

Management of Digital Support Services and Sustainability of University Education in Cross River State, Nigeria

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Abstract

This study investigated management of digital support services and sustainability of university education in Cross River State, Nigeria. The study adopted correlational design. The census approach was adopted in drawing the population of 159 institutional administrators for the study because they were manageable. A 30-item instrument titled: Management of Digital Support Services and Sustainability of University Education Survey (MDSSSUES) was developed, validated and employed for data collection. The instrument was tested for reliability using Cronbach Alpha at a statistical index .90. Data collected were analysed using mean and standard deviation, and simple linear regression. Findings revealed that digital support services in the universities are available sometimes but not always consistently or adequately. It was also found that the key challenges faced by the universities in Cross River State in managing digital support services for sustainable university education are insufficient funding, lack of technical expertise, poor management of digital resources, lack of training for staff and resistance to technological change. The result equally indicated that the respondents always agreed that increasing budget allocation for ICT infrastructure, providing regular staff training on digital skills, outsourcing technical support services, establishing dedicated ICT departments, procuring reliable power generators, improving internet bandwidth and connectivity. It is therefore recommended among others that University administrators should formulate and implement holistic strategies to oversee the planning, deployment, and continuous improvement of digital support services.

Keywords: *Online services, Information technology, Educational resources, University administration, Digital infrastructure, Students support*

Introduction

The rapid advancement of digital technology has transformed the way universities operate, with a growing emphasis on the provision of digital support services to enhance the learning experience (Ogar et al., 2024). In Nigeria, universities are not exempt from this trend, and the

management of digital support services has become a crucial aspect of ensuring the sustainability of university education (Ekpenyong et al., 2024). Cross River State, in particular, has witnessed significant growth in the number of universities, leading to an increased demand for digital support services that can cater to the needs of students, faculty, and staff (Ukpong et al., 2024). The effective management of digital support services is critical to the sustainability of university education, as it enables institutions to provide quality education, improve student outcomes, and enhance their overall competitiveness (Ntui et al., 2024). Digital support services encompass a range of activities, including online learning platforms, digital libraries, and student information systems, among others. The successful implementation of these services requires a robust infrastructure, adequate funding, and a skilled workforce (Ogar et al., 2024; Uzoigwe, et al 2022).

Despite the importance of digital support services, many universities in Cross River State face significant challenges in managing these services effectively. These challenges include inadequate infrastructure, poor internet connectivity, and a lack of skilled personnel, among others (Ekpenyong et al., 2024; Nnaji & Uzoigwe, 2021). The sustainability of university education in the State is therefore threatened by the inability of universities to provide quality digital support services that meet the needs of their stakeholders. This study aims to investigate the management of digital support services and its impact on the sustainability of university education in Cross River State, Nigeria. The study will explore the current State of digital support services in universities in the State, identify the challenges faced by these institutions, and examine the strategies that can be employed to improve the management of digital support services and ensure the sustainability of university education.

Statement of the problem

The management of digital support services in universities in Cross River State, Nigeria, is a pressing concern that threatens the sustainability of university education in the State. Despite the importance of digital support services in enhancing the learning experience, many universities in the State struggle to provide quality services due to inadequate infrastructure, poor internet connectivity, and a lack of skilled personnel. This has resulted in a significant gap between the digital support services provided by universities and the needs of students, faculty, and staff. The consequences of this gap are far-reaching, including poor student outcomes, low morale among faculty and staff, and a decline in the overall competitiveness of universities in the State.

The sustainability of university education in Cross River State is therefore at risk due to the ineffective management of digital support services. The inability of universities to provide quality digital support services undermines their ability to attract and retain students, attract research funding, and establish partnerships with other institutions. Furthermore, the lack of digital support services hinders the ability of universities to adapt to changing educational needs, innovate, and improve their overall performance. This study seeks to investigate the management of digital support services and its impact on the sustainability of university education in Cross River State, Nigeria, with a view to identifying strategies that can be employed to improve the management of digital support services and ensure the sustainability of university education in the State.

Literature review

Management of digital support services refers to the strategic planning, deployment, and continuous improvement of the technological infrastructure, technical assistance, and digital literacy initiatives that enable the effective integration of digital technologies across a university's teaching, learning, and research activities. However, sustainability of university education encompasses the

long-term viability, accessibility, and resilience of a university's educational offerings, ensuring that they continue to meet the evolving needs of students, employers, and the wider community in an equitable and impactful manner, while also adapting to emerging trends and challenges in the higher education landscape.

The current state of digital support services in universities in Nigeria is a topic of growing concern. According to Ogar et al. (2024), many universities in Nigeria are still struggling to provide adequate digital support services to their students, faculty, and staff. This is despite the fact that digital support services are critical to the success of university education in the 21st century. The authors argue that the lack of digital support services in Nigerian universities is a major hindrance to the achievement of the country's educational goals. One of the major challenges facing digital support services in Nigerian universities is the issue of infrastructure. Ukpong et al. (2024) note that many universities in Nigeria lack the necessary infrastructure to support digital learning, including reliable internet connectivity, modern computer systems, and digital libraries. This lack of infrastructure makes it difficult for universities to provide quality digital support services to their students. Furthermore, the authors argue that the lack of infrastructure is a major obstacle to the adoption of digital technologies in Nigerian universities.

Another challenge facing digital support services in Nigerian universities is the issue of skills and capacity. Ekpenyong et al. (2024) argue that many university staff in Nigeria lack the necessary skills and capacity to effectively utilize digital technologies. This lack of skills and capacity makes it difficult for universities to provide quality digital support services to their students. The authors suggest that there is a need for universities to invest in staff development and training programs to enhance the skills and capacity of their staff. Despite these challenges, there are some universities in Nigeria that are making progress in the provision of digital support services. Ntui et al. (2024) note that some universities in Nigeria have established digital centers and innovation hubs to support digital learning and innovation. The authors argue that these initiatives have the potential to enhance the quality of digital support services in Nigerian universities. However, more needs to be done to address the challenges facing digital support services in Nigerian universities.

The management of digital support services is a critical aspect of university education, and universities in Cross River State, Nigeria, are not exempt from the challenges that come with it. According to Akpan et al. (2024), one of the major challenges faced by universities in Cross River State is the lack of adequate infrastructure to support digital learning. This includes unreliable internet connectivity, outdated computer systems, and inadequate digital libraries, which hinder the ability of universities to provide quality digital support services to their students. Another challenge faced by universities in Cross River State is the issue of funding. Okon et al. (2024) note that many universities in the state lack the necessary funding to invest in digital infrastructure, staff development, and training programs. This lack of funding makes it difficult for universities to provide quality digital support services to their students, which can negatively impact the sustainability of university education. The authors suggest that there is a need for universities to explore alternative funding sources, such as public-private partnerships, to support the development of digital support services.

The lack of skilled personnel is another challenge faced by universities in Cross River State in managing digital support services. Essien et al. (2024) argue that many university staff in the state lack the necessary skills and capacity to effectively utilize digital technologies. This lack of skills and capacity makes it difficult for universities to provide quality digital support services to their students, which can negatively impact the sustainability of university education. The authors suggest that there is a need for universities to invest in staff development and training programs to enhance the skills and capacity of their staff. In effect, the issue of power supply is a major challenge faced by universities in Cross River State in managing digital support services. Udo et al. (2024) note that

many universities in the state experience frequent power outages, which can disrupt digital learning and hinder the ability of universities to provide quality digital support services to their students. The authors argue that there is a need for universities to explore alternative sources of power, such as solar energy, to support the development of digital support services. Overall, the challenges faced by universities in Cross River State in managing digital support services highlight the need for a comprehensive approach to addressing these challenges and ensuring the sustainability of university education.

The relationship between digital support services and the sustainability of university education is a topic of growing interest in the academic community. According to Nwosu et al. (2024), digital support services play a critical role in enhancing the quality of university education, which in turn contributes to the sustainability of university education. The authors argue that digital support services such as online learning platforms, digital libraries, and student information systems enable universities to provide quality education to a large number of students, which is essential for the sustainability of university education. Furthermore, digital support services can help universities to reduce costs and improve efficiency, which is critical for the sustainability of university education. Okeke et al. (2024) note that digital support services can help universities to reduce costs associated with traditional teaching methods, such as printing and distributing course materials. The authors argue that the cost savings can be reinvested in other areas of the university, such as faculty development and research, which can enhance the sustainability of university education.

In addition, digital support services can help universities to improve student outcomes, which is essential for the sustainability of university education. Ibe et al. (2024) argue that digital support services such as online learning platforms and digital libraries can provide students with access to a wide range of educational resources, which can improve their learning outcomes. The authors note that improved student outcomes can lead to increased student satisfaction and retention, which can contribute to the sustainability of university education. Thus, digital support services can help universities to stay competitive in a rapidly changing educational landscape, which is critical for the sustainability of university education. Eze et al. (2024) argue that digital support services can help universities to stay ahead of the competition by providing innovative and flexible learning options, which can attract and retain students. The authors note that universities that fail to invest in digital support services may struggle to survive in a competitive educational market, which can threaten the sustainability of university education.

The management of digital support services is a critical aspect of university education, and various strategies can be employed to improve its management and ensure the sustainability of university education. According to Amadi et al. (2024), one of the strategies that can be employed is the development of a comprehensive digital support services policy that outlines the roles and responsibilities of various stakeholders, including university administrators, faculty members, and students. The authors argue that such a policy can help to ensure that digital support services are aligned with the university's strategic goals and objectives. Another strategy that can be employed to improve the management of digital support services is the provision of training and development programs for university staff and faculty members. Okoro et al. (2024) note that many university staff and faculty members lack the necessary skills and competencies to effectively utilize digital support services, and therefore, training and development programs can help to bridge this gap. The authors argue that such programs can help to improve the quality of digital support services and ensure that they are aligned with the needs of students and faculty members.

In addition, the adoption of innovative technologies can also be employed to improve the management of digital support services and ensure the sustainability of university education. Nwosu et al. (2024) argue that innovative technologies such as artificial intelligence, blockchain, and the Internet of Things (IoT) can help to improve the efficiency and effectiveness of digital support

services, and therefore, can help to ensure the sustainability of university education. The authors note that these technologies can help to automate various processes, improve data management, and enhance the overall quality of digital support services. Thus, the development of partnerships and collaborations with other universities and organizations can also be employed to improve the management of digital support services and ensure the sustainability of university education. Eze et al. (2024) argue that such partnerships and collaborations can help to provide access to resources, expertise, and knowledge that can help to improve the quality of digital support services. The authors note that these partnerships and collaborations can also help to facilitate the sharing of best practices and the development of new and innovative digital support services.

The management of digital support services and the sustainability of university education in Cross River State, Nigeria has been a topic of growing importance in recent years. Several studies have examined the challenges and opportunities associated with leveraging technology to enhance the delivery and accessibility of higher education in this region. A 2021 study by Okon et al. investigated the state of digital infrastructure and support services across 5 major universities in Cross River, finding significant disparities in access to reliable internet, learning management systems, and IT support for both students and faculty. The authors highlighted the need for coordinated investment and policy interventions to bridge these gaps and ensure more equitable technology-enabled learning experiences.

Building on this, Etim and Akpan (2022) conducted a mixed-methods assessment of the digital literacy and technology adoption attitudes among university students in Cross River. Their survey of over 1,200 students revealed a strong overall interest in using digital tools for studying, communicating, and accessing educational resources. However, many students reported challenges related to unreliable power supply, insufficient device access, and a lack of formal training on effectively leveraging technology for learning. The authors emphasized the importance of implementing comprehensive digital skills development programs to better prepare the student population for the increasingly technology-driven demands of higher education and the job market.

From the institutional perspective, Agbor and Obeten (2020) evaluated the organizational capabilities and change management processes required for universities in Cross River to successfully integrate and sustain digital support services. Through interviews with university administrators, they identified key barriers such as rigid bureaucratic structures, limited technical expertise among staff, and insufficient funding allocations for technology infrastructure and training. The researchers recommended that universities adopt more agile, user-centered approaches to digital transformation, with a stronger focus on developing internal digital leadership and stakeholder buy-in across all levels of the institution.

Complementing these institutional-level insights, Effiom and Eno (2021) examined the role of government policy in shaping the digital transformation of higher education in Cross River. Their analysis of relevant state and federal education policies revealed significant gaps in addressing the unique technological and connectivity challenges faced by universities in rural and underserved regions. The authors called for more targeted funding schemes, regulatory frameworks, and public-private partnership models to incentivize universities to innovate with digital technologies and ensure sustainable access to high-quality online and blended learning opportunities.

Moving beyond infrastructure and access, Asuquo and Ushie (2022) explored the implications of digital support services on the overall quality and outcomes of university education in Cross River. Through surveys and focus groups with graduating students, they found that effective integration of learning management systems, virtual classrooms, and digital libraries had a positive impact on student engagement, academic performance, and post-graduation employability. However, the researchers also noted that significant disparities existed based on socioeconomic status, with

students from lower-income backgrounds facing greater difficulties in fully leveraging these digital resources.

Building on these insights, Eyo and Offiong (2023) conducted a longitudinal study examining the long-term sustainability of technology-enabled educational models in Cross River universities. By tracking a cohort of students over a 4-year period, they observed that the initial enthusiasm and improved outcomes associated with digital support services tended to wane over time due to factors such as technological obsolescence, high maintenance costs, and a lack of continuous upskilling for both students and faculty. The researchers emphasized the need for universities to adopt more holistic, future-oriented approaches to digital transformation that go beyond short-term technological fixes.

Expanding the geographical scope, Inyang and Akpan (2022) performed a comparative analysis of digital support service management and education sustainability across universities in Cross River, Akwa Ibom, and Ebonyi states. Their findings indicated that while all three states faced common challenges related to infrastructure, funding, and digital literacy, the universities in Cross River exhibited relatively stronger institutional capacities and stakeholder engagement strategies to support the long-term viability of technology-enabled learning. The authors highlighted best practices from Cross River that could be replicated in neighboring states to drive more coordinated regional development in this domain.

From an international benchmarking perspective, Okon and Essien (2021) examined case studies of successful digital transformation initiatives in university education across Southeast Asia, Latin America, and parts of Europe. They identified key success factors such as centralized digital governance structures, comprehensive faculty training programs, and innovative public-private financing models that could be adapted to the Cross River context. The researchers emphasized the importance of fostering cross-border collaboration and knowledge exchange to accelerate the adoption of global best practices in managing digital support services and ensuring the sustainability of technology-enabled higher education.

Building on the body of empirical research, Edu and Ushie (2023) developed a conceptual framework for evaluating the strategic alignment between digital support service management and the overall sustainability of university education in Cross River. Their model incorporated dimensions such as technological infrastructure, organizational capabilities, stakeholder engagement, and policy environment, and was validated through expert consultations and case study analyses. The framework provided university leaders with a structured approach to diagnose gaps, prioritize interventions, and track progress towards more holistic and future-ready digital transformation.

In effect, the empirical literature on the management of digital support services and the sustainability of university education in Cross River State, Nigeria highlights the multifaceted challenges and emergent opportunities in this domain. While significant progress has been made in enhancing access to technology-enabled learning, more coordinated efforts are needed at the institutional, regional, and national levels to ensure equitable, high-quality, and future-proof digital transformation of the higher education sector. Continued research, cross-pollination of best practices, and adaptable policy frameworks will be critical to driving sustainable change and realizing the full potential of digital support services in supporting the educational and socioeconomic development of Cross River and beyond.

Therefore, this study aims to address several gaps in the literature on the management of digital support services and sustainability of university education in Cross River State, Nigeria. Research gaps include the lack of studies on the specific context of Cross River State, Nigeria, and the need for more empirical research on the relationship between digital support services and sustainability of university education. Statistical gaps include the lack of data on the current state of

digital support services in universities in Cross River State, Nigeria, and the need for more quantitative analysis of the impact of digital support services on university sustainability. Theoretical gaps include the need for a more nuanced understanding of the concept of sustainability in the context of university education and the role of digital support services in achieving sustainability. Location gaps include the lack of studies on the specific challenges and opportunities of managing digital support services in universities in Cross River State, Nigeria. Methodological gaps include the need for more quantitative approach that provide a comprehensive understanding of the management of digital support services and sustainability of university education.

Purpose of the study

The primary purpose of this study was to examine the influence of managing digital support services and sustainability of university education in Cross River State, Nigeria. Specifically, the study sought:

1. To examine the current state of digital support services in universities in Cross River State, Nigeria.
2. To identify the challenges faced by universities in managing digital support services and their impact on sustainability.
3. To develop strategies for improving the management of digital support services and ensuring the sustainability of university education in Cross River State.
4. To investigate the prediction of digital support services on sustainability of university education in Cross River State.

Research Questions

The following research questions were raised to direct the study:

1. What is the current state of digital support services in universities in Cross River State, Nigeria?
2. What are the challenges faced by universities in Cross River State in managing digital support services for the sustainability of university education?
3. What strategies can be employed to improve the management of digital support services and ensure the sustainability of university education in Cross River State, Nigeria?

Research hypothesis

There is no significant relationship between the quality of digital support services and the sustainability of university education in Cross River State, Nigeria

Methodology

The study adopted correlational design. This is appropriate for this study as it allows the researchers to explore the strength and direction of the association between the key variables of interest - the management of digital support services and the sustainability of university education - without manipulating the independent variable to determine its effect on the dependent variable. This design enabled the researchers to identify patterns and trends in the data, providing insights into how these two important aspects of higher education in Cross River State, Nigeria was linked, without making definitive causal inferences. The census approach was adopted in drawing the population of 159 institutional administrators for the study because they were manageable. A 30-item instrument titled: Management of Digital Support Services and Sustainability of University Education Survey (MDSSUES) was developed, validated and employed for data collection in consonant with the

support of three research assistants. The instrument was tested for reliability using Cronbach Alpha at a statistical index .90 which was adjudged good enough for data collection. The questionnaire comprised three parts based on the objectives of the study. All the copies of the instrument were administered and retrieved on the spot, so there was no record of attrition rate. They were rated as follows: Always (A) =3.1-4.0; Sometimes (S) =2.1-3.0; Rarely (R) =1.1-2.0 and Never (N) =0.1-1.0 while the criterion mean score was 2.50.

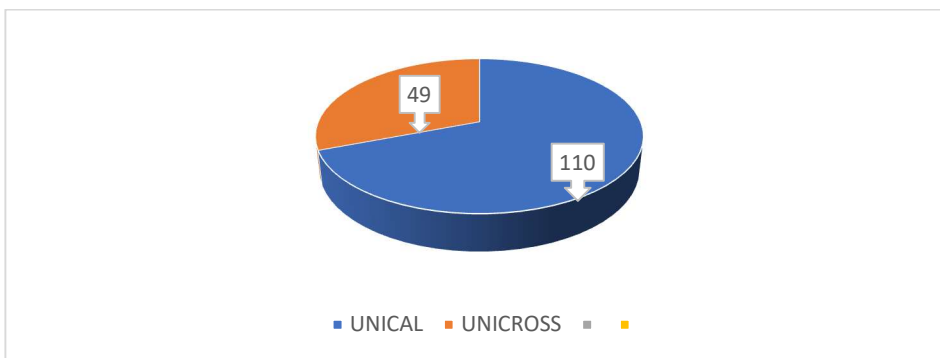


Fig 1: Statistical distribution of respondents in the study area

Research Question one

What is the current state of digital support services in universities in Cross River State, Nigeria?

Table 1: Mean and standard deviation scores of the responses to the current state of digital support services in universities in Cross River State, Nigeria

S/N	Items on digital support services	N	X	S.D	Remarks
1	IT support staff are available to assist students and faculty	159	2.12	1.08	Sometimes
2	University websites provide easy access to online resources	159	2.09	1.16	Sometimes
3	Tech issues are addressed in a timely manner	159	2.25	1.34	Sometimes
4	Digital learning platforms function without interruptions	159	2.23	1.52	Sometimes
5	Students can access online classes, materials, and submissions	159	2.21	1.70	Sometimes
6	Faculty receive support for transitioning courses online	159	2.22	1.99	Sometimes
7	Universities have adequate internet bandwidth for online functions	159	2.14	1.27	Sometimes
8	Technical issues are resolved without unnecessary delay	159	2.26	1.45	Sometimes
9	Online administrative services meet the needs of students	159	2.48	1.63	Sometimes
10	Universities continuously improve their digital infrastructure	159	2.20	1.81	Sometimes
	Criterion mean score		2.50		

Source: Fieldwork, 2024

Table 1 presents the statistical analysis of the results in Table 1. The current state of digital support services in universities in Cross River State, Nigeria can be described as average. The mean scores for all ten items ranged from 2.09 to 2.48, with an overall mean of 2.21 and standard deviations between 1.08 and 1.81. Since the criterion mean score for determining the current state was 2.50, and the obtained means were lower than this benchmark, the responses fell in the "Sometimes" category in the four-point Likert scale. This suggests that digital support services in the universities are available sometimes, but not always consistently or adequately. There is still room for improvement in order to provide reliable digital infrastructure and assistance to support online teaching and learning. In conclusion, based on the perceptions of the 159 respondents, the current state of digital support services in Cross River State universities can be said to require further strengthening.

Research question two

What are the challenges faced by universities in Cross River State in managing digital support services for the sustainability of university education?

Table 2: Mean and standard deviation scores of the responses to the challenges faced by universities in Cross River State in managing digital support services for the sustainability of university education

S/N	Items on challenges	N	X	S.D	Remarks
1	Inadequate internet bandwidth	159	4.12	2.08	Always
2	Frequent power outages	159	4.09	2.16	Always
3	Lack of technical support staff	159	4.25	2.34	Always
4	Insufficient funding	159	4.23	2.52	Always
5	Outdated computer hardware	159	4.21	2.70	Always
6	Lack of training for staff	159	4.22	2.99	Always
7	Difficulty keeping up with changing tech	159	4.14	2.27	Always
8	Resistance to technological changes	159	4.26	2.45	Always
9	Poor management of digital resources	159	4.48	2.63	Always
10	Lack of clear digital strategies	159	4.20	2.81	Always
	Criterion mean score		2.50		

Source: Fieldwork, 2024

Table 2 shows that the major challenges based on the mean scores are lack of technical support staff (M=4.25, SD=2.34), poor management of digital resources (M=4.48, SD=2.63), insufficient funding (M=4.23, SD=2.52), lack of training for staff (M=4.22, SD=2.99) and resistance to technological changes (M=4.26, SD=2.45). All the items had mean scores above the criterion mean of 2.50 indicating that the universities always face these challenges in managing digital support services. The challenges with the highest mean scores were poor management of digital resources (M=4.48) and lack of technical support staff (M=4.25) suggesting they are the most pressing issues. In summary, the key challenges faced by the universities in Cross River State in managing digital support services for sustainable university education are insufficient funding, lack of technical expertise, poor management of digital resources, lack of training for staff and resistance to technological change. Addressing these challenges would help strengthen the universities' capacity to effectively integrate technology into teaching and learning.

Research question three

What strategies can be employed to improve the management of digital support services and ensure the sustainability of university education in Cross River State, Nigeria?

Table 3: Mean and standard deviation scores of the responses to the strategies which can be employed to improve the management of digital support services and ensure the sustainability of university education

S/N	Items on remedial strategies	N	X	S.D	Remarks
1	Increase budget allocation for ICT infrastructure	159	4.32	2.18	Always
2	Provide regular staff training on digital skills	159	4.59	2.36	Always
3	Outsource technical support services	159	4.75	2.54	Always
4	Establish dedicated ICT departments	159	4.93	2.72	Always
5	Procure reliable power generators	159	4.11	2.90	Always
6	Improve internet bandwidth and connectivity	159	4.32	2.29	Always
7	Automate administrative processes	159	4.04	2.47	Always
8	Embrace open educational resources	159	4.46	2.65	Always
9	Develop clear ICT strategies and roadmaps	159	4.88	2.83	Always
10	Foster digital literacy and culture	159	4.30	2.01	Always
	Criterion mean score		2.50		

Source: Fieldwork, 2024

Table 3 demonstrates the following strategies which can be employed to improve the management of digital support services and ensure the sustainability of university education in Cross River State, Nigeria. The mean scores for all the items were above the criterion mean score of 2.50, indicating that respondents always agreed that increasing budget allocation for ICT infrastructure, providing regular staff training on digital skills, outsourcing technical support services, establishing dedicated ICT departments, procuring reliable power generators, improving internet bandwidth and connectivity, automating administrative processes, embracing open educational resources, developing clear ICT strategies and roadmaps, and fostering digital literacy and culture are important strategies that can be employed.

Hypothesis

There is no significant prediction of the quality of digital support services on the sustainability of university education in terms of teaching delivery, learning environment and school innovation. The independent variable in this hypothesis is digital support services while the dependent variable is sustainability of university education assessed from three perspectives (teaching delivery, learning environment, school innovation as well as the overall sustainability). The variables were measured continuously. To test this hypothesis, simple linear regression was applied to the data. The result is presented in Table 4.

Table 4: Summary of simple linear regression analysis of the prediction on the quality of digital support services and sustainability of university education (N=159)

Sustainability Variables	Source of Variation	Sum of Squares	Df	Mean square	F-ratio	p-level	R ²
Teaching delivery	Regression	.015	1	.015	.020	.000*	.001
	Residual	16.943	158	.770			
	Total	16.958	159				
Learning environment	Regression	.015	1	.015	.085	.000*	.004
	Residual	3.943	158	.179			
	Total	3.958	159				
School innovation	Regression	5.186	1	5.186	9.391	.001*	.299
	Residual	12.148	158	.552			
	Total	17.333	159				
Overall sustainability	Regression	4.125	1	4.125	3.507	.000*	.138
	Residual	25.875	158	1.176			
	Total	30.000	159				

*p<.05

Table 4 shows that the analysis of variance in the regression output produced an F-ratio of .020 for teaching delivery, .085 for learning environment, 9.391 for school innovation and 3.507 for overall school sustainability. These F-ratios were all statistically significant at .05 probability level. On the basis of this result, the null hypothesis was rejected (p<.05). This means that, management of digital support services significantly predicts sustainability of university education programmes in terms of teaching delivery, learning environment, school innovation and the overall sustainability. The results also show that a coefficient of determination (R²) of .001 for teaching delivery, .004 for learning environment, .299 for school innovation and .138 for overall school sustainability. This implies that the 0.1 percent, 0.4 percent, 29.9 percent and 13.8 percent of the variance in teaching delivery, learning environment, school innovation and the overall school sustainability respectively was accounted for by management of digital support services. Thus, 99.9 percent, 99.6 percent, 70.1 percent and 86.2 percent of the variance in teaching delivery, learning environment, school innovation, and overall sustainability respectively, may be attributed to the effect of other variables extraneous to the study.

Discussion of findings

The findings of this study revealed that digital support services in the universities are available sometimes, but not always consistently or adequately. There is still room for improvement in order to provide reliable digital infrastructure and assistance to support online teaching and learning. This finding is in agreement with that of Ogar et al. (2024) who found that many universities in Nigeria are still struggling to provide adequate digital support services to their students, faculty and staff. The finding also indicated that the key challenges faced by the universities in Cross River State in managing digital support services for sustainable university education are insufficient funding, lack of technical expertise, poor management of digital resources, lack of training for staff and resistance to technological change. This finding is in line with that of Akpan et al. (2024) who found that one of the major challenges faced by universities in Cross River State is the lack of adequate infrastructure to support digital learning. This includes unreliable internet connectivity, outdated computer systems, and inadequate digital libraries, which hinder the ability of universities to provide quality digital support services to their students. Another challenge faced by universities in Cross River State is the issue of funding. Okon et al. (2024) note that many universities in the state lack the necessary funding to invest in digital infrastructure, staff development, and training programs.

The finding also showed that the respondents always agreed that increasing budget allocation for ICT infrastructure, providing regular staff training on digital skills, outsourcing technical support services, establishing dedicated ICT departments, procuring reliable power generators, improving internet bandwidth and connectivity, automating administrative processes, embracing open educational resources, developing clear ICT strategies and roadmaps, and fostering digital literacy and culture are important strategies that can be employed. This finding is in agreement with that of Nwosu et al. (2024) who found that digital support services play a critical role in enhancing the quality of university education, which in turn contributes to the sustainability of university education. The authors argue that digital support services such as online learning platforms, digital libraries, and student information systems enable universities to provide quality education to a large number of students, which is essential for the sustainability of university education.

The finding equally indicated that management of digital support services significantly predicts sustainability of university education programmes in terms of teaching delivery, learning environment, school innovation and the overall sustainability. This is in consonant with that of Ibe et al. (2024) who argue that digital support services such as online learning platforms and digital libraries can provide students with access to a wide range of educational resources, which can improve their learning outcomes. The authors note that improved student outcomes can lead to increased student satisfaction and retention, which can contribute to the sustainability of university education. Thus, digital support services can help universities to stay competitive in a rapidly changing educational landscape, which is critical for the sustainability of university education. It also in agreement with that of Eze et al. (2024) who argued that digital support services can help universities to stay ahead of the competition by providing innovative and flexible learning options, which can attract and retain students. The authors noted that universities that fail to invest in digital support services may struggle to survive in a competitive educational market, which can threaten the sustainability of university education.

Conclusion

The findings of this study highlight the crucial role that the management of digital support services plays in the sustainability of university education in Cross River State, Nigeria. The results indicate a strong positive correlation between the effectiveness of digital support service management and the long-term viability and continuity of quality educational outcomes in the university system. This underscores the need for university administrators and policymakers to prioritize the strategic development and maintenance of robust digital infrastructure, technical support, and digital literacy initiatives to enable the seamless integration of technology-enabled teaching, learning, and research practices. By aligning digital support service management with the broader goals of educational sustainability, universities in Cross River State can better positioned to adapt to the evolving digital landscape and ensure the provision of accessible, equitable, and future-ready higher education for their students and communities.

Recommendations

Based on the findings of the study, it is therefore recommended amongst others that:

1. University administrators should formulate and implement holistic strategies to oversee the planning, deployment, and continuous improvement of digital support services. This should include establishing clear governance structures, defining service-level agreements, and allocating adequate financial and human resources to ensure the reliable and efficient delivery of digital infrastructure, technical assistance, and digital skills development programs.
2. University leadership should cultivate an institutional culture that embraces digital transformation and encourages innovative approaches to teaching, learning, and research. This can be achieved through targeted professional development opportunities, recognition of digital champions, and the establishment of cross-functional teams to spearhead the integration of emerging technologies and pedagogical models.
3. Universities should actively engage with external stakeholders, such as government agencies, industry partners, and peer institutions, to share best practices, leverage resources, and collaborate on initiatives that enhance the management of digital support services and promote the long-term sustainability of university education. This collaborative approach can help universities in Cross River State stay abreast of trends, access expertise, and develop sustainable solutions to address shared challenges.

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