conference on Data and Program Library Services which was held in conjunction with the World Sociology Congress Meeting in Toronto in 1974. It was at this meeting that IASSIST was founded by librarians and archivists from Canada, the U.S., and Europe (Thompson, 2017).

Data librarianship is an area that is under-exploited in developed countries although it has gained some ground in developed countries. It is also not incorporated in the library and information science curricula of most library and information science programmes in developing countries. The term data librarianship or data-driven librarianship as described by Ashiq and Warraich (2022) is a combination of information science, data science, and e-science fields. AFLIA LETIS Section (2022) posits that data librarianship is concerned with managing research data as well as using it as a resource to create new knowledge through further manipulation and research. This explanation should be viewed from the perspective that the drive for open data, open science, and open research among other arms of the open access movement has made possible the availability of/and access to data to a wider research community. Access to data makes it possible to reuse and manipulate data in different settings thus, creating new knowledge.

Semeler and Pinto (2020) posit that the emphasis of data librarianship is the creation of library services related to the use

of digital data, data repositories, data curation, and data management in libraries. This suggests that data librarianship is perceived as an information service that should be rendered by libraries and, consequently, librarians. Usually, the data is stored and preserved in electronic forms thus making it possible to be discovered, accessed, and re-used beyond the individuals or entities that originated/created the data.

Thompson (2017) notes that over time, the issue of how to handle large quantities of data has moved from being a technical one to being one of documentation, description, sharing, and knowledge transfer, and given the experience of librarians with cataloguing, organisation, and information literacy, they are uniquely positioned to provide data management services.

Definition of concept of data librarian

According to Thompson and Kellam (2016), data librarians and archivists, positions emerged in response to the varied needs of researchers and data producers. At first, these professionals organised and communicated informally through various venues. Several definitions of the term data librarian have been given by IGI Global (2023). The first definition sees a data librarian as an information specialist with technical competence in data management, archiving, and dissemination solutions as well as data mining and visualization. This definition gives an insight into the skills and competencies that a librarian must possess to take up the job of data librarianship. This shows that the individual cannot become a data librarian with only the basic or traditional librarianship skills/competencies. However, library science principles can prove useful if they are applied to solve problems and to provide new services related to research data (Research Data Alliance, 2015).

The second definition says a data librarian is a librarian who is engaged in managing research data, using research data as a resource, or supporting researchers in these activities. In essence, the data librarian doesn't just manage the data. The individual is also involved in the processing of the data in such a way that will make it useful or supportive of researchers in their work. This implies that he/she is not a mere custodian who simply provides access to data. He/she is actively involved in the processing of data to put it in usable forms.

The third definition sees data librarians as professional library staff engaged in managing research data, using research data as a resource, or supporting researchers dealing with data. They must equip [research] participants with the necessary knowledge to develop and implement services for research data management. This definition focuses on the data librarian as an employee who functions from his/her library. However, no rule says that such an individual may not take up this role outside library settings as the explanations by Leverkuhn (2023) indicate.

Leverkuhn's (2023) definition says a data librarian works with many media formats including hard text and analogue audio, as well as many digital media formats. The author went ahead to show the range of organisations that a data librarian can work with. This includes maintaining data for any type of library, from a small public library to a corporate or government archive. The individual maintains data for the entity. This is instructive because all kinds of organisations maintain data so the data librarian has a wide employment pool.

Data librarians are 'people originating from the library community, trained and specialising in the curation, preservation, and archiving of data' (Swan and Brown cited in Ohaji et al, 2019). In

their explanation, Ohaji et al note that the implication is that the “data librarian role is a professional position within academic and research librarianship that carries out e-research and/or research data management (RDM) support tasks.”

The foregoing amplifies the notion that librarians can effectively provide data services.

Responsibilities of data librarians

It should be noted that the responsibilities of a data librarian may differ somewhat depending on the need(s) of the hiring institution or organisation, but generally speaking, the responsibilities will include collecting, processing, validating, and storing data. They will also be expected to support the work of researchers. A look at some job advertisements for data librarians spells out some of their general and specific responsibilities.

The general duties of a data librarian according to Clemson University (n.d.) in their advertisement of a job vacancy for a data services librarian include developing and providing services that support faculty, researchers, and students in the discovery, use, preservation, and visualization of data. The individual will also coordinate and teach instruction sessions and programming related to research data management and provide consultations for researchers in collaboration with subject librarians. In their job description marketplace, Liber (2018) provides a job description template for any library organisation seeking to recruit a data librarian. They identify five core responsibilities of this strategically important post:

- i. Contribution to the development of services on research data management
- ii. Training PhD students and researchers on research data management, description, archiving, and dissemination

- iii. Advising researchers on practical solutions to manage, archive and disseminate their research data in a relevant way (finding a repository, setting up local or national partnerships)
- iv. Supporting researchers on legal matters when dealing with research data, especially personal data
- v. Taking part in the development of services to researchers on archiving and dissemination of research outputs.

Skills and competencies needed by data librarians

Semeler et al. (2017) note that data science provides new methods and practices for data librarianship. They further posit that while a data librarian need not become a programmer, statistician, or database manager, the individual should be interested in learning about the languages and programming logic of computers, databases, and information retrieval tools. In their opinion, numerous kinds of scientific data research provide opportunities for a data librarian to engage with data science. This is important because the data librarian is mostly involved in e-research and no one without the mentioned skill sets can work in that position effectively.

In their job description marketplace template, Liber (2018) outlines the skills and competencies that the data librarian must possess as follows:

- i. Good knowledge of the research environment
- ii. Knowledge of ... [preferred language], institutional landscape of actors proposing services to researchers on research data management
- iii. Expertise in research data management (description, archiving, dissemination)

- iv. Skills in database production
- v. Skills in copyright, legal and ethical matters related to research data.

Training Needs of Data Librarians

Every job requires some expertise. Usually, in institutions of learning, students are exposed to the first-level requirements for beginning their careers in a specified professional field. However, basic professional training is rarely sufficient for a lifetime career. In essence, as one continues in a job position, new demands will be made on him/him that will require him to acquire some training to function effectively.

On the other hand, an individual may be stepping into a completely novel career path. It is also important that the individual understands what he/she needs to function in such a role. Where this is not addressed, it is unlikely that the individual will function effectively. These requirement(s) are identified as training needs.

In their explanation of training needs, as it relates to data librarians, Ohaji et al. (2019) define it as “the gaps in the skills and knowledge for the data librarian role with research data services which can be filled with appropriate professional development.” They further posit that the basis for identifying the training needs of prospective data librarians are researchers' needs profiles and research data. This is important because the data librarian like any librarian in an organisation must understand the profiles of their clientele. They must also understand the resources that they are working with. Ohaji et al (2019) specifically identified the following training needs for the data librarian role:

- i. Research (understanding the areas around research including research cycles, research project management, and e-research)
- ii. Technology (understanding basics around technology, available tools,

what needs to be done with high-performance computers, and engaging with ever-changing technologies)

- iii. Information management (understanding of information governance and access principles or [international or existing] standards, basics regarding domains, information management and informatics, and understanding interchange standards)
- iv. Research data (research data, data collection, and its purpose, research data curation and management, data literacy, machine discovery, and business analysis)
- v. Metadata (metadata standards)
- vi. Organizational knowledge (including policies that govern various aspects of the organization)
- vii. Customer relationships (including customer training)
- viii. Interpersonal and communication skills

Cognizant of the fact that it is important to devise means to meet these needs, Ohaji et al (2019) offer two broad training options for meeting the training needs of the role. These are personal opportunities and organizational opportunities. In their view, personal opportunities include:

- i. working with librarians and other professionals who are experts in the area; being exposed to other support services in the area
- ii. conducting research with technology for hands-on experience
- iii. personal reading
- iv. talking to researchers about how they use data, the practices they use to manage data, and what sort of tools or programmes they use.

Organizational training supports arise from the fact that it is not only the individual but also the organisation that he/she works

for that benefits from his expertise. Moreover, most individuals are hardly in a position to provide all the funding required for training. Organisational training opportunities as enunciated by Ohaji et al. include the following:

- i. Organizational support for training in the form of sponsored formal learning such as courses or training programmes in a university, in-house training, or bringing in an expert singly or in partnership with other libraries.
- ii. Exchange course arrangements with other libraries or other organizations doing research data management; sponsorship to attend professional meetings such as conferences and workshops
- iii. Professional collegial or peer support to someone new to the role
- iv. Learning on the job through pilot data management projects and conferences.

In their study on assessing scholarly communication and research data training needs of librarians who wish to support researchers, Bresnahan and Johnson (2013) identified in the order of priority the following among others:

- i. *Data lifecycles* (this is also referred to as the information life-cycle. It consists of the entire period that data exists in a system. This life cycle encompasses all the stages that your data goes through, starting from the first time it is captured).
- ii. *Data manipulation and analysis* (Data collected, organised, protected, stored, and subsequently analysed for the desired end. Management of data makes it possible to make sense of vast amounts of data).
- iii. *Data sharing* (Data is not stored for storing sakes. It is important to understand how stored data can be

made available to multiple applications, users, or organizations. This is the essence of open data/open access).

- iv. *Data documentation and metadata* (This consists of all the information required to interpret, understand, and use data. Improper or bad documentation of data will prevent data preservation. On the other hand, metadata ensures that data appears in a standardised format).
 - v. *Data preservation* (Data must be conserved and maintained to maintain its safety and integrity. This is done through formal activities that are backed by policies, regulations, and strategies which aim to protect and prolong both the existence and authenticity of data and its metadata).
 - vi. *Data management plans* (This outlines among other things what data will be acquired or produced during research and how such data will be managed, described, and stored as well as what standards are to be used and data handling and protection during and after project completion).
 - vii. *Data citation* (How should data be attributed or referenced in research. The citation includes title, source, and owners of the data).
 - viii. *Institutional repositories* (An institutional repository is an archive for collecting, preserving, and disseminating digital copies of the intellectual output of an institution, particularly a research institution.
- In addition to the above training needs, Federer (2018) sought to better define data librarianship by exploring the skills and knowledge that data librarians utilize and the training that they need to succeed. The findings revealed that in addition to some

technical aspects of training, participants rated the following as highly important 1. developing relationships with researchers, faculty, etc., 2. oral communication and presentation skills, 3. teamwork, and interpersonal skills, 4. written communication skills, and 5. one-on-one consultation or instruction.

While the above soft skills are by no means technical, it is important to note that they are equally important skills that anyone working to support researchers must possess to function effectively.

Conclusion

The high level of unemployment in Nigeria makes it imperative that information professionals should explore opportunities for self-employment. Fortunately, advancements in technology have opened up opportunities that were hitherto not explored. Today, big data plays an important role in society, and library and information professionals can key into it by being providers of data services. With the right skills and competencies, interested library and information professionals can function in data librarianship. Data librarianship has gained much ground in academic libraries and among librarians in developed countries, however, it is little known in developing countries like Nigeria. Data librarianship is related to the use of digital data, data repositories, data curation, and data management. With the current move to make data available and accessible to researchers for re-use by a larger community of researchers, a career in data librarianship is possible. A data librarian plays several roles with the ultimate responsibility of supporting researchers in their work. However, while librarians can apply the principles of librarianship such as cataloguing, organizing and preservation, a career in data librarianship goes beyond the traditional skill sets that are acquired in

library schools. To that extent, an individual who desires a career as a data librarian must acquire some training to function effectively. This study has highlighted the concept of data librarianship and data librarian. It has also outlined some responsibilities and training needs of data librarians as well as some avenues that can be employed to meet training gaps.

Based on the literature review, it is obvious that data librarianship is not a much-explored service in Nigeria. This may not be unconnected to the lack of presence of data librarianship in the library and information science curriculum. To that extent, several recommendations are made

1. Library and information science programmes in Nigeria should introduce data librarianship into the curriculum. It is also important to employ academic staff who are knowledgeable/competent in data librarianship.
2. Librarians should develop their skill sets through training. Data librarianship requires skill sets and competencies beyond the traditional practice of librarianship. To function as a data librarian, a professional must acquire the necessary competencies. Because data librarianship is not prominent in library and information science curricula in Nigeria, interested librarians should leverage continuing professional opportunities that are offered over the Internet. Furthermore, with the right skills and competencies, librarians can create jobs for themselves in data librarianship.
3. Academic libraries should become more involved in data

services to support the research of their communities. The age of data requires that services that are geared towards data are offered by libraries. The inability of libraries to provide these services will result in side-tracking of the library and will question the continuing existence of librarians.

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