



## **ACCESS TO AND APPLICATION OF AGRICULTURAL INFORMATION SERVICES AMONG EXTENSION WORKERS IN NIGERIAN AGRICULTURAL RESEARCH INSTITUTE LIBRARIES**

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### **Abstract**

*This study investigates how extension workers in Nigeria use and gain access to agricultural information services offered by libraries in agricultural research institutes. It sought to measure the degree to which these services are utilized and to pinpoint obstacles that limit effective access. A mixed-methods approach was adopted: structured interviews were held with six librarians, and questionnaires were distributed to 946 extension workers across the six institutes using total enumeration. The questionnaire proved highly reliable, with a Cronbach's alpha of 0.96. Quantitative responses were summarized with descriptive statistics frequencies and percentages in SPSS, while interview data were analyzed thematically. Results showed that extension workers accessed a range of services, including reference assistance, translation support, Selective Dissemination of Information (SDI), photocopying, and Current Awareness Services (CAS). Photocopying, lending, and reference services were the most commonly used. Despite this usage, the study uncovered major barriers to accessing services: insufficient funding, unreliable internet, erratic electricity, and restricted access to paid databases. These challenges hamper the timely and effective delivery of information to extension workers. The study concludes that research institute libraries need to stay relevant by blending traditional services with modern, technology-driven offerings. To overcome identified limitations, it recommends deploying innovative solutions such as online reference services, digital SDI systems, and improved technological infrastructure. By expanding and modernizing service delivery, the libraries can better support the evolving information needs of extension workers, bolstering agricultural development in Nigeria.*

**Keywords:** *Agricultural Information Services, Agricultural Knowledge, Agricultural, Research, Institutes, Extension Workers, Information accessibility, Libraries, Nigeria.*

### **Background to the Study**

In Nigeria's agricultural sector, **Agricultural Research Institutes (ARIs)** are central to advancing innovation, productivity, and sustainability across thematic areas such as crops, forestry, livestock,

fisheries, storage, and extension. Each institute is supported by a library that serves as a knowledge hub, ensuring research outputs are preserved, accessible, and applicable to diverse stakeholders, especially extension workers (Yahaya, 2022). Extension workers act as conduits between ARIs and farmers, translating scientific research into practical knowledge on improved seed varieties, pest control, mechanization, and policy adoption (Aguolu, 2000; Okunade & Williams, 2014).

The effectiveness of extension services depends on timely access to credible information and the ability to communicate and repackage it for farmers' use (FAO, 2015). Agricultural research libraries support this by offering services such as reference assistance, current awareness services (CAS), selective dissemination of information (SDI), document delivery, translation, and user orientation (Singh & Kalra, 2019). These services enhance both accessibility and applicability of information, thereby empowering extension workers to promote innovation and strengthen food security (Idiegbeyan-Ose et al., 2019). By aligning services with research goals and user needs, libraries enable informed decision-making and effective field-based interventions (Adamu, Kasim, Adamu, & Abubakar, 2023).

Nonetheless, challenges such as inadequate funding, poor internet connectivity, irregular power supply, and limited access to digital resources constrain accessibility and application of these services. Overcoming these barriers is essential for ensuring extension workers can effectively guide farmers in adopting modern farming techniques, including improved seed varieties, fertilizer use, and pest and disease control (Adamu, Babalola, & Dogara, 2018; Das et al., 2021). Strengthening access and application of agricultural information services will not only boost productivity but also improve farmers' socioeconomic well-being and advance Nigeria's broader agricultural development goals (Yahaya, 2022).

## **Statement of the Problem**

Agriculture is central to Nigeria's economy, yet the sector struggles with low productivity, poor adoption of innovations, and limited access to reliable information among farmers. To address these challenges, Agricultural Research Institutes (ARIs) were established to generate scientific knowledge, supported by libraries that organize and disseminate information to stakeholders, particularly extension workers. Extension workers serve as vital intermediaries, repackaging research outputs into practical knowledge for farmers. However, despite the availability of services such as reference assistance, selective dissemination of information (SDI), and current awareness services, their accessibility and application remain constrained. Barriers including inadequate funding, poor internet connectivity, unstable electricity, and limited access to digital databases hinder extension workers' ability to obtain and apply timely information. As a result, the effective transfer of agricultural innovations to farmers is weakened, reducing opportunities for improved productivity and rural livelihoods. This raises concern about the relevance of ARIs' libraries, making it essential to examine how accessible and applicable their services are to extension workers in Nigeria.

## **Objectives**

1. To identify the range of agricultural information services provided by libraries in Agricultural Research Institutes.
2. To assess the extent to which extension workers access and access these information services.
3. To determine the barriers affecting the accessibility and application of agricultural information services by extension workers.

## Review of related literature

Agricultural research in Nigeria produces a wide range of knowledge and innovations designed to improve agricultural productivity, food security, and rural livelihoods. However, the utility of such knowledge depends heavily on **agricultural information services** and the ability of **extension workers** to apply and disseminate them effectively. Literature consistently highlights that extension workers act as the bridge between Agricultural Research Institutes (ARIs) and farmers, yet the success of this role is determined by their access to, and application of, information resources.

### Application of Agricultural Information Services by Extension Workers

The application of agricultural information services involves how extension workers use research outputs, technical reports, and digital content in their advisory roles. Johnson and Ramasamy (2021), identified various types of library services, including Cataloguing, Classification, Circulation Service, Reference Service, Current Awareness Service, Inter Library Loan Service, and Photocopying. Agwu (2023) notes that extension personnel are central to translating complex research into locally relevant practices that farmers can adopt. Nevertheless, many studies highlight limitations in practice. Village extension workers often lack adequate training in **information and communication technologies (ICTs)** and have limited competence in repackaging research knowledge into farmer-friendly forms (Analysis of Village Extension Workers' Capabilities, 2020). In some regions, extension agents rely on traditional methods such as oral communication and demonstrations, but fail to take advantage of digital platforms that could enhance their outreach.

Despite these challenges, innovative practices are emerging. ICT-based channels, including mobile phones, WhatsApp groups, and community radio, are increasingly being used to extend information services, thereby enabling extension workers to reach a wider audience more efficiently (Idiegbeyan-Ose, 2019). These applications have shown promise in improving the timeliness of information delivery, particularly in areas such as weather forecasting, market updates, and pest management strategies.

### Accessibility of Agricultural Information Services

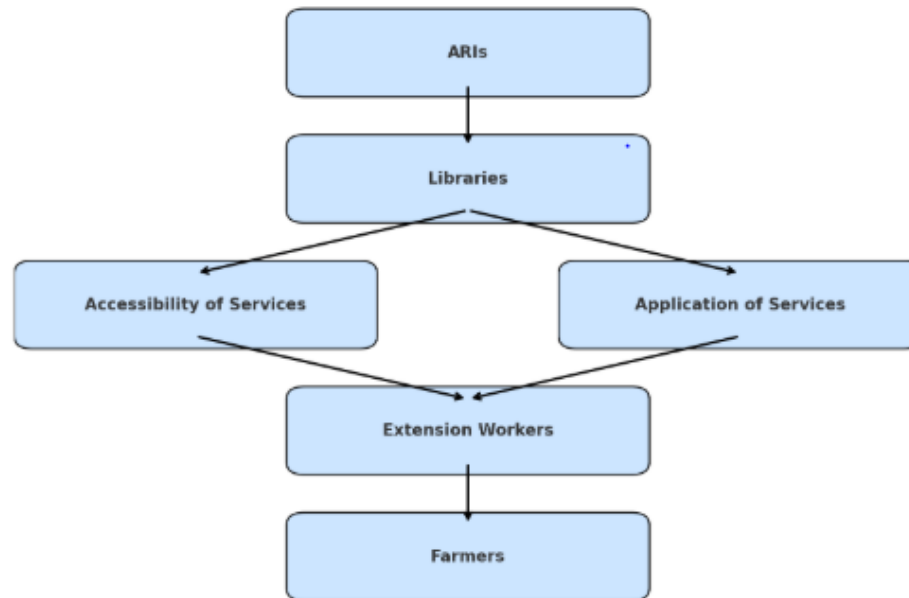
Accessibility refers to the ease with which extension workers can obtain and use information resources from ARIs and libraries. Studies suggest that accessibility is influenced by **infrastructure, institutional policies, ICT penetration, and funding**. Egwuonwu (2024) found that many extension agents in Anambra State struggled with irregular access to updated agricultural information due to poor linkages between ARI libraries and extension departments. Similarly, Yusuf (2021) reports that in Kwara State, farmers and frontline extension staff often face challenges such as limited internet access, poor electricity supply, and low information literacy skills, which undermine the effective use of agricultural information sources. Institutional constraints are another recurring issue. Ugwoke (2013) observed that Nigerian agricultural libraries often lack adequate funding, modern ICT facilities, and dissemination mechanisms, which results in poor accessibility of crucial information to extension services. Additionally, logistical challenges such as irregular transport allowances further restrict extension workers from physically accessing research institutes and libraries.

**Barriers affecting the accessibility and application of agricultural information services by extension workers.**

The literature emphasizes that limited accessibility and weak application of agricultural information services directly hinder the transfer of innovations to farmers. Weak coordination between ARIs, libraries, and extension agencies creates information bottlenecks, delaying the adoption of technologies like improved seed varieties or climate-smart practices (Agwu, 2023). Yusuf, (2023) revealed the challenges associated with library services include, poor organisation of materials on the shelves, lack of organisation of the library, ineffectiveness of the library catalogue for easy retrieval of information resources, lack of awareness of available information resources, little or no assistance from library staff were some of the challenges associated with services in the libraries

Nonetheless, several interventions are promising. The integration of ICTs, such as mobile messaging platforms, farmer information portals, and e-extension tools, has been shown to enhance accessibility and usability of information services (Idiegbeyan-Ose, 2019). Capacity-building initiatives, targeting both technical skills and information literacy of extension personnel, are also recommended to ensure better use of available resources (Egwuonwu, 2024).

## **Conceptual Framework**

**Conceptual Framework: Accessibility and Application of Agricultural Information Services**

The conceptual environment comprises the study's constructs, aligned with its variables: Agricultural Research Institutes, Libraries, Information Services, Accessibility, Extension Workers, and Farmers.

**Agricultural Research Institutes (ARIs):** ARIs generate scientific knowledge, develop innovations, and provide solutions to agricultural challenges in crops, livestock, fisheries, and natural resources, with the goal of improving productivity, sustainability, and food security.

**Libraries:** Within ARIs, libraries act as knowledge hubs by collecting, organizing, and preserving resources such as books, journals, reports, and digital content. They also provide access to global agricultural knowledge through databases, keeping researchers and stakeholders updated.

**Information Services:** These link ARIs to extension workers and farmers by delivering timely knowledge on technologies, markets, weather, and best practices. They support productivity, innovation, and sustainable agricultural development.

**Accessibility:** This refers to how easily researchers, extension workers, and farmers obtain and use information. It depends on infrastructure, ICT tools, literacy, and policies. Greater accessibility ensures ARI outputs reach end-users effectively.

**Extension Workers:** As intermediaries between ARIs and farmers, extension workers translate research into practical solutions and disseminate innovations. Their effectiveness relies on timely access to quality information.

**Farmers:** Farmers are the end-users of agricultural research. Their productivity and resilience depend on adopting innovations and practices made available through extension services.

The relationship among ARIs, libraries, information services, accessibility, extension workers, and farmers is interdependent. Library resources must be accessible to extension workers, who pass them on to farmers, ensuring research translates into real-world impact and sustainable development.

## **Methodology**

This study used a **mixed-methods** approach, combining quantitative and qualitative data to explore both the extent of access to agricultural information services and the barriers to effective accessibility. The design allowed triangulation of findings from a large cohort of extension workers with in-depth perspectives from librarians at the research institutes. The research was conducted across six agricultural research institutes in Nigeria. Using Librarians working in the libraries of these six institutes, and Extension workers connected to the institutes, who are the primary users of agricultural information services. Purposive selection of one librarian from each of the six institutes, yielding **six interview participants** (coded P1–P6). This ensured direct input

from staff responsible for service delivery in each library. **Total enumeration was used to take all of the 946** extension workers the six institutes who completed the questionnaire, representing the full enumerated population for the study period. **Questionnaires** were distributed to the extension workers, who completed them either in person or through the mechanism organized by the institutes, ensuring coverage of the total enumerated population. **Interviews** with librarians were conducted using the structured guide, recorded or noted for subsequent transcription. Each interview focused on the librarian's institute to allow both within-site and cross-site comparisons.

Data from the questionnaires were entered into **SPSS** for analysing **descriptive statistics** specifically frequencies and percentages were calculated and summarized. Results were interpreted to reflect patterns of usage and obstacles across the total population of respondents. Interview responses were transcribed and subjected to **thematic analysis**. Themes were identified to capture librarians' views on service provision, challenges to accessibility, and recommendations to improve use. Qualitative findings were compared and integrated with quantitative results to provide a comprehensive understanding of service application and accessibility.

### **Ethical considerations**

- Participation was voluntary for both librarians and extension workers.
- Confidentiality of respondents was maintained, with participants identified only by codes (e.g., P1–P6 for librarians).
- Data were stored securely and reported in aggregate or coded form to prevent disclosure of individual identities.

## Trustworthiness and rigor

- Use of both quantitative and qualitative methods provided methodological triangulation, strengthening the credibility of the findings.
- High reliability of the questionnaire ensured consistency in measurement across the large respondent pool.
- Thematic analysis of interviews allowed depth of understanding and contextualization of quantitative patterns, supporting interpretive validity.

## RESULTS PRESENTATION AND INTERPRETATION

**Table:** Participants for Interview

	Name of Institutes	Codes	Position	Gender	Work Experience	Qualification	Venue	Time	Date
1.	Lake Chad Research Institute	P1	Librarian	F	20yrs	Masters	Phone	12:00-12:36	24/07/25
2.	Nigerian Stored Product Research Institute	P2	Librarian	M	17yrs	Masters	Librarian Office	10:02-10:45	11/07/25
3.	National Agricultural Extension Research Liaison Services	P3	Librarian	M	15yrs	Masters	Librarian Office	9:00-9:43	17/07/25
4.	National Animal Production Research Institute	P4	Librarian	M	9yrs	Masters	Librarian Office	9:15-10:00	18/07/25
5.	Forestry Research Institute of Nigeria	P5	Librarian	M	19	Masters	Librarian Office	2:30-3:15	13/07/25
6.	National Institute for Oceanography and Marine Research	P6	Librarian	F	5yrs	Masters	Phone	3:07-3:39	24/07/25

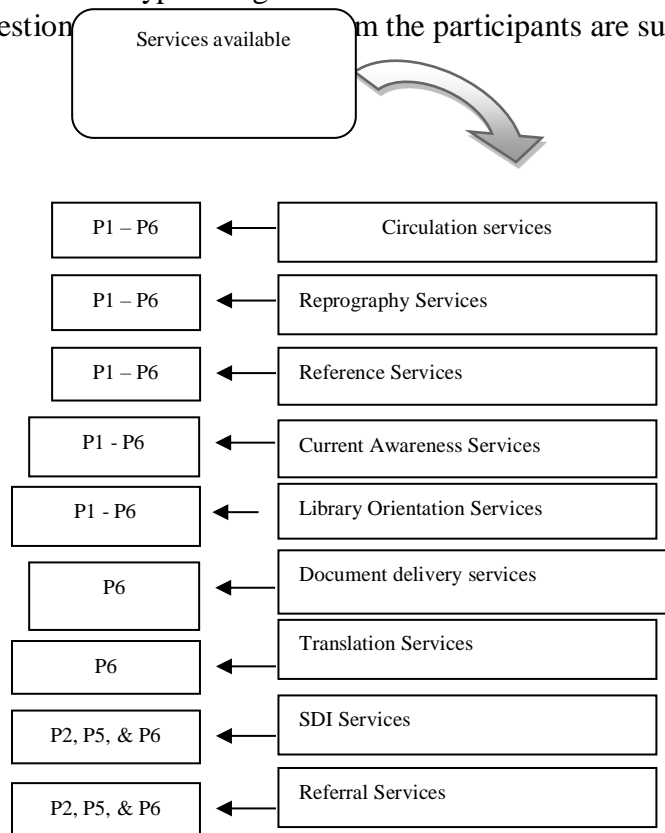
**Key:** - P = Participant, M=Male, F=Female

**Table 2 Themes and Sub-Themes**

S/N	Research Questions	Themes (T)	Sub-themes (S)	Participants	Positions
1	What types of information services available in the libraries under study?	Types of information services available	Services available	P1 to P6	Librarians
2	What barriers do the libraries face in the provision of information services?	Barrier associated with provision of information services	Provision barriers	P1 to P6	Librarians

## Services available to extension workers in the libraries of agricultural research institutes of Nigeria

The librarians were asked about types of agricultural information services available in the libraries. In response to this question, the services available from the participants are summarized in figure 1:



**Figure: 1: Agricultural Information Services available in libraries of Agricultural Research Institutes in Nigeria**

Data displayed in figure 1 show that all the participants (P1-P6) unanimously disclosed that they provide Circulation, reprography, reference, current awareness and orientation services in their various libraries. While P2, P5 and P6 added that they offer SDI and referral services, only P6 confirmed that the library offers Document delivery services as well as translation services.

This finding implies that the availability of agricultural information services varied among the libraries. It further implies that libraries of agricultural institutes in Nigeria, like many agricultural

libraries in the world, provide different types of information services to meet the information need of the extension workers.

### **Types of agricultural information services accessed by extension workers**

The extension workers were asked about types of agricultural information services they access in the libraries. In response to this question, the data obtained from the respondents were summarized in table

**Table 1: Type of agricultural information services accessed by extension workers in the libraries of agricultural research institute in Nigeria**

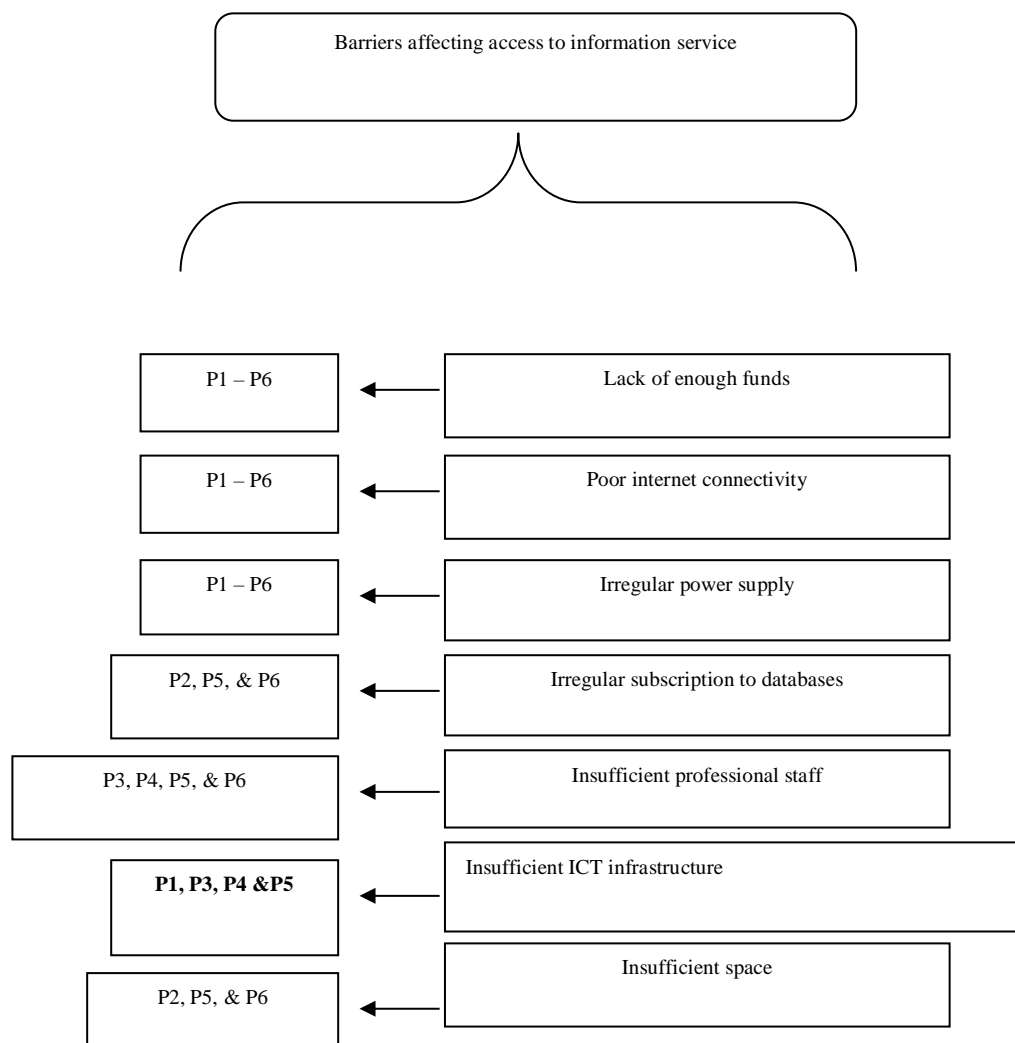
Services	LCRI (N=30)		NSPRI (N=47)		NAERLS (N=125)		NAPRI (N=87)		FRIN (N=151)		NIOMR (N=179)		T R (N=619)	
	F	%	F	%	F	%	F	%	F	%	F	%	F	%
Circulation	30	100	40	85	115	92	71	82	140	94	166	87	562	91
Reprography	30	100	39	83	106	85	71	82	137	91	147	82	530	86
Document Delivery	0	0	2	4	11	9	0	0	21	14	17	9	51	8
Translation	0	0	6	13	0	0	8	9	42	29	93	52	149	24
Reference	26	87	44	94	113	90	71	82	146	97	151	84	551	89
Current awareness	30	100	39	83	93	74	71	82	134	89	152	85	519	84
Orientation	25	83	30	64	98	78	64	74	132	87	154	86	503	81
S D I	0	0	2	4	38	30	30	34	49	32	31	17	150	24
Referral	4	13	17	36	31	29	15	17	47	31	16	10	130	21

**Key: F=Frequency, %=Percentage, TR=Total Response**

The table reveals types of service accessed by the extension workers in the institutes' libraries, it can be seen that the prominent service accessed as indicated by most of the respondents were circulation 562 (91%), Reference 551 (89%), Reprography 530(86%), Current Awareness 519

(84%) and Orientation 503 (81%). While the less popular services were SDI 150(24%), translation 149 (24%) followed by Referral 130(21%) and the least to be document delivery 51(8%). The low finding on SDI, translation, referral and document delivery could be attributed to insufficient professional staff that can carry out those services to the extension workers.

**Barriers Affecting Access to Information Services in Libraries of Agricultural Research Institutes in Nigeria**



**Figure: 2 Barriers Affecting Access to Information Services in Libraries of Agricultural Research Institutes in Nigeria**

From the figure it can be clearly seen that there are a lot of barriers affecting the provision of information services in the studied libraries, P1 to P6 all mentioned lack of enough funds, poor internet connectivity and irregular power supply; while P1, P3, P4 and P5 said that insufficient ICT infrastructure pose as a great barrier to the provision of agricultural information services.

## **DISCUSSION OF THE FINDINGS**

### **Types of services available to extension workers in the libraries of agricultural research institutes of Nigeria**

The findings from Figure 1 demonstrate a unanimous consensus among all participants (P1-P6) regarding the provision of fundamental services in agricultural research institute libraries. Core services, such as Circulation, Reprography, Reference, Current Awareness, and Orientation, are acknowledged universally, indicating a shared understanding among participants about the essential services these libraries should provide.

Additionally, participants P2, P5, and P6 reported supplementary services beyond the core ones, such as Selective Dissemination of Information (SDI) and Referral. This highlights a proactive approach to addressing specific information needs and tailoring services to meet individual requirements. These additional services reflect a responsiveness to the diverse and specialized needs of users within the agricultural research context.

It's noteworthy that only participant P6 confirmed the availability of more specialized services like Document Delivery and Translation. This finding aligns with the findings of Johnson and Ramasamy (2021), which identified various types of library services, including Cataloguing, Classification, Circulation Service, Reference Service, Current Awareness Service, Inter Library Loan Service, and Photocopying. The presence of these specialized services in P6's library

suggests a higher level of resource diversification, potentially catering to advanced information demands.

These variations in service provision underscore the diverse landscape of services in agricultural research institute libraries. The ability of libraries to customize offerings based on user needs and institutional capacities is crucial. Understanding these nuances is essential for optimizing the libraries' role in supporting the objectives of extension workers and the broader agricultural community, aligning with the findings of Johnson and Ramasamy (2021) and emphasizing the importance of tailored services in agricultural library settings.

### **Types of agricultural information services accessed by extension workers**

The findings highlight the primary library services extensively accessed by extension workers, underscoring their essential requirements. Circulation, reference, reprography, current awareness, and orientation services are notably crucial, demonstrating the significance of easy resource access, personalized assistance, and staying updated with the latest information. Conversely, lesser utilization of selective dissemination of information (SDI), translation, referral, and document delivery services is due to the inadequate availability of specialized staff, suggesting a critical need for enhancement. This finding is in line with Yusuf, (2023) whose findings indicated that SDI, library user`s education, loan services and current awareness services were mostly use by the respondents. It similar to the findings of this study, Ogbonyomi, Sani and Quadir (2020) found that agricultural information services utilized by the respondents from NAERLS revolves around Technical /Scientific Agricultural Information services with the highest score 261 (87.5%), followed by commercial agricultural information services, legal agricultural information services, socio-cultural information services and price information services on the same frequency 250 (83.8%). This finding further reveals that the types of agricultural information services accessed

by extension workers are diverse and varies from one institute to another depending upon the mandate of the institute.

### **Barriers Affecting Information Services in Libraries of Agricultural Research Institutes in Nigeria**

The finding clearly delineates a range of obstacles significantly hampering the delivery of information services in the surveyed libraries. Participants P1 to P6 uniformly identified major challenges, notably inadequate funding, unreliable internet connectivity, and irregular power supply. Furthermore, a specific subset of respondents—P1, P3, P4, and P5—stressed the substantial barrier posed by insufficient ICT infrastructure, emphasizing its profound influence on the efficient provisioning of agricultural information services. These findings collectively stress the urgent necessity for substantial investments and strategic interventions aimed at mitigating financial, technological, and infrastructural limitations. Addressing these issues is imperative to enhance the effectiveness and extend the reach of agricultural information services within the respective libraries, enabling a more robust support system for stakeholders in the agricultural sector. This finding is in line with the Findings of Yusuf, (2023) which revealed the challenges associated with library services include, poor organisation of materials on the shelves, lack of organisation of the library, ineffectiveness of the library catalogue for easy retrieval of information resources, lack of awareness of available information resources, little or no assistance from library staff were some of the challenges associated with services in the libraries

### **Conclusion**

The findings encompass the diverse range of services available to extension workers in agricultural research institute libraries in Nigeria, highlighting the tailored provision of information services to

meet their varied needs. Essential services such as circulation, reference, reprography, current awareness, and orientation were notably emphasized, illustrating the importance of accessibility and staying informed. Additionally, the study identified barriers impeding information service delivery, notably inadequate funding, unreliable internet connectivity, inconsistent power supply, and insufficient ICT infrastructure. These hindrances underscore the urgent need for investments and strategic interventions to address financial, technological, and infrastructural limitations, essential for enhancing the effectiveness and reach of agricultural information services, thereby providing a more robust support system for stakeholders in the agricultural sector.

**Recommendations:**

1. Addressing infrastructural barriers and improving digital access in rural areas can facilitate the utilization of online agricultural information services.
2. The libraries should employ regular assessment of its services by interacting and effecting the opinion of users. This will help the library to understand the expectations and information needs of the extension workers.
3. The library managements should provide current information services, internet connectivity, and adequate library facilities and improve existing services, employ professional library staff, make the library space inviting, welcoming and comfortable; provision of alternative power supply should be given necessary attention. All these will go a long way in solving some of the problems experienced by the extension workers, as well as, satisfying their research needs.

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