

EDUCATIONAL E-SERVICES AND STUDENT SATISFACTION IN NIGERIAN PUBLIC UNIVERSITIES

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Abstract: *This study sought to investigate educational e-services and student satisfaction in Nigerian universities using the University of Abuja as case study. The study's objectives were to identify the implementation of educational e-services; impact of e-services on student satisfaction and challenges impeding educational e-services and student satisfaction at the University of Abuja. The study adopted a survey design whereby the researcher elicited relevant information from the distributed questionnaire and extensively reviewed pieces of literature. The data generated from the questionnaire were analyzed using mean, standard deviation and hypotheses tested using linear regression model, chi-square, and spearman rank correlation (Statistical Package for Social Sciences, version 23). The findings revealed that the University of Abuja, had adopted educational e-services in the form of email services, website interaction for and e-registration, fees payments, e-payment platform, virtual/online classes via GoogleMeet and the University management interaction with students using social media platforms such as Telegram and Facebook. The study also revealed that students are not satisfied with the mode of virtual/online lectures, time allocated for virtual classes, internet network, e-library services, and e-registration for hostel accommodation. Factors impeding educational e-services were poor maintenance culture, overpopulation, cost/poor funding, low ICT literacy/digital divide, inadequate ICT experts, poor internet network and poor knowledge of best practices. Therefore, the study recommended that public-private partnerships and internally generated revenue should be expanded to increase the revenue base of the university to provide the needed educational e-services facilities. Also, training and retraining of the University staff on ICT should be adopted. The University management should adopt best practices in the maintenance e-library by content centralization, updated and recent learning materials, full accessibility, user-friendly electronic devices, multi-format and appealing contents so to increase students' satisfaction. Also strict adherence to National Universities Commission (NUC) policy on students' admission should be implemented fully. Awareness on the importance on the need to imbibe good maintenance culture of the University properties should be carried out periodically by management. Partnership with telecommunication companies to build more network gadgets/devices to improve network connectivity, periodical assessment by the University leadership, the Ministry of Education and students on implementation of educational e-services should be adopted.*

Keywords: *Technology, Information Communication Technology, e-governance, digital divide, education, e-services, students, satisfaction, students' satisfaction, public university, Nigerian public university, University of Abuja*

Introduction

The advancement of technology has made the world a global village. Technology has made private and public service organizations to render services seamlessly. The Nigerian educational sector is not left behind. Globally, Information and Communication Technology (ICT) is widely deployed in many Universities mainly for the provision of information accessibility, computer-based databank storage of students and staff statistics. ICT is also used for planning, budgeting, management requirements, and automation of administrative purposes. The idea behind the adopting of educational e-services by public

universities especially in developing nations is to offer wide range of services in a seamlessly fashion. The management of public universities in Nigeria have galvanized material and human resources to ensure their institutions implement educational internet services to offer seamless services to students. Educational e-services in public universities could be in form of information dissemination, payment of tuition and hostel fees, and e-registration of courses and so on. The history of adoption and implementation of educational e-governance (e-service) in University of Abuja is traced to 2010 when the former vice –chancellor Professor James Sunday Adelabu, launched some e-services which regularization policy linked to the Joint Administration Matriculation Board (JAMB), registration of online courses by students, e-payment procedures. Successive administration within the university has made efforts to improve educational e-services in the university through website upgrading, payment of fees through remitta (Treasury Single Account policy), e-library services and so on (Paul and Ali, 2022).

University of Abuja is a public service organization saddled with the responsibility of delivering educational services to the people. The institution is situated in the nation’s capital, and has embraced e-governance services. For instance, the payment of school fees, virtual/online classes, registration of hostel accommodation registration via the school portal, online course registration, and result checking and other activities are done electronically through the aid of internet-based devices. This study therefore, seeks to examine the influence of educational e-services on students’ satisfaction with a focus on the University of Abuja which is one the highly-ranked public university in Nigeria.

Statement of the Problem

Before the introduction of the advancement of technology, tertiary institutions utilized traditional methods. Administrative activities and services in tertiary institutions were characterized by bureaucratic bottlenecks resulting in a long period of delay in processing academic results, hostel registration, payment of tuition and other educational-related fees, poor service delivery in terms of lectures, and so on. Kazmi (2010) and Kayani et al. (2011) submit that the benefits of e-services are enormous. However, there have been challenges impeding its smooth implementation in developing countries. The University of Abuja has embraced the use of Information and Communication Technology (ICT) in ensuring its services reach a wide range of clients and for the seamless completion of tasks for its students. The idea of ICT in the University is a lofty one, although there have been several challenges impeding e-governance services within the University. The literacy level of some staff is still low despite the fact that we are in an advance technological age. Some of them cannot operate the computer very well thereby still resulting in getting information manually, which could take more time, thereby hindering their performance to deliver on time. Oftentimes, students have issues accessing their results on the school portal, paying their fees, or registering their courses because there are inadequate competent Information Technology (IT) experts (Paul and Ali, 2022).

The issue of inadequate ICT infrastructure in public universities is another major problem. For instance, the virtual classes have not been fully effective. The network within the University is still poor and this has hindered educational e-services for students. Consequently, the study seeks to investigate the following:

- i. What is the implementation of educational e-service at the University of Abuja?

- ii. How does access to educational e-service affect students' satisfaction at the University of Abuja?
- iii. What are the challenges affecting educational e-service and students' satisfaction at University of Abuja?

Objectives of the Study

The broad objective of this study is to assess educational e-services and students' satisfaction at the University of Abuja, while its specific goals are to:

- (a) Ascertain the implementation of educational e-service at the University of Abuja.
- (b) Identify the impact of educational e-services on students' satisfaction at the University of Abuja.
- (c) Find out the challenges affecting the existing educational e-service and students' satisfaction at the University of Abuja.

Statement of Hypotheses

This study is guided by the following hypotheses:

Ho₁: Educational e-service does not have a significant impact on student's satisfaction at the University of Abuja.

Ho₂: There is no significant relationship between existing challenges affecting educational e-services and student's satisfaction at the University of Abuja.

Literature Review

E-Service

The concept of e-service is an idea within the broad spectrum of electronic governance (e-governance). The concept of e-governance has been described in different terms, such as online governance, digital governance, competent government, mobile governance, and so on. (Manoharan and Ingrams, 2018). The letter "e" added to government and management refers to the utilization of electronic tools in rendering public services or goods to the general public. Under e-governance, we have concepts such as e-procurement, e-voting, e-participation, and e-services. The idea of e-service has a plethora of definitions, but however, they have one common feature, which the internet based services. The Electronic Service, shortened as 'E-Service', refers to any service rendered through electronic methods usually through internet-enabled devices or mobile devices (Bhuiyan, 2011). Ruyter et al. (2001) observed that e-service is a term that depicts technological applications with the aim of providing services that seek to strengthen the relationship between consumer and the provider of such services. In the view of Sukasame (2004), e-service has more meaning than just explaining electronics and service. He asserts that ideally, the e-service consists of different interactions and this mainly focuses on services between the consumer and the service provider done through the aid of internet devices. Surjadjaja et al. (2003) opines that there has been a paradigm shift in the operations of services, and this has to do with the use of internet-based devices to render services to the general public in a seamless manner and this has culminated in what is known as an e-service. The implementation of e-services has different purposes. Oseni and Dingley (2015) opine that one of the reasons organizations are adopting e-service, is for profit accumulation. The application of technology into business operations has made

products and services to reach out to a wide range of clients across geographical locations globally. For example, the use of social media by firms and clients has given customers and potential customers to have access to products and services. Online payments are made and this has reduced the cost of hiring personnel, and other overhead expenses.

Universities are the citadels of learning offering various services to their students, staff, and the general community. The university as an institution has several operations performed via electronic means. Hassan et al. (2011) submit that there have been considerable interest in the electronic services provided by public institutions in Nigeria. Significantly, the universities in Nigerian, in recent times, have offered a variety of educational e-services to their students. The payment of tuition fees, registration of courses and lectures, processing of transcripts, cost of hostel accommodation and continuous assessment of students are all carried out through electronic means. Kumar et al. (2007) suggest services offered by universities can be improved a whole lot through the adoption and implementation of e-services.

The scope and significance of e-service involved in providing opportunities for private and public organizations to deploy and developing an e-service will enhance customer/citizen interactions and experience. Kelleher and Peppard (2009) stated that there is a need for organizations to envisage deploying e-service delivery strategy, as this will not only give them a competitive advantage, but will propel them to success. However, the implementation of e-service comes with an unavoidable cost, and it is helpful to obtain meaningful feedback from the customers to improve the service. A dedicated online customer service agent in any organization benefits from e-services. Furthermore, the deployment and delivery of an e-service system have been associated with an increase in the ways businesses and their customers interact. Rowley (2006) concluded that e-service delivery contributes to the total service experience, and not just the consumer's experience and evaluation of e-service. Schware and Deane (2003) discuss major public e-service priorities, and they think that form processing, public complaints, information access, procurement, customer response, and polling are the most valuable services and the reasons why the general public goes online.

Students Satisfaction

The word satisfaction is derived from one's joy or happiness based on needs and desires fulfilled (Saif, 2014). Satisfaction is derived when an individual's performance is beyond his expectations. Hon (2002) submits that satisfaction is an experience of achievements based on the expected outcome. Ideally, an individual will be in a state of satisfaction when their desires, needs, or expectations are fulfilled, and this creates contentment (Rad and Yarmohammadian (2006). Satisfaction does not only depict happiness derived from positive achievements. In the submission of Kotler and Keller (2012), satisfaction refers to the feeling of pleasure or disappointment resulting from comparing perceived performance in relation to expected outcomes. Customers (students) will satisfy when services fit with their expectations (Petruzzellis and Rommanazzi, 2006). Put differently, satisfaction can be a function of the relative level of perception expectation in consonance with their perception (Mukhtar et al, 2015). One of the major beneficiaries of educational e-service of universities is the students cut across different levels and programs. In Nigerian public universities, we have several faculties such as humanities, law, science, management, administration, education, engineering, social sciences,

medicine, and environment. All these faculties have departments and various academic levels. The universities are saddled with the task of providing efficient educational services to this teeming population of students. The satisfaction students derive from the educational services from their universities may be positive or negative.

Elliot and Healy (2001) define students satisfaction as a short-term attitude resulting from a student's appraisal of educational service experience. Attitudes of individuals can be formed through experiences. Thus, universities that render efficient educational services to their students may have favorable ratings from students. Navarro et al. (2005) submit that students satisfaction refers to a positive antecedent of student loyalty. This definition explains that satisfaction would enhance students patronage and positive perception to the services being offered by the management of the university. Put differently, Elliot and Shin (2002), define student satisfaction as the disposition of students based on subjective appraisal of educational outcomes and experience. According to this definition, the emphasis is a subjective. Since educational e-services are majorly targeted toward the students, their judgments or disposition may be subjective and not objective. Mukhtar et al (2015), submit that student satisfaction can be defined as a function of different experiences level and perceived implementation concerning educational service. Educational e-services are offered to a large population of students and these students may have different experiences regarding the implementation of e-services and these would culminate into their perceptions or attitudes. Considering all the scholarly definitions discussed, students satisfaction can be defined as feelings of students' based on the utilization of services provided by their educational institutions.

Overview of Educational E-Service in Nigerian Public Universities

Several scholarly works of literature have been carried out on information technology in the administration of universities. The university can be seen as an educational institution offering service to the public. The university consists of students, staff, and the community where it is established or domiciled. In relation to the reviewed literatures, educational e-services in public universities in Nigeria can be summarized into three main areas:

1. Student administration
2. Staff administration
3. General administration

i. Student administration: One of the major essences of the establishment of universities is to enhance development through the training of students. Put differently, students are the major reason for the existence of universities. Students administration consists of a plethora of activities, such as registration of students' courses, timetable, continuous assessment, payment of school fees, hostel accommodation, processing students' identification cards, transcript payment, lectures, and so on. Obeng (2004) posits that the integrating of information communication technology into educational process has made these services more accessible to students across geographical locations.

ii. Staff administration: The staff consists of academic and non-academic staff. Staff administration involves the use of technology in terms of lecturing, submission of exams and test scores, recruitment, allotment of faculty and staff in the institution, leave management, and performance appraisal. This also includes relevant communication to and

from the institutions and among peers. The essence of the adoption of technology in staff administration is to facilitate the quick completion of voluminous work and retrieval of data (Obeng, 2004).

iii. General administration: Magni (2009) posits that a communication system in the university should also be in place to promote efficient administration. The adoption and implementation of technology in the university would bring out seamless delivery of services and coordination among the various departments by providing timely information to all concerned. Communication could be done internally or externally and the way and manner in which information is disseminated would have an impact on the general performance of the university. Public administration services may include communication between the relevant stakeholders, and sending of circulars to students and staff of the university.

Table 1: Overview of e-services in Nigeria Universities

S/N	Item	Categories of Contents
1	Student Administration	Application for admission via electronic media Students registration/enrolment via the use of computers Electronic form of timetable/class schedule Maintenance of students' attendance via computer usage Usage of E-media platforms to communicate students' academic details to their parents/guardians Notifications of information via use of e-media
2	Staff Administration	Employees' recruitment and job allotment via the use of computers Automation of attendance and leave management of staff members Performance appraisal for staff using e-media Usage of e-media to communicate with staff Usage of e-circulars to pass information
3	General Administration	Allocation of halls for examination using e-media Usage of e-kiosk to share information Results processing and display using e-media E-payment services Virtual/online classes

Source: Krishnaveni and Meenakumari, 2010 (Adopted).

Table 1 above describes item categories generated for information administration in Nigerian public universities. Some of the things are not rendered in the University of Abuja. Items in the table, such as the use of communication of academic details of students to their parents/guardians through e-media, and usage of electronic media for performance appraisal, are yet to be implemented in the University of Abuja. However, the University of Abuja has implemented online classes (virtual), using of electronic media by students to apply for admissions, etc.

Challenges Impeding the Implementation of Educational E-Service in Nigerian Public Universities

Although the implementation of e-governance has begun in Nigerian public universities especially, at the University of Abuja, e-governance activity in Nigeria is still relatively low. Some of the factors impeding the implementation of e-services include the following:

Low Information Technology Literacy/Digital Divide: Nigeria is a developing nation with evidence of a digital divide. As of January 2022, it was reported that the number of internet users in Nigeria was approximately 109 million and this is roughly half of the nation's entire population (Statista, 2022). Public universities have a larger students populations compared to their private counterparts, therefore, the majority of the students with low IT literacy are found in public universities. Despite the IT versatility of the younger generation, the overall professionalism about ICTs among the university staff is low, especially since many public servants resist change affecting work. Some staff finds it difficult to effectively use internet-based devices effectively. Some staff in public universities in Nigeria still prefer to access documents and circulars manually because of ignorance, inadequate IT knowledge, or resistance to change (Babatunde and Paschal, 2015).

The digital divide is another issue facing educational e-services in universities. There are still students and staff who are not computer literate and some who are literate and have access to modern internet-based devices. There are some students from indigent family backgrounds who cannot afford modern mobile phones or computers to aid their learning. Oyadiran (2017) submits that illiteracy and acceptance have remained a big impediment to the utilization of the platform of e-services. The higher the level of information technology education would enhance citizens' patronage on e-services.

2. **Poor Information Communication Technology (ICT) infrastructure:** One of the major problems affecting e-service in Nigerian public universities is the poor internet network coverage and the dearth of internet-based devices. Many Nigerian public universities are plagued with inadequate modern computers, and inadequate internet facilities, inadequate computer laboratories, among others. The trend of usage of internet-based devices such as laptops, mobile have been on the increase however, it has not significantly reduced the problems of adequate information technology infrastructure in Nigerian public universities. (Lawan and Mohammed, 2018). Oyadiran (2017) posits that insufficient technology is crucial factor impeding developing countries towards full implementation of e-services.

3. **Poor Maintenance Culture:** This is one of the problems causing the dilapidation of public service properties or facilities. The maintenance culture of many public servants is relatively poor. There is a mindset of many that government properties belong to nobody; therefore poor attitudes are paid to the maintenance of computer gadgets or internet-based devices in the universities. An empirical study by Oyenuga et al. (2012) on maintenance of university facilities in developing countries showed that lack of planned the maintenance and inadequate maintenance policies is the bane of the university facilities problem, especially in Nigerian public university.

4. **Cost and Poor Funding:** Investing in ICT requires huge funds because of the cost of computers, installation of internet gadgets/electronic devices and fees, and maintenance.

The educational sector in Nigeria has not received the needed attention. Adesina (2022) reported that the Federal Government allocated the sum of N355.47 billion to 44 federal universities in the country and this budget allocation is inadequate due to the massive operations of the universities. The internally generated by these universities have not been adequate to acquire the needed modern technological devices to enhance educational e-services for the students and staff. Poor funding of these universities has resulted in many students seeking scholarships to study in developed countries or choosing affordable private universities within the country.

5. **Inadequate trained Information Communication Technology (ICT) Experts:** The successful implementation of educational e-services is dependent on the availability and expertise of ICT personnel available to the universities. The job description of ICT experts is to ensure the smooth running of web portals, virtual or online classes, students courses registration process are hitch-free, and whole lots of ICT services. The educational e-services of the universities in Nigeria have been marred with brain drain. Many Information Technology experts prefer to work in private sector organizations or in foreign companies abroad where there is better pay and modern facilities to work with (Paul and Ali, 2022).

6. **Poor knowledge of Best Practices:** Universities in developed countries have world-class ICT facilities for their students. The issue of poor networks, overpopulation, and other factors impeding e-services in developing countries, are either non-existent or very minimal. The inadequate knowledge of best practices has been one of the factors restraining e-services within universities. Paul and Ali (2022) revealed that raising awareness, and overcoming resistance to change are critical factors for the adoption and implementation of e-services in Nigerian universities.

7. **Over Population of Students:** In 2019, the number of undergraduate students in Nigerian public universities was over 1.8 million while over 103 thousand were enrolled in private universities (Statista, 2022). These figures showed the high rate at which internet facilities especially in public universities would be used. The overpopulation of students has affected the level of accessibility to educational e-services in Nigerian public universities. Students in public universities virtually struggle to have access to e-library services, hostel accommodation, and so on.

Theoretical Framework

This study was hinged on Technology Acceptance Model (TAM). The theory was adopted because public universities rely on the use of technology to ensure that educational e-services are offered to students. TAM is considered one of the most influential and commonly employed theories for describing an individual's approval of information systems. TAM, adapted from the Theory of Reasoned Action (Ajzen and Fishbein, 1980) and originally proposed by Davis (1986), assumes that an individual's information systems acceptance is determined by two major variables: Perceived Usefulness (PU) and Perceived Ease of Use (PEOU). The key proponents of this model developed it to explain the key factors that drive users to adopt the new information system and its wide acceptance. The key aim of the TAM is to expose the factors affecting the acceptance of computer applications in general. This model also gives room for researchers and practitioners to determine the inadequacy of a process (Davis, 1989). As postulated by David (1989), there is a correlation between the behavioral intent of the utilization of information technology

devices, and such behavioral goal tends to be influenced by the attitudes of the users. The assumed simplicity of application influences actions and usefulness.

This model applies to this study in the sense that Nigerian universities use technology to meet their goals. Modern administration has relegated the traditional methods. The advent of information systems has taken educational e-services to a new level. The technology acceptance model is an ideology of information management to model how students and staff use and implement information technology. For instance, the number of internet users in Nigeria has increased tremendously since its inception. As of January 2022, the registered internet users are approximately 109 million (report from Statista, 2022). This figure is mind-blowing, knowing that universities can leverage this to reach out to more customers and expand their coverage.

The paradigm for using technology suggests that the intention to conduct decides the use of an information system but that the intention to conduct also depends on the approach of the individual to the system and their perception of its use. As opposed to internet advertising, consumers still weigh other factors. These are factors that affect e-service and these factors are a bad internet connection, lack of trust, lack of timing, and a payment issue (Ekwueme and Akagwu, 2017). The knowledge of TAM helps students to take decisions as regards the educational e-services offered to them. This also explains the perceived comparative modern networking technology and students use of the internet to satisfy their academic needs. Two factors that lead to recognition and acceptance by most students are the perceived usefulness and ease of use. Other factors, as level as literacy, funding, and maintenance culture, can affect students' usage of educational e-services especially at the University of Abuja.

Methodology

A survey design was employed for this study. A survey design is a research method that describes the characteristics of the population or phenomenon that is being studied (Adi, 2019). The purpose of adopting a survey research design is that it is suitable to elicit the opinions, attitudes, and perceptions of respondents regarding to the implementation of educational e-services and students satisfaction at the University of Abuja. Also, one of the advantages is that this research design can be carried out on a small or large-scale population. The total population for this study is placed at 25,897, and this consists of a total number of staff and total number of students of the University of Abuja. According to the staff nominal roll in the Registry Department of University of Abuja, (2018), while the entire number of staff in the University is 2,372 while the total student population is put at 23,525 (Statista, 2022). The sample size of 202 was derived by using Taro Yamane's (1967) formula. The formula is being given below:

$$n = \frac{N}{1+N(e)^2}$$

Where n=sample size

N =population of the study 25,897 being the total of the staff of the University of Abuja and students.

e = Tolerable error (in this case, 5%)

$$n = \frac{25,897}{1+25,897 (0.05)^2}$$

n = 392.

The researcher’s adopted both simple random sampling and purposive sampling techniques because these two techniques give equal chances for respondents to be selected for the study. Also, purposive sampling was used to select appropriate respondents based on the researcher’ judgment. The researcher adopted linear regression, chi-square and correlation analysis as statistical inferential tools in testing study’s hypotheses of the study using Statistical Package for Social Sciences (SPSS v23).

Data Presentation and Analysis

Table 2 displays the descriptive result of the implementation of educational e-services at the University of Abuja. The mean score of 4.14 and SD of 1.12 indicated that most of the respondents agree that there are active email services for students at the University of Abuja. Most of the respondents attested to the fact that there is a website provision for course registration and fee payment as shown by the mean score of 4.12 and SD of 1.14. A mean score of 4.12 and SD of 1.14 indicated that most of the respondents confirmed that there is Learning Management System (LMS) for tests/assignment submission.

Table 2: The nature of implementation of educational e-services at the University of Abuja
Descriptive Statistics

Items	N	Mean	Std. Deviation (SD)	Decision
Email services	371	4.14	1.12	Accepted
Website interface for course registration and fees payment	371	4.32	.79	Accepted
Learning Management System for tests/assignments	371	4.12	1.14	Accepted
YouTube recorded lectures	371	3.88	1.15	Not Sure
E-Library services	371	1.97	1.22	Rejected
Google Meet for virtual classes	371	4.27	1.07	Accepted
Telegram/Facebook for information dissemination and interaction	371	4.12	1.10	Accepted
E-payment services	371	4.28	.85	Accepted
Valid N (listwise)	371			

Source: Field Survey (2022).

There is no general agreement to as to whether there is active YouTube recorded lectures for students as revealed by the mean score of 3.88 and SD of 1.15. The mean score of 1.97 and SD of 1.22 indicated that the majority of the respondents confirmed that there is no adequate e-library services for students at the university. The mean score of 4.27 and SD of 1.07 and revealed that the majority of the respondents affirmed positively that virtual

classes is being carried out via the Google Meet platform. The mean score of 4.12 and SD of 1.10 showed that the university disseminates and interacts with students via Telegram/Facebook platforms. E-payment services are carried out by students at the university, as revealed by the mean score of 4.28 and SD of .85.

Table 3: Effect of implementation of educational e-services on students' satisfaction at the University of Abuja

Descriptive Statistics				
Items	N	Mean	Std. Deviation	Decision
Virtual class is convenient and reliable	371	2.45	1.52	Rejected
Tests/Assignments are conducted on e-platforms effectively	371	2.90	1.08	Not Sure
Internet networks hinders effectiveness of virtual classes/tests on e-platforms	371	4.16	1.13	Accepted
Examination results can be accessed effortlessly on the school portal	371	4.10	1.21	Accepted
Lectures are better delivered through e-platforms unlike physical contact	371	1.77	1.22	Rejected
Time allocated for virtual classes is not adequate	371	4.10	1.22	Accepted
My academic performance has improved based on virtual classes	371	2.62	1.30	Rejected
I am satisfied with e-payment services	371	3.59	1.23	Not Sure
I am satisfied with the social media channels used for online classes/interactions	371	2.90	1.46	Not Sure
I am satisfied with how e-services are being delivered in terms of hostel accommodation, fees payment, library services and information dissemination	371	1.86	1.11	Rejected
Valid N (listwise)	371			

Source: Field Survey (2022).

Table 3 displays the descriptive result of implementation of educational e-services on students' satisfaction at the University of Abuja. The mean score of 2.45 and SD of 1.52 revealed that the majority of the respondents disagreed that virtual class is convenient and reliable. Tests/Assignments are not conducted on the e-platform effectively according to the mean score of 2.90 and SD of 1.08. A mean score of 4.16 and SD of 1.13 revealed that the majority of the respondents agreed that poor internet network has hindered the smooth running of virtual classes/tests on e-platforms. Most of the respondents agreed that examination results could be accessed effortlessly on the school portal, as revealed by the mean score of 4.10 and SD of 1.21. The majority of the respondents affirmed that lectures are not better delivered through e-platforms, unlike physical contact, as revealed by the

mean score of 1.77 and SD of 1.22. One of the reasons why students agreed that virtual lessons are inadequate is because of inadequate time allocation for lectures. It was revealed by the mean score of 4.10 and SD of 1.22. The mean score of 2.62 and SD of 1.30 revealed that students academic performance has not improved due to the nature of virtual classes. The mean score of 3.59 and SD of 1.23 indicated that there is consensus on whether students' are satisfied with the e-payment services of the university. There is also no consensus on whether students are satisfied with the social media platforms used for lectures and interaction, as this was shown by the mean score of 2.90 and SD of 1.46. The mean score of 1.86 and SD of 1.11 indicated that the most of the students are not satisfied with how e-services are being delivered in terms of hostel accommodation, fee payment, library services, and information dissemination at the University of Abuja.

Table 4: Challenges affecting educational e-services and students' satisfaction at the University of Abuja

Descriptive Statistics				
Items	N	Mean	Std. Deviation	Decision
Over population of students	371	4.33	.98	Accepted
Poor Maintenance Culture	371	4.32	1.07	Accepted
Poor Internet network connectivity and inadequate modern electronic devices	371	4.00	1.38	Accepted
Inadequate ICT experts	371	4.46	.98	Accepted
Poor Funding	371	3.42	1.36	Not Sure
Poor knowledge of best practices	371	4.21	1.04	Accepted
Low ICT literacy/Digital Divide	371	3.98	1.35	Accepted
Valid N (listwise)	371			

Source: Field Survey (2022).

Table 4 shows the descriptive result of challenges affecting educational e-services and students' satisfaction at the University of Abuja. Overpopulation of students had a mean score of 4.33 and SD of .98 (Accepted); poor maintenance culture had 4.32 and SD of 1.07 (Accepted); poor internet network connectivity and inadequate modern electronic devices had mean of 4.00 and SD of 1.38 (Accepted); inadequate ICT experts had 4.46 mean score and SD of .98 (Accepted); poor funding had 3.42 and SD of 1.36 (Not Sure); poor knowledge of best practices had 4.21 mean and SD of 1.04 (Accepted) while low ICT literacy/digital divide had 3.98 mean score and SD of 1.35 (Accepted). From the result, it was discovered that there was no consensus on whether poor funding affects educational e-services at the University of Abuja.

Test of Hypotheses

Re-statement of Hypothesis One:

H₀₁: Educational e-service does not have a significant impact on student’s satisfaction at the University of Abuja.

Table 5: A model summary of educational e-services and student’s satisfaction at the University of Abuja

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.811 ^a	.658	.654	.65556

Source: Field Survey (2022).

- a. Predictors: (Constant), E-payment services, YouTube, LMS, GoogleMeet
- b. Dependent variable: Student’s satisfaction

Table 5 displays model summary of educational e-services and student’s satisfaction at the University of Abuja. From the result, the independent variables (e-payment services, YouTube, LMS and GoogleMeet) and a dependent variable (student’s satisfaction) have a correlate of .811, as shown in table 5. The given correlation of 81.1 made it clear that there is a strong and positive relationship between educational e-services and student’s satisfaction. The coefficient of determination between the independent variables (e-payment services, YouTube, LMS, GoogleMeet) and the dependent variable (students’ performance) is 0.658. This means that changes in the independent variable (e-payment, YouTube, LMS and GoogleMeet) account for 65.8 percent of the variations or changes in the dependent variable (student’s satisfaction).

Table 6: ANOVA result on educational e-service and student’s satisfaction at the University of Abuja

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	301.972	4	75.493	175.666	.000 ^b
	Residual	157.290	366	.430		
	Total	459.261	370			

Source: Field Survey (2022).

- a. Dependent Variable: Student’s Satisfaction
- b. Predictors: (Constant), E-Payment services, YouTube, LMS, GoogleMeet

The result of ANOVA as shown in table 8 indicates that the model is fit and significantly significant. The alternate hypothesis is accepted based on the F-value of 175.666 and a P-value of 0.05. This implies that educational e-services (e-payment, YouTube, LMS, GoogleMeet) has significant impact on students’ satisfaction.

Table 7: Coefficients of educational e-service and students’ satisfaction at the University of Abuja

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	6.289	.189		33.272	.000
	LMS	.011	.036	.011	.295	.768
	GoogleMeet	-.087	.050	-.084	-1.740	.083
	YouTube	.042	.032	.043	1.309	.191
	E-Payment	-.993	.068	-.761	-14.573	.000

- a. Dependent Variable: Students’ satisfaction

Table 7 displayed the coefficients of variables. The most significant educational e-services to student's services were found to be LMS ($=.011, t = .295, p < 0.05$) and YouTube ($=.032, t = 1.309, p < 0.05$).

Re-statement of Hypothesis Two:

Ho₂: There is no significant relationship between existing challenges affecting educational e-services and students' satisfaction at the University of Abuja.

Table 8: Chi-Square Test of relationship between challenges affecting educational e-services and students' satisfaction at the University of Abuja

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	480.123 ^a	16	.000
Likelihood Ratio	453.185	16	.000
Linear-by-Linear Association	106.814	1	.000
N of Valid Cases	371		

Source: Field Survey (2022).

Table 8 shows the Chi-Square Tests result regarding challenges affecting educational e-services and student's satisfaction at the University of Abuja. According to the table, calculated chi-square is X^2 (480.123) is greater than the tabulated chi-square of (453.185). The null hypothesis is rejected and the alternate hypothesis accepted. Thus there is significant relationship between challenges affecting educational e-services and students' satisfaction at University of Abuja.

Table 9: Correlation result showing relationships between challenges affecting educational e-services and student's satisfaction at the University of Abuja

			Inadequate ICT experts	I am satisfied with how e-services
Spearman's rho	Inadequate ICT experts	Correlation Coefficient	1.000	-.327**
		Sig. (2-tailed)	.	.000
		N	371	371
	I am satisfied with how e-services	e-Correlation Coefficient	-.327**	1.000
		Sig. (2-tailed)	.000	.
		N	371	371

Source: Field Survey (2022).

** . Correlation is significant at the 0.01 level (2-tailed).

Table 9 shows the spearman correlation result of the relationship between challenges affecting educational e-services and students' satisfaction at University of Abuja. Reject the null hypothesis if the calculated value is greater than the tabulated value and accept otherwise. The p-value of 0.000 is greater than the significant level of ($\alpha = 0.05$) and $\rho = -0.327$ at a sample size of 371, therefore we conclude that there is a fragile negative relationship between challenges affecting the implementation of educational e-services and student's satisfaction at the University of Abuja. By this we mean the two variables move in opposite directions.

Discussion of Findings

The nature of implementation of educational e-service at the University of Abuja

The University of Abuja as one of the federal universities in Nigeria, has embraced educational e-services for its students. The study findings revealed that e-services available for students include the following: email services, website interface, Learning Management System (LMS), YouTube recorded lectures, GoogleMeet, Telegram/Facebook, and e-payment services. The study findings showed that the e-library services have not been functioning. Students of the university can receive information from the school management on their email addresses, pay their fees, use biometric to register their courses. The Learning Management System (LMS) was created for students, especially distant learning students, to register their courses, carry out their continuous assessments/tests and also download available materials to aid their learning process. GoogleMeet has been effectively used by lecturers for their students. From the result, students were not sure of the school's YouTube platform. The university's management has utilized Telegram/Facebook to improve social interaction with the students and community. Also, the university has fully implemented the Treasury Single Account (TSA) policy which is an aid e-payment service. Students can pay their fees electronically into the TSA using the remittance platform. This collaborates with the submission of Adegoroye and Yinus (2015) that e-services have been gaining ground in Nigerian public service organizations. E-services have been able to provide a wide range of services to citizens without difficulty.

Impact of educational e-service on students' satisfaction at the University of Abuja

The findings from hypothesis one revealed that there is a correlation of .811 between educational e-services and student's satisfaction at the University of Abuja, which signified a solid and positive relationship between educational e-services and student's satisfaction. The coefficient of determination between the independent variables, and dependent variable was also 0.658. Also, changes in the independent variable (e-payment, YouTube, LMS and GoogleMeet) account for 65.8 percent of the variations or modifications in the dependent variable (students satisfaction). Based on this result, the study supports the claim that some students do not have positive attitude or satisfaction with some of the educational e-services rendered by the management of the university. Virtual classes have not been convenient and majority of the students still prefer physical contacts and this may be due to inadequate allocation of time to courses which may hinder in-depth explanations by the lecturers. Students sometimes find it difficult to access the e-platforms for virtual classes due to poor network connectivity. Oye et al. (2011) submit that one of the reasons responsible for poor educational service is the dearth of ICT experts in the universities which have resulted to students dissatisfaction.

Challenges affecting educational e-service and students' performance at University of Abuja

The relationship between the challenges affecting educational e-services and students satisfaction at the University of Abuja was tested using Chi-Square and Spearman (rho) correlation inferential statistics. The chi-square result of X^2 (480.123) which was more significant than the tabulated chi-square of (453.185), signified a positive relationship between challenges affecting educational e-services and students' satisfaction at the University of Abuja.

This shows that overpopulation, poor maintenance culture, poor internet network connectivity, inadequate ICT experts, poor funding, poor knowledge of best practices and low ICT literacy/digital divide were all significant factors hindering educational e-services and causing students dissatisfaction. The study of Kazeem and Dingley (2014) supports that poor funding is one of the critical challenge affecting e-services and implementation in Nigeria. The study of Oye et al. (2011) also consolidates this research finding that inadequate ICT experts, poor internet network connectivity have impeded e-services in Nigerian public universities.

Conclusion

The universities are established to provide quality educational services to students and promote national development through research and community services. The adoption and implementation of educational e-services in Nigerian public universities have been a lofty idea. However, there have been several challenges that have marred the success of educational e-services especially at the University of Abuja. This study identifies the nature of educational e-services available to students of the University of Abuja, impact of educational e-services on students' satisfaction and challenges impeding educational e-services and students' satisfaction at University of Abuja. The study concludes that the management of public universities (especially the University of Abuja) have made reasonable efforts to ensure students access educational e-services. However, issues such as poor internet network, insufficient ICT experts, mode of lecturing delivering on e-platforms, inadequate allocation of time for virtual classes and other factors have affected accessing e-services, and at the long run, caused students' dissatisfaction.

Recommendations

The results from the data analysis have revealed some salient areas the management of Nigerian public universities and other stakeholders should try and resolve. The following are recommendations based on the findings from the study:

1. The management of the University of Abuja and the Ministry of Education should provide adequate funds for modern ICT facilities so that students can have access to educational e-services. The internally generated revenue should be expanded to increase the revenue base of the university. Another way of improving funding is through collaboration with private sector organizations such as multinational companies, Non-Governmental Organizations (NGOs), and banks. Adequate monitoring and evaluation of such disbursed funds should be encouraged.
2. Training and retraining of staff should be encouraged in management of Nigerian public universities and this can be done through a public-private partnerships. ICT experts in private firms should be actively engaged to train staff on the effective use of modern electronic devices in rendering educational e-services to students. Also, the issue of low literacy rate/digital divide among staff can be tackled effectively through this method.
3. The e-library services should be revamped by the University management. The management of the University of Abuja should adopt best practices in maintaining an e-library and some of these practices are contents centralization, updated and recent learning

materials, full accessibility, user-friendly electronic devices and multi-format, and appealing content.

4. The management of the University of Abuja should provide ways to curtail overpopulation of students accessing educational e-services. The National Universities Commission (NUC) policies on students' admission intake should be strictly adhered to enhance students' accessibility to educational e-services.

5. Poor maintenance culture on the part of students and staff should be dealt with. Awareness on the importance on the need to imbibe good maintenance culture of the universities properties should be carried out periodically. Strict penalties should be put in place for offenders.

6. The university can partner with telecommunication companies to build more network gadgets/devices within the university campus so as to improve the quality of network connectivity for students to access educational e-services.

7. A periodical assessment of students views on educational e-services should be implemented by the university's management. Students should be allowed to rate or give feedback concerning their accessibility and use of educational e-services. This assessment would enable the university management to know the weakness, and strengths of educational e-services policies, and enhance students satisfaction.

8. The Ministry of Education, Universities management and other relevant stakeholders should adopt in-depth periodical assessments of educational e-services in public universities, especially the University of Abuja. This would enable the various educational stakeholders to know the current global trend and adopt best practices to boost the satisfaction level of students.

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