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Awareness, Perceptions and Reactions on the Science Hub (Sci-Hub) Website Use among Postgraduate Students of Usmanu Danfodiyo University, Sokoto

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Abstract

The study investigated the awareness, perceptions and reactions on the Science Hub (Sci-Hub) website use among the postgraduate students of Usmanu Danfodiyo University, Sokoto. The objectives of the study were to find out the postgraduate students' level of awareness, perceptions and contributions of Science Hub website use for research and to ascertain their reactions and extent of satisfaction with it. The study adopted the survey research design. The population for the study comprised of postgraduate students of the university. Four faculties namely: Science, Health, Veterinary and Agriculture were purposively selected for the study. This is due to the fact that about 98.5% of the information resources in Science Hub are science, health and biomedical based. Simple random sampling was used to select one hundred and twenty (120) PG students that is thirty (30) each from the faculties under study. The questionnaire was the instrument used for data collection. The data collected were analyzed descriptively using tables, frequency and simple percentage statistic tool. The study found out that only few postgraduate students are aware of the existence of Science Hub website for research, majority of the postgraduate students who are aware of the Si-Hub website are making use of it because it provide free access to expensive online articles and books, majority of the respondents who are aware of the Sci-Hub website make use of it after few hours and majority of the respondents who are aware of the Sci-Hub website make use of it after few hours, among others. The study concluded that Science Hub website renders significant information services delivery to the users. Hence it provides free access to expensive online articles and books that ordinarily would have been out of reach of many students and researchers. The study recommended that based on the significance of this site to academia, the university library may

communicate its value as well as its copyright status quo to the students especially during orientation programmes and the postgraduate students of Usmanu Danfodiyo University, Sokoto should take advantage of free access offered by Science Hub website and utilize it in addition to the proprietary databases provided by the university library, among others.

Keywords: Awareness, Perceptions, Reactions, Science Hub, Postgraduate students, Usmanu Danfodiyo University, Sokoto

Introduction

Research at all stages is extremely valuable because it is a raw material for innovations and scientific discoveries. Postgraduate students at all levels of their studies are engaged in literature searching in order to satisfy their information needs to support their studies. They conduct various researches especially in meeting the requirement for the award of postgraduate degrees such as Master and Doctor of Philosophy (Ph.D) and also to make scientific contributions to knowledge. In support of the statement above, Egbe and Elija (2019) have observed that postgraduate students attached more preferences and importance to web resources when searching for literature for their researches because of their currency, remote accessibility and flexibility of use. The Internet and the Web are constantly influencing the development of new scholarly communication models as they have overcome successfully the geographical limitations associated with the print media (Sharma, 2009 cited in Kpakiko & Sadiku, 2015).

Science hub (Sci-Hub) as fondly called by the users is a website that contains over 50 million papers from scientific journals, providing free access to researchers worldwide (Christian, Mario, Armando, Felipe, Liz, William, Cynthia, Maria & Danai, 2017). Christian, et al (2017) stated that about 200,000 articles are downloaded daily from this database, without any distinction between developing and developed countries. The main source of these articles is

usually Elsevier (Science Direct) which accounts for 50% of the downloads made by the users. For example, the Latino scientific community is well aware of this resource; in Peru, from September 2015 to February 2016, over 370,000 papers were downloaded from sci-hub website (ElComercio Peru, 2016).

According to ElComercio Peru (2016), researchers utilizing Sci-Hub are scarce globally, as regions of Latin America have not demonstrated its usage, particularly among scientists and medical professionals. There have been reports concerning the scientific ethical conduct of this website regarding to the illegality of its service. Although, many scholars have defended this site based on the fact that there is high cost of scientific publications that has led many scientists with no choice than to obtain papers illegally (Bohannon, 2016). To the best knowledge of the researchers, awareness, perceptions and reactions about Sci-Hub among postgraduate students of Usmanu Danfodiyo University, Sokoto have not yet been studied. Hence, the purpose of this study was to find out the awareness, perceptions and reactions on the relevance of Sci-Hub to postgraduate students and the scientific contributions it has offered.

Brief History of Usmanu Danfodiyo University, Sokoto

The official website of the university (www.udusok.edu.ng/about) revealed that Usmanu Danfodiyo University (UDUSOK) formerly known as University of Sokoto is one of the initial twelve Federal Universities in Nigeria founded in 1975. It is situated in the ancient city of Sokoto in North-West Nigeria. It is made up of three campuses namely: the city campus, university teaching hospital and the main campus. The main campus house the administrative offices and faculties such as sciences, social sciences, agriculture, veterinary medicine, arts and languages, education, law, engineering and research facilities. The city campus hosts the centre for Islamic studies, centre for hausa studies and veterinary teaching hospital. The university

teaching hospital host college of health sciences respectively. The school is named after Usmanu Danfodiyo the founder of the Sokoto caliphate. It runs a four-year and six-year university degree programmes, postgraduate degrees and remedial programmes (pre-degree) and has a large accredited medical programmes. The remedial study is only conducted for the sciences and science related courses. Admission into other courses is sought by the standard JAMB (UTME or DE) procedure.

Statement of the Problem

Advancement in information technologies such as computer hardware and software as well as convergence of communication technologies such as the Internet, World Wide Web (WWW) etc in Nigerian universities has gradually taking over every facet of human endeavour ranging from education, commerce, government and so on. Interactions with some postgraduate students in the faculty of science, Usmanu Danfodiyo University, Sokoto indicated that the use of e-resources has created high dependency value on their research work and they needed current articles and electronic documents to ease their studies. However, this effort is often frustrated as a result of restrictions in retrieval of relevant and current online articles and documents from high impact journals and databases due to high cost of subscription fees to scientific publications.

Hence, most high impact factor online journal articles and books are usually indexed in proprietary/commercial databases where access to such resources go beyond the reach of many PG students because they are expensive and are mostly in dollars. Based on the high cost of scientific publications PG students are left with no choice than to obtain papers from any source possible legally or illegally to meet their information needs to support their studies. To the best knowledge of the researchers no study has been conducted on the awareness, perceptions and

reactions of the PG students in any Nigerian university on their experience with Science Hub. It is based on this threshold that research is designed to ascertain the level of awareness, perceptions and reactions on the use of Science Hub by postgraduate students in Usmanu Danfodiyo University, Sokoto.

Objectives of the Study

The study was designed to achieve the following objectives:

1. To find out the level of awareness of Science Hub website for research by the postgraduate students of Usmanu Danfodiyo University, Sokoto.
2. To ascertain perceptions on the Science Hub website use among the postgraduate students of Usmanu Danfodiyo University, Sokoto.
3. To find out the extent to which Science Hub website have contributed to the information needs among the postgraduate students of Usmanu Danfodiyo University, Sokoto.
4. To obtain reactions on Science Hub website use among the postgraduate students of Usmanu Danfodiyo University, Sokoto.
5. To determine the extent of satisfaction with Science Hub website use among the postgraduate students of Usmanu Danfodiyo University, Sokoto.

Literature Review

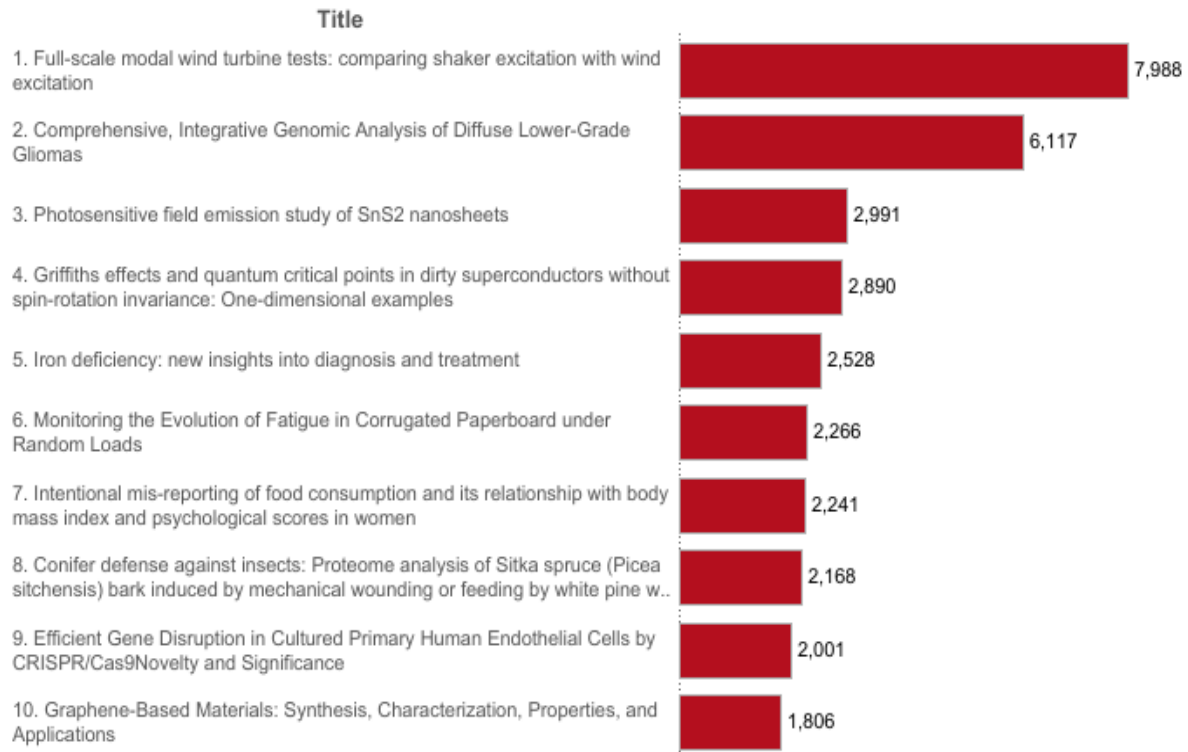
Science Hub is fondly called Sci-Hub by many scientists. It is a library website that provides free access to millions of research papers and books, without regard to copyright by bypassing publishers' paywalls in various ways (Elbakyan, 2021). One of the ways Sci-Hub does this is by allowing access through educational institution proxies. Sci-Hub stores downloaded papers in its repository, this storage is called Library Genesis (LibGen) or library genesis proxy 2021 which then allows its users to download such documents free (Correa, J. C., Laverde-Rojas,

H., Marmolejo-Ramos, F., Tejada, J. & Bahník, Š., (2020). Sci-Hub was founded by Alexandra Elbakyan in 2011 in Kazakhstan in response to the high cost of research papers behind paywalls. The site is extensively used worldwide. For example, in September 2019, the site's owners said that it served approximately 400,000 requests per day (Bohannon, 2016). The number of articles claimed is frequently updated on the site's home page, being over 85 million in December 2020 (Bohannon, 2016).

Sci-Hub and Elbakyan were sued twice for copyright infringement in the United States in 2015 and 2017, and lost both cases by default, leading to loss of some of its Internet domain names (Chawla, 2017). The site has cycled through different domain names and since then Sci-Hub has been lauded by some in the scientific, academic and publishing communities for providing access to knowledge generated by the scientific community (Rosenwald, 2016). Other proprietary/commercial publishers have criticized Sci-Hub for violating copyright, threatening the economic viability of publishers, potentially compromising universities' network security (Gardner, McLaughlin, & Asher, 2017). The cyber security threat posed by Sci-Hub claimed by commercial publishers according to Times Higher Education (2020) may have been exaggerated by publishers and jeopardizing legitimate access to papers by researchers in the university. Again, Times Higher Education (2020) revealed that in June 2020, a study found that articles downloaded from Sci-Hub were cited 1.72 million times more than papers not downloaded from Sci-Hub. Hence Sci-Hub website provides links to over 64.5 million academic papers and articles available for direct download. The image below shows the Sci-hub's top 10 most downloaded papers across different disciplines from September, 2015 through February, 2021.

Sci-Hub's top 10 most downloaded papers

Of the 28 million documents requested from September 2015 through February, these were the most popular.



Source: Peter Suber, Harvard University, 2021

The fundamental ideal surrounding Sci-Hub is to provide open access to knowledge to all with no copyright. We fight inequality in knowledge access across the world (Elbakyan, 2021). He stressed that scientific knowledge should be available for every person regardless of their income, social status and geographical location. Elbakyan (2021) remarked that the mission of Sci-Hub is to remove any barrier that is impeding the widest possible distribution of knowledge in human society. He further stated that creation of Sci-Hub is to advocate for cancellation of intellectual property or copyright laws for scientific and educational resources.

Copyright laws according to Bohannon, and Elbakyan (2016), render the operation of most online libraries illegal. Hence many people are deprived from knowledge, while at the same time

allowing rightholders to reap a huge benefit from it. The copyright fosters increase of both informational and economical inequality. The Sci-Hub project supports Open Access movement in science. Bohannon, and Elbakyan (2016) are of the opinion that research should be published in open access, that is they should be free to read. The Open Access is a new and advanced form of scientific communication, which is going to replace outdated subscription models. We stand against unfair gain that publishers collect by creating limits to knowledge distribution.

Some major reasons according to Matthew (2021), many researchers from different parts of the world are using Sci-Hub despite the website is perceived illegal are as follows:

1. Many of the researchers are facing huge difficulty in downloading peer-reviewed journal articles and books due to the cost of the journal subscription and lack of funding;
2. Open access journals fail to give enough resources hence researchers are turning into the Sci-Hub kind of sites to download peer-reviewed paid articles;
3. Many academic publishers offer programs to help researchers in poor countries access papers using a share link. This method requires researchers to contact authors individually to get links to their work, and such links go dead 50 days after a paper's publication. They are therefore left with a choice of either they quit the postgraduate programme or illegally obtain copies of the papers.

Millions of researchers due to reasons stated above turned to Science Hub, the world's largest pirate website for scholarly literature without feeling of guilt.

Other interesting things about Sci-Hub website as identified by Elbakyan (2020) includes:

1. Sci-Hub was founded to address the challenges of high cost of research papers behind paywalls.

2. In 2015, academic publisher specifically Elsevier filed a legal complaint against Sci-Hub alleging copyright infringement and the subsequent lawsuit led to a loss of the original sci-hub.org domain.
3. It stores papers in its own repository and additionally the papers downloaded by Science Hub are also stored in LibGen.
4. In February 2016, the website claimed to serve over 200,000 requests per day with an increase from an average of 80,000 per day before the sci-hub.org domain was blocked in 2015.
5. Science Hub website provides access to articles from almost all academic publishers, including Elsevier, Springer/Nature, Institute of Electrical and Electronics Engineers, American Chemical Society, Wiley Blackwell, and The Royal Society of Chemistry.
6. Science Hub does not require subscriptions or payment to download the full article.
7. Most requests for medical literature about (69%) come from middle and low-income countries. Also, India, China, the USA, Brazil, and Iran having most request in absolute numbers.
8. The website around March 2017, had 62 million papers in its collection, 85% of it were the articles published in paywalled scholarly journals.
9. Institutions like Harvard and Cornell have had to cut down their access to publications because of escalating subscription costs. This has turned larger number of researchers to become potentially the highest user of Sci-Hub in American cities with well-known universities.

10. Studies have shown that in 2021 over 30.8 million download requests via Sci-Hub indicates that 23.2 million of these were for journal articles. Also, 4.7 million (22%) of which were articles from medical journals.

Methodology

The study adopted the survey research design because it allows the researcher to make use of a sample of the entire population. The population for the study comprised of postgraduate students of the university. Four faculties namely: Science, Health, Veterinary and Agriculture were purposively selected for the study. This is due to the fact that about 98.5% of the information resources in Science Hub are science, health and biomedical based. Simple random sampling was used to select one hundred and twenty (120) PG students that is thirty (30) each from the faculties under study. The questionnaire was the instrument used for data collection. One hundred and twenty (120) copies of questionnaires were administered and eighty four (84) copies were completed and returned and found useful for the study. This represents 70% of the entire population. The data collected were analyzed descriptively using tables, frequency and simple percentage statistic tool.

Results and Discussions

Table 1: Awareness of the Existence of Science Hub Website among the Postgraduate Students of Usmanu Danfodiyo University, Sokoto

Level of Awareness	Frequency	Percentage
Not Aware	48	57%
Aware	36	43%
Total	84	100%

From Table 1, 48(57%) of the respondents indicated that they are not aware of the Science Hub website, while 36(43%) indicated that they are aware. From the analysis, the majority of

postgraduate students at the Usmanu Danfodiyo University, Sokoto are not aware of the existence of Science Hub website for research. This finding conformed to the remark by Matthew (2021) when he asserted that many researchers from different parts of the world are using Sci-Hub despite the website is perceived illegal. This might be one the reasons why the university library does not promote the use of Sci-Hub website to the users.

Table 2a: Perceptions on the Reasons for Using Science Hub Website among the Postgraduate Students of Usmanu Danfodiyo University, Sokoto

Reasons for Using Sci-Hub	Frequency	Percentage
It provides free access to expensive online articles and books	35	41.6%
Open access journals fail to give enough resources	31	36.9%
It removes the stress associated with share links where a researcher has to contact the author(s) individually to get link to their work	35	41.6%
It gives access to almost all academic publishers like Elsevier, Springer, IEEE etc	34	40.4%
It is fast in download and very easy to use	35	41.6%

From Table 2a, shows that majority of the respondents 35(41.6%) who indicated that they are aware of the existence of Sci-Hub are making use of it because it provides free access to expensive online articles and books, removes the stress associated with share links where a researcher has to contact the author(s) individually to get link to their work and that the website is fast in download and very easy to use while, 34(40.4%) of the same category of the respondents (aware) of indicated that they are using Sci-Hub website because it gives access to almost all academic publishers like Elsevier, Springer, IEEE etc. Also, 31(36.9%) of such respondents shows that they are making use of the website due to the fact that open access journals does not give enough resources to meet up their information needs. These findings again corroborates with the findings of Mathew (2021) who revealed that many researchers from

different parts of the world are using Sci-Hub for their research studies based on the above stated reasons.

Table 2b: Perceptions on the Frequency of Science Hub Website Use among the Postgraduate Students of Usmanu Danfodiyo University, Sokoto

Frequency of Sci-Hub Use	Frequency	Percentage
After few hours	36	43%
Weekly	-	-
Monthly	-	-

Table 2b, reveals that all respondents 36(43%) who are aware of the existence of Sci-Hub website make use of the site after few hours anytime they go online to search for information resources to support their research. This finding is in line with that of Elbakyan (2020) who says that Science Hub is being accessed frequently especially from middle and low income countries because it does not require subscriptions or payment to download the full article.

Table 3: Extent to Which Science Hub Website have Contributed to Information Needs among the Postgraduate Students of Usmanu Danfodiyo University, Sokoto

Extent to Which Sci-Hub Website have Contributed to Information Needs	Frequency	Percentage
Have greatly contributed to my information needs	26	31%
Have contributed to my information needs	7	8.3%
Have fairly contributed to my information needs	3	3.6%
Have never contributed to my information needs	-	-

Table 3 shows that among the respondents who are aware of the Sci-Hub website, 26(31%) of them indicated that it has contributed greatly to their information needs, 7(8.3%) pointed out that it has to some extent contributed to their information needs and 3(3.6%) of the respondents showed that the site has to somewhat contributed to their information needs. These findings confirmed the observation of Times Higher Education (2020) which stated that using Sci-Hub

website pose cyber security threat as claimed by commercial publishers may have been exaggerated by publishers and jeopardizing legitimate access to papers by researchers in the university.

Table 4: Reactions on the purpose of Science Hub Website Use among the Postgraduate Students of Usmanu Danfodiyo University, Sokoto

Purpose of Science Hub Website Use	Frequency	Percentage
Download materials for my research work	36	43%
To get relevant materials to support my studies	36	43%
To get materials for seminars and presentations	29	34.5%
Obtain materials for my assignment	23	27.3%
To build up resources to enhance knowledge in field of study	18	21.4%

From Table 4, all respondents 36(43%) who are aware of the Sci-Hub website agreed that they usually make use of the site for the purpose of downloading materials for their research work and same number of respondents 36(43%) indicated that they make use of the site for the purpose of getting relevant materials to support their studies. 29(34.5%) among these respondents showed that they make use of the site for the purpose of getting materials for their seminars and presentations while 23(27.3%) of these respondents confirmed that they make use of Sci-Hub for the purpose of obtaining materials fro their assignments. Also, 18(21.4%) among the respondents who are aware of the existence of the Sci-Hub website make use of it for the purpose of building resources to enhance knowledge in their fields of study. These findings confirmed the remark of Rosenwald (2016) who says that Sci-Hub has been lauded by researchers in the scientific, academic and publishing communities for providing access to knowledge generated by the scientific community.

Table 5: Reactions on the Extent of Satisfaction with Science Hub Website Use among the Postgraduate Students of Usmanu Danfodiyo University, Sokoto

Extent of Satisfaction with Science Hub Website Use	Frequency	Percentage
Very satisfactory	26	31%
Satisfactory	6	7%
Fairly satisfactory	4	5%
Not satisfactory	-	-

Table 5 shows that majority 26(31%) of the respondents who are aware of Sci-Hub website and are making use of it confirmed that they are very satisfied with resources they got from it while, 6(7%) among the respondents said they are to some extent also satisfied with the resources they got from the website. 4(5%) are of the opinion that they are somewhat satisfied with the information resources they got from the Sci-Hub website. These findings confirmed the assertion by Times Higher Education (2020) which stated that Sci-Hub website provides links to over 64.5 million academic papers and articles available for direct download.

Summary of the Findings

Significant findings of the study are hereby summarized below:

1. The study discovered that only few respondents are aware of the existence of Science Hub website for research.
2. Majority of the respondents who are aware of the Si-Hub website are making use of it because it provide free access to expensive online articles and books.
3. It was discovered that majority of the respondents who are aware of the Sci-Hub website make use of it after few hours.
4. The study also discovered that majority of the respondents who are aware of the Sci-Hub website confirmed that it has greatly contributed to their information needs.

5. The finding shows that majority of the respondents who are aware of the Sci-Hub website usually make use of it for the purpose of downloading materials for their research work.
6. It was discovered that majority of the respondents who are aware of the Sci-Hub website are very satisfied with information resources they got from it.

Conclusion

This paper has looked at the awareness, perceptions and reactions about Science Hub (Sci-Hub) website use among postgraduate students of Usmanu Dandodiyo University, Sokoto. From the findings it can be concluded that Science Hub website renders significant information services delivery to the users. Hence it provides free access to expensive online articles and books that ordinarily would have been out of reach of many students and researchers. The website provides access to over 64.5 million academic papers and articles available for direct download. This no doubt, can enhance research work and knowledge in the fields of study.

Recommendations

Based on the findings of the study, the following recommendations were made.

1. Based on the significance of this site to academia, the university library may communicate its value as well as its copyright status quo to the students especially during orientation programmes.
2. The postgraduate students of Usmanu Danfodiyo University, Sokoto should take advantage of free access offered by Science Hub website and utilize it in addition to the proprietary databases provided by the university library.

3. Due to enormous contributions of this site knowledge, postgraduate students should optimize the use of it irrespective of the litigation surrounding it hence the site has come to stay.
4. Since majority of users of this site are for the purpose of research work, therefore, intellectual property or copyright laws for scientific and educational resources should be cancellation.
5. Science Hub website is providing satisfactory advanced form of information resources to the users therefore its support for open access movement in science should be sustained to replace outdated subscription models.

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