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Personal factors influencing Academic` Librarians` Strategies for Promoting Data Literacy in Jigawa State Polytechnics

Sani Lawan¹; Nura Haruna² & Bashir Ahmed Muhammad³

¹Department of Library and Information Science
Jigawa State College of Remedial and Advanced Studies, Babura, Nigeria
+2348132804158 Sanilawankezo@gmail.com

²Department of Library and Information Science
Jigawa State Polytechnic for Information and Communication Technology, Kazaure, Nigeria
+2348133222014 nuraharuna2008@gmail.com

³Dr. M. Adamu Digital Library,
Hussaini Adamu Federal Polytechnic, Kazaure, Jigawa State, Nigeria
+2348130196608 malbashirkzr@gmail.com

ABSTRACT

This was carried out to investigate the Personal factors influencing Academic` Librarians` Strategies for Promoting Data Literacy in Jigawa State Polytechnics. The study employed Descriptive survey design. The population of the study comprised of all thirty three (33) Academics librarian within four (4) Polytechnics in Jigawa State Nigeria. The sample size of the study is all the Thirty three (33) Academic librarians because the manageable number of the population. Data was collected using self-structured questionnaire and were analyzed using descriptive statistical tools involving frequency count and percentages were used to analyze the data. The study discovered that Academic librarians in Jigawa State polytechnics are predominantly mid-career professionals with bachelor's degrees and 6-10 years of experience. It also reveals that personal factors significantly influence librarians` engagement in data literacy promotion. Attitude toward data literacy and digital competence emerged as the most influential personal factors. The study also found that librarians employ traditional strategies such as library orientation programs and user education workshops, while more collaborative and advanced approaches are less frequently used. The finding also shows that the major challenges identified consist of lack of data literacy training, inadequate ICT infrastructure, limited institutional support, and time constraints. The study made the following recommendation: Professional development programs, Institutional support, Policy integration and collaborative engagement need to be organized, provided, incorporated and collaborated with academic staff and management to include data literacy instructions into teaching, learning and research activities

Keywords: Academics Librarian; Data literacy; Personal factors; Polytechnics

1. INTRODUCTION

The rapid development of digital technologies and the heavy reliance on data in higher institutions of learning have significantly transformed the roles of academic libraries worldwide. This development creates opportunities and challenges, increasing the need for “data literacy” which include the skills and abilities needed to find, evaluate, organize, analyze, visualize, sharing, and using data ethically in research and decision-making. Similarly, it is the ability to access, understand, critically evaluate, manage, analyze, present, and use data ethically. (Marzal, 2013; Bauder et al., 2021; Choi, Kyung-Hee & Cho, Dong-Sung 2023).

However, data literacy has become an essential competency for students, teachers and researchers (Carlson et al., 2011; Koltay, 2015). As academic librarians are expected to support data literacy development through instruction, workshops seminars, consultation, and research data services (Cox et al., 2017; Tenopir et al., 2017). However, the effectiveness of these efforts often depends not only on institutional resources but also on the personal characteristics and competencies of librarians.

Personal factors such as educational background, professional training, digital competence, professional experience, and attitudes toward emerging technologies play a critical role in shaping librarians’ performance and strategic engagement in data literacy initiatives (Aharony, 2014; Tang & Tseng, 2017). In developing countries, including Nigeria, disparities in digital skills development, infrastructure, and professional training opportunities may influence how librarians approach data literacy promotion (Ibrahim et al., 2022). Despite the growing importance of data literacy in higher institution of learning, limited attention has been given to how these personal factors affect academic librarians’ strategies, particularly within Jigawa State polytechnics Nigeria, thus, this This study examines the personal factors influencing academic librarians’ strategies for promoting data literacy in Jigawa State Polytechnics.

1.2 Statement of the problems

The growing importance of data in higher education has made data literacy an essential competency for effective research, teaching, and decision-making. Academic libraries are increasingly expected to play a significant role in promoting data literacy by supporting students, researchers, and faculty through training, consultations, and research data services (Carlson et al., 2011; Cox et al., 2017). Consequently, academic librarians are required to possess adequate knowledge and competencies to guide users in accessing, evaluating, managing, analyzing, and ethically using data in academic environments (Koltay, 2015).

However, despite the recognition of data literacy as a critical component of contemporary librarianship, many academic libraries in developing countries still face challenges in effectively promoting these skills among their users (Tenopir et al., 2017). In Nigeria, particularly within polytechnic institutions, the promotion of data literacy remains limited and inconsistent. Although some libraries attempt to introduce data related services, the level of implementation and effectiveness of such initiatives often varies across institutions and among librarians (Ibrahim et al., 2022).

One possible explanation for this variation lies in the personal characteristics of librarians. Personal factors such as educational background, professional training, digital competence, work experience, and attitudes toward emerging technologies can significantly influence librarians’ engagement with data-related services and their ability to promote data literacy effectively (Aharony, 2014; Tang & Tseng, 2017). Librarians who lack adequate training or confidence in data related tools may face difficulties in developing strategies that support users’ data literacy needs.

Despite the growing importance of data literacy in higher institutions of learning, limited empirical studies have examined how personal factors influence academic librarians’ strategies for promoting data literacy, particularly in Nigerian polytechnics. Existing studies tend to focus on digital literacy or research data management without sufficiently exploring the role of librarians’ personal characteristics in shaping data literacy initiatives. This gap in the literature highlights the need for further investigation.

Therefore, this study examines the personal factors influencing academic librarians’ strategies for promoting data literacy in polytechnics in Jigawa State, Nigeria. Understanding these factors will contribute to improving librarians’ professional development, strengthening data literacy competencies,

and enhancing the role of academic libraries in supporting teaching, learning, and research in higher institutions.

1.3 Objectives

- i. To explore personal factors affecting academic librarians' performance in data literacy roles.
- ii. To evaluate current practices and challenges associated with promoting data literacy in academic libraries in Jigawa State higher institutions.
- iii. To examine the strategies librarian used to promote data literacy among librarian and library users

2.0 REVIEW OF RELATED LITERATURE

Data literacy in academics libraries

Data literacy has become an essential competency in academic libraries due to the rapid advancement of digital technologies and the increasing reliance on data-driven research in higher education. Data literacy refers to the ability to locate, evaluate, interpret, manage, and ethically use data for research and decision-making purposes (Koltay, 2017). As research increasingly depends on complex datasets, academic librarians are expected to develop the skills necessary to assist researchers and students in managing and effectively using data.

Globally, academic libraries are expanding their roles beyond traditional information services to include research data management, data curation, and data literacy training. Universities in North America and Europe have established specialized data librarian positions to support researchers in managing and analyzing research data (Pratama, 2025). In addition, academic libraries organize workshops, consultations, and instructional programs aimed at improving users' data literacy skills and supporting the research lifecycle (Carlson & Johnston, 2015).

However, the development of data literacy initiatives in many African countries, particularly Nigeria, remains limited. Although higher institutions are gradually adopting digital technologies, the integration of data literacy into academic library services is still developing (Koltay, 2017). This situation underscores the need to examine the competencies of librarians and their readiness to support data literacy initiatives within Nigerian academic libraries.

Personal Factors and Librarians' Competence

Personal factors that influence librarians' competence in promoting data literacy include educational background, professional training, work experience, and attitudes toward technology. Librarians who participate in professional development programs and technology-related training are more likely to demonstrate stronger digital competencies and confidence in delivering data-related services (Ibrahim et al., 2025). Similarly, positive attitudes toward technology encourage librarians to adopt digital tools and electronic information resources that enhance service delivery (Agim & Azolo, 2025).

Challenges in Promoting Data Literacy Programs

Despite the growing recognition of data literacy in academic libraries, several challenges hinder the effective promotion of data literacy programs in Nigerian tertiary institutions. These challenges include inadequate technological infrastructure, limited professional development opportunities, and insufficient institutional support. Outdated digital facilities and poor internet connectivity restrict libraries' ability to provide effective data management and data literacy services (Haruna et al., 2025). Consequently, strengthening infrastructure, professional training, and institutional commitment is essential for improving the promotion of data literacy in academic libraries.

3. METHODOLOGY

Descriptive survey design was used to investigate the personal factors influencing academic librarians' strategies for promoting data literacy in Jigawa State Polytechnics which enables the researcher to collect data from members of a given population on their views, opinion, attitude, beliefs and perception based on the responses of the population. The population of the study comprised of all thirty three (33) Academics librarian within four (4) Polytechnics in Jigawa state. The sample size of the study is all the

Thirty three (33) Academic librarians because the manageable number of the population. Data was collected using self-structured questionnaire and analyzed using descriptive statistical tools involving frequency count and percentages were used to analyze the data.

4. RESULT AND DISCUSSION
Section A: Demographic information

Table 1.1: Age distribution

Age	Frequency	Percentage
Under 25 years	2	6.06
25 _ 34	7	21.21
35 _ 44	18	54.54
45 _ 54	4	12.12
2	2	6.06

Source: Questionnaire Administered

The table above shows that majority of the respondents were aged 35 to 44 years (54.54%) indicating mid- career professionals dominate the sample. Whereas the - next largest group is 25 to 34 years (21.21%), showing a good representation of younger academic librarians. However, the under 25 years and 55 and above age groups each have the smallest share at 6.06%. Meanwhile, the distribution is slightly right skewed towards younger and middle-aged participants.

Table 1.2: What is your Highest Educational Qualification?

Qualification	Frequency	Percentage
National Diploma	5	15.15
Bachelor's degree	17	51.51
Master's degree	9	27.27
PhD	2	6.06

Source: Questionnaire Administered

The table above point out that Most of the respondents hold a Bachelor's degree (51.51%), reflecting typical academic librarian qualifications, similarly, a Master's degree holders are the second-largest group with (27.27%). The National Diploma holders make up 15.15%, indicating a smaller proportion with diploma-level qualification. Moreover the Few is (6.06%) have PhDs, suggesting limited doctoral-level representation among respondents within Jigawa state polytechnics.

Table 1.3: How many years have you worked as Academic Librarian?

Years	Frequency	Percentage
Less than 1 year	2	6.06
1 - 5 years	6	18.18
6 – 10 years	20	60.60
More than 10 years	5	15.15

Source: Questionnaire Administered

The table above present that the Majority of the respondents have 6 to 10 years of Working experience with a sixty four percent (60.60%), indicating substantial experience in the profession. Furthermore, The 1 to 5 year's group represents 18. 18%, showing some early-career librarians. Similarly Very few among academic librarian have less than 1 year or more than 10 years (each approximately 15.15%), indicating limited representation of novices and very senior librarians.

Table 2.1 Influence of Personal Factors on Data Literacy Promotion Strategies

Personal factors	High influence %	Moderate influence %	Low influence %
Educational qualification	75	18	7
Professional training	65	21	14
Digital competence	78	13	9
Attitude toward data literacy	82	10	8

Source: Questionnaire Administered

The results reveals that attitude toward data literacy has the highest level of influence, with 82% of respondents indicating a high influence on their data literacy promotion strategies. Followed by digital competence (78%), educational qualification (75%), and professional training (65%). It also indicate that the low percentage responses across all factors suggest that personal attributes play a significant role in shaping librarians’ engagement with data literacy initiatives.

Based on this result librarians who possess positive attitudes and strong digital skills are more likely to adopt effective and innovative strategies for promoting data literacy among library users.

Table 2.2 Data Literacy Promotion Strategies Used by Academic Librarians

Promotion strategy	Frequently used (%)	Occasionally used (%)	Rarely used (%)
User education workshop	68	27	5
One on one data consultation	60	33	7
Online tutorial and guide	65	25	10
Collaboration with academic staff	58	37	5
Library orientation programs	75	20	5

Source: Questionnaire Administered

The Table 2.2, reveals that library orientation programs with (75%) and user education workshops (68%) were the most frequently used strategies for promoting data literacy. This shows that librarians rely frequently on structured and traditional instructional approaches to deliver data literacy content. Meanwhile, strategies such as collaboration with academic staff and one-on-one consultations were used less frequently, suggesting potential areas for improvement and innovation.

Table 2.3 Challenges Affecting Data Literacy Promotion

Challenges	Agree (%)	Disagree (%)
Lack of data literacy training	83	17
Inadequate ICT infrastructure	79	21
Limited institutional support	70	30
Time constraints and workload	60	40

Source: Questionnaire Administered

The table 2.3. Above indicated that lack of data literacy training with the highest percentage of (83%) was the most significant challenge faced by librarians, followed by inadequate ICT infrastructure (79%). Additionally, limited institutional support and time constraints were identified as major obstacle to effective data literacy promotion.

These challenges highlight the interaction between personal and institutional factors, indicating that even librarians with strong competencies may be constrained by organizational limitations.

Summary of Findings

Based on the data collected and analyzed the following are major findings:

- i. The study reveals that Academic librarians in Jigawa State polytechnics are predominantly mid-career professionals with bachelor's degrees and 6-10 years of experience.
- ii. The personal factors significantly influence librarians’ engagement in data literacy promotion. Attitude toward data literacy and digital competence emerged as the most influential personal factors.

- iii. The findings also reveals that librarians commonly employ traditional strategies such as library orientation programs and user education workshops, while more collaborative and advanced approaches are less frequently used.
- iv. The finding also shows that the major challenges identified consist of lack of data literacy training, inadequate ICT infrastructure, limited institutional support, and time constraints.

5. CONCLUSION

This study concluded that personal factors play a significant role in determining the effectiveness of academic librarians' strategies for promoting data literacy in Jigawa State polytechnics. Librarians who possess positive attitudes toward data literacy, higher digital competence, and relevant professional training are more likely to actively engage in data literacy initiatives.

However, the effectiveness of these strategies is constrained by institutional challenges such as inadequate ICT infrastructure and limited support for professional development. The study therefore concludes that enhancing librarians' personal competencies, alongside strengthening institutional support mechanisms, is essential for effective data literacy promotion in academic libraries.

RECOMMENDATIONS

Based on the research findings and conclusions, the study the makes the following recommendations:

- i. Professional Development Programs: Jigawa state polytechnics both state owned and federal should organize regular training workshops, seminars, and certification programs to improve academic librarians' data literacy skills and digital competence.
- ii. Institutional Support: Management of tertiary institutions should provide adequate ICT infrastructure, including computers, internet connectivity, and access to data analysis tools, to support data literacy initiatives.
- iii. Policy Integration: Data literacy should be incorporated into institutional library policies and academic programs to ensure sustained commitment and structured implementation.
- iv. Collaborative Engagement: Librarians should collaborate with academic staff to include data literacy instruction into teaching, learning, and research activities.

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