

OPEN ACCESS AWARENESS, SCHOLARLY COMMUNICATION AND RESEARCH DATA MANAGEMENT AS PREDICTORS OF KNOWLEDGE DISSEMINATION AMONG LIBRARIANS IN SELECTED UNIVERSITY LIBRARIES IN OSUN STATE, NIGERIA

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Abstract

The transition from conventional scholarly publishing to open, data intensive and mediated research environments has expanded the responsibilities of academic librarians for knowledge dissemination. Evidence on how open access awareness, scholarly communication and research data management jointly relate to knowledge dissemination among librarians in Nigerian university libraries nevertheless remains limited, in part because these three domains are usually studied separately. This study examined the relationships among these variables among librarians in three university libraries in Osun State, Nigeria. A cross sectional survey design was adopted. The population comprised 46 professional librarians at Osun State University, the University of Ilesa and Obafemi Awolowo University, and total enumeration was used rather than sampling because the population was small and fully enumerable. Data were collected using a questionnaire validated by three Library and Information Science experts and pilot tested among five librarians outside the study sites, yielding a Cronbach alpha coefficient of .79. All 46 instruments were returned and usable. Data were analysed using descriptive statistics, Pearson product moment correlation and multiple regression at the .05 significance level. Findings showed high open access awareness (grand mean 3.65), high knowledge dissemination practice (3.61), moderate scholarly communication practice (3.40) and emerging research data management practice (3.07). All three predictors were positively and significantly related to knowledge dissemination: open access awareness ($r = .682, p < .001$), scholarly communication ($r = .641, p < .001$) and research data management ($r = .598, p = .001$). The regression model was significant, $F(3, 42) = 21.90, p < .001$, with $R = .781$ and $R^2 = .610$, the three predictors jointly accounting for 61.0 percent of the variance in knowledge dissemination. Open access awareness emerged as the strongest predictor ($\beta = .421$), followed by scholarly communication ($\beta = .337$) and research data management ($\beta = .294$). The ordering is informative: the domain most firmly established in professional practice contributes most, while the domain still emerging contributes least, which suggests that the contribution of each competency is conditioned by how far institutional support for it has developed. Inadequate ICT infrastructure and poor funding were rated the most severe constraints. The study recommends targeted investment in research data management capability, which currently represents the largest gap between professional expectation and institutional provision.

Keywords: open access awareness; scholarly communication; research data management; knowledge dissemination; academic libraries; librarians; Nigeria; open scholarship

1. Introduction

Knowledge dissemination is a core function of university libraries. Academic libraries supply the infrastructures, expertise and services through which scholarly knowledge is organised, preserved and circulated, and the forms that work takes have changed substantially as publishing has moved online and as research has become more data intensive.

This transformation carries particular significance in developing higher education environments, where subscription costs, technological inequality and limited research infrastructure constrain what institutions can provide. For a Nigerian university library, open scholarship is not only a normative commitment but a practical response to a subscription market whose prices are set in currencies that have appreciated sharply against the naira.

Three professional domains structure this study. **Open access awareness** encompasses librarians' knowledge of open access principles, publishing models, repositories, licensing and copyright. **Scholarly communication** refers to the system through which research is created, evaluated, disseminated and preserved, and to librarians' participation in it. **Research data management** covers the systematic organisation, storage, description, preservation and sharing of research data.

These three are usually treated separately in the literature, each with its own body of research and its own professional development pathway. That separation is analytically convenient but it leaves an important question unanswered. Librarians do not deploy these competencies in isolation; they draw on them together in the course of the same work. The question of practical interest is therefore not whether each matters but how much each contributes once the others are accounted for, since that determines where limited professional development resources should be directed.

Evidence from Nigeria suggests that research data management is becoming an established area of academic library practice, though provision remains uneven across institutions (Adekoya et al., 2026). Whether that unevenness translates into differences in knowledge dissemination has not been established empirically in this setting.

1.1 Statement of the Problem

The digital transformation of scholarly communication has created opportunities for university libraries to extend their contribution to knowledge dissemination through institutional repositories, open access advocacy and data services. In Nigerian university libraries the development of these services appears uneven. Librarians are increasingly expected to support open scholarship, yet the extent of their awareness, the depth of their engagement and the maturity of their data practices vary, and the relative contribution of each to actual dissemination outcomes is not known.

The problem is specific in Osun State, where university libraries operate within different institutional environments and possess different levels of infrastructure and policy support. Without evidence on the relative contribution of these factors, library administrators must allocate training and investment on assumption rather than on measurement, and may reasonably invest in the competency that is most visible rather than the one that would yield most.

1.2 Objectives of the Study

The general objective is to examine the relationships between open access awareness, scholarly communication, research data management and knowledge dissemination among professional librarians in the selected university libraries. Specifically, the study seeks to:

- (i) determine the level of open access awareness among professional librarians;
- (j) assess the extent of librarians' engagement in scholarly communication practices;
- (k) examine the level of research data management practices;
- (l) determine the level of knowledge dissemination practices;
- (m) examine the relationships between the three predictors and knowledge dissemination; and
- (n) identify the major institutional and professional challenges affecting knowledge dissemination.

1.3 Hypotheses

Four null hypotheses were tested at the .05 level of significance.

H₀₁: There is no significant relationship between open access awareness and knowledge dissemination.

H₀₂: There is no significant relationship between scholarly communication practices and knowledge dissemination.

H₀₃: There is no significant relationship between research data management practices and knowledge dissemination.

H₀₄: Open access awareness, scholarly communication and research data management do not significantly jointly predict knowledge dissemination.

2. Literature Review

2.1 Knowledge Management and Knowledge Dissemination

Knowledge management concerns the processes through which organisations create, capture, organise, share and apply knowledge. Applied to academic libraries, it supplies a useful frame because it treats dissemination not as the terminal act of making something available but as part of a cycle in which availability, discoverability, uptake and reuse are linked. Knowledge dissemination in this sense extends beyond deposit: it encompasses the processes through which research reaches, and is used by, the communities for which it is relevant.

2.2 Open Access and Open Access Awareness

Open access enables scholarly literature to be made available online without conventional price barriers and, under open licensing, without many permission barriers. Its relevance to Nigerian academic libraries is direct, since it alters the economics of access for institutions whose subscription budgets are constrained.

Awareness is the professional competency on which library contribution to open access depends. A librarian cannot advise on licensing, deposit or compliance without knowledge of publishing models, repository practice and copyright. Awareness is therefore treated here as a precondition for service rather than as an attitude.

2.3 Scholarly Communication

The Association of College and Research Libraries defines scholarly communication as the system through which research and scholarly writing is created, evaluated, disseminated and preserved (Association of College and Research Libraries, 2024). Librarians participate in this system in several capacities: as authors, as reviewers, as advisers to faculty on publishing decisions and as managers of the infrastructure through which outputs are circulated.

2.4 Research Data Management

Research data management has become increasingly important as research has become more data intensive and as funders and publishers have introduced data availability requirements. The FAIR principles articulated by Wilkinson et al. (2016) established findability, accessibility, interoperability and reusability as the standard against which data stewardship is assessed, and they have become the reference point for library data services internationally.

Adekoya et al. (2026) examined research data management services among librarians in Nigerian university libraries and found practice emerging but uneven, constrained by limited training, absent institutional policy and infrastructural gaps. The present study situates that finding within a comparative frame by estimating the contribution of data management alongside the two more established domains.

2.5 Research Gap

Three gaps motivate this study. First, existing research frequently examines open access, scholarly communication and research data management as separate professional domains, which makes their collective contribution difficult to assess. Second, a substantial proportion of the evidence on data management and scholarly communication comes from contexts with more mature research infrastructure, so its transferability to Nigerian conditions is uncertain. Third, no study has estimated the relative predictive contribution of the three domains to knowledge dissemination in a Nigerian university library setting, which is the specific contribution the present study makes.

3. Methodology

3.1 Research Design

A cross sectional survey design was adopted. The design permits description of the levels of each variable and examination of associations among them using correlation and regression. Because data were collected at a single point in time, the findings are to be interpreted as associations and statistical prediction rather than as evidence of causation.

3.2 Population and Enumeration

The population comprised 46 professional librarians across three university libraries in Osun State. Total enumeration was used rather than sampling, since the population was small enough to survey completely, which removes sampling error entirely.

Table 1: Distribution of professional librarians across the study sites

Institution	Professional librarians
Osun State University, Osogbo	9
University of Ilesa, Osun State	12
Obafemi Awolowo University, Ile-Ife	25
Total	46

Note. Total enumeration; all 46 librarians were surveyed.

3.3 Instrument, Validity and Reliability

Data were collected using a structured questionnaire measured on five point agreement scales. The instrument was subjected to face and content validation by three experts in Library and Information Science, who reviewed the adequacy, clarity, relevance and coverage of the items; their observations were incorporated before final administration. The instrument was pilot tested among five librarians not included in the main study, two from Adeleke University, Ede and three from Redeemer University, Ede, and returned a Cronbach alpha coefficient of .79, indicating acceptable internal consistency.

3.4 Data Collection and Analysis

Following institutional permission, questionnaires were administered directly to professional librarians in the selected libraries. Respondents were given one week to complete the instrument, with follow up communication to encourage timely return. All 46 questionnaires distributed were returned and usable, producing a response rate of 100 percent.

Descriptive statistics were used to address the first four objectives, Pearson product moment correlation to test the first three hypotheses, and multiple regression to test the fourth. The regression model is specified as

$$KD_i = \beta_0 + \beta_1 OAA_i + \beta_2 SC_i + \beta_3 RDM_i + \varepsilon_i \quad (1)$$

where KD denotes knowledge dissemination, OAA open access awareness, SC scholarly communication and RDM research data management for respondent i . Because the three predictors are estimated jointly, each standardised coefficient represents the contribution of that domain holding the other two constant, which is the property that permits their relative importance to be compared. Interpretation of mean scores followed the convention that values of 3.50 and above denote a high level, 2.50 to 3.49 a moderate level and below 2.50 a low level.

4. Results

4.1 Levels of the Study Variables

Table 2 reports item level and grand means for the four constructs. Open access awareness recorded the highest grand mean at 3.65, followed by knowledge dissemination at 3.61, scholarly communication at 3.40 and research data management at 3.07. On the interpretation convention adopted, the first two fall in the high band and the latter two in the moderate band.

Table 2: Levels of open access awareness, scholarly communication, research data management and knowledge dissemination

Construct and indicator	Mean	SD
Open access awareness		
Awareness of OA principles	3.98	0.82
Knowledge of institutional repositories	3.76	0.91
Awareness of Creative Commons licensing	3.45	0.88
Understanding of OA publishing models	3.67	0.79
Participation in OA advocacy	3.41	0.85
<i>Grand mean</i>	3.65	
Scholarly communication		
Publishing in journals	3.22	0.93
Conference paper presentations	3.58	0.81
Peer review participation	3.11	0.87
Use of academic networking platforms	3.44	0.89
Support for faculty publishing	3.67	0.76
<i>Grand mean</i>	3.40	
Research data management		
Data organisation and storage	3.29	0.90
Use of metadata standards	3.05	0.88
Data sharing and reuse	3.14	0.92
Training on RDM	2.98	0.95
Existence of RDM policy	2.87	0.91
<i>Grand mean</i>	3.07	
Knowledge dissemination		
Use of institutional repositories	3.71	0.78
OA advocacy to researchers	3.64	0.83
Visibility of research outputs	3.58	0.81

Construct and indicator	Mean	SD
Collaboration with academics	3.49	0.86
Grand mean	3.61	

Note. $N = 46$. Five point scale. Source: field survey (2026).

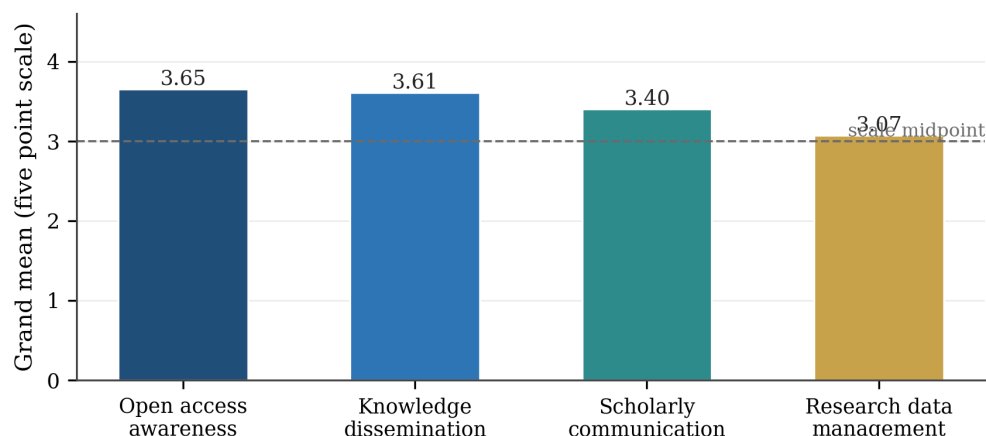


Figure 1: Grand means for the four constructs. The ordering places the two established professional domains above the scale band for high practice and the two developing domains below it.

The item level pattern within each construct is as informative as the grand means. Within open access awareness, the highest score attaches to knowledge of principles (3.98) and the lowest to participation in advocacy (3.41), indicating that awareness exceeds action. Within research data management, the two lowest scoring items across the entire instrument are training on data management (2.98) and the existence of a data management policy (2.87), both of which are institutional provisions rather than individual competencies. This is a consequential detail: the weakest element of the weakest construct is not a deficiency of the librarians but an absence in their institutions.

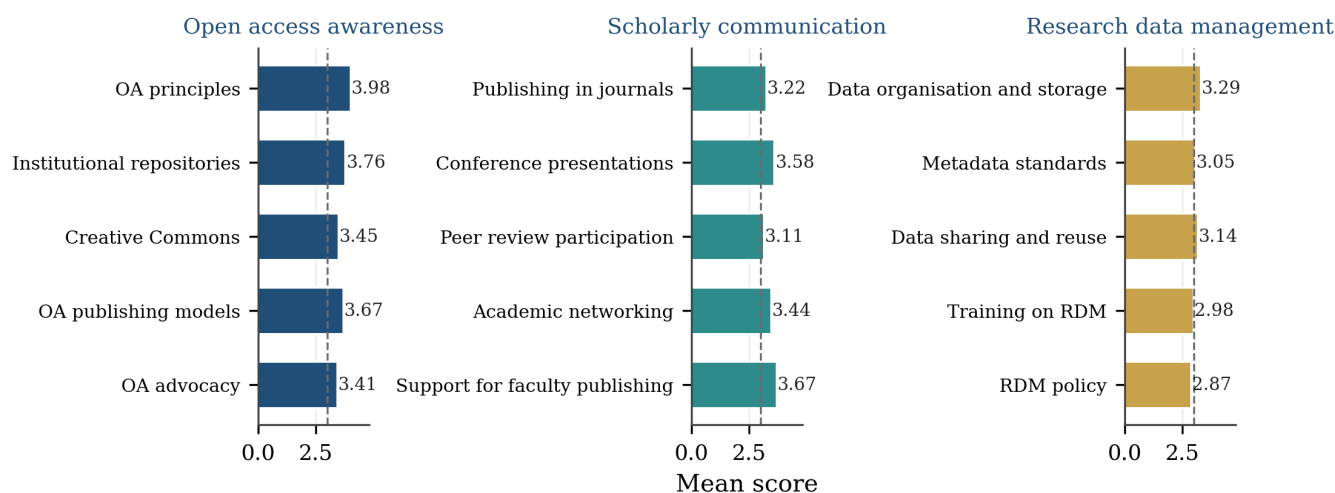


Figure 2: Item level means within the three predictor constructs. The broken line marks the scale midpoint. Within research data management, the lowest scoring items are training provision and the existence of institutional policy, neither of which is within the individual librarian's control.

4.2 Correlation Analysis

Table 3 reports the correlations between each predictor and knowledge dissemination. All three are positive and statistically significant, so the first three null hypotheses are rejected.

Table 3: Correlations between the predictors and knowledge dissemination

Hypothesis	Relationship	r	p	Decision
H_{01}	Open access awareness and knowledge dissemination	.682	<.001	Rejected
H_{02}	Scholarly communication and knowledge dissemination	.641	<.001	Rejected
H_{03}	Research data management and knowledge dissemination	.598	.001	Rejected

Note. $N = 46$. Correlations reported to three decimal places as in the source analysis. Source: field survey (2026).

4.3 Regression Analysis

Table 4 reports the multiple regression. The model is statistically significant, $F(3, 42) = 21.90$, $p < .001$, with $R = .781$, $R^2 = .610$ and adjusted $R^2 = .582$. The three predictors jointly account for 61.0 percent of the variance in knowledge dissemination, and the fourth null hypothesis is rejected.

Table 4: Multiple regression predicting knowledge dissemination

Predictor	Standardised β	t	p
Open access awareness	.421	4.63	<.001
Scholarly communication	.337	3.81	.001
Research data management	.294	3.12	.003
$R = .781$	$R^2 = .610$	Adj. $R^2 = .582$	$F(3, 42) = 21.90$, $p < .001$

Note. $N = 46$. Dependent variable: knowledge dissemination. Source: field survey (2026).

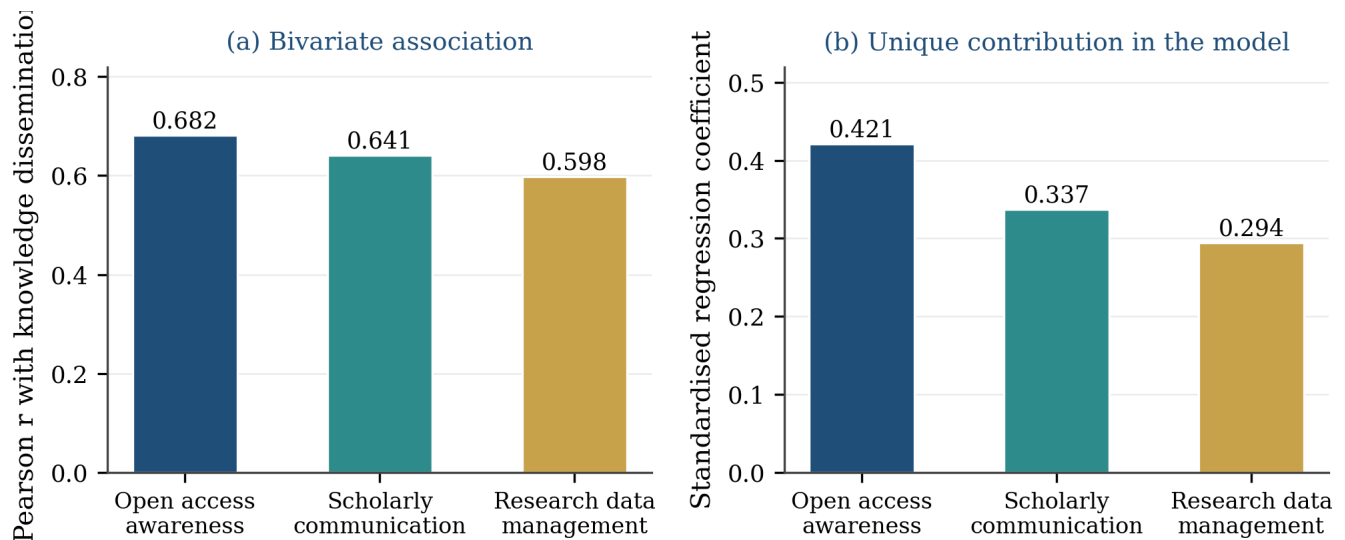


Figure 3: Bivariate associations and unique contributions. Panel (a) shows the correlation of each predictor with knowledge dissemination; panel (b) the standardised coefficient once the other two predictors are controlled. The ordering is preserved across both panels.

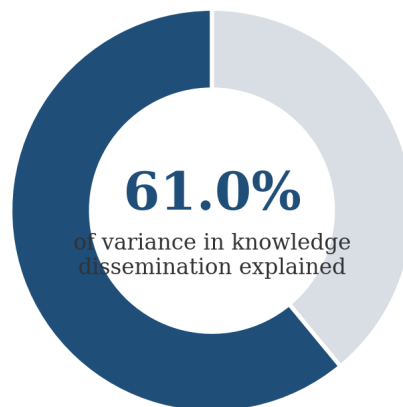


Figure 4: Proportion of variance in knowledge dissemination jointly explained by the three predictors.

4.4 Challenges to Knowledge Dissemination

Table 5 reports the perceived severity of institutional and professional challenges. Inadequate ICT infrastructure was rated most severe at 4.12, followed by poor funding at 4.06 and the absence of institutional policies at 3.98. Low staff motivation was rated least severe at 3.54.

Table 5: Challenges affecting knowledge dissemination

Challenge	Mean	SD	Rank
Inadequate ICT infrastructure	4.12	0.69	1
Poor funding	4.06	0.74	2

Challenge	Mean	SD	Rank
Lack of institutional policies	3.98	0.74	3
Insufficient training	3.85	0.81	4
Low staff motivation	3.54	0.88	5

Note. $N = 46$. Higher means denote greater perceived severity. Source: field survey (2026).

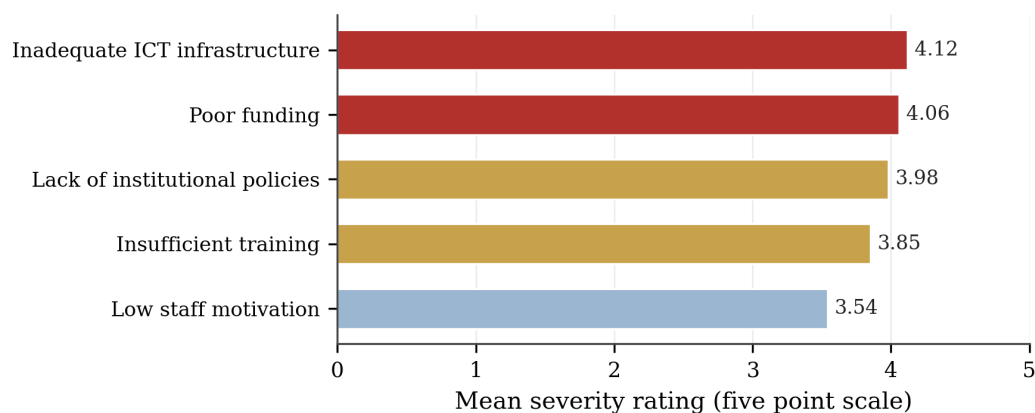


Figure 5: Perceived severity of challenges to knowledge dissemination. The four highest ranked constraints are institutional rather than individual, while the lowest ranked concerns staff disposition.

The ordering of these challenges is consistent with the item level pattern noted in Section 4.1. The four most severe constraints are institutional, concerning infrastructure, funding, policy and training provision, while the least severe concerns the disposition of staff themselves. Librarians in this sample are not reporting that they lack the will to disseminate knowledge; they are reporting that the institutional conditions for doing so are incomplete.

5. Discussion of Findings

5.1 A Gradient of Professional Maturity

The descriptive results describe a clear gradient. Open access awareness is high, knowledge dissemination practice is high, scholarly communication is moderate and research data management is the lowest of the four. The gradient is not random: it tracks the order in which these domains entered mainstream library practice. Open access has been part of professional discourse for two decades, scholarly communication support is well established in library service models, and research data management is comparatively recent, particularly in settings where institutional research infrastructure is still developing.

Reading the gradient as a maturity sequence rather than as a ranking of competence changes its interpretation. The finding is not that these librarians are weak at data management; it is that data management is at an earlier stage of institutional development than the other two domains. Adekoya et al. (2026) report precisely this pattern across Nigerian university libraries more broadly, with practice emerging but constrained by training, policy and infrastructure. The present data localise that finding and quantify the gap.

5.2 Why Open Access Awareness Predicts Most

Open access awareness emerged as the strongest predictor ($\beta = .421$), ahead of scholarly communication (.337) and research data management (.294). Two explanations are consistent with the data and they are complementary rather than competing.

The first is substantive. Open access awareness is the competency most directly connected to the dissemination outcome measured here. The knowledge dissemination construct is operationalised through repository use, advocacy to researchers, visibility of outputs and collaboration with academics, and each of these is an application of open access knowledge. A librarian who understands licensing, deposit and publishing models possesses exactly what repository and advocacy work require.

The second is structural and bears on the ordering as a whole. The predictive contribution of each domain appears to track how far institutional support for it has developed. Where infrastructure, policy and training exist, as they largely do for open access, individual competency converts into practice. Where they do not, as the item level data show for research data management, competency has less to act upon and its measured contribution is correspondingly smaller. On this reading the coefficient on data management understates its potential contribution rather than measuring its ceiling, because the institutional conditions that would let it operate are precisely the ones respondents identify as absent.

This reading has a direct implication for resource allocation, and it is the opposite of what a naive reading of the coefficients would suggest. Investing further in the strongest predictor would reinforce a domain already well supported. The larger marginal return is likely to lie in the weakest, where the constraint is institutional provision rather than professional

capability.

5.3 Scholarly Communication and the Awareness to Action Gap

Scholarly communication occupies the middle position, and its item level pattern is instructive. The highest scoring activity is support for faculty publishing (3.67), which is a service function, while the lowest are peer review participation (3.11) and publishing in journals (3.22), which are scholarly functions. Librarians in this sample are more engaged in enabling others' scholarly communication than in participating in it themselves.

A parallel gap appears within open access awareness, where knowledge of principles scores 3.98 but participation in advocacy scores 3.41. In both cases the pattern is the same: understanding exceeds action. This is consistent with the challenges data, where workload implications of infrastructure and funding constraints rank highest, and it suggests that the limiting factor on librarian participation is capacity rather than conviction.

5.4 Research Data Management as the Binding Constraint

Research data management recorded the lowest grand mean (3.07) and the two lowest scoring items in the instrument: training on data management (2.98) and the existence of a data management policy (2.87). Both are institutional provisions. A librarian cannot individually supply a policy that the institution has not adopted, nor training that it does not offer.

The significance of this for knowledge dissemination is prospective. The FAIR principles (Wilkinson et al., 2016) have become the reference standard for data stewardship, and funder and publisher data availability requirements continue to extend. Nigerian universities seeking international research partnerships will increasingly encounter data management expectations as a condition of collaboration. A library service that is strong on open access and weak on data management is well positioned for the scholarly communication environment of the last decade and less well positioned for the next.

5.5 Institutional Conditions and the Limits of Professional Development

The challenges data complete the picture. Inadequate ICT infrastructure (4.12), poor funding (4.06), absent institutional policy (3.98) and insufficient training (3.85) all rank above low staff motivation (3.54). The four leading constraints are institutional and the trailing one is individual.

Read together with the regression results, this suggests a boundary on what professional development alone can achieve. Training raises individual competency, and the regression shows that competency predicts dissemination practice. But the item level and challenges data both indicate that the conversion of competency into practice is mediated by infrastructure, policy and funding. Training a librarian in data curation without providing storage infrastructure or an institutional data policy produces capability with nowhere to be exercised. The two investments are complements, and the present evidence suggests the institutional one is currently the scarcer.

5.6 Limitations

Several limitations qualify these findings. The study involved 46 professional librarians in three university libraries in a single state, so the findings characterise this population rather than Nigerian academic librarianship generally; the full enumeration removes sampling error within the population but does not extend inference beyond it. With 46 observations and three predictors the regression is adequately powered for the model estimated but leaves little scope for control variables such as years of experience or professional qualification, which may confound the relationships reported. All variables were measured perceptually through self report on a single instrument, which raises the possibility of common method variance; repository deposit counts or download statistics would provide an objective dissemination measure. The design is cross sectional, so the direction of the relationships cannot be established: librarians engaged in dissemination may acquire open access knowledge through that work rather than the reverse. Finally, the reliability coefficient of .79 was established on a pilot of five respondents, which is a small basis for that estimate.

6. Conclusion and Recommendations

This study examined open access awareness, scholarly communication and research data management as predictors of knowledge dissemination among professional librarians in three university libraries in Osun State. All three were positively and significantly associated with knowledge dissemination, and together they explained 61.0 percent of its variance. Open access awareness was the strongest predictor, followed by scholarly communication and research data management.

The study concludes that the three competencies contribute jointly rather than independently to knowledge dissemination, and that their relative contribution appears conditioned by the maturity of institutional support for each. The weakest domain, research data management, is weak principally in its institutional components, namely policy and training, rather than in the dispositions of individual librarians. Since this is also the domain whose importance is rising fastest, it represents the clearest gap between current provision and foreseeable requirement.

The following recommendations follow.

1. **Develop institutional research data management policy.** University managements should adopt formal data management policies, since the absence of policy was the single lowest rated item in the entire instrument and is a precondition for coherent service development.
2. **Provide structured data management training.** Libraries should establish continuing professional development in data curation, metadata and the FAIR principles, paired with the storage and platform infrastructure needed to apply it.
3. **Convert open access awareness into advocacy.** Given that knowledge of open access principles substantially exceeds participation in advocacy, libraries should allocate protected time for repository outreach and researcher engagement rather than treating advocacy as discretionary.
4. **Support librarian participation in scholarly communication.** Institutions should facilitate librarians' own publishing and peer review activity, which currently lags their support for faculty publishing.
5. **Address infrastructure and funding as the leading constraints.** Since the four most severe reported challenges are institutional, professional development investment should be accompanied by infrastructure and funding provision, without which training yields capability that cannot be exercised.
6. **Establish objective dissemination metrics.** Libraries should monitor repository deposit rates, download statistics and output visibility, which would permit future studies to replace self reported dissemination with measured outcomes.

Conflict of Interest

The authors declare no competing financial or non-financial interests in relation to this study.

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Authors Contributions

Luqman Ayanlola Atanda: conception and design of the study, data collection, analysis and drafting of the manuscript. **Ajibola Sunmade Gbotosho:** supervision, methodology validation, interpretation of findings, review and editing. **Opeyemi Funmilayo Balogun:** literature review, data curation, critical revision of the manuscript. All authors approved the final version.

Ethical Statement

Institutional permission was obtained from each participating university library before data collection. Participation was voluntary, respondents were informed of the purpose of the study, and responses were anonymised and reported only in aggregate.

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