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DIGITAL LITERACY SKILLS AS CORRELATE OF USE OF CLOUD COMPUTING TECHNOLOGIES BY LIBRARIANS IN PUBLIC UNIVERSITY LIBRARIES IN ANAMBRA STATE

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Abstract

This study investigated the relationship between digital literacy skills and use of cloud computing technologies by Librarians in university libraries in Anambra State. Correlational research design was used for the study. Four research questions guided the study and four hypotheses were tested at 0.05% level of significance. The population of the study consist of all the 46 librarians working in public universities in Anambra State. No sampling was done as the population was of manageable and adequate for the study. Structured questionnaire was used to collect data for the study. The instruments were validated by three experts in the Faculty of Education. The reliability of the cognitive Test was ascertained using Kuder-Richardson-20 to obtain coefficient of 0.85 while reliability of questionnaire was established using Cronbach alpha to obtain a co-efficient of 0.79. Data collected were analysed using Pearson Product Moment Correlation Coefficient. The findings of the study revealed that a high positive and significant relationship exist between information literacy skill and the use of cloud computing technologies by librarians in university libraries in Anambra State. Additionally, a weak positive and insignificant relationship exist between media literacy skill and the use of cloud computing technologies by librarians in university libraries in Anambra State. Based on the finding, it was recommended among others that Librarians should sustain their investment in the acquisition of information literacy skills so as to use cloud computing technologies to the benefit of library patrons.

Keywords: Digital Literacy Skills, Cloud Computing Technologies, Librarians, University Libraries

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Introduction

In Nigeria, university libraries have remained in the vanguard of supporting teaching, learning and research using available resources and tools. In many cases, the Nigerian Universities have used only tools and technologies that the librarians are aware of, and that are readily available and accessible. The use of technology among university librarians in collection development has become a matter of exigency and paramount importance given that modern day library users and to whom digital tools have become integral to users' information-seeking behaviour. In fact, libraries are using novel technologies to ensure that the onerous task of meeting the information need of every user is accomplished within the shortest period of time. Such technologies include: artificial intelligence google assistant, library management software and cloud computing technology. The present study will, however, be focusing on cloud computing technologies.

Cloud computing technologies, according to Aloysius, Ezeibe & Eno (2025), are internet-based computing delivery models that promote the provision of data storage by virtual shared servers, software, infrastructure, platforms, devices as well as other resources. Cloud computing technology captures a novel pattern of sharing electronic resources, exchanging information over the Internet, saving them on one's network in such a manner that it can be accessed at any point in time. Cloud computing technology offers libraries various merits such as cost-effectiveness, etc. (Eneh, Oviri & Ekhorutonmwen, 2024). One vital use of cloud computing technologies in libraries is the management of

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digital collections. Awa, Aloysius & Okereke (2023) averred that with the advent of Web 3.0, Web 4.0 as well as the high speed of Internet, university libraries use cloud computing technologies for service provision to library users. The implication is that a considerable increase of digitized contents urges libraries to integrate new media of all types like record labels and neo documents into the general collection and special documents reserved areas (Onwubiko, Okorie & Onu, 2021). The role of cloud computing technology in data management is far-reaching. Buttressing this, Goldner (2022) observed that libraries have commenced the adoption of cloud computing technologies with a view to meeting the technological needs of their users; thereby saving costs and enhancing data management. A critical factor influencing the librarians' use of cloud computing technologies is digital literacy skill.

Digital literacy skills refer to requisite set of skills a person ought to possess in order to navigate the Internet; (Okeji, Nwankwo, Anene & Olorunfemi, 2020). Fakunle, & Adeyeye (2022) pointed out that a digitally literate individual possesses the capacity to identify, access, manage, integrate, evaluate, analyse and synthesize electronic resources. Uzohuo (2022) asserted that digital literacy skills can be broadly categorised into four areas such as information literacy skills, media literacy skills, technical literacy skills as well as digital security skill.

While several studies have addressed digital literacy skills or cloud computing technologies in isolation, there is noticeable paucity of empirical research examining the relationship between digital literacy skills as correlate of use of cloud computing

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technologies by librarians within the context of university libraries in Anambra State. It is in the light of the above that the researchers sought to investigate the relationship between digital literacy skills as correlate of cloud computing technologies by librarians in university libraries in Anambra State.

Statement of the Problem

The use of cloud computing technologies in university libraries is not only relevant but urgent in line with global best practices. Thus, it is expected that librarians prioritize its use for effective service delivery. This is because, modern day library users may not be well-inclined towards the traditional style of collection development in which print resources are given prominence.

The researchers observed poor management of cloud computing technologies among librarians for service delivery in public university libraries. This trend of poor management of cloud computing technologies is rather unsatisfactory given that university libraries in Anambra State such as that of Nnamdi Azikiwe University is digitalized. While multiple factors could contribute to low uptake of cloud computing technologies, the extent to which digital literacy relates with this remains unclear. It is against this backdrop that the researchers sought to ascertain the relationship between digital literacy skills as correlate of cloud computing technologies by librarians in public university libraries in Anambra State.

Research Questions

The following research questions were posed to guide the study:

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1. What is the relationship between information literacy skill and the use of cloud computing technologies by librarians in university libraries in Anambra State?
2. What is the relationship between media literacy skill and the use of cloud computing technologies by librarians in university libraries in Anambra State?
3. What is the relationship between technical literacy skill and the use of cloud computing technologies by librarians in university libraries in Anambra State?
4. What is the relationship between digital security skill and the use of cloud computing technologies by librarians in university libraries in Anambra State?

Hypotheses

The following hypotheses were tested at 0.05 level of significance:

1. There is no significant relationship between information literacy skill and the use of cloud computing technologies by librarians in university libraries in Anambra State.
2. There is no significant relationship between media literacy skill and the use of cloud computing technologies by librarians in university libraries in Anambra State.
3. There is no significant relationship between technical literacy skill and the use of cloud computing technologies by librarians in university libraries in Anambra State.
4. There is no significant relationship between digital security skill and the use of cloud computing technologies by librarians in university libraries in Anambra State.

Literature Review

Information Literacy Skills of Librarians

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Moving from printed information resources to digital resources, university libraries are increasingly becoming automated to provide digital resources and services to users (Unwgboje, Alonge & Godwin, 2024). Evidence suggests that librarians who are highly information literate are best positioned to navigate cloud systems, thus enhancing their capacity to manage and provide resources maximally (Eze, 2021). Bashorun, Olarongbe, Bashorun & Akinbowale (2022) carried out a study on information literacy competence and the use of electronic information resources in University of Ilorin, Nigeria and found out that information literacy competence had improved the search performance of the students because undergraduates had developed various information literacy competencies to identify the need, locate and access information. Information literacy skill is important because libraries are slowly making the transition from old business to cloud-empowered services that entail a technical hand in managing the technology, and managing the content-density information that it hosts, Adeleke & Emerahara, (2016). Cloud technologies facilitate smooth sharing and collaborative management of resources, Oseghale 2023. Bartlett & Miller (2023) discuss the fact that better information literacies among librarians enable them to utilize cloud technology more effectively for curating web content and interact with the end-users. Opeyemi, Oluwaseyi & Marcus (2022) analysed the information literacy skills, self-efficacy and use of information resources by secondary school teachers in selected secondary schools in Ijebu Ode Local Government Area, Ogun State, the study found out that there was significant relationship between information literacy skills and use of information resources among teachers.

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Librarians who have adequate expertise in cloud computing technologies can build more efficient collaborative environments that foster interlibrary loans, resource sharing, and even collaborative research activities (Davis, Jackson & Lee 2023). In the same vein, Udem & Anaehobi (2020) carried out a study on the relationship between information literacy skills acquisition, research self-efficacy and use of electronic resources of Library and Information Science postgraduate students in South-East Nigerian Universities. The finding of the study indicated that a positive and significant relationship existed between information literacy skills and postgraduate students' use of electronic information resources. In the words of Faraz (2020), information literacy skill is an important skill in the 21st century, allowing individuals to efficiently find, evaluate and use information in a variety of forms, thereby supporting informed decision-making.

Media Literacy Skills of Librarians

Librarians provide various procedures for patrons to evaluate sources, facts and context critically. To help patrons distinguish between real and fake news, Librarians should organize information literacy sessions, prepare research guides, and provide links to resources for fact-checking (Chukwueke & Idris, 2023). Unfortunately, many students today lack adequate media literacy skills, struggling to differentiate between credible and unreliable sources of information. Dada & Oyewole (2023) examined media literacy skills and use of social media by undergraduates in two universities in Ibadan, Nigeria. The findings of the study showed that the level of media literacy skills of the respondents was high.

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With the rise of media technology, the traditional role of Librarians as gatekeepers and guardians of information has been disrupted. According to Obinyan & Ugwuanyi (2022), librarians are now considered knowledge workers who find, obtain, share, and arrange various knowledge tools. Librarians can work together with teachers to tackle the problem of media literacy skills among students (Tekoniemi, Kotilainen, Maasilta & Lempiainen (2022). Banning & Sweeter (2018) examined the media literacy skills of undergraduate students in the United States and their use of social media. The finding of the study revealed that majority of undergraduates were proficient in using social media, but they lacked critical media literacy skills for analysis and are likely to believe and share misinformation.

Shuaibu & Aliyu (2022) explained that individuals with strong media literacy skills are more likely to stay updated with industry trends, emerging technologies and best practices through media platforms. Individuals can develop their critical thinking skills by analyzing media messages, evaluating the credibility of sources and creating their own media content (Hobbs, 2020). Media literacy education can further help individuals develop a deeper understanding of the media and its impact on society. Ahmad & Aziz (2017) examined the relationship between media literacy skills and social networking site use among undergraduates in Malaysia. The findings of the study showed that majority of the respondents who had higher levels of media literacy skills tended to use social network for social interaction and entertainment purposes rather than for academic purposes. Aiyebelehin, Makinde, Odiachi & Mbakwe (2020) examined the awareness and use of cloud

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computing services by librarians in selected universities in Edo State. The finding of the study indicated that the librarians were aware of the use of OCLC, world cat, and Google docs to a very high extent.

Technical Literacy Skills of Librarians

Technical literacy skill is critical for librarians, who are saddled with the responsibility of managing and providing access to diverse technological resources, including library management systems, databases, software programmes as well as digital archives Akwang & Udo, 2024). Proficiency in technical literacy skill allows Librarians to assist patrons with technology-related questions and issues in such a manner that enhances library services (Nwankwo & Ifeka, 2024). Farmer (2019) posited that university librarians increasingly provide guidance to faculty and students for the integration of digital information into the learning experience. Adeniran & Onuoha (2018) stated, "in the competitive environment where things are changing fast for the better technology, there is the need for technical skill acquisition to facilitate access to gain benefit in the information and communication technology environment". Librarians with little or no knowledge in technical literacy will find it difficult to share their professional knowledge technologically (Aldemita, Capusi, Martinez, Mendez & Zotoma 2023). Librarians with strong technical literacy skills excel in their use of multimedia resources to enhance user experiences, (Akwang, Udo-Anyanwu (2017).

Digital Security Skills

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In contemporary times, where data breaches and cyber threats are prevalent, digital security plays a key role in safeguarding sensitive information and ensuring the smooth operation of digital systems (Ghauri, 2021). Digital security skills are essential in today's digital age, where individuals and organizations are increasingly vulnerable to cyber threats. Best practices for digital security include: choosing passwords that are difficult to guess, keeping software up to date and using encryption as such, digital security forms a crucial dimension of the broader digital literacy framework guiding this study.

Methodological Approach

Correlational survey research design was adopted for this study. According to Cohen, Manion, & Morrison (2018), correlational survey research design is a research design that examines the relationships between variables as it allows researchers to collect data on multiple variables simultaneously without the manipulation of any independent variables. The population for this study consists of 46 librarians. Descriptive and inferential statistics were used to analyse data obtained from the study. The data for the research question were analysed using Pearson Product Moment Correlation Coefficient. To describe the nature of relationship between the variables, guidelines suggested by Shober, Boer & Schwarte (2018) will be utilized. Thus, the correlation coefficient (r) with scores

+/-0.00 – 0.09 = Negligible relationship

+/-0.10 – 0.39 = Weak relationship

+/-0.40 – 0.69 = Moderate relationship

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+/-0.70 – 0.89 = Strong relationship

+/-0.90 – 0.10 = Very Strong relationship.

Testing of hypotheses was done with Pearson Product Moment Correlation Coefficient. In taking decisions regarding the hypotheses, a null hypothesis was rejected if the probability value (p-value) was less than or equal to significant value of 0.01; if otherwise (p>0.01), the null hypothesis was not rejected.

Presentation and Analysis

Research Question 1: What is the relationship between information literacy skill and the use of cloud computing technologies by librarians in university libraries in Anambra State?

Table 1: Pearson r on Relationship between Information Literacy Skill and the Use of Cloud Computing Technologies by Librarians in University Libraries in Anambra State

Source of Variation	n	r r2	df	Remark
Information Literacy Skill Librarians' Use of Cloud Computing Technologies	42	0.731 .534	40	Strong Positive relationship

Results in Table 1 show that there is a strong positive relationship that exists between information literacy skill and the use of cloud computing technologies by librarians in public university libraries in Anambra State. This is evident by the size of Pearson's Correlation Coefficient r, which is 0.731. More so, approximately 53.4% of variance in cloud computing use is associated with information literacy skill.

Research Question 2: What is the relationship between media literacy skill and the use of cloud computing technologies by librarians in university libraries in Anambra State?

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Table 2: Pearson r on Relationship between Media Literacy Skill and the Use of Cloud Computing Technologies by Librarians in University Libraries in Anambra State

Source of Variation	n	r r2	df	Remark
Media Literacy Skill Librarians' Use of Cloud Computing Technologies	42	0.315 .099	40	Weak Positive relationship

Results in Table 2 show that there is a weak positive relationship that exists between media literacy skill and the use of cloud computing technologies by librarians in university libraries in Anambra State. This is evident by the size of Pearson's Correlation Coefficient r, which is 0.315. More so, approximately 9.9% of variance in cloud computing use is associated with media literacy skill.

Research Question 3: What is the relationship between technical literacy skill and the use of cloud computing technologies by librarians in university libraries in Anambra State?

Table 3: Pearson r on Relationship between Technical Literacy Skill and the Use of Cloud Computing Technologies by Librarians in University Libraries in Anambra State

Source of Variation	n	r r2	df	Remark
Technical Literacy Skill Librarians' Use of Cloud Computing Technologies	42	0.506 .256	40	Weak Positive relationship

Results in Table 3 show that there is a moderate positive relationship exists between media literacy skill and the use of cloud computing technologies by librarians in university libraries in Anambra State. This is evident by the size of Pearson's Correlation Coefficient r, which is 0.506. More so, approximately 25.6% of variance in cloud computing use is associated with technical literacy skill.

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Research Question 4: What is the relationship between digital security skill and the use of cloud computing technologies by librarians in university libraries in Anambra State?

Table 4: Pearson r on Relationship between Digital Security Skill and the Use of Cloud Computing Technologies by Librarians in University Libraries in Anambra State

Source of Variation	n	r r2	df	Remark
Digital Security Skill Librarians' Use of Cloud Computing Technologies	42	0.462 .213	40	Moderate Positive relationship

Results in Table 4 show that there is a moderate positive relationship exists between digital security skill and the use of cloud computing technologies by librarians in university libraries in Anambra State. This is evident by the size of Pearson's Correlation Coefficient r, which is 0.462. More so, approximately 21.3% of variance in cloud computing use is associated with digital security skill.

Hypothesis One: There is no significant relationship between information literacy skill and the use of cloud computing technologies by librarians in university libraries in Anambra State.

Table 5: Test of Significance of Pearson Correlation between Information Literacy Skill and the Use of Cloud Computing Technologies by Librarians in University Libraries in Anambra State

Source of Variation	n	r r2	df	p-value	Remark
Information Literacy Skill Librarians' Use of Cloud Computing Technologies	42	0.731 .534	40	0.00	Sig

Analysis in Table 5 shows that there is a significant relationship between information literacy skill and the use of cloud computing technologies by librarians in

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university libraries in Anambra State. r (40) = .731, p < .001, indicating strong positive association. Approximately 53.4% of variance in cloud computing use is associated with information literacy skill. In addition, effect size interpretation using Cohen (1988) benchmarks show r has large effect size.

Hypothesis Two: There is no significant relationship between media literacy skill and the use of cloud computing technologies by librarians in university libraries in Anambra State.

Table 6: Test of Significance of Pearson Correlation between Media Literacy Skill and the Use of Cloud Computing Technologies by Librarians in University Libraries in Anambra State

Source of Variation	n	r r2	df	p-value	Remark
Media Literacy Skill Librarians' Use of Cloud Computing Technologies	42	0.315 .099	40	0.27	Not Sig

Analysis in Table 6 shows that there is no significant relationship between media literacy skill and the use of cloud computing technologies by librarians in university libraries in Anambra State. r (40) = .315, p > .001, indicating weak positive association. Approximately 9.9% of variance in cloud computing use is associated with media literacy skill. In addition, effect size interpretation using Cohen (1988) benchmarks show r has medium effect size.

Hypothesis Three: There is no significant relationship between technical literacy skill and the use of cloud computing technologies by librarians in university libraries in Anambra State.

Table 7: Test of Significance of Pearson Correlation between Technical Literacy Skill and the Use of Cloud Computing Technologies by Librarians in University Libraries in Anambra State

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Source of Variation	n	r r2	df	p-value	Remark
Technical Literacy Skill Librarians' Use of Cloud Computing Technologies	42	0.506 .256	40	0.00	Not Sig

Analysis in Table 7 shows that there is a significant relationship between technical literacy skill and the use of cloud computing technologies by librarians in university libraries in Anambra State. r (40) = .506, p < .001, indicating weak positive association. Approximately 25.6% of variance in cloud computing use is associated with technical literacy skill. In addition, effect size interpretation using Cohen (1988) benchmarks show r has large effect size.

Hypothesis Four: There is no significant relationship between digital security skill and the use of cloud computing technologies by librarians in university libraries in Anambra State.

Table 8: Test of Significance of Pearson Correlation between Digital Security Skill and the Use of Cloud Computing Technologies by Librarians in University Libraries in Anambra State

Source of Variation	n	r r2	df	p-value	Remark
Digital Security Skill Librarians' Use of Cloud Computing Technologies	42	0.462 .213	40	0.00	Sig

Analysis in Table 8 shows that there is a significant relationship between digital security skill and the use of cloud computing technologies by librarians in university libraries in Anambra State. State. r(40) = .462, p < .001, indicating weak positive association. Approximately 21.3% of variance in cloud computing use is associated with

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digital literacy skill. In addition, effect size interpretation using Cohen (1988) benchmarks show r has large effect size.

Discussion

Relationship Between Information Literacy Skill as Correlates of Cloud Computing Technologies by Librarians in University Libraries in Anambra State

The finding of the study showed that a strong positive and significant relationship exist between information literacy skill and the use of cloud computing technologies by librarians in university libraries in Anambra State. This relationship is critical in today's digital age where librarians are expected to navigate complex information systems and provide users with accurate and relevant information.

The finding of this study is in consonance with that of Opeyemi, Oluwaseyi & Marcus (2022) which found out that there was a positive and significant relationship between information literacy skills and use of information resources among teachers. The positive relationship between information literacy skills and librarians' use of cloud computing technologies suggests that librarians who possess these skills are well-equipped to leverage on cloud computing technologies, enhancing their productivity and service delivery.

The finding of the current study further aligns with that of Unuigboje, Alonge & Godwin (2024) who found that library staff in South-West Nigeria, utilization of cloud computing was strongly influenced by their ICT literacy levels. In other words, that ICT literacy skills indicators, particularly proficiency in using hardware, word processing, web-based functions, and data processing relate to the use of cloud computing technologies.

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Information literacy skills are imperative for accessing information in this generation of technology advancement that most of the information needed for research can be retrieved from electronic sources" (Adeleke & Emeahara, 2016). Inamdar (2021) observed that libraries act as connectors to reduce the digital divide providing equal access to resources for everyone. Contradicting the finding of the study, Oseghale (2023) found that humanities graduate students at the University of Ibadan possessed high level of digital information literacy skills in respect of digital devices usage, web-based tasks, information finding and evaluation, but low in the utilization of electronic resources.

Relationship Between Media Literacy Skill as Correlates of Use of Cloud Computing Technologies by Librarians in University Libraries in Anambra State

The finding of this study showed that a weak positive and insignificant relationship exist between media literacy skill and the use of cloud computing technologies by librarians in university libraries in Anambra State. This show that media literacy skills may not be a strong contributor to librarians' ability to utilize cloud computing technologies. This finding is rather surprising given the relevance of media literacy skills in navigating complex digital environments and evaluating online information. The present study, found that media literacy skills empower librarians to communicate and engage with media platforms and technologies effectively. Moreover, Shuaibu & Aliyu (2022) explained that individuals with strong media literacy skills are more likely to stay updated with industry trends, emerging technologies and best practices through media platforms. The present finding was contradicted by Dada & Oyewole (2023) which states that there was significant

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relationship between media literacy skills and use of social media by Library and Information Science (LIS) undergraduates in two universities in Ibadan. Similarly, Ahmad & Aziz (2017) found that majority of the respondents who had higher levels of media literacy skills tend to use social interaction for entertainment purposes rather than for academic purposes.

Relationship Between Technical Literacy Skill as a Correlate of Use of Cloud Computing Technologies by Librarians in University Libraries in Anambra State

The finding of the study showed that a moderate positive and significant relationship exist between technical literacy skill as correlate of use of cloud computing technologies by librarians in university libraries in Anambra State. This is an indication that librarians with moderate technical literacy skills possess a moderate tendency to effectively utilize cloud computing technologies. This relationship is key in contemporary digital age where librarians are expected to provide library users who are digital natives with precise information.

The finding of the current study is in consonance with Akwang & Udoh (2024) who found **t**hat librarians' online search skills had strong positive significant relationships with the use of electronic information resources for research activities in public university libraries in South-East, Nigeria. Akanwa & Udo-Anyanwu (2017) pointed some of the areas technical literacy skills of librarians could be applied to library services, which include, creation of database etc. In similar vein, Nwankwo & Ifeka (2024) found that proficiency in

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technical literacy skill allows librarians to assist patrons with technology-related questions and issues in such a manner that enhances library services. More so, Farmer (2019) posited that university librarians increasingly provide guidance to faculty and students for the integration of digital information into the learning experience. Moreover, McAlbert & Uzoeto (2016) observed that technical literacy skill has not only helped in traditional library and information procedures. In contrast to the finding of the present study, Aldemita, Capusi, Martinez, Mendez & Zotomayor (2023) found that there was no significant relationship between the level of technological skills and the level of readiness of the students in utilization of digital application.

Relationship between digital security skill and the use of cloud computing technologies by librarians in university libraries in Anambra State.

The finding of the study showed that a moderate positive and significant relationship exist between digital security skill and the use of cloud computing technologies by librarians in university libraries in Anambra State. This shows that librarians with moderate digital security literacy skills have a moderate likelihood of adopting cloud computing technologies for service. This relationship is rather expected given that digital security is key to the preservation of digital contents. Ghauri (2021) indicated that the knowledge that digital security had the chance of causing significant issues while storing and securing private information. In similar vein, Ryan & Cole (2016) observed that such librarians can proactively identify vulnerabilities in digital infrastructures and implement counter-measures to prevent breaches. These include

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maintaining secure authentication protocols, applying data encryption and overseeing access controls within library networks.

Recommendations

In view of the findings of the study, several recommendations were made which include:

1. Librarians should sustain their investment in the acquisition of information literacy skills so as to use cloud computing technologies to the benefit of library patrons.
2. University authorities should prioritize the professional development of librarians on media literacy skills so that they would be able to proficiently use cloud computing technologies.
3. Librarians should endeavour to improve on their technical literacy skills so as to use cloud computing technologies to the benefit of library patrons.
4. Librarians should expose themselves to conferences on digital security skills in order to equip themselves with the digital security skills for the use of cloud computing technologies.

Conclusion

Based on the findings of the study, it was concluded that, a positive relationship existed between digital literacy skills and the use of cloud computing technologies by librarians in university libraries in Anambra State.

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