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System quality and use of open educational resources among postgraduate students

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Abstract

Background of the study: OER is very beneficial and its adoption and usage by Nigeria universities as recommended by the federal government through National Universities Commission was expected to transmit to national acceptance because of the benefits accrued. Unfortunately, the story is different as so many universities are yet to key into this policy.

Purpose: This study investigated the quality of the system and postgraduate students' use of open educational resources in federal universities in South-West, Nigeria. The purpose of the study was to find out how postgraduate students at federal universities in South-West Nigeria used open educational resources.

Method: The study's research design is a correlational survey design and includes 9,436 master's degree students as its population; using quota sampling, the sample size is 377. 377 copies of the questionnaire were given in total, and 330 of those were determined to be usable, indicating an 88% response rate. With a criterion mean of 2.50, the data was analyzed using inferential statistics to address the research objectives.

Findings: As a result, the following findings were reached. In South-West Nigerian federal universities, postgraduate students have access to excellent quality open educational resources. Postgraduate students use university-based free educational resources to a very little extent. The use of Open Educational Resources (OER) by postgraduate students at universities is negatively correlated with the quality of systems.

Conclusion: The study thereby recommends that OER platform providers should ensure they sustain the system quality of OER repositories in order to attract more students to its usage and there should be training and retraining such as workshops to educate the postgraduate students on how to use OER.

Keywords: System quality, Open educational resources, Use of OER, Postgraduate students, library resources

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Introduction

Open educational resources (OER) is made possible through the use of Information and Communication Technologies (ICTs) and broadband infrastructures which allows seamless sharing or access to digital information materials. The resources on OER are always housed in a databank which is usually referred to as repositories. These repositories are usually hosted on web portals of institutions or owned by corporate organizations or government agencies. These repositories help to store and also permits users to find and use contents that are available. McGreal (2011 as cited in Clements et al., 2015) defined repository of OER as a digital database that contains learning materials, texts, documents, audio files, movies, multimedia apps, and social networking networks are among the tools and applications that are available. The first point of the Paris OER calls on states to make it easier for people to find, retrieve, and share OER, as well as to support the creation of user-friendly tools for finding and retrieving OER that is relevant to a given situation and specific to a state. Esan et al. (2024) opined that access to information is facilitated via open educational materials, which is especially advantageous in developing nations such as Nigeria.

The process of sharing educational resources has gone digital thanks to open educational resources, an internet-based worldwide repository. Curricula, maps, course materials, textbooks, streaming videos, multimedia apps, podcasts, and any other educational materials created for general public use by educators and learners can all be shared without paying extra royalties or licensing fees thanks to Open Educational Resources (OER). Wiley (2015) said, with these options, open educational resources (OER) may be able to improve teaching and learning quality and efficiency while also supporting social inclusion, gender equity, and special needs education. The Open Educational Resources (OER) movement seeks to promote the dissemination and repurposing of high-quality, freely accessible content across multiple platforms, without any financial or legal constraints. (Andrade et al., 2011; Downes, 2007; Gourley & Lane 2009; McAndrew et al., 2012 all cited in Atenas & Havemann, 2014). Openness, which significantly denotes "openly licensed" rather than just "freely available," is consequently the most distinctive, unifying characteristic among the plethora of resources covered by the umbrella term OER.

Thus, while OER continues to advance, the Ljubljana OER action plan (2017) asserted that awareness of OER among stakeholders, teachers, teacher trainers, librarians, students, parents, government and institutional educational policy makers, funding agencies, intergovernmental organizations, student associations, teacher and student unions, and other members of the civil society has grown more quickly than its actual application to date. This means that despite the fact that stakeholders are aware of the existence and advantages of using OER, the awareness has not really translated to the use of OER till date. This could be the result of consumers not feeling that open-education resources (OER) has been beneficial in general or of them not being entirely satisfied with the quality of the information, services, and the quality of the repositories that houses OER contents.

A major area of concern when it comes to using OER is the quality of the system where the information is located, these systems are usually regarded as repositories. Quality of repository of OER therefore can be assessed through user friendly interface, storage capacity, media format allowed, quality of resources (peer review), standardized metadata, multilingualism, attribution of authorship, feedback option and so on. The goal of OER repositories, according to Atenas and Havemann (2014), is to help educators find content in an organized way, share their own content, reuse pre-existing resources, and create new content by translating, adapting, and working with other community members to review, comment on, promote, and develop resources.

System quality as defined by Petter et al. (2008, as cited in Fitriati et al., 2020) is the

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ideal characteristics that an information system should possess. For instance, system adaptability, dependability, simplicity of use, ease of learning, intuitiveness, sophistication and response time. All these are characteristics are portraying quality attributes of a good information system. The degree to which users believe using an information system requires less effort is known as ease of use. Furthermore, the user must be able to use a quality information system with adequate flexibility. A flexible information system may be altered to accommodate both internal and external changes as well as changing conditions. User satisfaction is directly correlated with system adaptability, and this has an effect on users' involvement with the system. Furthermore, reliability is a crucial indicator of a high-quality information system. The extent to which users can rely on an information system is known as its reliability. Additionally, a system's ease of learning is a key sign of its quality. Ease to learning is the users' perception of how easy a system is to learn, together with its sophistication, responsiveness, and intuitiveness, are critical markers of an information system's quality. A system's response time is the amount of time it takes to respond to an order. Slower systems can make users less satisfied. An information system like the repositories of OER will be perceived useful if all the desired characteristics discussed are embedded in it.

Hodgkinson-Williams et al. (2017) highlighted and listed OER repositories as one of the structural factors potentially influencing the adoption of OER. He further listed infrastructure, power supply, hardware (devices and printing facilities), software, connectivity as part of the hindrances to the adoption of OER. Otto (2021) also revealed that teachers suggested that repositories ought to be implemented in all institutions of higher education. One aspect that seems to be essential for their design is that authors/creators want to be informed about their material's further use. This is because repository is a two-way communication system as users should be able to give feedback to the creator. Despite this, the exclusive use of open licences was undisputed.

While several authors have explored the reasons behind the low patronage of OER, particularly in developing countries like Nigeria, this study stands out by uniquely examining the quality of the system hosting the OER as a potential factor contributing to low usage.

Statement of the Problem

In order to comply with the UNESCO educational plan, all universities have been told by the federal government, acting through the regulating body NUC, to produce and preserve Open Educational Resources (OER). This policy is yet to be generally accepted as several universities are yet to key into it. Some Academic libraries particularly those at federal universities however have made significant investments to enable open access to a vast array of resources for its throngs of undergraduates, postgraduates, lecturers, and other university community members. Through observation and conversations with librarians employed by a few of these federal universities in South-West Nigeria, it has become evident that these resources are underutilized, particularly by postgraduate students who are thought to be the user group most likely to conduct research. This could be as a result of users dissatisfaction with the system quality of OER as researchers like Ozdemir and Bonk (2017) listed some of the barriers to satisfaction of OER and they include that OER is too difficult to use, OER does not have high quality, It takes too long to search for, choose, edit, and implement OER; it is too difficult to update or alter; it is not relevant to local content; it is not current or up to date etc. All these barriers can be grouped to mean users are not exactly satisfied with the system quality of OER. It is on this premise that this study set to investigate system quality and use of open educational resources among postgraduate students in federal universities in South-West Nigeria.

This study's primary objective is to look into postgraduate students' usage of open

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educational resources and the quality of the systems in federal universities in South-West Nigeria. The specific goals are to: evaluate the system quality of open educational resources used by postgraduate students at federal universities in South-West Nigeria; ascertain the degree to which postgraduate students in federal universities in South-West Nigeria utilize open educational resources; investigate the relationship between postgraduate students' use of open educational resources and the system quality in the federal universities in South-West Nigeria;

Research Questions

In this study, the following research questions were posed:

1. What is the level of system quality of open educational resources used by postgraduate students in federal universities in South-West Nigeria?
2. To what extent do postgraduate students use open educational resources in federal universities in South-West Nigeria?

Literature Review

Theoretical Framework

The theory adopted for this study is the Information System Success Model. Information system success model is adopted for this study because the researchers are of the opinion that the model is suitable to measure the variables in the study. Information system success model was propounded by DeLone and McLean in 1992 and was later reviewed and updated by the same researchers in 2003 to accommodate new trends. The initial model consists of six interrelated dimensions of information system success which include, System quality, Information quality, Use, User satisfaction, Individual Impact and Organizational Impact. The model was further reviewed to consist of System quality, Information quality, Use/Intention to use, User satisfaction and Net benefits.

Recently, DeLone and McLean information system success model was used in their investigation on using the DeLone and McLean information system success model to the modeling of digital library success, Alzahrani et al. (2019). Using a standardized questionnaire, the researchers gathered information from 978 respondents from four different Malaysian universities. The results demonstrated that behavioral intention, variance in actual use, and satisfaction are all significantly impacted by the quality characteristics of digital library systems. The best indicator of user satisfaction is the quality of the information provided, and student behavioral intention to use the system is strongly influenced by user satisfaction. Furthermore, there is a substantial positive correlation between the real use of a digital library system and user happiness as well as behavioral intention to utilize the system. In brief, behavioral intentions are greatly influenced by system quality, information quality and service quality.

In a similar vein, Ojo (2017) tested the validity of the DeLone and Mclean information system success model and found that user satisfaction and utilization are highly influenced by information quality, system quality, and service quality. The study ultimately validated the DeLone and McLean information system success model within the setting of a developing nation hospital information system. The success recorded by researchers who have used the model in various discipline assisted in the choice and suitability for this study. The new model introduced the concept of user satisfaction and also merged Individual and Organizational Impact to become Net benefits. According to DeLone and Mclean (2003), information system success model is a framework for measuring different dependent variables for research. The model indicates that information quality and system quality affect actual usage and user satisfaction of information system developed. It goes further to show how use of information system leads to a net benefit that affect both the individual and organization.

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The updated Information system success model is represented in the figure below.

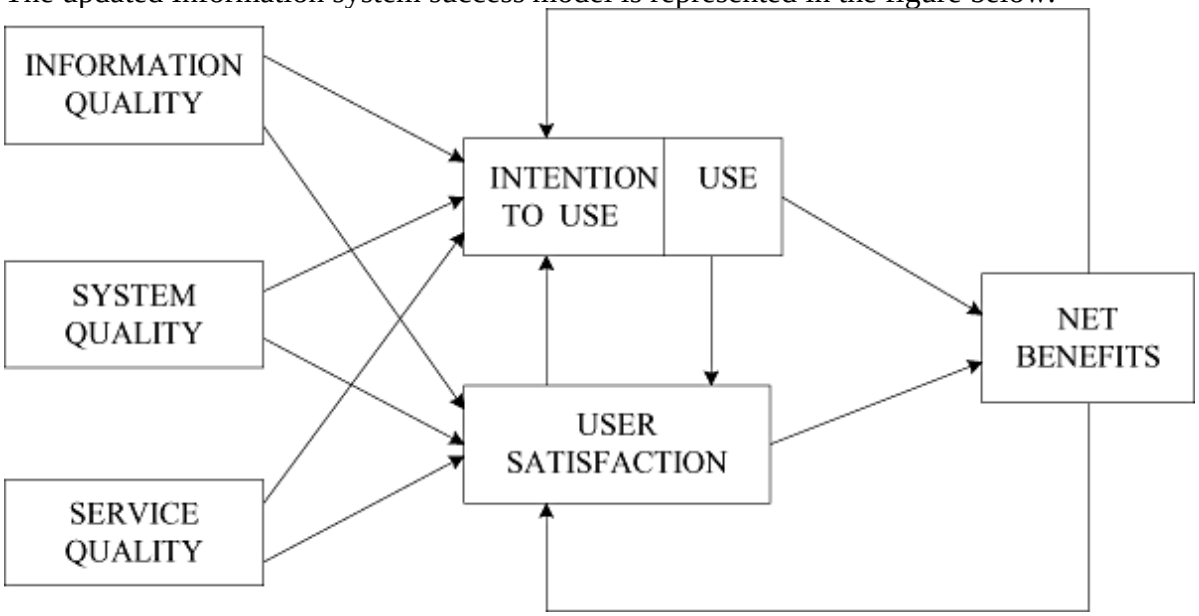

Figure 1. Information System Success Model

Relevance of Information System Success Model to the study

The model is interpreted to mean, Information quality, System quality and perceived usefulness individually and collectively affect intention to use and actual use of Open educational resources. The current study is not using all the variables in the model but will only focus on system quality as its affects usage of an information system.

System Quality of OER refers to the quality of the system or support the users get from using OER, this support could include, responsiveness accuracy, reliability, technical competence, user friendliness, standardization, usage of keywords, adaptability, flexibility of the system, ease of use, accuracy of the system, integration of system and the response time of the OER repository (Ojo, 2017).

The interaction of the variables regarding the current study is represented in the self-developed conceptual model below.

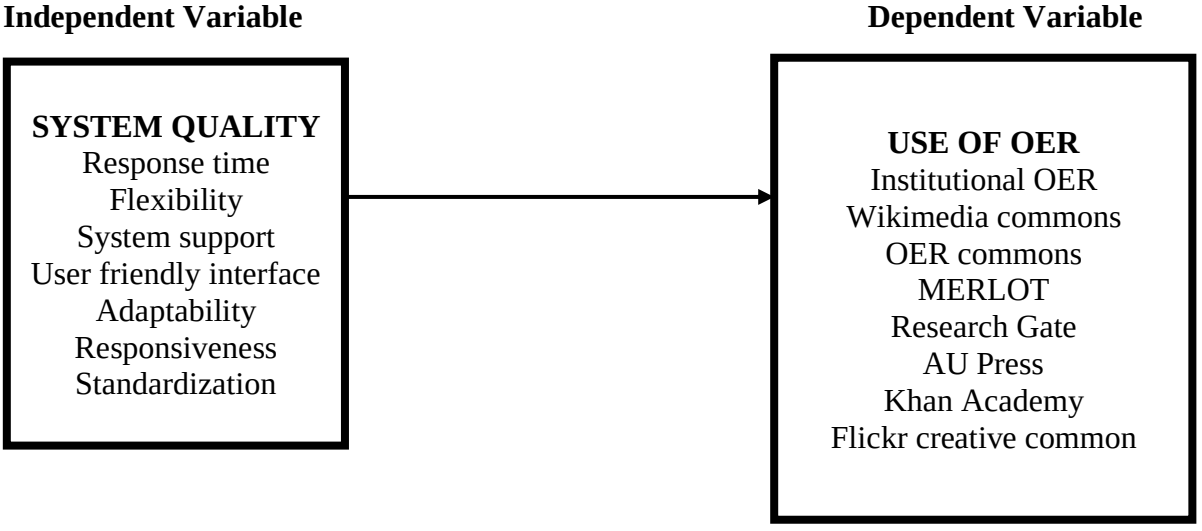

Figure 2. Conceptual Model on Information Quality, System Quality, Perceived Usefulness and Use of Open Educational Resources among Postgraduate Students'

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Figure 2 provides the conceptual model for the study; the objective is to find out if system quality has an effect on the use of OER by postgraduate students in federal universities in south-west Nigeria. The model has one independent variables that was derived from previous research and literature review of the information system success model by Delone and Mclean. The model showed that, for OER to be properly used, variable such as system quality should be put into consideration. Postgraduate students, irrespective of their locations, should be able to use OER for quality research. Using this model, this study considers system quality as a factor that may influence OER usage among postgraduate students in federal universities in south-west region of Nigeria.

System quality of open educational research (OER)

The information resources available on OER are usually housed in a database often known as repositories. These repositories are the information systems that allows for easy storage and retrieval of information resources in various format on OER. McGreal (2011, as cited in Santos-Hermosa, 2017) described repositories of OER (ROER) as digital databases that include social networking sites, papers, essays, videos, audio files, and multimedia apps as well as tools and resources for education. Resources are made available to teachers and students via OER repositories on the Internet. A digital repository is characterized in the context of education as a database that gathers and holds data along with certain metadata and descriptions so that beneficiaries can access it (Bogucki, 2021). Another way to describe it is as an online database that houses research projects completed by scientists across all disciplines and is searchable and accessible (Nayana & Pai, 2018).

Nigerian universities have previously implemented Open Educational Resources (OER) repositories and required instructors to post instructional materials they own for public use (NUC, 2017). OER use is closely related to the process by which regular lecturers post digital materials to an online resource repository at one end and how co-lecturers and students use those materials, remixing, repurposing, and redistributing them at the other. This indicates that open educational resources (OER) go beyond simply publishing materials to the university repository; instead, they can be downloaded and utilized for specific teaching, learning, and research objectives. (Bello et al., 2021).

According to McGreal (2011, as cited in Santos-Hermosa et al., 2017), OER repositories can be valuable tools for scholars and students, depending on the quality of the resources housed within. However, Butcher et al. (2015) assert that the creation of these repositories will support the quality of resources in the OER environment by offering initial stages of quality assurance. Housing materials within ROER is beneficial because it makes them easier to retrieve and more accessible. If a social layer is added, it also promotes cooperation because users will feel more like they are a member of a community of practice (Browne et al. 2010; Jacobi & van der Woert 2012; Petrides & Nguyen 2008; all cited in Atenas & Havemann 2014).

Furthermore, Gordillo et al. (2020) discovered that the current state of OER indicated that instructors and students had access to an enormous and growing number of digital learning resources via OER repositories. This was found during research on the efficacy of quality scores in recommending learning objects from repositories of open educational resources. Repositories such as the LRE, MERLOT, ODS, OER Commons, Europeana, Wikimedia Commons, and OER Commons offer thousands or even millions of OER. While Europeana provides access to about 59 million digitized resources from European museums, galleries, and multimedia archives, Wikimedia Commons offers about 61 million freely accessible media files. According to Gordillo et al. (2020), the pedagogical quality of the learning resources in

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these repositories warrants special attention because many OER repositories use a production model where OER are developed by volunteer groups without an effective quality control system. These are the primary causes of the frequent mention of quality assurance as an unresolved issue for open education resources (Larsen, & Vincent-Lancrin, 2006, as cited in Wiley et al., 2014; Clements et al., 2015).

According to Wynants and Dennis (2022), a recurring issue raised by students in their comments was in line with the most popular recommendations for OER lesson enhancements, which centered on format and design modifications. Some formatting characteristics, such as printing problems, mobile friendliness, and additional highlighting, notetaking, and audio features, were directly related to the constraints of the software used to construct the OER lessons.

Use of open educational resources (OER)

Hilton et al. (2013) found that integrating Open Educational Resources (OER) into well-planned academic programs at the university level will reduce costs for students and increase access to higher education. Furthermore, OER can be quite important in online courses for a variety of reasons. Time-saving, easy integration, interactive nature, and the availability of free resources are only a few advantages. The main objectives of the OER movement are to lower the cost of education and assist students in achieving higher learning outcomes. Hilton et al. (2013) further stated that students will save money and education will become more inexpensive when OER is integrated into coordinated academic programs at the level of educational institutions. Furthermore, OER can be quite important in online courses for a variety of reasons. In addition, open educational resources (OER) reduce costs for students by providing free books, and it also saves time for lecturers by allowing them to incorporate completed materials and exercises straight into their classes (Ko & Rossen, 2017). More significantly, OER offers the same functionality as in-person instruction by substituting comparable learning resources (Orr et al., 2015).

The most popular form of open educational resources (OER) among faculty that include OER into their course materials are open textbooks, which are textbooks with open licenses. Research indicates that Open Educational Resources (OER) not only reduce costs for students but also enhance academic performance and lower the percentage of students obtaining D, F, or withdrawal letter grades, or DFW rates. These benefits are even more pronounced for students who have historically been underrepresented in higher education. (Colvard et al., 2018).

OER was seen favorably by students for a number of reasons. First, OER's user-friendliness (Ikahihifo et al., 2017). Students discovered that the materials were customized for their courses and that it was simpler to modify them for use in a variety of disciplines and classrooms. Of those surveyed, 74% said that open educational resources (OER) were more engaging than standard textbooks. Ikahihifo et al. (2017) therefore suggested that during that trial semester, both the school and the students saved $34,000 compared to the price of similar course materials.

Similarly, Itasanmi (2020) posited that students use open educational resources (OER) extensively. According to the students, learning becomes more fascinating and engaging when they use open educational resources, which also enhances the learning process itself. They said that OER is heavily utilized to supplement in-class teaching and learning as well as for completing assignments. In general, they affirmed that OER is convenient and allows them to learn at their own pace. In addition, it helps them get ready for class and mostly functions as extra content for their course modules. Because OERs are freely available and simple to use, they were regarded as having a high relevance by them.

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Arunkumar and Kannan (2020) conducted a study at Alagappa University to look into postgraduate students' awareness of and usage of open education resources (OER). OER utilization was judged to be average by the study. The primary problem with open educational resources (OER) is that their adoption in teaching practices is still relatively low, according to Otto (2019), who also noted that further research is necessary to ascertain the relationship between OER and other open concepts. Nyamwembe et al. (2018) investigated the relationship between Kenyan private university students' awareness of and use of open educational materials for academic work. Researchers found that while most students had a moderate awareness of open educational resources (OER), usage of these resources is still very low. It was therefore recommended by Esan et al (2024) that University administrations should host conferences, seminars, and workshops to raise knowledge of the different kinds of open educational resources and to promote their use. They stated further that the purpose of this phase is to familiarize the pupils with the advantages of using open educational resources.

Relationship between system quality and use of Open Educational Resources (OER)

According to a study by Camilleri et al. (2014), one of the things that comes up frequently when talking about digital education resources, especially open educational materials, is quality. Despite the significant advantages of open educational resources (OER), quality concerns are thought to be among the reasons for its limited usage. The same authors also stated that innovation is required for the development and assessment of open educational resources (OER) and that the potential of OER to revolutionize educational practice has not yet been fully realized.

Also, 79% of the 126 students who participated in a Pitt et al. (2013) poll expressed overall satisfaction with the integration of OER into the curriculum, whereas 17% were unsure and 4% were not happy with the OER's quality. Wiche and Ogunbodede (2021) identified several barriers to the efficient utilization of free educational materials, including insufficient information retrieval abilities, limited internet access, and a subpar electrical supply. Other challenges include lecturers' lack of support for OER use and a lack of library sensitization.

There is ample evidence that Open Educational Resources (OER) reduced college students' tuition expenses without compromising their academic achievement. Clinton (2018) discovered that while spending far less on course materials, students utilizing OpenStax textbooks in an introductory psychology course at a public university in the United States performed somewhat better than those using standard textbooks. Hendricks et al. (2017) revealed a notable drop in textbook costs for a physics course at a Canadian college, without a corresponding decline in students' exam performance. These results were corroborated by Ngimwa and Wilson (2012), who stated that open educational resources (OER) offered inexpensive, high-quality, and pertinent learning experiences to teacher candidates participating in the Teacher Education in Sub-Saharan Africa project.

Adeyemi and Issa (2021) found a substantial relationship between system quality and students' satisfaction in their study on predictors of students' satisfaction with usage of the Web portal of University of Ilorin. They also noted that the web portal is easy to use, despite its unappealing user interface. The conclusions that there is a substantial association between system quality and users' satisfaction were previously confirmed by Lai and Pires (2010, as quoted in Adeyemi and Issa, 2021). Additionally, Ajoye and Nwagwu (2014) found that the most important factor influencing consumers' satisfaction is ease of use.

Leornard (2021) also conducted study on the relationship between the quality of the technological system, e-learning platforms, and students' perceived satisfaction with the e-learning system in higher education. The goal of the study was to investigate how students' reported satisfaction with the quality of the technical system as related to e-learning platforms.

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A questionnaire was used to gather data and was given to 286 university students. The results of the questionnaire indicated that there are variations among the students' e-learning platforms, methods, and tools. The chi-square test findings indicated that there is no significant correlation between the reported satisfaction of students and the technical system quality of the e-learning platform. This demonstrates that students' perceptions of quality and satisfaction are unaffected by the platform they choose. However, there is a strong correlation between reported student satisfaction and the quality of the technical system. Thus, in order to raise students' satisfaction with their involvement in the learning process, the quality of e-learning needs to be upgraded in line with the innovation of a learning system. Additionally, the findings of Wright's (2018) faculty interviews indicated that academics usually thought OER materials were of a high quality. Wright also discovered that locating, assessing, and incorporating OER required a significant time investment, which was seen to be a barrier to adoption.

Hypothesis

The following null hypothesis was formulated for this study

H0: There is no significant relationship between system quality and use of OER by postgraduate students in south-west federal universities in Nigeria

Method

Research type

This study used a survey design of the correlational type as its research design. Descriptive correlational design was used in this research study because the aim is to provide static pictures of situations as well as establish the relationship between different variables (McBurney & White, 2009). Correlational research helps to examine the extent to which two or more variables relate to one another with little or no effort to control extraneous variables. The universities selected has a large population of masters students, hence the study used the survey design which is convenient for large and small populations without sacrificing efficiency in addition to time, money and accuracy.

Population, sampling and sample size

9,436 master's degree candidates from Federal Universities in South-West Nigeria make up the study's population. This study has a sample size of 377. The sample size determination table by Krejcie and Morgan (1970) was used to derive this. They pointed out that a sample size of 373 is sufficient for a population of 10,000, and that a sample size of 377 is sufficient for this study because its population of 9,436 is smaller than Krejcie and Morgan's population of 10,000.

Research location

The population covered the Master degree students in University of Ibadan (UI); University of Lagos (UNILAG); Obafemi Awolowo University, Ile-Ife (OAU) and Federal University Oye-Ekiti (FUOYE). Federal University of Technology, Akure and Federal University of Agriculture Abeokuta were purposely left out because of their specialization.

Data collection

The researcher and four research assistants, one each from the universities under study administered a total number of three hundred and seventy-seven (377) questionnaires on the respondents in the four universities (University of Ibadan, Ibadan, University of Lagos, Obafemi Awolowo University, Ile-Ife and Federal University, Oye-Ekiti). It took a period of one month for the data collection. The research assistant was advised to respect the privacy of

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the respondents and never to tamper with their responses.

Data analysis

The questionnaire was collected, coded and analyzed. The statistical package for the social sciences (SPSS) was used for the analysis. Descriptive statistics such as frequencies and mean distribution was used to analyze the research questions. The criterion mean was set at 2.50. Pearson product moment correlation was used for the hypothesis since it seeks to determine the effect of one independent variable on the dependent variable. The research hypotheses was tested at 0.05 level of significance.

Result and Discussion

Table 1: Questionnaire Response

Number of Questionnaire Administered	Number of Questionnaire Returned	Percentage of Questionnaire Returned
377	330	88%

Table 1 revealed that a total of 377 copies of the survey were sent out, and 330 (88%) of those were returned. Since most studies require a response rate of 60% to be regarded acceptable, the study's response rate of 88% is deemed appropriate. This is supported by Fincham (2008), who said that for most studies, researchers should aim for a response rate of about 60%.

Research Question 1: What is the level of system quality of open educational resources used by postgraduate students in federal universities in South-West Nigeria?

Table 2. Systems Quality of Open Educational Resources

	System Quality	VH	H	L	VL	$\overline{X}$	SD
1	Easy information retrieval	196	123	10	1	3.56	0.57
2	Wider access to variety of information	199	122	8	1	3.57	0.56
3	Common search terms or metadata	118	187	20	5	3.27	0.64
4	Connectivity of devices	76	220	32	2	3.12	0.58
5	Pedagogical quality of OER	145	158	22	5	3.34	0.67
6	Quality control mechanism of the OER	124	180	19	7	3.28	0.67
7	Quality assurance of the OER	117	183	27	3	3.25	0.64
8	Online nature of OER	94	217	16	3	3.22	0.57
9	Access to the internet	92	199	33	6	3.14	0.66
10	High speed of the internet	46	159	114	11	2.73	0.74
11	Type of devices used for OER	54	230	40	6	3.01	0.60
12	Good formatting elements	54	210	63	3	2.95	0.63
13	Good software for creating OER lessons	55	221	51	3	2.99	0.60
14	Ease of printing OER	63	221	41	5	3.04	0.61
15	Mobile friendliness	80	225	25	0	3.17	0.54
16	Audio features (such as highlighting and note taking)	77	198	44	11	3.03	0.71
Aggregate Mean						3.16	0.40
Criterion Mean						2.50	

Given that Table 2's aggregate mean of 3.16 (Std. = 0.40) is higher than the 2.50 criterion mean, it can be said that there is a high level of system quality of open educational

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resources used by postgraduate students in federal universities in South-West Nigeria.

Research Question 2: To what extent do postgraduate students use open educational resources in federal universities in South-West Nigeria?

Table 3. Extent of Usage of Open Educational Resources by Postgraduate Students

	Signify the extent you have used these OER	VHE	HE	LE	VLE	$\overline{X}$	SD
1	Institutional OER	165	139	22	4	3.41	0.67
2	NOUN OER	29	61	162	78	2.12	0.87
3	Wikimedia Commons	81	169	71	9	2.98	0.76
4	Europeana	48	137	133	12	2.67	0.77
5	OER Commons	28	76	194	32	2.30	0.76
6	Teaching commons	16	58	205	51	2.12	0.72
7	MERLOT	16	60	212	42	2.15	0.69
8	ODS	24	83	176	47	2.25	0.79
9	LRE	38	158	112	22	2.64	0.77
10	Google scholar	38	129	148	15	2.58	0.75
11	Research gate	34	88	189	19	2.42	0.75
12	OpenStax	24	41	217	48	2.12	0.74
13	AU press	62	172	87	9	2.87	0.74
14	Project Gutenberg	44	77	189	20	2.44	0.80
15	Khan Academy	28	106	167	29	2.40	0.77
16	Coursera	14	47	215	54	2.06	0.69
17	Flickr creative common	165	139	22	4	3.41	0.68
18	Vimeo	29	61	162	78	2.12	0.87
19	Creative common search	81	169	71	9	2.98	0.76
20	Open courseware	48	137	133	12	2.67	0.77
21	Open textbooks	28	76	194	32	2.30	0.76
22	Open access journals	16	58	205	51	2.12	0.72
23	Open educational videos	16	60	212	42	2.15	0.69
24	Open software	24	83	176	47	2.25	0.79
Aggregate Mean						2.48	0.50
Criterion Mean						2.50	

Table 3 indicates that postgraduate students at federal universities in South-West Nigeria use open educational resources to a low degree because the aggregate mean of 2.48 (Std. = 0.50) is less than the criterion mean of 2.50.

Testing of the Hypotheses

There is no significant relationship between system quality and use of OER by postgraduate students in south-west federal universities in Nigeria.

Table 4. Relationship between Systems Quality and Use of OER

		System Quality of OER	Extent of Usage of OER
System Quality of OER	Pearson Correlation	1	-.186**
	Sig. (2-tailed)		.001
	N	330	330
Extent of Usage of OER	Pearson Correlation	-.186**	1
	Sig. (2-tailed)	.001	

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N	330	330

From Table 4, the Pearson correlation coefficient (r) of is -.186, indicating a 19% degree of relationship. As a result, the relationship between the use of OER and system quality is low negative. It is possible to conclude that there is a significant relationship between the use of open educational resources (OER) by postgraduate students at south-west federal universities in Nigeria and the quality of the systems since the significant value (Sig.2-tailed) is 0.001, which is less than 0.05. As a result, the null hypothesis is rejected, suggesting that a drop in the usage of OER may result from an improvement in system quality and vice versa.

Discussion

Systems Quality of Open Educational Resources

The findings of the study revealed that there is a high level of system quality of open educational resources used by postgraduate students in federal universities in South-West Nigeria. This negates the findings of Gordillo et al. (2020) as they posited that since many OER repositories use a production model where OER are produced by volunteer groups without an efficient quality control system, the pedagogical quality of the learning resources in these repositories merits special attention. The study also refutes the findings of Wynants and Dennis (2022), who discussed a few issues with OER use, such as the online nature of OER and e-textbooks, which could be problematic for some students because reading online can strain their eyes more and cause them to become easily distracted by internet browsing. Some students may find it difficult to engage with OER lesson components such as integrated videos, quizzes, and other features due to technological issues with internet access, speed, and device type.

Extent of Usage of Open Educational Resources by Postgraduate Students

The study found that the extent to which postgraduate students use open educational resources in federal universities in South-West Nigeria is low. The study confirms Otto's (2019) results, according to which the main issue with open educational resources (OER) is their low acceptance rate in teaching and learning environments. Similarly, the study is in line with the findings of researchers Nyamwembe et al. (2018) who examined how students' awareness of and use of open educational resources for academic purposes in Kenya's private universities. The researchers found that while most students had a moderate awareness of open educational resources (OER), usage of these resources is still very low. The low usage recorded in this finding can also be traced to the fact that respondents may not be aware of various OER platform available to them. This negates the findings of Itasanmi, (2020) who posited that OER usage among students is high. Also, it is in contrast to that of Arunkumar and Kannan (2020) which found that OER usage was on the average.

Relationship between Systems Quality and Use of OER

The finding revealed a low negative relationship between systems quality and use of OER. It can be concluded that there is a significant relationship between system quality and use of OER by postgraduate students in south-west federal universities in Nigeria implying that an increase in the system quality may lead to a decrease in the use of OER and vice versa. This is consistent with research by Wright (2018), who conducted faculty interviews and found that faculty members generally thought OER materials were of high quality. The researcher also discovered that finding, assessing, and incorporating OER required a significant time commitment, which was seen as a barrier to adoption. Despite the overall satisfaction with the system quality of OER the usage is still low this may be due to users' resistance to change as the respondents may be familiar with the use of traditional textbooks. Access to internet might

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also be a barrier as that is still a prevalent challenge in developing countries.

Conclusion

Arising from the findings of this study, it can be concluded that the system quality of the OER in federal universities in South-West, Nigeria is high and the usage by the postgraduate students is also low. It is also concluded that the quality of the system has a low negative significant relationship on the usage of OER. This may be as a result of students not being aware of the various OER platforms available to them as it is evident from the extent of usage of the listed OERs.

The geographical scope of the study covered only federal universities in South-West, Nigeria. The study was carried out in four federal universities in South-West, Nigeria and the Universities include (University of Ibadan; Obafemi Awolowo University, Ile-Ife; University of Lagos and Federal University, Oye-Ekiti). These universities were selected because they offer similar courses and have almost the same faculties. Federal University of Technology, Akure and Federal University of Agriculture, Abeokuta were left out because of the specialties of the courses they offer. The categories of postgraduate students that constitute the respondents of interest to the study are the fresh master degree students from the four federal universities. The masters' students were selected to ensure uniformity because some of the universities selected are yet to start Ph.D. programmes in some of their courses.

Recommendations

Based on the findings from this study, the following recommendations were made: OER platform providers should ensure they sustain the system quality of OER repositories in order to attract more students to its usage. The ease of use of the system, interface friendliness, mobile friendliness, ease of printing, connectivity and all other system qualities of OER should be sustained and even improved on so that users may continue to find OER repository easy to use and to possess good quality. There should be training and retraining such as workshops and seminars to educate the postgraduate students on the technical know-how to use OER. These trainings could be organized by the library or even the postgraduate school in conjunction with the University library. Effort should be made to promote the awareness of various OER platforms to postgraduate students. Awareness of various OER platforms will help increase usage. This could be promoted through by including the use of library resources and study skills as a required coursework for all students and through awareness campaigns on so the library and university social media pages.

Suggestions for Further Studies

The following have been suggested for further study: The study of awareness of the various types of OER by postgraduate students should be undertaken as evident from this current research shows that the postgraduate students are only aware of a few OER platforms. The study should be replicated in other regions in Nigeria outside the area of study. The study should also be carried out with the same variables using lecturers in place of postgraduate students that was used in this study.

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Authors' Contributions

All authors have contributed to the final manuscript. The contribution of all authors:

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Conflict of Interest

All authors have no conflict of interest related to this study.

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