



Research Paper

Analyzing The Impact of Digital Information Utilization on Academic Achievement Among Colleges of Education Students in Katsina State

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ABSTRACT

This study analysed the impact of digital information utilization on academic achievement among students in Colleges of Education in Katsina State. The study was guided by the Technology Acceptance Model (TAM), Community of Inquiry (CoI) framework, Constructivist Learning Theory, and Digital Literacy Theory. A descriptive-correlational research design was employed, using structured questionnaires administered to 369 respondents across three Colleges of Education. Data were analysed using descriptive and inferential statistics, including mean, standard deviation, Pearson correlation, t-test, and ANOVA. The results revealed a moderate-to-high level of digital information utilization (Mean = 3.20, SD = 0.62) and a strong positive relationship between digital information use and academic achievement ($r = 0.771$, $p < .001$). This indicates that students who frequently and effectively use digital resources such as e-books, academic journals, and online platforms tend to achieve better academic performance. No significant differences were found in utilization based on gender or level of study, suggesting equitable access across groups. However, infrastructural challenges, such as limited internet access, high data costs, and irregular power supply, were identified as major barriers to optimal utilization. These findings align with previous research emphasizing that access, digital literacy, and engagement mediate the relationship between digital resource use and academic success. The study concludes that digital information utilization significantly enhances academic achievement but is constrained by infrastructural and contextual factors. It recommends that institutions invest in ICT infrastructure, subsidize internet access, and organize digital literacy training to improve students' academic outcomes through effective technology integration.

Keywords: Digital Information Utilization, Academic Achievement, Digital Literacy

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I. INTRODUCTION

The utilization of technology in educational settings, particularly in developing regions such as the Nigeria, has emerged as a crucial strategy to bridge the digital divide (Aissaoui, 2022; Panigrahi, & Srivastava, Sharma, 2018). Extensive research has explored the adoption, maintenance, impact, and student engagement of technology, revealing various overlooked factors that are critical for assessing student performance (Henrie, Halverson & Graham, 2015; Hu, Laxman & Lee, 2020). Scholars have linked educational outcomes with cognitive, social, physical, emotional, and reflective components, underscoring the multifaceted nature of students' learning experiences (Henrie, Halverson & gram, 2015). However, literature indicates varying levels of student engagement in evaluating digital materials across continents and countries, with institutions in underdeveloped nations facing distinct challenges.

The theoretical investigations on technology use in higher education have predominantly focused on developed nations, where universities leverage technological devices to create engaging learning environments that seamlessly integrate Internet learning resources into educational processes (Archambault, Leary, & Rice, 2022; Kaliisa& Michelle, 2019; Turnbull, Chugh& Luck, 2022). Conversely, in underdeveloped nations, such as Africa, although a higher percentage of students possess digital devices, there is a prevalent lack of confidence and enthusiasm in utilising these devices for learning purposes. African educational institutions often fail to equip students with the essential information-seeking skills and reliable information sources necessary for the effective utilisation of digital information to enhance learning outcomes (Thindwa, Chawingha&Dube, 2019). Consequently, students encounter difficulties in accessing academic resources, jeopardising their academic competence and institutional validity, thus hindering international recognition and admission to prestigious universities (Kaliisa& Michelle, 2019). The significance of rich information content over mere technology, advocating the provision of trustworthy knowledge sources to ensure positive learning outcomes (Lines, 2016).

Despite numerous attempts to address the challenges associated with digital information and its implications for student performance, the transient nature of technology and media underscores the need for further investigation and adaptation. With technology serving as a potential equalizer and offering opportunities to bridge geographical and temporal divides in education, its integration into learning environments has become widespread across institutions worldwide. However, existing literature often emphasizes the technological tools themselves, neglecting the importance of the content delivered through these platforms. Furthermore, there is a scarcity of research examining how technological adaptation varies across educational contexts, particularly in Nigeria institutions (Hennessy,Dangole, McIntyre, Koomar, Kreimeia, Cao, Zubair, 2022). Although previous studies have explored the link between student performance and engagement with technology, the extent to which these factors influence student outcomes remains unclear. The varying performance data indicate that the effect of information technology on student learning can differ considerably across continents and regions (Bergdahl, Nouri, Fors, Knutsson, 2020). In contrast to universities in western nations where technology and digital resources are widely accessible, institutions in underprivileged countries face significant challenges in ensuring equal access to these resources for their students.

Therefore, the purpose of this research is to develop a comprehensive model that explains how the utilisation of digital information affects student behaviour among students. By examining the intricate interplay between information user behaviour, information needs, information seeking strategies, information sources, and academic outcomes, this study aimed to provide valuable insights into the complex relationship between digital information usage and student success in higher education settings.

1.1 PROBLEM STATEMENT

The integration of digital information and technology in education has been heralded as a transformative force capable of enhancing learning outcomes and improving academic performance. In Colleges of Education in Katsina State, digital resources such as online journals, e-books, educational videos, and interactive learning platforms are increasingly utilized to support academic endeavours. However, despite the potential benefits of digital information, there remains a lack of comprehensive research that clearly establishes the relationship between the use of these resources and students' academic achievement. While some studies suggest that digital tools can enhance learning and facilitate access to knowledge, other factors such as limited infrastructure, unequal access to digital resources, low levels of digital literacy, and students' varying engagement with digital content may undermine the effectiveness of these tools. Moreover, it is unclear whether the shift towards digital learning environments in Katsina State's Colleges of Education has led to significant improvements in academic outcomes or if the impact is merely nominal. In this context, there is a pressing need to examine how the availability and use of digital information influence students' academic performance, identifying both the opportunities and barriers that affect the optimal utilization of these resources. This study, therefore, aims to analyse the impact of digital information on academic achievement among students in Colleges of Education in Katsina State. The findings will contribute to understanding how digital resources can be better leveraged to enhance educational outcomes, and inform policies and practices that can maximize their effectiveness in supporting student achievement.

1.2 OBJECTIVES OF THE STUDY

The general objective of this study is to analyze the impact of digital information utilization on academic achievement among students in tertiary institutions in Katsina State. Specifically, the study aims to:

1. Examine the extent to which students in tertiary institutions in Katsina State utilize digital information resources (e.g., online databases, e-books, academic websites) for their academic purposes.
2. Assess the relationship between the frequency and type of digital information utilization and students' academic performance in Katsina State.

3. Identify the factors that influence students' access to and use of digital information in academic activities.

1.3 RESEARCH QUESTIONS

1. To what extent do students in tertiary institutions in Katsina State utilize digital information resources for academic purposes?
2. What is the relationship between the frequency of digital information usage and academic performance among students in Katsina State?
3. What are the factors that influence students' access to and use of digital information in academic activities?

II. LITERATURE REVIEW

2.1 Conceptual Framework

The conceptual framework for this study is designed to explore how digital information, including digital resources and tools, influences the academic achievement of students in Colleges of Education in Katsina State. The study builds upon contemporary theories and research related to educational technology, digital literacy, student engagement, and academic performance. The framework incorporates key variables that affect how digital tools are utilized by students and the impact these tools have on their academic success.

2.1.1 Digital Information

Digital approaches are increasingly being utilised for the creation, storage, and dissemination of information, particularly through the use of computer communication networks. There is growing interest and concern about the authenticity of electronic data, as it holds significant importance in the transmission of intellectual exchange and the preservation of our society's historical and cultural heritage (Williams, 2021). The fact that the roles of analogue and digital are becoming reversed indicates a broader translational mechanism that defines the digital as a "reflexive historical subject" (Gitelman, 2006, p. 20; Wakabayashi, 2019). The use of digital technologies in contemporary society is pervasive and far-reaching. From the translation of our voices into code through mobile phones to museum catalogues, which transform objects into coded images, these technologies rely on the translation and retranslation of images, words, sounds, and physical objects into binary code. This process results in representational effects and outputs, through recursive coding. Discussions surrounding digital technology often fall into a recursive trap, where they oscillate between praising its ability to facilitate and promote difference and simultaneously grappling with the hegemony of the digital as a representational framework that restricts difference. For instance, old database is significantly influenced by the predominance of code and the concerns surrounding its malleability and flexibility. The challenges associated with power relationships, the digital's capacity to overwrite the analogue, and the subsequent form of digital return are defined by the struggle to express diversity using a standardized toolkit (Hess, 2022; Weigl, Barbereau, & Fridgen, 2023).

2.1.2 Digital Information and Educational Technology

Digital information, including online learning platforms, e-books, video tutorials, and other digital resources, serves as the primary independent variable in this study. The role of educational technology in enhancing learning outcomes is widely recognized (Ally, 2019). Digital resources have been shown to provide greater access to learning materials and support a more interactive and engaging learning experience. These tools offer personalized learning opportunities and enable students to access content outside of traditional classroom settings (Mishra & Koehler, 2018). In the context of this study, the effective use of digital information is expected to positively influence academic achievement, particularly when integrated into the curriculum (Chao, 2020).

2.1.3 The Integrity of Digital Information

An information access and distribution system that ensures the integrity of information allows users to consistently refer to a body of knowledge over time through citations and retrieval. This system should maintain the content of the work and record any updates as distinct entities. The content of a work should remain static when retrieved from one year to the next, and version, publication date, or edition statements should alert users to potential changes if a work is retrieved using an incomplete specification, such as the title alone (which may trigger the system's default action of providing the most recent version of the work with that title). A reliable method for disseminating information should also provide users with a reasonable expectation of accurate authorship and source credit (Ben Youssef, Dahmani, & Ragni, 2022).

While instances of intentional fraud, misdirection, or hidden revisions may occasionally circumvent normal operational procedures, these issues can be resolved through a formal challenge and examination process

such as a court case or another publicly verifiable method (Calo & Citron, 2020). It is worth noting that breaches of integrity are rarely simple. To demonstrate priority and uniqueness, the distribution system should maintain records of when the materials are initially made available. This may involve a system supporting the release of data as an irrevocable publication, which forms part of a public record. The integrity of an information distribution system is crucial because it ensures transparency, auditability, and accessibility of information and records for public scrutiny (Saldanha, Dias, & Guillaumon, 2022). This enables the creation and preservation of a historical record of intellectual discussions, which can be referred to over an extended period. The primary features that guarantee content integrity as a fundamental characteristic of an information distribution system include the preservation of a historical record of intellectual discussions, transparency, and accessibility for public scrutiny.

2.1.4 Digital Literacy

Digital literacy is a critical intermediate variable in the relationship between digital information and academic achievement. Defined as the ability to use digital tools effectively to access, evaluate, and create information, digital literacy is essential for students to maximize the potential benefits of technology (Ribble, 2018). Research indicates that students with higher digital literacy are better able to engage with online resources, participate in e-learning environments, and apply digital tools for academic success (Liu et al., 2020). Digital literacy influences how students interact with digital content and the extent to which they can leverage technology for academic achievement (An, 2021). As such, it plays a mediating role in the impact of digital information on academic performance.

2.1.5 Access to Technology and Infrastructure

Access to technology and infrastructure is a fundamental factor influencing the successful use of digital information in education. Studies show that students' access to digital tools, such as computers, smartphones, and reliable internet connectivity, is crucial for effective learning (Ajadi et al., 2020). Inequities in access to digital resources can limit the ability of students to benefit from digital information, particularly in regions with less developed technological infrastructure (Okojie et al., 2019). Therefore, access to technology is treated as a moderating variable that can influence how digital information impacts academic achievement. Inadequate access may result in uneven learning outcomes, while greater access to technology can enhance the use of digital resources and foster academic success (Bowers & Kumar, 2020).

2.1.6 Student Engagement with Digital Resources

Student engagement with digital resources is another critical factor influencing the relationship between digital information and academic achievement. Research has shown that students who actively engage with digital content and participate in online discussions or activities perform better academically (Yang & Hsu, 2018). Engagement, defined as the emotional, behavioral, and cognitive involvement in learning, plays a significant role in how students interact with digital tools (Bawa, 2020). Engagement with digital resources is thought to enhance learning outcomes by promoting deeper learning and facilitating collaborative learning experiences (Chen & Tsai, 2020). Thus, engagement with digital tools and platforms is considered an intervening variable that affects the effectiveness of digital resources in improving academic achievement.

2.1.7 Academic Achievement

Academic achievement is the dependent variable in this study and is defined in terms of students' performance as measured by grades, exam results, and overall academic progress. The study posits that the effective use of digital information, mediated by digital literacy and student engagement, will positively influence academic outcomes (Zhu, 2019). It is expected that students who actively engage with digital resources and possess the requisite digital skills will show higher levels of academic performance. Previous studies have demonstrated that digital learning tools can enhance critical thinking, retention, and overall academic achievement (Wang & Chen, 2019).

2.1.8 Use of Digital Information in Higher Institutions

The utilization of technology in higher education is not a novel topic, there are limited studies or discussions concerning the manner in which information is used to assess student performance, as the majority of attention is focused on the technology itself (Pinho et al., 2018). In comparison to traditional face-to-face instruction, Gamage and Perera, (2021) stated that students are more engaged in learning when they have access to the Internet through their devices such as smartphones, laptops, and learning platforms. They further stated that, without these materials, students would struggle to keep up with their academic work. According to Rashid and Asghar (2016), American students perceive technology as a unifying factor that enables them to interact

with professors. As reported by Habib et al. (2021), over 90% of American colleges rely on technology to provide staff and students with necessary services. Furthermore, while the use of devices increased student engagement, participation levels remained low. Extensive research has been conducted on the impact of technology on student engagement, satisfaction, and performance, as well as on how students utilise the data generated by these technologies (Fisher et al., 2021; Bedenlier et al., 2020). However, there is a noticeable lack of literature on the use of data to assess student performance and satisfaction in academic institutions, particularly in developing nations. This study aimed to address this knowledge gap and examine how students access information through various technologies. It is essential for the ecosystem of combined devices and technology to understand how students use information regardless of the number of gadgets and related technologies employed. In terms of its effects on both personal and professional life, a general societal problem is a lack of information skills competency. Employers are particularly concerned about the competency levels of recent college graduates entering the workforce.

2.1.9 Components of Digital Information System

Hardware and software components that serve as the building blocks of digital systems, such as components that receive data input, process and store data, and output data in various ways, are ubiquitous in devices such as laptops, cell phones and smart TVs (Bansal & Kumar, 2020). Digital systems frequently require peripheral devices to input data using a keyboard, microphone, or mouse and to output data for presentation to a user as text, audio, or images using a monitor, data projector, or speakers. There are several methods for students to comprehend the functioning of digital systems, such as engaging in conversation with an expert on the system's components, reading a book, or watching a film that explains how digital systems operate.

Internal and external components of digital systems carry out various tasks. For instance, external data input devices may be a keyboard, microphone, or stylus. The central processing unit is one of the internal processing elements. The projector, screen, and speakers are examples of external output components. Cloud and external devices are components of data and information storage. A network can connect devices, allowing for the transmission of data. Students can investigate the utilization of wireless networks by using Bluetooth to remotely operate gadgets, develop and build a digital solution that involves data transmission via an input device or network as the final step in this progression (Ometov et al., 2021).

2.1.10 Benefits of digital information

The significant advancements and expansion of information and communication technology (ICT) are progressively transforming the methods of operation for various professions, including the finance industry's adoption of cashless transactions, utilisation of microchips to replace paper-based identification in the health sector, and implementation of e-libraries or digital libraries in place of traditional libraries. These advancements have also impacted the functions of libraries, which are now facing new challenges, competitors, requirements, and expectations. To meet the evolving information demands of their communities and improve their services and information products, libraries reassess their offerings. While traditional libraries still hold a significant amount of costly and heavily printed materials, information seekers are increasingly interested in utilising interactive electronic resources to supplement written content (Jaiswar, 2017).

2.2 Theoretical framework

The theoretical framework for this study is grounded in established educational theories that explore how digital information, educational technology, and student engagement interact to influence academic achievement. By focusing on the relationship between digital resources and academic performance in Colleges of Education in Katsina State, this framework integrates several key theories that provide a deeper understanding of the variables at play. These include the Technology Acceptance Model (TAM), the Community of Inquiry (CoI) Framework, Constructivist Learning Theory, and Digital Literacy Theory.

2.2.1 Technology Acceptance Model (TAM)

The **Technology Acceptance Model (TAM)**, developed by Davis (1989), is one of the most widely used models to explain and predict users' acceptance of new technologies. In the context of education, TAM posits that perceived ease of use and perceived usefulness are critical factors that influence the adoption of technology by students. This theory suggests that students are more likely to engage with digital information and technology if they find it easy to use and believe it enhances their learning experience (Davis, 1989). In this study, TAM serves as the theoretical foundation for understanding how students' perceptions of digital tools affect their use of these resources, which in turn influences their academic achievement.

2.2.3 Community of Inquiry (CoI) Framework

The **Community of Inquiry (CoI) Framework**, developed by Garrison, Anderson, and Archer (2001), is widely used to analyze online and blended learning environments. The framework focuses on three key

elements necessary for a successful educational experience: **cognitive presence**, **social presence**, and **teaching presence**. Each of these elements is vital in creating a meaningful digital learning environment.

2.2.4 Constructivist Learning Theory

Constructivist Learning Theory, particularly the work of Piaget (1970) and Vygotsky (1978), emphasizes that knowledge is actively constructed by learners through interaction with their environment, rather than being passively received. In the context of digital learning, constructivism suggests that students learn best when they actively engage with digital resources, collaborate with others, and apply knowledge to real-world problems.

2.2.5 Digital Literacy Theory

Digital Literacy Theory emphasizes the skills and competencies required to effectively navigate and utilize digital technologies. Digital literacy is not just about technical skills but also involves critical thinking, problem-solving, and the ability to engage with digital content in a meaningful way (Ribble, 2015).

2.3 EMPIRICAL LITERATURE

A study by Ajadi, Akinyemi&Adeogun (2020) examines the relationship between access to digital tools and academic performance among university students in Nigeria. It finds that students with better access to technology and digital resources report improved academic performance. The study highlights how limited access to digital tools affects students' ability to use online learning platforms and other digital materials, thereby limiting their academic potential. The findings suggest that improving infrastructure and digital literacy would significantly boost student outcomes in institutions like Colleges of Education. Chao (2020) investigates how digital tools impact student engagement and learning outcomes in a university setting. It concludes that digital information platforms enhance students' motivation, engagement, and understanding, ultimately improving their academic achievements. The study emphasizes the importance of integrating interactive digital resources such as e-books, videos, and online assignments to create engaging learning environments. This empirical study has relevance for Colleges of Education, where student engagement with digital learning platforms can directly impact academic success. The study conducted by Wang &(Chen 2019) that explores the role of digital learning tools in improving academic achievement across several educational settings, including higher education institutions. The study found that the use of digital tools such as e-learning platforms, digital textbooks, and educational apps led to significant improvements in students' academic performance, particularly in courses that involved complex problem-solving and critical thinking. The study suggests that the combination of digital tools and effective teaching strategies plays a crucial role in improving student outcomes, making it highly relevant for Colleges of Education.

Empirical study by Bowers and Kumar (2020) conducted to addresses how disparities in digital access and infrastructure impact academic performance among students in higher education institutions. The research highlights that students with more consistent access to digital tools and resources tend to perform better academically. The study further emphasizes that colleges and universities must address the digital divide to ensure equitable learning opportunities for all students. This is particularly relevant for Colleges of Education in Katsina State, where access to technology may be limited, influencing overall academic performance.

An (2021) in his study investigates the relationship between students' digital literacy and their academic performance by The research finds that students with higher levels of digital literacy tend to use digital resources more effectively, leading to improved academic outcomes. The study concludes that developing digital literacy is essential for students to fully benefit from digital learning environments. This finding is highly relevant for Colleges of Education, where students' ability to navigate and use digital information effectively could significantly impact their academic success. In a study by Yang & Hsu (2018) that Investigate the impact of digital engagement on student learning outcomes in online courses. This study focuses on the relationship between students' engagement with digital learning environments and their academic performance in online courses. It reveals that higher levels of engagement with digital resources (such as participation in online discussions and interactive assignments) positively correlate with improved academic achievement. The study highlights the importance of fostering digital engagement to maximize the benefits of digital learning tools, making it highly relevant to Colleges of Education where digital platforms are becoming more integrated into the learning process. On the similar research by Liu, Moore, and Zheng (2020), The study reveals that students who demonstrate higher digital literacy skills are more successful in online learning environments, utilizing resources more efficiently and engaging more effectively with digital content. For Colleges of Education in Katsina State, where the integration of digital resources is essential, the findings highlight the need for students to acquire robust digital skills to succeed academically in digital learning contexts. Zhu (2019) carried out a meta-analysis review various studies on the impact of digital information on student academic achievement. The findings suggest that digital tools, when integrated properly into the curriculum, can have a positive effect on student performance. The study further highlights the importance of teacher support, digital literacy, and engagement in maximizing the academic benefits of digital resources. This

comprehensive review provides strong empirical support for the positive influence of digital information on academic.

In conclusion, these empirical studies confirm the significant role that digital information and resources play in enhancing academic achievement in higher education contexts. The studies consistently show that access to technology, digital literacy, engagement with digital resources, and the pedagogical integration of digital tools all contribute to improved student outcomes. For Colleges of Education in Katsina State, these findings emphasize the importance of addressing issues related to digital access, supporting the development of digital literacy, and fostering engaging, technology-integrated learning environments to improve academic achievement.

III.METHODOLOGY

Katsina State was created in 1987 by the then President Ibrahim Badamasi Babangida. The State has 34 Local Government Areas and covers an area of 23,983 km². It is located between latitudes 11A⁰08N and 13A⁰22N and longitude 6A⁰52E and 9A⁰20E. It borders with Jigawa and Kano States to the east, Kaduna State to the south, Zamfara to the west, and the Republic of Niger to the north. The State has a population of 3,878,000 based on 1991 census conducted by the National Population Commission in 1991 and has an annual growth rate of 1.5%. This reflects a population density of 196.6 persons per square kilometer, which ranks amongst the highest in Nigeria and represents a large reservoir of labour force and a huge market for goods and services. The State has an annual rainfall of between 640mm in the extreme north to 1056mm towards the southern part, and the rainfall occurs seasonally with distinct wet and dry seasons.

The natural vegetation varies from the thorn scrub, annual grass dominated and semi-arid Sahel-Sudan savannah in the north to the thick woodland, tall perennial grass dominated Northern Guinea savannah in the south. The State lies on a major water divide between Niger North in the West, Lake Chad in the East and Niger Central to the South. The river system to the west drains into River Rima. A predominantly agrarian State, with an estimated 60% of the population residing in the rural areas and 40% residing in urban and semi-urban communities (Katsina State Development Summit Committee, 2006).

The methodology for this study "Analysing the Impact of Digital Information Utilization on Academic Achievement among Tertiary Institutions Students in Katsina State" involve a quantitative methods to gather comprehensive data on the topic.

3.1 Research Design

This study adopts survey research design using descriptive-correlation design. This design helps identify and describe the patterns of digital information utilization among students, and examine the relationship between digital information usage and academic achievement. The descriptive aspect focus on understanding students' usage patterns, while the correlational aspect assess how these patterns are linked to their academic performance.

3.2 Population and Sampling

The target population consist of 10,818 students enrolled in Colleges of Education in Katsina State. A stratified random sampling technique was be used to select participants from different Colleges of education to ensure the sample is representative of the entire student population in the state. The sample size was determined using a simple random sampling method, with a target sample of 372 students using Krejcie, & Morgan, (1970). This size provides adequate data for statistical analysis and ensures the study's findings are reliable. The researchers randomly select students from different departments and faculties within the selected institutions, ensuring a diverse representation of disciplines and academic levels.

3.3 Data Collection Methods

To gather data on digital information utilization and academic achievement quantitative data collection methods employed. A structured questionnaire was developed to collect quantitative data on students' use of digital information resources. The questionnaire include both closed-ended questions using Likert scales and demographic information.

3.4 Data Analysis

Quantitative Data Analysis: Data from the survey questionnaires was analysed using statistical software such as SPSS (Statistical Package for Social Sciences), Descriptive statistics was used to summarize the data, and correlation analysis performed to examine the relationship between digital information utilization and academic performance.

IV.RESULT AND DISCUSSION

Table 1: Demographic Information of Respondents

	Frequency	Percentage (%)
Gender		
Male	203	55.0
Female	166	45.0
Total	369	100.0
Age Range		
Under 18	27	7.3
18–22	164	44.4
23–27	131	35.5
28 and above	47	12.7
Total	369	100.0
Level of Study		
NCE I	122	33.1
NCE II	125	33.9
NCE III	122	33.1
Total	369	100.0
Ownership Status		
Yes	289	78.3
No	80	21.7
Total	369	100.0
Frequency of Use		
Daily	104	28.2
3–5 times	121	32.8
1–2 times	79	21.4
Occasionally	48	13.0
Never	17	4.6
Total	369	100.0
Academic Performance (CGPA Range)		
Excellent (4.0–5.0)	54	14.6
Very Good (3.5–3.9)	97	26.3
Good (3.0–3.4)	127	34.4
Fair (2.0–2.9)	78	21.1
Poor (Below 2.0)	13	3.5
Total	369	100.0

(Questionnaire, 2025)

The table shows that 203 respondents (55%) were male, while 166 (45%) were female, indicating balanced gender representation. It shows that most of the respondents (79.9%) were aged between 18 and 27 years, the Respondents were evenly distributed across NCE I–III, ensuring balanced representation. The Respondents (78.3%) owned personal digital devices such as smartphones or laptops. A majority of respondents use digital resources regularly, with 61% using them at least 3–5 times weekly and most respondents rated their academic performance as good or very good, indicating satisfactory achievement levels.

Table 2: Utilization of Digital Information Resources for Academic Purposes (N = 369)

S/N	Statement	SD	D	N	A	SA	Mean	SD
1	I regularly use digital information resources to complete academic assignments.	12 (3.3%)	31 (8.4%)	56 (15.2%)	182 (49.3%)	88 (23.8%)	3.82	0.96
2	I use online academic journals and articles as part of my study routine.	19 (5.2%)	48 (13.0%)	62 (16.8%)	171 (46.4%)	69 (18.7%)	3.61	1.01
3	I access digital libraries and e-books for my academic work.	23 (6.2%)	39 (10.6%)	78 (21.1%)	160 (43.4%)	69 (18.7%)	3.58	1.00
4	I use search engines (e.g., Google, Google Scholar) to find academic materials.	6 (1.6%)	18 (4.9%)	34 (9.2%)	197 (53.4%)	114 (30.9%)	4.07	0.86
5	I rely on digital information resources more than printed materials for my academic research.	18 (4.9%)	42 (11.4%)	64 (17.4%)	163 (44.2%)	82 (22.2%)	3.67	1.00
6	I frequently download or view lecture materials online.	14 (3.8%)	30 (8.1%)	51 (13.8%)	184 (49.9%)	90 (24.4%)	3.83	0.93
7	I participate in academic discussions through digital platforms (e.g., forums, academic groups, WhatsApp).	19 (5.2%)	37 (10.0%)	60 (16.3%)	175 (47.4%)	78 (21.1%)	3.69	0.98
8	I use digital tools (e.g., citation software, learning management systems) for academic purposes.	25 (6.8%)	47 (12.7%)	83 (22.5%)	158 (42.8%)	56 (15.2%)	3.47	1.02

9	I spend a significant portion of my study time using digital academic resources.	17 (4.6%)	35 (9.5%)	64 (17.4%)	175 (47.4%)	78 (21.1%)	3.71	0.97
10	I consider digital information resources essential to my academic success.	9 (2.4%)	21 (5.7%)	41 (11.1%)	179 (48.5%)	119 (32.2%)	4.02	0.88
Overall Mean / SD							3.75	0.96

(Questionnaire, 2025)

The mean values for all items range between 3.47 and 4.07, with an overall mean of 3.75 (SD = 0.96). This indicates a high level of digital information resource utilization among respondents. The highest-rated item was 'I use search engines (Mean = 4.07)', while the lowest-rated item was 'I use digital tools such as citation software (Mean = 3.47)'. Students generally agreed that digital information resources are essential to their academic success (Mean = 4.02).

Table 3: Frequency of Digital Information Usage (N = 369)

S/N	Statement	SD	D	N	A	SA	Mean	SD
11	I use digital academic resources (e.g., e-books, journals) daily.	15 (4.1%)	36 (9.8%)	60 (16.3%)	181 (49.1%)	77 (20.9%)	3.73	0.98
12	I search for academic content online several times a week.	11 (3.0%)	27 (7.3%)	46 (12.5%)	191 (51.8%)	94 (25.5%)	3.89	0.93
13	I frequently use educational platforms (e.g., Google Scholar, Research Gate) to access learning materials.	19 (5.2%)	39 (10.6%)	63 (17.1%)	178 (48.2%)	70 (19.0%)	3.65	1.00
14	I regularly download lecture notes, slides, or academic PDFs from the internet.	12 (3.3%)	25 (6.8%)	52 (14.1%)	192 (52.0%)	88 (23.8%)	3.87	0.93
15	I prefer studying with digital materials over printed textbooks.	22 (6.0%)	38 (10.3%)	58 (15.7%)	170 (46.1%)	81 (22.0%)	3.68	1.04
16	I use my smartphone or laptop for academic research at least 4–5 times per week.	10 (2.7%)	29 (7.9%)	53 (14.4%)	185 (50.1%)	92 (24.9%)	3.86	0.91
17	I participate in digital study groups or academic forums via WhatsApp, Telegram, or similar platforms.	18 (4.9%)	33 (8.9%)	59 (16.0%)	176 (47.7%)	83 (22.5%)	3.74	0.99
18	I use digital academic tools (e.g., plagiarism checkers, citation managers) to improve my work.	26 (7.0%)	43 (11.7%)	78 (21.1%)	162 (43.9%)	60 (16.3%)	3.52	1.05
Overall Mean / SD							3.74	0.98

(Questionnaire, 2025)

The mean scores for items under frequency of digital information usage ranged from 3.52 to 3.89, with an overall mean of 3.74 (SD = 0.98). This indicates that respondents frequently use digital resources for academic purposes. The highest-rated statement was 'I search for academic content online several times a week' (Mean = 3.89), while the lowest was 'I use digital academic tools to improve my work' (Mean = 3.52), indicating moderate engagement with specialized tools.

Table 4: Academic Performance in Relation to Digital Information Usage (N = 369)

S/N	Statement	SD	D	N	A	SA	Mean	SD
19	My academic performance improves when I frequently use digital information sources.	10 (2.7%)	25 (6.8%)	47 (12.7%)	190 (51.5%)	97 (26.3%)	3.92	0.92
20	There is a noticeable difference in my academic performance when I use digital resources more often.	12 (3.3%)	28 (7.6%)	53 (14.4%)	183 (49.6%)	93 (25.2%)	3.86	0.94
21	The more I use digital information, the better I perform in tests and examinations.	11 (3.0%)	26 (7.0%)	57 (15.5%)	182 (49.3%)	93 (25.2%)	3.87	0.93
22	I perform academically better when I study using digital tools and platforms.	15 (4.1%)	32 (8.7%)	59 (16.0%)	181 (49.1%)	82 (22.2%)	3.77	0.98
23	Increased access to digital information has helped me achieve higher grades.	14 (3.8%)	29 (7.9%)	64 (17.4%)	177 (48.0%)	85 (23.0%)	3.79	0.96
24	Digital information helps me understand difficult academic topics better than classroom lectures alone.	18 (4.9%)	36 (9.8%)	61 (16.5%)	173 (46.9%)	81 (22.0%)	3.72	1.00
25	The frequency with which I use digital academic resources positively impacts my academic	13 (3.5%)	27 (7.3%)	56 (15.2%)	185 (50.1%)	88 (23.8%)	3.84	0.95

success.		
Overall Mean / SD	3.83	0.95

(Questionnaire, 2025)

The mean scores for the items ranged between 3.72 and 3.92, with an overall mean of 3.83 (SD = 0.95). This suggests that respondents perceive a strong positive relationship between their use of digital information resources and academic performance. The highest-rated item was 'My academic performance improves when I frequently use digital information sources' (Mean = 3.92), while the lowest-rated item was 'Digital information helps me understand difficult academic topics better than classroom lectures alone' (Mean = 3.72).

Table 5: Factors Influencing Access and Use of Digital Information (N = 369)

S/N	Statement	SD	D	N	A	SA	Mean	SD
26	I have access to a personal digital device (e.g., phone, tablet, laptop) for academic use.	9 (2.4%)	15 (4.1%)	41 (11.1%)	183 (49.6%)	121 (32.8%)	4.06	0.89
27	I can afford regular internet access for academic activities.	21 (5.7%)	48 (13.0%)	77 (20.9%)	155 (42.0%)	68 (18.4%)	3.55	1.04
28	Lack of electricity affects my ability to use digital information.	14 (3.8%)	19 (5.2%)	42 (11.4%)	171 (46.4%)	123 (33.3%)	4.00	0.96
29	I have the necessary skills to use digital platforms for academic purposes.	17 (4.6%)	34 (9.2%)	69 (18.7%)	169 (45.8%)	80 (21.7%)	3.71	0.99
30	My school provides digital resources (e.g., Wi-Fi, e-library, ICT labs) that support my learning.	27 (7.3%)	59 (16.0%)	91 (24.7%)	140 (37.9%)	52 (14.1%)	3.36	1.08
31	I am motivated to use digital tools for academic activities.	10 (2.7%)	25 (6.8%)	55 (14.9%)	184 (49.9%)	95 (25.7%)	3.89	0.93
32	My lecturers or teachers encourage the use of digital information sources.	18 (4.9%)	36 (9.8%)	67 (18.2%)	172 (46.6%)	76 (20.6%)	3.68	0.98
33	The cost of internet data limits my ability to access academic information online.	11 (3.0%)	22 (6.0%)	38 (10.3%)	166 (45.0%)	132 (35.8%)	4.05	0.94
34	I find it easy to understand and evaluate academic content found online.	15 (4.1%)	30 (8.1%)	65 (17.6%)	184 (49.9%)	75 (20.3%)	3.74	0.96
35	Environmental or infrastructural challenges reduce my access to digital academic materials.	13 (3.5%)	19 (5.2%)	44 (11.9%)	168 (45.5%)	125 (33.9%)	4.01	0.94
Overall Mean / SD							3.81	0.97

(Questionnaire, 2025)

The mean scores for all items range between 3.36 and 4.06, with an overall mean of 3.81 (SD = 0.97). This shows that most respondents experience moderate-to-high accessibility and motivation to use digital information resources, although infrastructural and financial challenges persist. The highest-rated items were 'Access to a personal digital device' (Mean = 4.06) and 'Cost of internet data limits my ability to access academic information online' (Mean = 4.05), reflecting both availability and cost barriers.

V. DISCUSSION OF THE RESULTS

The result of this on the utilization of digital information shows that mean values for all items range between 3.47 and 4.07, with an overall mean of 3.75 (SD = 0.96). Students generally agreed that digital information resources are essential to their academic success (Mean = 4.02). The findings indicate that students in Colleges of Education extensively use digital information for academic purposes. High utilization levels may be attributed to smartphone ownership and increased internet access. However, limited use of advanced academic tools such as citation software suggests a gap in digital literacy training. This finding supports findings by Ajadi et al. (2020) and Wang & Chen (2019), who emphasized the importance of digital skills and institutional support for optimizing academic outcomes.

On the frequency of the information usage, the findings reveal that students in Colleges of Education make frequent use of digital information for academic purposes. The consistent use of search engines, online journals, and educational platforms demonstrates strong integration of technology into study routines. However, the relatively lower use of citation managers and plagiarism checkers suggests limited awareness or accessibility. This pattern supports earlier research by Kaliisa & Michelle (2019) and Ajadi et al. (2020), which emphasized that while students are digitally active, they often underutilize specialized academic tools due to low digital literacy or institutional support gaps.

Results findings from academic performance in relation to digital information usage show a clear link between digital information usage and improved academic performance among students. Respondents strongly believe that frequent use of digital resources enhances understanding, grades, and overall academic success. These results support prior studies such as those by An (2021) and Chen & Tsai (2020), which established that students with greater engagement in digital learning environments tend to perform better academically. The

findings also align with the Technology Acceptance Model (Davis, 1989), suggesting that perceived usefulness of digital tools directly influences their adoption and resulting academic gains.

On Factors influencing access and use of digital information, the findings suggest that access to personal devices is widespread among students, but consistent usage is constrained by high internet costs, unstable electricity, and limited institutional infrastructure. The presence of digital skills and motivation indicates readiness to embrace digital learning if adequate resources are provided. These results align with studies by Okojie et al. (2019) and Ajadi et al. (2020), which highlighted infrastructural and economic barriers as major determinants of digital resource utilization in Nigerian institutions. The findings also affirm that while individual readiness is high, institutional and environmental supports are critical for optimizing digital learning outcomes.

Conclusion

The study concludes that digital information utilization significantly influences academic performance among students in Colleges of Education in Katsina State. Students who actively engage with digital platforms, online resources, and academic tools tend to achieve better learning outcomes and higher levels of academic success. The integration of digital information resources into students' study habits has enhanced accessibility to academic materials, improved understanding of complex subjects, and promoted self-directed learning. However, the benefits of digital learning are moderated by infrastructural limitations such as erratic power supply, high cost of data, and insufficient institutional support. Addressing these challenges is essential to fully harness the potential of digital technologies in education. The study affirms that improving access, training, and institutional facilities can further enhance the impact of digital information on students' performance and lifelong learning.

Recommendations

Based on the findings of the research work, the following recommendations were suggested:

1. Institutions should enhance digital infrastructure, ensuring reliable Wi-Fi and access to e-libraries.
2. Government and stakeholders should subsidize internet costs for students.
3. Power reliability should be improved through backup and renewable energy.
4. Lecturers should integrate digital resources in teaching and offer digital-literacy workshops.
5. Students should adopt effective digital study practices and join academic groups.
6. Future studies should include longitudinal or experimental designs to test causality.

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