

# Digital Divide as Predictors of Access to Information Resources in ICT Based Services in Colleges of Education in Borno State

**Maryam Bomai Zarma (CLN)**

Ramat Library, University of Maiduguri, Borno State, Nigeria

**Emmanuel Amiel Usman (CLN)**

Ramat Library, University of Maiduguri, Borno State, Nigeria

**Wavi Pur Mamza (PhD)**

Department of Library and Information Science, Modibbo Adama University Yola, Adamawa State, Nigeria

doi: <https://doi.org/10.37745/ijliss.15/vol11n21123>

Published April 06, 2025

---

**Citation:** Zarma M.B., Usman E.A., and Mamza W.P. (2025) Digital Divide as Predictors of Access to Information Resources in ICT Based Services in Colleges of Education in Borno State, *International Journal of Library and Information Science Studies*, Vol.11, No.2, pp.11-23

---

**Abstract:** *The study investigated the digital divide as predictors of access to information in ICT- based library services in colleges of education in Borno state. The objectives that guided the study were to: Assess the socio-economic status of users in accessing information resources in Colleges of Education in Borno state; Examine the impact of geographical location of users on access to information resources in Colleges of Education in Borno state and, Determine the impact of literacy level of users in accessing information resources in Colleges of Education in Borno state. In line with the objectives, three research questions and three null hypotheses were answered. This study adopted descriptive survey research design. The targeted population of this study was one hundred and six eighty-four (164) registered library users of Shehu Kyari library, Umar Ibn Ibrahim College Education science and Technology Bama and College library, Waka Biu College of Education. The study adopted purposive sampling technique since the entire population can be managed. The researcher used a self-designed questionnaire as the research instrument for data collection using the modified four (4) likert scale with 1= Strongly Agree, 2 = Agree, 3 = Disagree, 4 = Strongly Disagree. The regression analysis was used to test the null hypothesis at 0.05 level of significance using the Statistical Packages for Social Sciences (SPSS). The study found that: There is a positive very high relationship [ $r = 0.68$ ] between the Socio-Economic Status of users and access to ICT - Based library services Borno State tertiary institutions. Furthermore, a significant relationship exists between socio economic status of users and access to information in ICT- based library services carried out in the libraries [ $0.02 < 0.05$ ].; There is a positive high relationship [ $r= 0.73$ ] between the geographical location of library users and access to ICT - Based library services Borno State tertiary institutions. Interestingly, a significant relationship exists between the geographical location of library users and access to ICT - Based library services carried out in the libraries [ $0.04 < 0.05$ ].and, there is a positive high relationship [ $r= 0.73$ ] between the literacy level of users and access to ICT - Based library services Borno State tertiary*

*institutions. Furthermore, a significant relationship exists between the geographical location of library users and access to ICT - Based library services carried out in the libraries [0.01 < 0.05].*

**Keywords:** digital divide, predictors access to information ICT- based services, colleges of education, Borno state

---

## INTRODUCTION

The advent of Information and Communication Technologies (ICT) has ushered in a new era characterized by rapid information dissemination and accessibility. Libraries, as repositories of knowledge, have embraced ICT to transform their services, evolving into ICT-driven information centres. This paradigm shift promises to democratize access to information, fostering learning, research, and development. While ICTs have the potential to revolutionize education, research, and development, their benefits are unevenly distributed, with certain populations, regions, and socioeconomic groups experiencing limited access and utilization (Norris, 2021).

The digital divide is a term coined to describe the gap between those with access to information and communication technologies (ICTs) and those without, has emerged as a critical issue in contemporary society (Van Dijk, 2006). It refers to the gap between people who have adequate access to ICT and those who have 'zero' or poor access to ICT. Rogers (2016) has referred to this issue as an important for social justice in the twenty-first century. Although swift advances in technology have occurred, the digital gap remains ever-present (Centeio, 2017). Relating Digital Divide to library service, is the gap between those students who have access to digital technology at home and those who do not. Galuszka, (2007) examined it as the inequitable distribution of technology resources such as telecommunication and broadband by the government so that urban, suburban and rural areas can have equal opportunities to implement educational technologies in their communities.

The digital divide can exist between those living in rural areas and those living in urban areas, between the educated and uneducated, between economic classes and on a global scale between more and less industrially developed nations. Without mix of words, digital divide form the basis to equip libraries and build librarians' capability in technology use, encounter acceptance, sustainability and scalability challenges (Resta & Laferrière, 2015). This disparity is particularly pronounced in developing regions, where infrastructure, economic constraints, and educational challenges exacerbate the issue. Borno State is a region grappling with insurgency and underdevelopment deserves more attention from ICT based knowledge management but is currently seems to be facing challenges associated with bridging the digital divide.

Consequently, the region's educational sector, particularly higher education institutions such as Colleges of Education, has grappled with limited access to ICT resources and services. However,

the potential of these ICT-driven libraries to support teaching, learning, and research is contingent upon the availability and accessibility of ICT infrastructure and resources. Such initiatives aimed to equip library and build librarian capability in technology use encounter acceptance, sustainability and scalability challenges (Resta & Laferrière, 2015). This study seeks to understand the factors contributing to the digital divide in this context, the implications for information access, and the potential strategies to mitigate the disparities. By examining these issues, the study aims to contribute to the body of knowledge on the digital divide in education, informing policy decisions and interventions to promote equitable access to information and ICT resources in Borno State and beyond.

### **Statement of the Problems**

The integration of ICTs into library services has the potential to revolutionize teaching, learning, and research in these institutions. The advent of Information and Communication Technologies (ICTs) has ushered in an era of unprecedented access to information, transforming libraries into dynamic hubs for knowledge dissemination. However, the realization of this potential is hindered by the persistent digital divide, a chasm that separates those with access to ICTs from those without. This disparity is particularly pronounced in developing regions, where infrastructure, economic constraints, and educational challenges exacerbate the issue. However, the limited access to computers, internet connectivity, and digital skills among the college community it seems to be it poses a significant barrier to harnessing the full potential of ICT-driven library services. This digital divide may inequitable access to information resources, hindering library users and the overall quality of education. Consequently, this study seeks to investigate the extent to which the digital divide impedes access to information within ICT-driven library services in Colleges of Education in Borno State.

### **Objective of the Study**

The general objective of this study was to assess digital divide as predictors of having access to information in ICT- based services in colleges of education in Borno State while the specific objectives were to:

1. Assess the relationship between the socio-economic status of users and access to information resources in Colleges of Education in Borno state.
2. Examine the relationship between the geographical location of users and access to information resources in Colleges of Education in Borno state.
3. Determine the relationship between the literacy level of users and access to information resources in Colleges of Education in Borno state

### **Research Question**

1. What is the relationship between the socio-economic statuses of users and accessing information resources in Colleges of Education in Borno State?
2. What is the relationship between the geographical location of library users and access to information resources in Colleges of Education in Borno State?

3. What is the relationship between the literacy level of users and access to information in colleges of education in Borno State?

**Hypothesis**

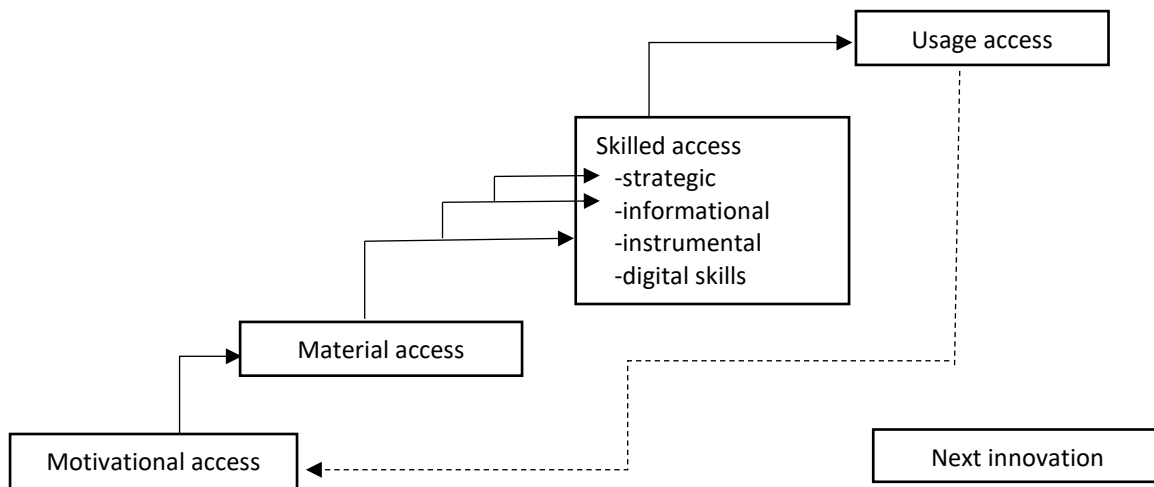
**H<sub>01</sub>** There is no significance relationship between socio-economic status of users and access to information in Colleges of Education in Borno state

**H<sub>02</sub>**: There is no significant relationship between geographical location of library users and access to information resources in Colleges of Education in Borno State

**H<sub>03</sub>** There is a significant relationship between the literacy level of users and access to information in College of Education in Borno state

**Theoretical Framework**

The theoretical framework of the study is anchored on Digital Divide Model propounded by Van Dijk in 2012.



**Figure 1.1: Adapted Digital Divide Model (van Dijk 2012)**

The model is a multifaceted access to ICT, where access problems progressively shift from the first two stages or kinds of access (physical and motivational access) to the last two (skills and usage access). This model suggests that the digital divide, between two groups or segments of the society, can occur at any one, two, three, or all four stages of access to digital technologies. The profunder of the model believes that access problems of ICT progressively shift from the first two stages or kinds of access (physical and motivational access) to the last two (skills and usage access). This model suggests that the digital divide, between two groups or segments of the society, can occur at any one, two, three, or all four stages of access to digital technologies.

Motivational access refers to an individual’s wish or intent to “adopt, acquire, learn, and use” digital technologies (van Dijk 2005). In other words, it is about the mental readiness of an

individual to have and use digital technologies. Lack of motivation in acceptance of emerging technologies has always been on top of the list of problems preventing technology adoption (van Dijk 2012). Material or physical access Material or physical access refers to the custody or authorization to use digital technologies. According to van Dijk (2005), digital skills do not mean only the ability to operate computers and other related digital technologies but it also includes the skills of searching, selecting, and applying information strategically to promote one's position in the community. He has suggested three successive levels of digital skills: operational skills, informational skills, and strategic skills. Operational skills Operational skills, one's ability to operate computer, network and software, is a necessary condition to higher levels of digital skills – informational and strategic skills. These skills involve handling computer files, skills to perform basic operations in word processing, spreadsheets, presentation, media player and utility software, surfing the Internet, and emailing.

Informational skills although operational skills have received much attention, having ability to work with information are indispensable in an information society (van Dijk 2005). van Dijk has defined informational skills as one's ability to search, select, process, and assess information in computer and network resources. Strategic skills According to van Dijk (2005), strategic skills reflect individuals' capabilities to use computer and network sources as the vehicle to reach specific goals as well as the general goal to promote one's position in the society. Strategic skills are not learned in a formal educational environment or on the work in categorical ways but are assimilated into the day-to-day practices of work, education, and leisure time (van Dijk 2005) Usage access An individual might have fulfilled the minimum requirements of the first three levels – he or she is motivated to possess and use a computer and Internet, has material access to them, and knows how to use them; but nevertheless he or she has “no need, occasion, obligation, time, or effort to actually use them” (van Dijk 2005)

## **LITERATURE REVIEW**

In a study conducted by Cecilia and Shaun (2021) on the global Covid-19 pandemic found that it has created a heightened sense of awareness of the inequalities that prevail in society. They further added that the issue of external factors including those of corruption, lack of training and community exclusion are determinants of ICT adoption in a rural community. Similarly, Soomro et al. (2020) conducted a survey on the challenges in digital divide on access to various dimensions of information and communication technology (ICT) including physical access, motivation, skills, and actual usage of digital technologies. The findings revealed that there were significant differences in the faculty's access to technology at the four levels in respect of their personal and positional categories owing to socio economic status of the users, Consequently, Wisdom et-al. (2024) while exploring on the adoption trends, challenges, and opportunities surrounding Information and Communication Technology (ICT) and emerging technologies in the Africa-US contexts. It identifies key drivers influencing technology adoption and outlines innovative

solutions for sustainable development by analysing the current state of ICT infrastructure, policy frameworks, socio-economic factors, and cultural considerations.

The gap (digital divide) between children from low-income families and others according to Norris (2021) may negatively affect one's education pipelines. It is important that the digital divide does not lead to social exclusion. He suggested the need for the various groups of people who cannot benefit from the digital technology because of lack of access or poor skills. Originally, the digital divide was attributed to internet access. The socio-economic disparities and parents' perceptions of the importance of technology use may also result in digital divide. If parents do not think technology is an essential tool in the children's education, they may not choose to invest in technology which may eventually negatively affect their children's learning abilities. Also, students' educational outcomes in the long term is crucial to ensure that students have equal access to technology

In a separate note from Gupta, Bodhi and Salim (2024) and Marsh, Vallejos and Spence (2022) shows that, social norms regarding technology use, such as expectations of constant connectivity without paying for the airtime and digital engagement, may contribute to issues such as technology addiction and digital fatigue. They equally noted that, it is almost certain that the developing countries which do not adopt and adapt to these changes will be marginalized, widening the digital divide. They suggested for the need to extent their capabilities to the remote locations for users to enable to access the major part of the country

In a study carried out by Ngmenkpieo, et-al. (2023) on the evolving digital landscape of today, a notable transformation towards digitalization across diverse domains with specific emphasis on the integration of ICT in school management discovered that, literacy level of the users is a key factor in digital divide and suggested for an immediate training initiatives, infrastructural enhancements, and the design and adoption of user-centric ICT tools as pivotal strategies to capacitate head teachers. Similarly, in a separate remark from Balakrishnan (2021) on technophiles' view as the Information and Communication Technologies (ICT) that herald the arrival of the new information era and are key factors for social change adding that, it requires vigorous literacy training skills.

The problem emanating from the government of poorer countries according to Gupta, Bodhi and Salim (2024) will not be able to do this. Digital literacy computer skills are now a requirement for all college students but due to the divide, minorities or underserved students from low-income families may not be competitive candidates or be accepted into college with insufficient technology skills. In the views of Romalyn and Erico (2021) digital divide most be centred on access to various dimensions of information and communication technology (ICT) including physical access, motivation, skills, and actual usage of digital technologies found that, the divide tends to be even wider in the context of developing countries.



## METHODOLOGY

This study adopted descriptive survey research design. The targeted population of this study was one hundred and six eighty four (164) registered library users of Shehu Kyari library, Umar Ibn Ibrahim College Education science and Technology Bama and College library, Waka Biu College of Education. The entire population was used for this study and hence purposive sampling technique was used. The researcher used a self-designed questionnaire as the research instrument for data collection. The researcher adopted the modified four (4) likert scale with 1= Strongly Agree, 2 = Agree, 3 = Disagree, 4 = Strongly Disagree. A split-half reliability coefficient of 0.70 was obtained using the Pearson Product Moment Coefficient. Descriptive statistics of frequency counts and percentage scores as well as mean and standard deviation were used in analysing the data that answered the research questions. The Pearson Product Moment Correlation (PPMC) was used to test the one null hypothesis at 0.05 level of significance using the Statistical Packages for Social Sciences (SPSS).

### Data Analysis, Results and Discussion

Out of the 164 questionnaires distributed to the respondents in Shehu Kyari library, Umar Ibn Ibrahim College Education science and Technology Bama and College library, Waka Biu College of Education 138 (84%) copies were duly completed, returned and found valid for the analysis.

**Research Question One:** What is the relationship between the socio-economic statuses of users and accessing information resources in Colleges of Education in Borno State?

**Table 1: Pearson's Correlation Analysis of the Relationship between the Socio Economic Status of users and access to ICT =Based library services**

Variables	Mean	Std.	N	R	r <sup>2</sup>
Socio economic status of users	3.4203	1.34442	138	068	.541
Access to information in ICT- based library Services	2.8333	.83345	138		

Table 1 presents the result of the relationship between the Socio Economic Status of users and access to ICT - Based library services in Borno State tertiary institutions.. It reveals that the correlation coefficient [r] is 0.68. This suggests that there is a positive high relationship between the Socio Economic Status of users and access to ICT - Based library services Borno State tertiary institutions This result implies that the more the improved the socio economic status of users, the more it will positively reflect on access to information in ICT- based library Services. The table also reveals that the coefficient of determination [r<sup>2</sup>] is associated with the correlation

coefficient [r] of 0.68 is .54. This implies that 54% of Socio Economic Status of users could predict access to information in ICT- based library Services

**H0<sub>1</sub>** There is no significance relationship between socio-economic status of users and access to information in Colleges of Education in Borno state

Table 2: *ANOVA on the Relationship between the Socio Economic Status of users and access to ICT =Based library services*

Model	Sum of Squares	df	Mean Square	F	Sig.	Decision
Regression	.982	1	.982	241.322	.002	Significant
Residual	46.641	136	1.814			
Total	247.623	137				

*DF= degree of freedom, Sig = Level of Significance p 0.05, F = F*

Table 2 shows that the obtained F-ratio 241.322 is significant at the 0.02 level. The null hypothesis was rejected because 0.02 is less than the 0.05 level of significance set for the study. Therefore, it can be inferred that a significant relationship exists between socio economic status of users and access to information in ICT- based library services carried out in tertiary institutions in Borno state.

**Research Question Two:** What is the relationship between the geographical location of library users and access to information resources in Colleges of Education in Borno State?

Table 3: *Pearson's Correlation Analysis of the Relationship between the access to information resources and access to ICT =Based library services*

Variables	Mean	Std.	N	R	r <sup>2</sup>
geographical location of library users	3.3287	1.93243	138	.073	.623
Access to information in ICT- based library Services	2.3422	.78465	138		

Table 3 presents the result of the relationship between the geographical location of library users and access to ICT - Based library services in Borno State tertiary institutions.. It reveals that the correlation coefficient [r] is 0.73. This suggests that there is a positive high relationship between the geographical location of library users and access to ICT - Based library services Borno State tertiary institutions. This result implies that the more the improved the socio economic status of users, the more it will positively reflect on access to information in ICT- based library Services. The table also reveals that the coefficient of determination [r<sup>2</sup>] is associated with the correlation



coefficient [r] of 0.73 is .62. This implies that 62% of geographical location of library users could predict access to information in ICT- based library Services.

**Ho<sub>2</sub>:** There is no significant relationship between geographical location of library users and access to information resources in Colleges of Education in Borno State

Table 4: *ANOVA on the Relationship between the access to information resources and access to ICT =Based library services*

Model	Sum of Squares	df	Mean Square	F	Sig.	Decision
Regression	.823	1	.756	223.291	.004	Significant
Residual	48.082	136	1.923			
Total	213.342	.623	241			

*DF= degree of freedom, Sig = Level of Significance p 0.05, F = F*

Table 4 shows that the obtained F-ratio 223.291 is significant at the .004 level. The null hypothesis was rejected because 0.004 is less than the 0.05 level of significance set for the study. Therefore, it can be inferred that a significant relationship exists between geographical location of library users and access to information in ICT- based library services carried out in tertiary institutions in Borno state.

**Research Question Three:** What is the relationship between the literacy level of users and access to information in colleges of education in Borno State?

Table 5: *Pearson's Correlation Analysis of the Relationship between the literacy level of users and access to ICT =Based library services*

Variables	Mean	Std.	N	R	r <sup>2</sup>
Literacy Level Of Users	3.5902	2.4120	138		
Access to information in ICT- based library Services	2.6342	73464	138	061	.531

Table 5 presents the result of the relationship between the literacy level of users and access to ICT - Based library services in Borno State tertiary institutions. It reveals that the correlation coefficient [r] is 0.61. This suggests that there is a positive high relationship between the literacy level of users and access to ICT - Based library services Borno State tertiary institutions. This result implies that the more the improved the literacy level of users, the more it will positively reflect on access to information in ICT- based library Services. The table also reveals that the coefficient of determination [r<sup>2</sup>] is associated with the correlation coefficient [r] of 0.61 is .53.

This implies that 53% of literacy level of users could predict access to information in ICT- based library Services.

**H0<sub>3</sub>** There is a significant relationship between the literacy level of users and access to information in College of Education in Borno state

Table 6: *ANOVA on the Relationship between the literacy level of users and access to ICT - Based library services*

Model	Sum of Squares	df	Mean Square	F	Sig.	Decision
<b>Regression</b>	.632	1	.612	541.086	.001	Significant
<b>Residual</b>	51.032	136	2.1723			
<b>Total</b>	312.342	137				

*DF= degree of freedom, Sig = Level of Significance p 0.05, F = F*

Table 2 shows that the obtained F-ratio 541.086 is significant at the .001 level. The null hypothesis was rejected because 0.001 is less than the 0.05 level of significance set for the study. Therefore, it can be inferred that a significant relationship exists between the literacy level of users and access to information in ICT- based library services carried out in tertiary institutions in Borno state.

### Summary of Major Findings

Based on the study carried out on the digital divide as predictors of access to information in ICT- based library services in colleges of education in Borno state, the following are the summary of major findings:.

1. There is a positive very high relationship [ $r = 0.68$ ] between the Socio Economic Status of users and access to ICT - Based library services Borno State tertiary institutions. Furthermore, a significant relationship exists between socio economic status of users and access to information in ICT- based library services carried out in the libraries [ $0.02 < 0.05$ ].
2. There is a positive high relationship [ $r = 0.73$ ] between the geographical location of library users and access to ICT - Based library services Borno State tertiary institutions. Interestingly, a significant relationship exists between the geographical location of library users and access to ICT - Based library services carried out in the libraries [ $0.04 < 0.05$ ].
3. There is a positive high relationship [ $r = 0.73$ ] between the literacy level of users and access to ICT - Based library services Borno State tertiary institutions. Furthermore, a significant relationship exists between the geographical location of library users and access to ICT - Based library services carried out in the libraries [ $0.01 < 0.05$ ].

## **DISCUSSION OF FINDINGS**

The analysis revealed that socio-economic status of users in accessing digital divide, laptop/computer, iPad/Tablet, printer/photo copy machine, personal router and smartphone are unaffordable with the exception of subscribing data and memory card/hard disc/flash disc this study is related with work of Olatunji (2021) stated that developing countries like Nigeria, where ICT infrastructure is often underdeveloped, the educational landscape is characterized by disparities in access to digital resources and services. Borno State, located in the North-eastern region of Nigeria, has faced significant challenges, including insurgency and underdevelopment, which have adversely affected its socio-economic and infrastructural development. Consequently, the region's educational sector, particularly higher education institutions such as Colleges of Education, has grappled with limited access to ICT resources and services. Libraries, traditionally seen as knowledge repositories, have undergone a transformation with the integration of ICT, evolving into dynamic information centres. However, the potential of these ICT-driven libraries to support teaching, learning, and research is contingent upon the availability and accessibility of ICT infrastructure and resources.

Furthermore, a significance relationship between socio-economic status of users and impact of location to digital divide. Therefore, since the calculated r-value 0.68 was greater than the p-value of .002, the null hypothesis is accepted. This implies that there is a significant relationship between Socio-economic status and impact of location on digital divide among the library users of College of Education in Borno State.

The analysis revealed that impact of geographical location to digital divide on access to information resources through ICT it makes report writing, assignment, payment of school fee through remitter, searching for information, making multiple tasks very difficult this finding has corroborated with work of Bonfadelli (2002) opine that the major ICT discussed in this field was the Internet. The reason might be that the supply of information by the Internet is more heterogeneous and potentially unlimited than for other ICTs, while on the other hand access to the Internet is still restricted in many areas due to technical and economic barriers. Furthermore, in comparison to the other ICTs, the use of the Internet requires a much more active and skilled user.

Subsequently, a significant relationship between the literacy level of users and access to ICT - Based library services carried out in the libraries. Therefore, since the calculated r-value 0.73 was greater than the p-value of .004, the null hypothesis is rejected. This implies that there is a strong significant relationship between literacy level and Socio-economic status on digital divide among the library users of College of Education in Borno State.

The analysis revealed that literacy level of digital predictor among users, are retrieving a right information, they are not just confidence of ICT gadget (phobia), create a mail account and AI account for my research purpose, using Microsoft word office, using some of the ICT tools are the

challenges of library users with exception of connect my gadget with internet is a challenge and upload and downloading of document is tough this finding has corroborated with work of (Ogude, 2010) highlighted that developing countries, including Nigeria, have been focal points in digital divide. The challenges posed by inadequate infrastructure, low levels of digital literacy, and economic disparities in bridging the digital gap. These factors have implications for access to information and knowledge, with potential consequences for among library users. Kazadi and Kim (2012) highlight the importance of digital literacy skills for effective use of ICT-driven library services. Students with strong digital literacy competencies are more likely to benefit from the resources and services offered by libraries.

In line with the hypothesis three above, a significant relationship exists between the geographical location of library users and access to ICT - Based library services carried out in the libraries [0.01 < 0.05]. This explains that the closer the users to the ICT based facilities, the more they can access the information services generated through the ICT technologies.

## **CONCLUSION AND RECOMMENDATIONS**

The introduction of ICT based information services is the best ever witnessed technology that allows access to information with restricting its domain to either rich or poor users. In fact, it has silenced the barriers of distance, cost and exhaustiveness. ICTs have the potential to revolutionize education, research, and development, their benefits are unevenly distributed, with certain populations, regions, and socioeconomic groups experiencing limited access and utilization. However, some group of users arising from socio-economic status, geographical location and the inability to have the surfing skills have difficulties to access this breakthrough in the field of information sharing and the implication of this is that, they would not have the ability to move with the latest trends in educational activities, research and developments. Unless something is urgently done to link such groups of individuals to the civilized society, they will ever remain irreverent.

Based on the above envisaged advantages that certain groups of information users stands to lose, the following recommendations should be taken into consideration:

- 'Government and non-governmental organizations should find a way of encouraging seriously academic minded users by a way of providing them access to ICT based information resources;
- Government and its relates agencies should work toward ensuring the rural development projects such rural electrification, rural community ICT centers should be established for the benefit of rural dwellers to access internet services and,
- The federal ministry of education and science and technology should incorporate ICT literacy skills as prerequisite courses of study in all levels of education to enable students have the required knowledge to access ICT resources for surfing for information.

## REFERENCES

- Kamal Ahmed Soomro, Ugur Kale, Reagan Curtis, Mete Akcaoglu, and Malayna (2020) Bernstein. *International Journal of Educational Technology in Higher Education* 17:21 <https://doi.org/10.1186/s41239-020-00191-5>
- Ngmenkpieo, F., Tseer, T., Chirani, F. (2023). The Digital Edge in Education: Harnessing ICT for Optimal School Management. *Politi Sci Int*, 1(2), 87-96.
- Wisdom, S. U, Nneka, A. O., Olatunji, A. and Yinka, J. O. (2024). Conceptualizing emerging technologies and ICT adoption: Trends and challenges in Africa-US contexts. *World Journal of Advanced Research and Reviews*, 2024, 21(03), 1676–1683. <https://doi.org/10.30574/wjarr.2024.21.3.0872>
- Srinivasan, S., Barchas, I., Gorenberg, M., & Simoudis, E. (2014). Venture capital: fueling the innovation economy. *Computer*, 47(8), 40-47.
- Gupta, T., Bodhi, R., & Salim, M. (2024). The Interplay between Social Media Addiction, Emotional Exhaustion, and Social Media Fatigue: A Comprehensive Review of the Literature. *Academy of Marketing Studies Journal*, 28(2).
- Marsh, E., Vallejos, E. P., & Spence, A. (2022). The digital workplace and its dark side: An integrative review. *Computers in Human Behavior*, 128, 107118.
- Munirathinam, S. (2020). Industry 4.0: Industrial internet of things (IIOT). In *Advances in computers* (Vol. 117, pp. 129-164): Elsevier.
- Romalyn L. G. and Erico M. H. (2021) Technology Acceptance and Digital Divide as Correlates of Performance Among Engineering Students and Teachers: Inputs to Educational Technology Acquisition and Adaptation Model. *Proceedings of the International Conference on Industrial Engineering and Operations Management Rome, Italy, August 2-5, 2021*
- N. Balakrishnan, (2001). Information and communication technologies and the digital divide in the Third World countries. *Supercomputer Education and Research Centre, Indian Institute of Science, Bangalore 560 012; and Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore 560 064, India.*
- Norris, P., (2001). *Digital Divide and the Internet World Wide*. London Cambridge University Press.
- Van Dijk, J.A.G.M. (2006). Digital divide research, achievements and shortcomings. *Poetics*, 34(4-5), 221-235.