EDUCATIONAL TECHNOLOGY

Assessment of Information Resources Utilization for Service Delivery by Academic Technologists in Universities in Adamawa State, Nigeria

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Abstract

This study assessed information resources utilization for service delivery by academic technologists in selected universities in Adamawa State, Nigeria. The study examined the availability and utilization of information resources, the level of service delivery, the challenges affecting utilization, and the relationship between information resources utilization and service delivery. A descriptive survey research design was adopted. The population comprised 357 academic technologists from four universities, and the total enumeration sampling technique was employed. Of the 357 questionnaires administered, 300 were properly completed and returned for analysis. Data were analyzed using frequency counts, percentages, mean, and standard deviation, while the hypothesis was tested using the Chi-square (χ^2) test at the 0.05 level of significance. The findings revealed that information resources were generally available and highly utilized by academic technologists, resulting in a high level of service delivery. However, inadequate funding, poor internet connectivity, irregular power supply, and limited access to electronic information resources were identified as major challenges. The Chi-square analysis further indicated a significant relationship between information resources utilization and service delivery among academic technologists. The study concludes that effective utilization of information resources enhances service delivery and recommends increased investment in information resources, ICT infrastructure, and capacity-building programmes for academic technologists.

Keywords: Information resources; information resources utilization; service delivery; academic technologists; universities; Adamawa State; Nigeria

1 Introduction

Information resources are indispensable to the effective functioning of higher education institutions. They provide the knowledge required to support teaching, learning, research, innovation, and administrative activities. With the rapid advancement of information and communication technologies (ICTs), academic institutions increasingly rely on both print and electronic information resources to improve productivity and service delivery. These resources include books, journals, online databases, institutional repositories, technical reports, standards, and internet-based information sources that facilitate access to current and reliable information. Academic technologists play a vital role in supporting teaching, research, and innovation through laboratory management, equipment maintenance, practical instruction, and technical support services. To perform these responsibilities effectively, they require timely access to relevant and up-to-date information resources. Effective utilization of these resources enhances technical competence, improves decision-making, supports research activities, and promotes quality service delivery. Conversely, inadequate access to or poor

utilization of information resources may result in inefficient service delivery, reduced productivity, and poor institutional performance. However, despite increased investment in library resources and digital information systems by universities, evidence suggests that challenges such as inadequate funding, poor internet connectivity, irregular power supply, limited ICT skills, and insufficient access to electronic resources continue to affect the utilization of information resources by university personnel. While several studies have examined information resource utilization among students, academic staff, and librarians, limited empirical attention has been given to academic technologists, particularly in universities in Adamawa State, Nigeria. This study therefore assesses information resources utilization for service delivery by academic technologists in selected universities in Adamawa State, Nigeria.

1.1 Statement of the problem

Academic technologists are central to the effective operation of laboratories, workshops, research facilities, and practical teaching in universities. Their ability to provide efficient technical and research support depends largely on the availability and effective utilization of relevant information resources. However, many universities continue to experience challenges related to inadequate information resources, poor ICT infrastructure, limited access to electronic databases, unstable power supply, and insufficient professional development opportunities. These challenges may adversely affect the quality of service delivery by academic technologists. Although previous studies have investigated information resource utilization among students, academic staff, and librarians, there is limited empirical evidence on how academic technologists utilize information resources to enhance service delivery, particularly in universities in Adamawa State, Nigeria. This lack of evidence creates a knowledge gap that makes it difficult for university management and policymakers to develop targeted interventions for improving technical support services. It is against this background that this study assesses information resources utilization for service delivery by academic technologists in selected universities in Adamawa State, Nigeria, with a view to providing empirical evidence for improving service delivery through effective utilization of information resources.

1.2 Research objectives

1. Identify the information resources available to academic technologists in universities in Adamawa State.
2. Determine the extent of information resources utilization by academic technologists in universities in Adamawa state.
3. Assess the level of service delivery among academic technologists in universities in Adamawa State.
4. Examine the relationship between information resources utilization and service delivery in Universities in Adamawa State.
5. Identify the challenges affecting information resources utilization for service delivery in Universities in Adamawa State.
6. Suggest strategies for improving information resources utilization for effective service delivery in Universities in Adamawa State.

1.3 Research questions

The study seeks to answer the following research questions:

1. What information resources are available to academic technologists in universities Adamawa State?
2. To what extent do academic technologists utilize information resources in universities in Adamawa?
3. What is the level of service delivery among academic technologists in universities in Adamawa State?
4. What is the relationship between information resources utilization and service delivery in universities in Adamawa State?
5. What challenges affect information resources utilization for service delivery in universities in Adamawa State?
6. What strategies can improve information resources utilization for effective service delivery in universities in Adamawa State?

1.4 Research hypotheses

The following null hypothesis was tested at the 0.05 level of significance:

H_0: There is no significant relationship between information resources utilization and service delivery among academic technologists in Universities in Adamawa State, Nigeria.

1.5 Significance of the study

The findings of this study will be beneficial to university management, academic technologists, librarians, policymakers, and researchers. The study will provide empirical evidence on how information resources utilization influences service delivery among academic technologists in universities in Adamawa State. The findings will assist university management in improving the provision of information resources, ICT facilities, and technical support services. Librarians will benefit from understanding the information needs of academic technologists, thereby enhancing library collections and information services. The study will also guide policymakers in developing policies that promote effective access to and utilization of information resources in tertiary institutions. Furthermore, it will serve as a valuable reference for future researchers interested in information resources utilization and service delivery in higher education.

1.6 Scope and limitations of the study

This study focuses on the assessment of information resources utilization for service delivery by academic technologists in four selected universities in Adamawa State, Nigeria: American University of Nigeria, Adamawa State University, Federal University of Agriculture, Mubi, and Modibbo Adama University. The study covers the availability of information resources, the extent of their utilization, the level of service delivery, the relationship between information resources utilization and service delivery, the challenges encountered, and strategies for improving information resources utilization. The study was limited by time constraints, financial limitations, and the willingness of respondents to provide accurate information. Additionally, not all questionnaires distributed were returned, as **300 out of 357** administered questionnaires were successfully retrieved and analyzed. Despite these limitations, the response rate was considered adequate for valid statistical analysis and reliable findings.

2 Literature review

2.1 Concept of information resources

Information resources are print and electronic sources of knowledge that support teaching, learning, research, innovation, and decision-making. They include books, journals, newspapers, reference materials, theses, dissertations, government publications, technical reports, e-books, e-journals, online databases, institutional repositories, websites, and multimedia resources. International Federation of Library Associations and Institutions (2023) notes that information resources facilitate access to knowledge and promote lifelong learning, while United Nations Educational, Scientific and Cultural Organization (2021) recognizes them as essential for knowledge creation and sustainable development.

2.2 Information resources utilization

Information resources utilization refers to the process of identifying, accessing, retrieving, evaluating, and applying relevant information resources to accomplish academic and professional tasks. Effective utilization enhances productivity, research output, and evidence- based decision-making. Academic technologists depend on information resources to manage laboratories, maintain equipment, support practical teaching, and conduct research.

2.3 Service delivery by academic technologists

Service delivery by academic technologists involves providing technical support services that facilitate teaching, research, laboratory management, equipment maintenance, and innovation in tertiary institutions. Effective service delivery depends on access to current information resources, technical competence, institutional support, and adequate ICT facilities.

2.4 Relationship between information resources utilization and service delivery

The utilization of information resources has a positive influence on service delivery. Access to current and relevant information enables academic technologists to perform their responsibilities efficiently, improve technical support services, enhance laboratory operations, and support quality research. However, poor access to information resources, inadequate ICT infrastructure, and limited information literacy skills may reduce the quality of service delivery.

2.5 Theoretical framework

The study is anchored on **Mtega's (2012) Information Needs, Access and Use Model**. The theory explains that users first recognize an information need, seek access to appropriate information resources, evaluate the information obtained, and utilize it to accomplish specific tasks. The model is suitable for this study because it explains how effective utilization of information resources enhances job performance and service delivery among academic technologists in Universities.

2.6 Empirical review

Recent studies have shown that effective utilization of information resources improves research productivity and service delivery in higher education institutions. Studies conducted between 2020 and 2026 reported high utilization of electronic information resources among academic staff and librarians but identified poor internet connectivity, inadequate funding, irregular power supply, and limited ICT skills as major constraints. Other studies found that effective utilization of information

resources significantly improves technical efficiency, innovation, and institutional performance. However, these studies focused mainly on students, academic staff, and librarians rather than academic technologists.

2.7 Knowledge gap

The reviewed literature indicates that most previous studies concentrated on information resources utilization among students, lecturers, and librarians. Few studies have specifically investigated academic technologists, especially in universities in Adamawa State, Nigeria. Furthermore, little empirical evidence exists on how information resources utilization influences their service delivery. This study bridges this gap by accessing information resources utilization for service delivery among academic technologists in selected universities in Adamawa State.

3 Methodology

3.1 Research design

This study adopted a descriptive survey research design. The design was considered appropriate because it enabled the researcher to obtain data from academic technologists regarding information resources utilization and service delivery in selected universities in Adamawa State, Nigeria.

3.2 Area of the study

The study was conducted in four selected universities in Adamawa State, Nigeria, namely: American University of Nigeria (AUN), Adamawa State University (ADSU), Federal University of Agriculture, Mubi (FUAMB), and Modibbo Adama University (MAU Yola).

3.3 Population of the study

The population of the study comprised 357 academic technologists from the four selected universities in Adamawa State. The distribution of the population is presented in Table 1.

Table 1. Population distribution of academic technologists.

University	Population
American University of Nigeria (AUN)	47
Adamawa State University (ADSU)	75
Federal University of Agriculture, Mubi (FUAM)	55
Modibbo Adama University, Yola (MAU)	180
Total	357

3.4 Sample size and sampling technique

The study adopted the total enumeration (census) sampling technique because the population of 357 academic technologists was considered manageable. Consequently, all members of the population were included in the study. A total of 357 questionnaires were administered, out of which 300 questionnaires were properly completed and returned, representing a response rate of 84.0%, which was considered adequate for data analysis.

3.5 Instrument for data collection

Data were collected using a structured questionnaire titled "Information Resources Utilization and Service Delivery Questionnaire (IRUSDQ)." The questionnaire consisted of two sections. Section A elicited respondents' demographic information, while Section B contained items on the availability and utilization of information resources, service delivery, challenges affecting utilization, and strategies for improvement. Responses were measured using a four-point Likert scale of Strongly Agree (4), Agree (3), Disagree (2), and Strongly Disagree (1).

3.6 Validity of the instrument

The questionnaire was subjected to face and content validity by experts in Library and Information Science and Measurement and Evaluation. Their comments and suggestions were incorporated to ensure that the instrument adequately measured the variables of the study.

3.7 Reliability of the instrument

The reliability of the instrument was established through a pilot study conducted among academic technologists outside the study area. Data obtained from the pilot study were analyzed using Cronbach's Alpha, yielding a reliability coefficient of 0.84, indicating that the instrument was reliable for data collection.

3.8 Method of data collection

The researcher personally administered the questionnaires with the assistance of trained research assistants. Respondents were given sufficient time to complete the questionnaires, which were retrieved through personal visits and follow-up contacts to ensure a high response rate.

3.9 Method of data analysis

Data collected were analyzed using both descriptive and inferential statistics. Frequency counts, percentages, mean, and standard deviation were used to answer the research questions. The null hypothesis was tested using the Chi-square (χ^2) test at the 0.05 level of significance. Statistical analyses were performed using the Statistical Package for the Social Sciences (SPSS), Version 27. The decision rule for the research questions was based on a criterion mean of 2.50, where a mean score of 2.50 and above indicated agreement or high extent, while a mean score below 2.50 indicated disagreement or low extent.

4 Results of the study

This section presents the analysis of data collected from the respondents. A total of 357 questionnaires were distributed to academic technologists in the selected universities in Adamawa State, Nigeria. Out of these, 300 questionnaires were properly completed and returned, representing a response rate of 84.0%. The data were analyzed using frequency counts, percentages, mean, and standard deviation to answer the research questions, while the hypothesis was tested using the Chi-square (χ^2) test at the 0.05 level of significance.

Table 2. Questionnaire distribution and return rate.

Questionnaires	Frequency	Percentage (%)
Distributed	357	100.0
Returned	300	84.0
Not Returned	57	16.0
Total	357	100.0

Interpretation: Table 2 shows that 357 questionnaires were administered to respondents, of which 300 (84.0%) were returned and found usable for analysis, while 57 (16.0%) were not returned.

4.1 Research question one

What information resources are available to academic technologists in Adamawa State?

Table 3. Availability of information resources (n = 300).

Information Resources	Mean	SD	Decision
Printed books	3.48	0.69	Available
E-books	3.35	0.74	Available
E-journals	3.41	0.71	Available
Online databases	3.22	0.76	Available
Internet facilities	3.60	0.58	Available
Institutional repository	3.10	0.81	Available
Grand Mean	3.36	0.72	Available

Interpretation: The grand mean of 3.36 indicates that information resources are generally available to academic technologists in the selected universities.

4.2 Research question two

To what extent do academic technologists utilize information resources?

Table 4. Extent of information resources utilization (n = 300).

Item	Mean	SD	Decision
Utilization of printed books	3.42	0.71	High Extent
Utilization of e-books	3.31	0.75	High Extent
Utilization of e-journals	3.46	0.68	High Extent
Utilization of online databases	3.28	0.73	High Extent
Utilization of internet resources	3.55	0.61	High Extent
Grand Mean	3.40	0.70	High Extent

Interpretation: The findings indicate that academic technologists utilize information resources to a high extent.

4.3 Research question three

What is the level of service delivery among academic technologists?

Table 5. Level of service delivery (n = 300).

Service Delivery Indicators	Mean	SD	Decision
Laboratory management	3.50	0.64	High
Practical support	3.54	0.61	High
Equipment maintenance	3.45	0.66	High
Research support	3.39	0.70	High
Technical advisory services	3.37	0.72	High
Grand Mean	3.45	0.67	High

Interpretation: The grand mean of 3.45 shows that academic technologists provide a high level of service delivery.

4.4 Research question four

What challenges affect information resources utilization for service delivery?

Table 6. Challenges affecting information resources utilization (n = 300).

Challenges	Mean	SD	Decision
Poor internet connectivity	3.62	0.59	Agree
Inadequate funding	3.58	0.63	Agree
Irregular power supply	3.66	0.55	Agree
Limited ICT skills	3.24	0.77	Agree
Inadequate access to e-resources	3.41	0.69	Agree
Grand Mean	3.50	0.65	Agree

Interpretation: Respondents agreed that poor internet connectivity, inadequate funding, irregular power supply, limited ICT skills, and inadequate access to electronic information resources are the major challenges affecting information resources utilization.

4.5 Research question five

What strategies can improve information resources utilization for effective service delivery?

Table 7. Strategies for improvement (n = 300).

Strategies	Mean	SD	Decision
Improved ICT infrastructure	3.71	0.54	Agree
Increased funding	3.68	0.58	Agree
Regular staff training	3.64	0.60	Agree
Improved internet services	3.73	0.52	Agree

Strategies	Mean	SD	Decision
Subscription to more databases	3.60	0.61	Agree
Grand Mean	3.67	0.57	Agree

Interpretation: Respondents agreed that improving ICT infrastructure, funding, staff training, internet services, and database subscriptions would enhance information resources utilization and service delivery.

4.6 Test of hypothesis

H_0: There is no significant relationship between information resources utilization and service delivery among academic technologists in Adamawa State, Nigeria.

Table 8. Chi-square (χ^2) test of relationship.

Variables	χ^2 Calculated	df	p-value	Decision
Information Resources Utilization and Service Delivery	28.74	12	0.004	Reject H_0

Interpretation: Since the p-value (0.004) is less than the 0.05 significance level, the null hypothesis is rejected. This indicates that there is a significant relationship between information resources utilization and service delivery among academic technologists in the selected universities in Adamawa State, Nigeria.

5 Summary

This study assessed information resources utilization for service delivery by academic technologists in selected universities in Adamawa State, Nigeria. The study specifically examined the availability of information resources, the extent of their utilization, the level of service delivery, the challenges affecting information resources utilization, and strategies for improving service delivery. It also determined the relationship between information resources utilization and service delivery among academic technologists. A descriptive survey research design was adopted for the study. The population comprised 357 academic technologists from four selected universities in Adamawa State, namely the American University of Nigeria, Adamawa State University, Federal University of Agriculture, Mubi, and Modibbo Adama University. The study adopted the total enumeration sampling technique because the population was manageable. A total of 357 questionnaires were administered, out of which 300 were properly completed and returned, representing a response rate of 84.0%. Data were analyzed using frequency counts, percentages, mean, and standard deviation to answer the research questions, while the hypothesis was tested using the Chi-square (χ^2) test at the 0.05 level of significance.

The findings revealed that:

1. Information resources were generally available to academic technologists in the selected universities.
2. Academic technologists utilized available information resources to a high extent.
3. The level of service delivery among academic technologists was high.

4. Poor internet connectivity, inadequate funding, irregular power supply, limited ICT skills, and inadequate access to electronic information resources were the major challenges affecting information resources utilization.
5. There was a statistically significant relationship between information resources utilization and service delivery among academic technologists in Adamawa State, Nigeria.

6 Conclusion

The study concludes that information resources utilization is a key determinant of effective service delivery among academic technologists in universities in Adamawa State, Nigeria. Academic technologists who have access to relevant and current information resources are better equipped to provide efficient laboratory management, practical instruction, equipment maintenance, and research support services. Although the level of utilization and service delivery was found to be high, persistent challenges such as inadequate funding, poor ICT infrastructure, unstable power supply, and limited access to electronic resources continue to hinder optimal performance. Therefore, improving access to quality information resources and strengthening institutional support will further enhance service delivery by academic technologists.

7 Recommendations

Based on the findings of the study, the following recommendations are made:

1. University management should provide adequate and up-to-date print and electronic information resources to support the work of academic technologists.
2. Universities should improve ICT infrastructure, internet connectivity, and electricity supply to enhance access to and utilization of information resources.
3. Regular training, workshops, and capacity-building programmes should be organized to improve the information literacy and digital competencies of academic technologists.
4. University management should allocate adequate funds for the acquisition, subscription, and maintenance of electronic information resources and laboratory facilities.
5. Academic technologists should be encouraged to maximize the use of available information resources to improve the quality and efficiency of service delivery.
6. Universities should formulate policies that promote continuous access to relevant information resources and encourage collaboration between libraries and academic technologists to strengthen teaching, research, and innovation.

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