Impact of telecommunication network shutdown on academic performance of students, Federal University Dutsin-Ma, Katsina State, Nigeria

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Abstract
This study examines the impact of telecommunication network shutdowns on the academic performance of students at Federal University Dutsin-Ma (FUDMA) in Katsina State, Nigeria. Network access is integral for students' academic activities, enabling them to complete assignments, download resources, and communicate with faculty and peers. However, in response to security concerns, the government imposed a network shutdown in Dutsin-Ma, severely disrupting students' ability to perform these tasks. This research explores the consequences of the shutdown, the alternative methods students employed to access network services, and the challenges they faced. Data was gathered through a survey of final-year students, with findings indicating that network disruptions led to missed deadlines, difficulties in remote learning, and heightened communication challenges. The study highlights the adverse effects of network shutdowns on students' academic progress and calls for alternative security measures that do not compromise students' access to essential digital resources.

Keywords: Academic Performance, Information, Internet, Network Shutdown, Students, Telecommunication

Introduction
Network is very important in our daily lives. The network is useful for searching information easily and helps students to do their assignments with a click on the required search engine. It also encourages them to interact with one another for exchanging of idea and information from a different locations simultaneously (Affum, 2022). The internet is the key information and communication technology that led to a worldwide revolutionary change in the information scenario (Siraj, et al., 2015). Telecommunication networks is defined as transmission system that

enables information to be diffused in analogue or digital form between various sites by means of electromagnetic or ophthalmic gestures (https://www.nfon). Telecommunication service delivery is the goal of telecommunication systems (Sendin, Matanza & Ferrus, 2021). This implies that in event of shutting it down, the aim of the system is defeated. This can be catastrophic to internet subscribers leading to loss of millions of vital information, dollars as well as Naira.

The network has become a stable means of students' interaction and information dissemination in the Universities. Success in academic fields is now strongly attached to computer/internet utilization and this is influenced by computer self-efficacy of students on surfing the net for academic information. The use of the internet to enhance the academic performance of students is an uphill task because of the way students negatively use the internet (Bolu-Steve, Oyeyemi, & Amali, 2015). The network is a technology that has become an enormous part of people's daily lives through its ability to act as a supportive medium in different functions for which people use it. The internet was introduced to academic institutions as a tool to enhance student's academic experience in the mid-1990s (Ngoumandjoka, 2012 in Yebowaah, 2018). Over the last decades, internet connectivity has improved tremendously and is available everywhere such as homes, offices, travels and schools (Ellore et al., 2014).

The Internet remains a viable medium for quick access to information, especially among tertiary institution students. In particular, social networking sites usage facilitates students' communication, socialisation, coordination, collaboration and entertainment, but the use can also cause addiction and lead to time wasting, information overload and physical isolation from the society (Jehopio, Wesonga, and Candia, 2017). Ajanaku (2019) opines that network has given a new approach to education where students are no longer dependent on their teachers and school libraries as their only source of information. A major cursory observation shows that the internet is a means of communication and information sharing among students of higher institutions.

Problem Statement

Federal University Dutsin-Ma (FUDMA) is an ICT driven institution from its inception. Majority of its services are carried out via networks. Recently, due to security challenges bedeviling the society, state government issued a directive leading to shutdown of the telecommunication network in Dutsin-Ma and its suburbs in order to tackle the menace of insecurity. This causes a lot of havocs among FUDMA students in terms of payment of school fees, registration, semester course registration, accessing online resources for assignment, downloading of lecture notes, submission of assignment, communication with family and friends, etc. This is detrimental to FUDMA students' academic pursuit. With networks , there will be flow of information, assignment can be carried out with ease, communicate with loved ones, access internet and university portal, upload assignment, download lecture notes, access to digital information resources will be very easy, etc. Suffice to say that network is very important in this era of digitization and globalization especially among the net generations who want information need at the tip of their fingers (Sorensen & Sarjeant-Jenkins, 2016).

Statistical record has shown the decline in internet subscribers due to network shutdown and the loss of millions of money incurred. For instance, in India, loss of hours to internet subscriber are calculated in Dollars to see the economic implication such as 16315 hours of Internet shutdown cost nearly $3.04 billion, 12615 hours of mobile Internet shutdowns cost almost $2.37 billion while

3700 hours of mobile and fixed line Internet shutdowns cost close to $678.4 million during the period 2012 to 2017 (Paicker, 2020).

However, there was no trace of investigation carried out on the effects of network shutdown on the students from this particular region. This is the more reason it becomes imperative to conduct this study. The study aims at finding out the effects of network shutdown on students of Federal University Dutsin-Ma, Katsina State in order to fill the missing gap.

Objectives of the Study
The aims of this study are to:
1. Find out the impact of telecommunication network shutdown on FUDMA students' academic programme.
2. Ascertain their alternative source of network telecommunication among FUDMA students during the network shutdown.

Research Question
1. What are the impact of telecommunication network shutdown on FUDMA students' academic programme?
2. What are the alternative means of accessing telecommunication network during shutdown by FUDMA students?

Literature Review

Concept of Network Shutdown
Network Shutdown is a deliberate closure of network services by the government or service providers for a specific period. It is defined as a premeditated disruption of communication system thereby hampering accessibility to information. There are countries that adopt network shutdown policy. Network shutdown is seen as cessation of network services among government officials (Staifitri and Noviadhista, 2020). Internet shutdowns are defined as intentional disconnections of digital communications by government authorities such as Internet and mobile phone services as well (wagner, 2018) to prevent freedom of expression and access to information, unlawful restriction to human rights (De Gregorio & Stremlau, 2020). There is no scholarly unanimity on the definition of the term network shutdown, and many sources use it interchangeably with Internet shutdown, blackout, network disruption, and kill switch. However, Rydzak, karanja & Opiyo (2020) define telecommunication network shutdown as reactive social media bans, suspension of fixed and mobile telephone services, deliberate slowdowns (throttling), and complete blackouts of Internet connectivity.

Effects of Network shutdown
Network shutdown does not only cripple learning capability but also destroys educational system. Internet journalism work can be hindered by the epileptic nature of network (Staifitri and Noviadhista, 2020). The findings of Staifitri and Noviadhista (2020) with a sample of 34 via social constructivism paradigm by means of framing model showed that network shutdown; is usually a government decision. The investigation of Paicker (2020) shows that India experienced 67% total network shut down out of 47% in Jammu and Kashmir with a devastating effects of 16315 hours of internet shutdown costing billions of Dollar as per hours between 2012 and 2017.

Similarly, the investigation carried by Mare (2020) reveals that network shutdown has negative impact on financial sustainability of Zimbabweans' telecommunication firms who complied partly

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to uphold their license period and avert political intimidation. Systematic interference with the rights to freedom of expression, information, association and peaceful assembly continue to have a chilling effect on the political opposition, media outlets, journalists and bloggers. People are now denied their rights to seek, receive and impart information. Poor and marginalized people stand to pay the greatest price for dissent through heavy court fines, bail and bond terms for people arrested under many of these new repressive laws (Amnesty International, 2019; Parks and Thompson, 2020).

Alternative Source to Communication Network
Paiker (2020) suggests in his studies that laying down a good network facilities could be a substitute to network shutdown. Similarly, the findings of Tukur, Ibrahim & Lawal (2022) revealed that access to library conventional and offline databases could be a welcome relief and therefore recommend that academic libraries should intensity their efforts toward creation of awareness among academic staff and students on the existence of various sources of information in the library while the university update its knowledge on the technique of accessing the alternatives sources of information. Rather than shutting down Internet access to information in social media platforms, the Indonesian government should strengthen independent and reliable information sources for the information society, such as improving the mainstream media credibility to regain public trust (Satriawan, Elven & Lailam, 2023).

Challenges of telecommunication network shutdown
The study of Tukur, Ibrahim and Lawal (2022) highlighted some challenges encountered in the cause of accessing and utilizing the information during the period include time constraint, insufficient information richness of the alternative source compared to the internet, poor personal communication, inadequate information for preparing lecture note and inadequate information for research. In a situation where a nation relies solely on network and mobile apps for online transaction, the consequences are incredible, such as disruption of economy, threat to digital economy supply chain, undemocratic, bad governance, denial of freedom of speech and expression (Panicker, 2020). Equally, investigation of Yilma (2018) discloses that network disruption blocked chances of the vulnerable, women in pain and those facing domestic violence be reported timely in Ethiopia.

Research Methodology
A survey research design was used to achieve the objective of the study. The targeted population of the study are the final year undergraduate students of Federal University Dutsin-Ma, Nigeria. A close-ended questionnaire was utilised as the research instrument and stratified random sampling employed on the spot selection of students. The questionnaire was designed by the researchers and it consisted of two sections. The first section contained questions aimed at eliciting information about the demographic data of the respondents while the second section consisted of questions related to the study. The questionnaire was based on a five-point Likert scale form (1 -strongly disagree, 2 -disagree, 3 -undecided, 4 -agree, 5 -strongly agree). The data was analysed using SPSS Statistics.
The population of the study is 3015 while the sample size is 303 approximately. This is congruent to Neuman (2006) that if a population of study is above 1000, 10% can be drawn as sample size. This is also in collaboration with Krecie and Morgan (1970). The table below represents population and sample size.

Table 1: Population and Sample Size of the Study

Faculty	Population of Students	Sample Size (10%)
Agriculture and Agricultural Technology	151	15
Art	16	2
Computing and Artificial Intelligence	266	27
Earth and Environmental Sciences	106	11
Education	566	57
Life Sciences	709	71
Management Sciences	156	16
Physical Sciences	304	30
Renewable Natural Resources	134	13
Social Sciences	607	61
Total	3015	303

Source: Management Information Science Directorate, 2024

Table 1 represents the population of the study. Then, there were ten (10) faculties. The study summed up the total population from various faculties resulting to three thousand and fifteen while 303 is approximately 10% of the total population based on Krecie and Morgan (1970) chart for population and sampling size.

Result and Discussion of the Finding

Response Rate. In order to have a total number of copies of questionnaire as the 10% of targeted 3015, 350copies of questionnaire were distributed to the respondents while 303 copies were duly completed, returned and found useful for the analyses this is because the respondents were FUDMA and willingly displayed their enthusiasm toward filling the questionnaire with utmost regards.

Research Questions

What are the impact of telecommunication network shutdown on FUDMA students' academic program?

Table 1: Impact of telecommunication Network Shutdown on FUDMA Students' academic programs.

S/N	Statement	SA	A	U	D	SD	Total	Mean	Decision
1	I could not do my assignment online	196	83	13	11	0	303	4.5	Accept
2	I found it difficult to download lecture notes	139	116	22	18	8	303	4.2	Accept
3	I was unable to generate remittance/pay school fees online	241	52	3	7	0	303	4.7	Accept
4	Lack of internet connectivity in carrying out research	192	94	15	2	0	303	4.6	Accept
5	I missed some lectures due to lack of network communication	97	65	51	53	37	303	3.3	Accept

S/N	Statement								Decision
6	There was communication gap between us and our lecturers	89	88	26	62	38	303	3.4	Accept
7	Network shutdown did not affect my academic programme	32	46	55	88	82	303	2.5	Reject
	I can do all my assignment by visiting and borrowing books from the library	35	67	32	67	102	303	2.5	Reject
9	Network shutdown was insignificant at FUDMA	3	18	3	106	173	303	1.6	Reject
10	It is better not to have network at all	0	3	16	207	77	303	1.8	Reject
11	I can rely on physical library materials without networks	14	29	72	84	104	303	2.2	Reject
12	I was unable to do my course registration online	119	101	51	13	19	303	3.9	Accept
13	I cannot attend my lecture through zoom	225	62	7	9	0	303	4.7	Accept

Table 1 above indicates the mean scores on the effects of telecommunication Network Shutdown on FUDMA Students. The calculated mean score of 4.7 x 2 as well as 4.6 and 4.5 calculated mean score were accepted. This shows that FUDMA students were unable to generate remittance/pay school fees online, cannot attend lectures through zoom, could not do their assignments online and lacked internet connectivity in carrying out their research respectively. Similarly, the calculated mean scores of 4.2, 3.9, 3.4 and 3.3 were recorded on item statements such as finding it difficult to download lecture notes, unable to do course registration online, communication gap between them and their lecturers and missing some lectures due to lack of communication were all accepted. This is an indication that network shutdown had adverse effects on students' programs. On the same note, five item statements in which the calculated mean scores range between 1.6 and 2.5, were all rejected. It implies that network shutdown affected FUDMA students' academic program, upheld the relevance of telecommunication network, while relying on physical library materials without networks may not be feasible due to paradigm shift, because majority of university students prefer electronic information resources where they can access, download add and delete. This result corroborates the findings of Paicker (2020) as telecommunication network shutdown affected economic, social and educational development of India. The study also confirms the statement of Ajanaku (2019) that network has channeled the mindset of students towards a new approach to education with respect to non-dependent on teachers and use of libraries.

Table 2: Alternative Means of Accessing Telecommunication network during shutdown among FUDMA students?

S/N	Statement	SA	A	U	D	SD	Total	Mean	Decision
1	I was shuttling Dutsinma to Katsina to down load PDF files for my assignments	162	97	8	34	2	303	4.3	Accept
2	I spent a lot of money to get my assignment done	159	108	18	12	6	303	4.3	Accept
3	I used to climb a hill to access network/make calls	236	64	3	0	0	303	4.8	Accept

4	I travelled to neighbouring towns surrounding Dutsinma to make calls	57	44	7	106	89	303	2.6	Accept
5	I was accessing electronic resources via WiFi/VSAT	193	105	0	5	0	303	4.6	Accept
6	I downloaded a software called Trayer/talkie to make calls	77	83	4	65	74	303	3.1	Accept

Table 2 above shows alternative sources for the network shutdown, all the variables measured were affirmed by the respondents because based on findings, these were the only means the respondents can reach out to their loved ones and access internet for academic activities. The calculated mean score of 4.8, 4.6, 4.3 X 2, 3.1 and 2.6 are all accepted because the calculated underscore that could be rejected is 2.9 and below. These measures were peculiar to FUDMA students at that material time. Based on investigation, FUDMA students were searching for network in order to connect to the loved ones by climbing hills, accessed electronic information resources via WiFi/VSAT, shuttled Dutsin-Ma/Katsina and neighboring towns all in search of network, downloaded a particular software known as Trayer/Talkie in order to make calls.

Conclusion
The tables have been interpreted showing mean score as per variables measured in this study. The study analysed the effects of network shutdown on FUDMA students' academic activities and socializations, the peculiar alternative means as well as challenges encountered which were hitherto unknown. This implies that without network, majority of the academic activities could be jeopardized thereby leading to social, economic, educational and political setback. Therefore, telecommunication network is very important in lives of individuals irrespective of whether one is a student or not.

Recommendations
Based on the above findings, the study suggests the following recommendations:
1. Due to the negative impact of the network shutdown on the academic performance of students, the closure of telecommunication should not be an option for tackling issues of insurgencies. There should be other measures to be deployed rather than shutting down the network. These could be through provision of adequate security personnel and facilities
2. If it becomes expedient that the network must be shut down, then there should be provision of other avenues of accessing the network from the Government so that students can make of use it to actively perform better in their academic activities

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