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**The Adoption of ICT by Libraries of Teacher Colleges of Education in Northern Ghana:  
challenges and prospects**

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## **Abstract**

This study was conducted to investigate the adoption of ICT by libraries of teacher training colleges of education located in northern Ghana. The study area covers five administrative regions located in northern Ghana. These are the Northern Region, North East Region, Upper East Region, Savanna Region and Upper West Region. The survey method was used and questionnaire was used as data gathering tool. Copies of the questionnaire were issued to eight librarians of the eight teacher college libraries in the study area. Findings of the study revealed that the adoption of ICT by libraries of teacher training colleges of education located in northern Ghana was still a new phenomenon and therefore in a conception stage. The study also revealed that although the libraries use ICT in the provision of some services these services were inadequate because of some challenges such as inadequate funding, lack of skilled staff, and the lack of support from management. The study recommended that ICT literacy training should be given to college librarians since ICT is a dynamic environment which needs constant practice and training. It was also recommended that management of teacher colleges of education provide adequate support to the libraries by equipping them with modern ICT tools such as computers, printers and scanners to support their house keeping activities. The study also recommended that college librarians go on attachment programmes to understudy librarians in mainstream university libraries in order to learn the best practices in modern librarianship.

**Key words:** Information and Communication Technology, ICT, College Libraries, Adoption, Computers , Northern Ghana, Teacher Colleges

## **Introduction**

Qutab and Bhatti (2014) defined Information and Communication Technology (ICT) as made up of communication devices, radio, television, cell phones, computer and network hardware, satellite systems as well as the various services and appliances or gadgets used for video conferencing and distance learning. The term ICT also represents the hardware and software applications for information transportation and conducting communications linked by a vast array of technological protocols

ICT plays a major role in today's society. The use of the internet has made access to information quicker and faster at the click of a button thereby turning the world into a global village. This has brought about electronic librarianship with the diversification of library operations and services to users. The concept of virtual libraries, OPAC, Hypertext, and teleconferences for the purpose of library and information services have become common (Uddin & Hasan, 2012). Library "collections" are not only made up of physical information resources such as books, periodicals, videos, films, stored in physical library buildings, but now include digital resources created locally and those accessed over the Internet from computers that are managed by other libraries or information service providers.

The role of a college library in any institution of higher learning cannot be underestimated. College libraries are established to provide information services and resources to support the teaching, learning, and research of the parent institution. Globally, it is accepted that there is a positive relationship between the provision of efficient services by a library and its use of ICT (

Despite the immeasurable benefits of ICT to libraries, teacher colleges of education libraries located in the northern part of Ghana are lagging behind in terms of ICT use and application in

their day-to-day operations. This study therefore is to examine the extent of ICT usage among the libraries of the teacher colleges of education with emphasis on the challenges and prospects of ICT adoption and application.

Kalam, Nasirudin & Sayeed (2011) explored the extent of ICT usage by public and private university libraries in Bangladesh and found that public libraries are lagging behind in adopting ICT for library operations than libraries in the private sector. Reasons for this can be attributed to; low funding, lack of computer skills, lack of staff willingness, lack of support from college administration, inadequate number of computers, poor internet connections as well as lack of cooperation among libraries (Qutab and Bhatti, 2014). Mahanta and Das (2019) investigated the application of ICT in libraries in Assam, India. Chisenga (2015) Okon and Ogbodo (2014) examined ICT as a necessity for libraries and librarians in Nigerian Universities. In Ghana, Dzandza (2019) conducted a mixed method study on the use and management of information systems in academic libraries in Ghana.

The current study is the first of its kind to be conducted on the application of ICT by libraries in teacher colleges of education in Ghana. The study was to look at the extent at which Colleges in the Northern part of Ghana use ICT to provide routine services. This study is also undertaken because there is very little literature on teacher college libraries especially those located in northern Ghana and hopes to make recommendations that will improve the ICT situation in the college libraries.

### **Statement of the Problem**

The emergence of ICT has changed the information seeking behavior of library users. Previously, library users looked for information in physical resources such as books, newspapers,

maps, indexes and abstracts. However, with the proliferation of electronic information on the internet library users now have access to electronic information on computers, phones and other accessories which has put pressure on libraries to improve on service deliveries to remain relevant in the information industry. There is no better way to do this than for the adoption of ICT by libraries to provide advanced services to users. According to Okon and Ogbodo (2014) libraries have now become virtual, digital, paperless or electronic libraries offering on-line services of all kind, providing electronic resources and various databases to their users even outside the walls of the libraries. In this information age and with the Internet, it is possible for users to have access to a wide range of information. Libraries are using information and communication technologies for book and serial acquisitions, classification and cataloguing, reference service, user orientation service, circulation service, inter library loan, document delivery services, electronic contents, e-mail and chat assistance, web 2.0 interactive sharing, bibliographic service and photocopy services (Qutab and Bhatti, 2014). Thus libraries have adopted ICT to help them provide prompt services to users.

Despite the advantages of ICT to the operations of the library, Teacher Colleges libraries located in the northern Ghana are yet to take full advantage of this new innovation. Most of the operations undertaken in these libraries are still done manually and therefore tend to slow down service delivery to users. This study sought to investigate the extent to which these libraries are using ICT to provide services to their users. The study will also examine the challenges and prospects of the adoption of ICT in the operations of the libraries.

### **Objectives of the Study**

The study sought to investigate;

- The type of ICT equipment used by the libraries
- The ICT related services provided by the libraries
- Challenges of using ICT by the libraries
- Prospects of using ICT by libraries

## **LITERATURE REVIEW**

According to Kaware and Sain (2015), the term ICT is made up of Information, Communication and Technology which is “a combination of technological tools and resources that are used to manipulate and communicate information”. According to them ICT tools include; computers, internet and broadcasting technologies.

Anie and Achugbue ( 2009) on their part define ICT as the use of hardware, software and technological protocols to transmit information. According to them ICT also covers internet service provision, information technology equipment and services, media and broadcasting, library and documentation centers, network based information services and other related communication activities.

Shukla and Scholar (2016) described ICT as a collective term for all technologies that are used in the processing and transmission of information. Thus ICT includes computer technology, communication technology, multimedia technology, optical technology, networking and barcode technology, etc.

Adeleke and Olurunsola (2005) indicated that libraries must take a more proactive response to ICT to function effectively in the present age, the manual processes or methods will have to be

replaced by information and communication technologies (ICT) and a computer driven environment.

Iddrees (1995) as cited in Ramzan and Singh (2009) reported low use of ICT among academic libraries in Pakistan as the author identified automation of cataloging as the only area of ICT application in libraries. The study further revealed that only one library had internet connection and 60% of the libraries had only one computer each which was used for internet purposes.

Mahanta and Das (2019) investigated the application of ICT by college libraries in Assam, India and found that ICT infrastructure has a significant relationship with the ICT based services provided by the libraries. The study also revealed that there was an improvement of library activities through the application of ICT in the libraries.

Uddin and Hasan (2012) studied the ICT adoption rate of libraries located in the northern Bangladesh and found that most of the libraries use ICT technologies but they are in the embryonic stage. Problems encountered by most libraries included; political instability, lack of skilled personnel to work with new technologies and poor economic conditions.

Chisenga (2015) conducted a study on the strategies to enhance the adoption of ICTs and provision of innovative library and information services to meet the demands of users in Sub-sahara Africa. The study concluded that most libraries in Africa had automated their services; most libraries provided ICT facilities for use by users and these facilities included computers, internet, and mobile devices. Major challenges facing ICT adoption in Africa according to the study included; lack of funds to purchase ICT equipment and lack of skilled personnel to operate the ICT facilities in the libraries.



Victoria and Anthonia (2017) investigated the use of ICT in academic libraries in Nasarawa, Nigeria. The study reported that computers and the internet are the main ICT tools used to provide innovative library services. The study categorized the challenges of ICT adoption into three (3). These included: financial problem, lack of ICT manpower and lack of ICT facilities.

Elisha and Library (2006) in a study of the application of ICT among Nigerian libraries reported that libraries use ICT to provide online access to their resources and also to provide online reference service to users. The study also revealed the lack of funding, lack of knowledge in ICT by library staff and lack of comprehensive ICT policy as the main challenges facing the adoption of ICT by libraries.

Kalam et al. (2011) reported the lack of support from high authority, high cost of implementing ICT, lack of skilled manpower and lack of financial support as factors affecting the adoption of ICT among libraries in Bangladesh.

Considering the above literature, there are few studies done libraries. This study therefore, intends to bridge this research gap by looking into the adoption of ICT by libraries of the teacher colleges of education in northern Ghana.

## METHODOLOGY

The purpose of this study was to investigate the extent of the adoption and application of ICT by libraries of teacher colleges of education located in the northern part of Ghana in the delivery of their services to their patrons. The study adopted a quantitative approach of research. There are currently 8 teacher colleges of education in northern Ghana. Each of these libraries has a librarian as the head. A survey of librarians of all the 8 teacher colleges of education in northern Ghana was conducted to find out their ICT adoption level in the performance of their functions

and the delivering of their services to patrons. The population of the study was therefore all the 8 librarians of the 8 libraries of all the teacher colleges of education in northern Ghana. All the population were considered for the study hence there was no sample size and sampling technique. Google forms link containing questionnaires were sent to the librarians through their WhatsApp platforms to solicit their opinions on the ICT adoption of their libraries. All the 8 copies of the questionnaire sent were returned to the researcher; hence there was 100% response rate. The retrieved data was analyzed using google forms data analysis tool and presented in tables and charts. Simple percentages was used to analyzed the data

### **Research Settings**

Data was collected from all the 8 libraries of all the 8 teacher colleges of education located in the northern part of Ghana. These are the Bagabaga College of Education, Tamale, the E. P. College of Education, Bimbilla, Tamale College of Education, Tamale, and the St. Vincent College of Education, Yendi all located in the Northern Region. The rest are the Tumu College of Education, Tumu and Nusrat Jahan College of Education located in the Upper West Region. The Gambaga College of Education located in the North-East Region whilst St. John Bosco College of Education, Navrongo and the Gbewa College of Education, Pusiga are located in the Upper East Region. Each of these colleges has a library that supports research and information needs of the institutions. These libraries are managed by professional librarians whose duty is to provide administrative and functional services to the libraries.

### **PRESENTATION OF RESULTS**

The tables and charts below represent the results of the study

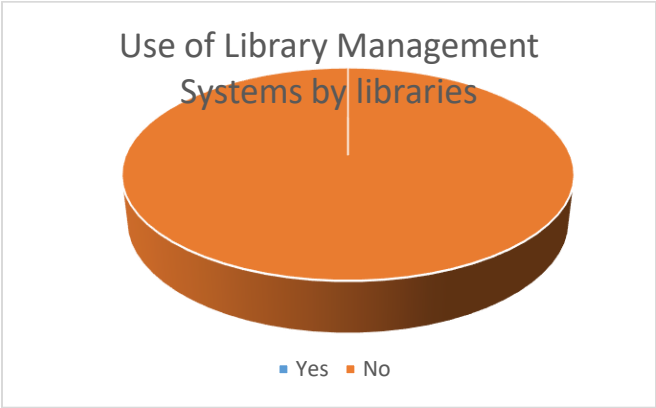
**Table 1. ICT resources use in the college library**

ICT equipment	No. of Colleges	Percentage of Usage (%)
Desktop and laptop computers	8	100
Printers	6	75
Photocopy machine	5	65
Scanner	1	12.5
Internet connection	6	75
CD/DVD players	0	0
Projector	3	37.5

Source: Field Survey, 2021

The table above depicts the ICT resources use by teacher college of education libraries in the study area. The results show that all the libraries use desktop and laptop computers to provide services 8(100%). Printers 6(75%), internet connection 6(75%), photocopy machines 5(65%), projectors 3(37.5%) and scanners 1(12.5%) were other ICT resources used by libraries of teacher colleges of education in northern Ghana.

**Figure 1. Use of library management system**



Source: Field Survey, 2021

Respondents were asked to indicate ‘yes’ or ‘no’ about the use of library management system in their libraries. None of the libraries in the teacher colleges of education located in the northern Ghana was using a library management system as all the librarians indicated that they were not using it. This data is shown in the diagram above.

**Table 2. State of ICT resources in the College libraries**

Comment	Very poor (1)	Poor (2)	Fairly good (3)	Good (4)	Very good (5)
ICT resources are available in your library	(27.3%)	(18.2%)	(45.5%)	(0%)	9.1%
The ICT resources in your library is good for your service delivery.	9.1%	72.7%	0%	9.1%	9.1%

Source: Field Survey, 2021

To find out the ICT resources availability level in the libraries, the researcher asked the librarians to rate the ICT resources availability and how good the ICT resources at a 5-point scale. 1 was considered 'very poor', 2 'poor', 3 'fairly good', 4 'good' and 5 'very good'. On the ICT resources availability, 27.3% indicated that ICT resources in their libraries were very poor, 18.2% indicated poor ICT resources, 45.5% indicated that ICT resources were fairly good in their libraries and 9% indicated their ICT resources were very good. This can be seen in Table 2 above. Results for the question on how good ICT resources were providing effective services in the library, 72.7% and 9.1% said ICT related services were poor and very poor respectively and 9.1% said their ICT services were very good. The findings revealed that even though some ICT resources are available in their various libraries, they are not in good enough to provide good services to patrons. This can be seen from the findings where most libraries (45.5%) in the colleges responded that ICT resources were available: however, majority (about 80%) of the libraries also indicated that their ICT related services were poor.

**Table 3. ICT related services provided by libraries**

Services	No. of libraries	Percentage (%)
Online reference services	2	25
OPAC	0	0
Social media services	1	12.5
Photocopying/Printing services	4	50
Online marketing of resources	1	12.5
Plagiarism detection services	0	0
Online user education	0	0
E-resources	1	12.5
None of the above	4	50

Source: Field Survey, 2021

Respondents were asked to indicate the ICT services provided by their libraries. Photocopying and printing services were the ICT services provided by most of the libraries as 4 out of the 8 libraries selected it representing 50% of the libraries. Other services provided by the libraries were online reference services, 2 libraries engaged in it (25%), social media services 1 (12.5%), online marketing of resources 1 (12.5%) and 1 (12.5%) provide E-resources to their clients. Also, 50% of the libraries provide other services apart from the ones mentioned above. However, none of the libraries has the following services: OPAC, online education and plagiarism detection services. These services that are lacking in the college libraries are essential to the provision of quality services to 21<sup>st</sup> century user of the library. Because users today are referred to as digital natives; they always want information at the lowest cost, at all times and at all places. The presence of OPAC in the library has fastening information acquisition in the library. User education enables users to be information literates, so that they can determine when information is needed, exactly which information is needed, where to locate the needed information and how

to locate it. The absence of this in a typical academic library means that it will have serious implications on the type of services provided.

**Table 4. Rating of ICT related services**

Rating	No. of libraries	Percentage
Very good ICT services (5)	0	0%
Good (4)	1	12.5%
Fairly good (3)	0	0%
Poor (2)	6	75%
Very poor (1)	1	12.5%

Source: Field Survey, 20121

The researcher asked respondents to rate the ICT services of the various libraries as follows: ‘1’ is ‘very poor’, ‘2’ is ‘poor’, ‘3’ is ‘fairly good’, ‘4’ is ‘good’ and ‘5’ is very good. 12.5% of respondents said their ICT services were good but none of them said their ICT services were very good. The study also revealed that 60% and 12.5% of the libraries provide poor and very poor ICT services respectively. Based on the above findings, though the libraries provide some ICT related services, the services are not adequate to support the needs of users. This findings confirmed Uddin & Hasan (2012) study on academic libraries in Bangladesh. His study revealed that most libraries adopt ICT in Bangladesh but their adoption is at the initial stage, hence not adequate to meet the needs of their users.

**Table 5. Challenges of using ICT in the library**

Challenges	No. of libraries in percentages (%)
Lack of ICT skills of librarians	36.4%
Inadequate ICT equipment in the library	100%
Lack of funding to purchase ICT equipment	100%
Lack of interest by management to support the library	63.6%
Other	9.1%

Source: Field Survey, 2021

The above table contains results of challenges facing libraries in teacher colleges in Northern Ghana. Lack of Funding (100%) and inadequate ICT equipment (100%) in the libraries were revealed to be the main challenges facing ICT adoption by libraries. Other challenges included: Lack of skilled staff to operate ICT resources (36.4%), lack of support from management of various educational institutions to the libraries in their effort to adopting ICT and many other challenges (9.1%).

## **ANALYSIS OF THE RESULTS**

The study was designed to achieve the following objectives: The type of ICT equipment used by libraries in teacher Colleges of Education in Northern Ghana; The ICT related services provided by the libraries and the Challenges facing the libraries to adopt ICT. The analysis of the study will be based on these three (3) objectives.

### **The ICT Equipment used by Libraries**

The study revealed that all the libraries in northern Ghana have either desktop computers or laptop computers. Most libraries also own one or more printer(s) or photocopy machine and are fully connected to the internet. The results also revealed that the libraries also have other ICT resources such as scanners and projectors. The study revealed that the libraries have some hardware ICT tools that can support them perform basic ICT task of scanning, photocopying, printing. These findings agreed with Chisenga (2015) and Victoria & Anthonia (2017) whose findings revealed that academic libraries adopt ICT tools such as computers, printers, internet and photocopy machines to provide services to patrons except the findings of Iddrees (1995) which reported low use of internet among academic libraries in Pakistan. They lacked modern ICT tools that assist libraries to provide customized services to users.

### **The ICT services provided by libraries**

The ICT services that are provided by libraries according to study include: social media service, online reference service, photocopying and printing services. The study however revealed that most of the libraries do not provide online services; out of eight libraries, only one library provides online reference service, media service and online marketing of resources. The study also revealed that the general ICT services provided by the libraries is poor. This findings confirmed the findings of Ramzan & Singh (2009) whose study reported that academic libraries in Pakistan are far behind in adopting ICT tools in service delivery.

### **Challenges facing the libraries to adopt ICT**

The study revealed the following challenges facing Teacher College libraries located in Northern Ghana in their attempt to adopt ICT: inadequate ICT equipment, inadequate funds to purchase ICT equipment, lack of skilled personnel to man the ICT equipment and the lack of the support of management to the libraries. This implies that libraries in the study area had inadequate ICT resources, inadequate skilled personnel and also lacked support from the management of the academic institutions to acquire the needed ICT equipment to enable them provide effective services to users. This confirms the study by Al-Qallaf and Al-Azmi (2002); Victoria & Anthonia (2017); Elisha & Library (2006); Kalam et al. (2011); and Chisenga (2015). Each of these researchers reported the following as the challenges of ICT adoption by academic libraries: lack of funding, lack of skilled personnel, lack of ICT facilities, lack of ICT policies, high cost of implementing ICT and lack of support by management of institutions.



## **. Conclusion**

After the research data was presented and analyzed, the following conclusions were drawn from the results of the study:

- Libraries in teacher colleges of education in northern Ghana incorporate ICT into the performance of some basic library functions and services though their use of ICT is not enough to take them to the level of their counterparts in the developed world.
- The study also reveals that libraries in northern teacher colleges of education provide some ICT related services to their patrons.
- It is also found that the libraries lacked the following: skilled ICT personnel, funding, support from management, adequate ICT equipment and others that have direct impact on their service delivery.

## **Recommendations**

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

- Management of teacher colleges of education should equip the college libraries with modern ICT tools that can help in providing good services to users.
- In-service trainings on ICT should always be organized for staff of the libraries.
- Staff of the libraries must have the opportunity to do attachments at the mainstream universities where ICT application is in advance stages.
- Budget allocation to the libraries must always be appropriated to them to take care of their ICT and other related needs.
- ICT literacy training must be given to the library staff to enable them use the ICT resources to provide better services.

- Management should support the libraries in their bid to provide services to users.

### **Recommendation for Further Research**

This study was conducted to establish the usage of ICT by libraries in teacher colleges of education within the northern part of Ghana. Further studies that are aimed at establishing the usage of ICT in colleges of education could be extended to cover all teacher colleges of education libraries in Ghana. Also, a study could also be conducted on the impact of ICT knowledge on ICT use by staff of libraries of teacher colleges of education in Ghana.

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