Research article

Potential ethical problems in the creation of open educational resources through virtual spaces in academia☆

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ABSTRACT

The concept of open educational resources (OER) is an emerging phenomenon that encourages modern teaching and learning in the higher education sector. Although many institutions are promoting the adoption and creation of OER, they are still lacking in the policies and development guidelines related to the creation. This could perpetrate the potential ethical problems that affect the development of OER. This study aimed to find out ethical procedures and peer-review processes associated with the adoption and development of OER. A qualitative approach was used to gather data from OER developers in the academic space. Structuration theory was considered the main theoretical underpinning of this study. The commonly used big data virtual spaces for OER, such as social media and learning management systems (LMS), were identified. The study articulates three major causalities of OER's ethical problems, as follows: non-compliance to openness, transactional purchases of OER, non-incentives for developers. Also, the scholars' ideas and OER outputs cannot be undermined; however, there is a need for a peer-review process in the creation of OER. Institutions are expected to formulate the standards and requirements to be followed in the creation of OER because OER contributes to the rising of big data in the education domains. The study recommends that OER be developed for a specific purpose and aligned with the specific subject content, and the resource must be precise and peer reviewed for quality measures.

1. Introduction

Globally, higher education institutions continue to recognise that open educational resources (OER) are significant in the provision of tuition and research. The OER initiative was initially adopted at the United Nations Education, Scientific and Cultural Organisation's (UNESCO) 2002 Forum on the Impact of Open Courseware for Higher Education in Developing Countries (Miao et al., 2016). The essence of OER is identified as a great enabler of affording open and free access to education (Admiraal, 2022). OER affords wider opportunities for educational access globally and brings technological advancements in educational spaces (Midha & Kumar, 2022). OER initiatives have been made possible by advancements in various technologies, such as internet bandwidth quality, accessible computers, and mobile computers (Fulgencio and Asino, 2021). Therefore, the existence of OER depends on ICT infrastructure and internet connectivity. As such, some potential ethical dynamics affect the adoption and development of OER in different spheres of education.

In the Fourth Industrial Revolution (4IR) era, information and education spaces are confronted with many opportunities and educational innovations which contribute to the ever-increasing big data. Big data refers to a huge scale of information and knowledge that demand new architectures and technologies for data management to enable the extraction of value for improved insight and decision-making in any domain (Katal et al., 2013; Pika et al., 2021). Big data is characterised by various high-volume, high-velocity, high-variety, and high-veracity properties (Chebbi et al., 2015; Alam et al., 2017). The rise of big data is caused by digitisation of information like OER. In the era of big data, the process of generating data is continuously taking place (Naeem et al., 2022). This resembles the development of OER that is continuously taking place in education and on business domain platforms through the adoption of digital technologies. The education sector, including industries, strives for enabling technologies, social media, online stores, digital markets, cloud computing, Internet of Things (IoT), artificial intelligence, etc, in order to attempt a transformative digital disruption (Autio et al., 2018; Hervas-Oliver et al., 2021).

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The presence of OER that has the capability of generating big data in higher education institutions, cannot be denied. For example, the evolving of OER occurs from the combination of emerging technologies of data storage and data processing (Shah, 2022) and this is in line with the big data nature of realities. In such a dynamic 4IR era that promotes OER, a comprehensive review is still lacking in big data in education (Baig et al., 2020). Also, the ethics in the application of web technologies and OER has been under investigation (Mbunge and Muchemwa, 2022). Therefore, potential ethical problems cannot be predicted in diverse virtual structures of information production because they can occur in dual contexts and can be in the hands of individuals who may or may not be aware of the infringements concerned (Ncube and Dube, 2016). This is related to "information ethics" which was initiated in information science as an attempt to bring the creation, organisation, dissemination, and use of information within the purview of ethical standards and moral codes (Buchanan, 1999; Britz, 2013). Information ethics gained popularity in the field of information science because it deals with mass information and also makes full use of digital information technology to promote the development and expansion of services (González-Alcaide and Poveda-Pastor, 2018). Such generated knowledge can be referred to as big data.

Higher education institutions like the University of South Africa (Unisa) are framed in the circle of virtual spaces which are characterised by ethical problems because they are expected to develop and adopt OER. These OER are open-licensed educational resources that users can retain, reuse, revise, remix, and redistribute for personalised needs (Wiley and Hilton, 2018). There are ethics and copyright that protect the creation and development of OER (Creative Commons, 2007). However, academics have remained unaware of these licences underpinning the misuse of copyright (Cox, 2016; Arinto et al., 2017; Hylén, 2021; Mncube, 2022). Academia continues to produce OER that contributes to the rise of big data and open access based on its nature to store, generate and transmit in online platforms. Potential ethical problems are perpetrated during the development and adoption of information. Yet, higher education institutions have not yet ascertained how OER are ruined, misinterpreted, and mistreated in academia. Also, as OER continues to contribute to the rise of big data and open access, the systems and structures play a role in the creation and management and there is a need to identify relevant spaces. To engage with the study phenomenon to identify the relevant systems and structures for OER, structuration theory was used as the main theoretical underpinning. Therefore, the study sought to answer the following research questions:

- How do the potential ethical problems continue to transpire in the virtual spaces when creating OER?
- What peer-review procedures are applied in the creation of OER in academia?

This study will help to highlight the potential ethical problems of OER creation and enhance its sustainability in academia. The structure of this article consists of the introduction, literature review related to the courses, the potential ethical problems during the development of OER, theoretical framework, study methodology, discussion of results, conclusion, and a summary of conclusions.

2. Literature review

In this section, the study unpack the general OER knowledge in HEI (Section 2.1); review the practical creation of OER (Section 2.2); provides an overview of existing OER platforms associated with existing challenges (Section 2.3); and the overview of OER in association with open access (Section 2.4).

2.1. Knowledge of OER

The absence of OER expertise has been recognized globally, and it might have a detrimental impact on OER usage. When academics wish to use OER that are acceptable for tuition and research, this becomes a hurdle (Ujakpa et al., 2020). "Knowledge" means that in any particular context, knowing something has an impact on how it is used (Silverstone and Hirsch, 1992). In general, only a small percentage of the world's population is aware of OER (Karunanayaka & Naidu, 2017, 2018; Appiah et al., 2020). It's hardly unexpected, given current worldwide awareness of OER, that there are low levels of OER usage and many broken roles among developers. Many organizations, especially HEIs, are still learning about OER, which has been labelled as an emergent phenomenon (Nascimbeni et al., 2021). Consequently, the governments and HEIs must continue to play a role in empowering their academics.

2.2. Creation of OER

Many views exist concerning the creation of OER. To have a clear understanding, it is necessary to understand the distinction between adoption or use and creation of OER. Many researchers treat adoption and creation as a single entity (McKerlich et al., 2013; Mahendraprabu et al., 2021). Globally, the adoption and creation of OER have been recognised (McKerlich et al., 2013). McKerlich et al. (2013) further noted a disjuncture in measuring the adoption and creation of OER, where academics prefer adoption instead of creation. There is a need to treat these terms differently. Adoption is a behaviour related to the utilisation of technology to perform a task and is considered a vibrant research area in the IT domain (Cheung et al., 2019). Adoption concerns OER which are already developed and ready for consumption. Adoption is defined as a function of information-processing activities (Makkonen, 2021). Therefore, adoption might not be feasible because the lack of appropriate OER in many disciplines still constitutes one of the greatest impediments to the open education movement (Hilchey, 2021). Academics must observe the adoption limitations and start creating.

In the higher education space, the content or subject provided must be in the position to create an OER. Creation differs from adoption because it is more concerned about developing from scratch based on the requirement of the course or module. The creation of the OER cycle involves design and development, redesign, reuse and republishing (Pawlowski, 2012). The OER creation starts from an understanding of open access and creative commons. Creative commons are copyright laws to be initiated in the creation of OER. OER materials under these licences are considered 'open' because users are 'free' to retain, reuse, revise, remix and redistribute the content (Wiley, 2014). These rights are commonly referred to as 'the 5Rs' (Wiley, 2014). Open licences, such as Creative Commons licences, exist on a range of openness depending on how many of the 5Rs are shared with the end-user in the global domains (Mahendraprabu et al., 2021). Once such OER common laws are well established in faculty, the collaboration and masses of OER big data will continue to grow unviolated. The adoption also adheres to the 5Rs because the adopter adopts based on these assigned restrictions. This causes academics to have a vested interest in the adoption and creation of OER.

2.3. OER platforms

The nature of OER is virtual since it is accessed, created, adopted, and shared online as part of promoting open access. By being 'open', it signifies its full position and structure. Many dual virtual structures enable open access and free-to-use resources which mostly occur in websites via the internet. Most of these technology platforms and internet affordance for academics mean they can use IT artefacts towards achieving organisational goals (Effah et al., 2021), which are related to the adoption and development of OER. The internet is an affordance of different search engines, virtual structures, systems, and media repositories that allow the creation and distribution of OER (Hilchey, 2021). The nature and structures of OER bring challenges related to economic, technical, legal, social, and infrastructural requirements needed for availing OER to academia (Ochieng and Gyasi, 2021), which hamper the acceptance of OER. These diverse big data virtual spaces hinder academics in pointing

out the relevant platform before they even locate and select the most appropriate resources among the thousands that are published and that are available online (Tlili et al., 2021).

There are many different OER virtual platforms and web-based OER, such as open courseware, a computing application, massive open online courses (MOOCs), social media, institutional repository, and many more (Moon and Park, 2021). All these platforms promote interconnectedness globally for open access and collaboration. It has been proved that an OER virtual space has a positive impact on the global collaboration practices of universities based on the following patterns: "OER contextualisation and adaptation, knowledge sharing on open education, collaboration through MOOC platforms, virtual mobility schemes, collaborative open courses development, and collaborative accreditation of non-formal learning" (Nascimbeni et al., 2021: 368).

There is no uniformity of the virtual platform used for OER. The adaptability of the system is dependent on the institutional or individual choice. Some institutions develop their learning management systems (LMS) that are OER compatible for the distribution and organisation of OER. When these structures and key elements are presented, issues of implementation in educational practice are considered (Velychko et al., 2021). During this era of 4IR, social media plays a huge role in OER practices. As such, OER are well catered for in the social media spaces compared to websites (Kumar et al., 2021). Social media can be used as OER, and the open educational practice (OEP) education system focuses on OER and OEP because of its capabilities in entertainment and self-learning (Chukwu and Uhegbu, 2020). In the South African context, several social media virtual platforms are used, such as ResearchGate, Google Scholar, Facebook, Twitter, Instagram, YouTube, WhatsApp, Telegram, LinkedIn, and many others. Besides social media with the elements of entertainment, many academics prefer Wikipedia and Wikimedia, where more than 1.4 billion individuals have created OER available on these platforms (Hilchey, 2021), this cannot be denied because it is still part of open access. Whereas other institutions and academics rely on shadow IT to cater to OER shadow, IT refers to ICT facilities that are not officialised by the central IT department of an organisation (Kopper et al., 2020). The study on the domestication of OER by academics in a South African institution noted shadow IT as a contribution to OER practices (Mncube, 2022). The literature brings more attention to another researcher because, if OER practices take place on these platforms, the violation of OER ethics needs to be considered and minimised. Lastly, all these digital platforms have a role of affordance; however, the Global South countries still face challenges with internet connectivity, lack of electronic devices, and lack of ICT skills to interact and use educational digital platforms (González-Díaz et al., 2021). These factors contribute to social exclusion.

2.4. OER as associated with open access

There is a relationship between OER and open access to make tuition and resources available in the global village. The association of OER and open access is under investigated. That may continue to confuse academics and institutions. The main purpose of open access is to support scholarly publishing and encourage accessible and open access to content (Appavoo and Pagotto, 2014). Open access publishing has been defined in several ways, but it is generally known to involve the free availability of the results of research mainly in the form of scholarly articles (Papin-Ramcharan, 2006). Open access allows researchers in less represented parts of the world to participate in the international research community while also allowing researchers in higher-income countries to access local research and knowledge towards the resolution of the world's major problems (Chan et al., 2005).

OER are appropriate and worthwhile response to consider as colleges and universities shift to digital modes of teaching and learning for free (Veletsianos, 2021). A comprehensive analysis of the relationship between open access and OER revealed that these initiatives share the same connotation because they address issues of information in the public domain (Gowran et al., 2021; Huang et al., 2020). The existing distinct literature affirms that the development of open access was more concerned about research (Appavoo and Pagotto, 2014; Hermans, 2017; Papin-Ramcharan, 2006), while OER concerned teaching and learning (Pawlowski, 2012; Midha & Kumar, 2022). Both OER and open access succeeded through utilisation of ICT for tuition and research provision in higher education institutions (Huang et al., 2020). The aforementioned unresolved issues between the related terminology may also constitute a potential ethical problem, because if users are uncertain, they may start violating ethics.

3. Theoretical framework

The study opted for structuration theory, which was developed and published under the title *The Constitution of Society* (Giddens, 1984). Due to the pervasiveness of technology in the everyday operation of organisations, especially in the strategy formulated and reality construction in contemporary organisations, some attempts have been made to extend Giddens's ideas by including an explicit IT dimension in terms of social analysis (Walsham, 1993, 2002). The potential of the structuration theory in helping to increase understanding of IT research is the understanding of how organisational phenomena affect the development and use of technologies and how technologies help shape organisations (Pinsonneault, 2003). The theory is deemed to be more relevant because it allows for the study of the complexity of dual structures, dual systems, and structuration to transform IT artefacts concerning unveiling the potential ethical problems related to OER at Unisa.

There are three significant structuration theory concepts: structure, system, and structuration. The structure is defined as "rules and resources, organized as properties of social systems" that exist only as structural possessions (Giddens, 1984: 25). This means that structural analysis of something specifies constitutive relations between the various parts which help human beings, developers or users understand why something is as it appeared. The structures apply from reviewing literature and developing research instruments to the presentation of results. This concept helped to identify the dual structures involved in the development of OER. Some of the structures were related to the academics, institutions, and documents related to the governing of OER.

The 'system' refers to reproduced relations between actors, organised as regular social practices (Jones and Karsten, 2008). The system variable is considered useful in determining the existing and emerging ICT systems used for OER. This helped the study to categorise the systems used, such as LMS and social media systems. The significance of the systems stems from the fact that they play a potential ethical role in the administration and development of OER. Also, systems used contribute to establishing the causality of ethical challenges related to OER.

Structuration refers to situations leading to the stability of social transformation of structures and the reproduction of the system which reproduces social systems; it is the production and reproduction of social systems introduced by the interaction of rules and resources (Orlikowski and Robey, 1991). The importance of structuration is based on its capabilities to provide answers, and future recommendation of propositions that answers the main research question. The study could propose two propositions significant to the elimination of potential ethical problems related to OER in academia.

4. Methodology

As a research design, the study chose a case study. The research concentrated on a single case study, the University of South Africa (Unisa). This was interpretive research with a qualitative approach. The study of how OER ethics are broken in virtual places called for a qualitative investigation. The structuration hypothesis also aided IT research in gaining a better understanding of how organisational phenomena influence technology development and use, as well as how technology helps shape organisations (Pinsonneault, 2003).

4.1. Case study

This research was done at Unisa, a South African university that specializes in open distance e-learning (ODeL). E-learning is used in an ODeL to deliver tutoring and learning services. Distance and open learning are achieved through the use of ICT equipment to support instructional sessions between online students and lecturers via virtual platforms, according to the interaction between ODeL and OER (Ooko, 2021; Mncube et al., 2021). Furthermore, ODeL institutions have been shown to be useful in broadening access to higher education (UNESCO, 2000) through online realities and the use of free resources for tuition and textbook costs deduction (De Hart et al., 2015). The University of South Africa (Unisa) is the largest of its kind in Africa. The following students are currently enrolled at Unisa.

ODeL offers a variety of qualifications including higher certificates, post-graduate diplomas, undergraduate degrees, and post-graduate degrees (honours, masters and doctoral studies). The nature of this institution is characterised by a variety of activities such as tuition, research, open education, and collaboration in handling institutional big data and open access. ODeL can benefit from blockchain technology in terms of efficiency and provision of services. E-learning institutions are compatible with blockchain use in smart learning environments (Ullah et al., 2021). The aforementioned characteristics of the study context constituted the main reasons to select Unisa as a case study.

4.2. Sample and sampling

Unisa was chosen as a single case study for the study. This research is interpretive in character and uses a qualitative technique. Purposive and snowball sampling were used in the study. The sample was obtained from a large, diverse ODeL environment that included eight colleges (Unisa website, 2022). To obtain permission to conduct semi-structured interviews, e-mails were sent to all colleges in the academic departments. The first responders in each college aided in the identification of other important respondents involved in the adoption and development of OER. Academics were chosen for interviews since they are the primary users and adopters of open educational resources. Academics of various ranks taught at Unisa, including junior lecturer, lecturer, senior lecturer, and professors. A total of 42 academicians were present.

4.3. Data collection and analysis

Semi-structured interviews were used to gather information. Data was collected mostly through face-to-face interviews prior to the Covid-19 era. During Covid-19, however, it was done through online interviews utilising technologies like Microsoft Teams. The interviews were usually held in academic offices on several ODeL campuses. Because all the participants could communicate in English, the interviews were done in that language. Due to the diversity of Unisa participants, some code-switching into other languages like as Sepedi, IsiXhosa, Swati, and IsiZulu occurred throughout the interviews. The transcripts afterwards translated these into English. The researcher began by noting the following facts: the time, date, location, interviewer details, and interviewee details (Creswell, 2013). Thereafter, the questioning started. The interviews lasted 30–60 min. During data collection, the data were recorded and later transcribed into a text format.

For analysis, the transcribed data were coded in NVIVO. Thematic analysis was applied in the research. By reading the interviews and re-reading the codes, the researcher began to code the data according to themes, producing NVIVO memoranda on various subjects by returning to individual interviews, and developing the analysis by further interrogation of the data. All of the coded data and concepts were examined and grouped into primary themes and correlations by the researcher. The researcher began to redefine and rename the final themes after recognising and integrating them, and the analysis was completed. Finally, the researchers began to deliver the study's findings after completing all data analysis operations.

4.4. Ethical considerations

The researchers followed all the research ethics requirements. The ODeL granted authorization when the study applied. In addition, all the participants in this study gave their informed consent. As a result, all ethical standards were followed: anonymity, including the protection of respondents, the right to participate, and the freedom to withdraw at any moment (Unisa Website, 2022). Permission was also granted to reveal the study's context.

5. Results

The results are presented from a heterogeneous single-case study context, which is Unisa. The characteristics of participants are drawn from equal representation where gender, qualification, work experience, position, and colleges were considered. Table 1 presents the demographic information of the respondents.

5.1. Learning and social platforms

The results reveal that a potential ethical problem could occur during the creation of OER in virtual domains like LMSs. Several LMSs are preferred and used in academia; however, the most preferred is social media. The motive for opting for social media platforms stems from the fact that, when academics see other academics utilising these platforms, they are often motivated to follow suit. Social media platforms or LMSs are considered to be the suitable enabler of open access, content visibility and keep academics active in online tuition. While browsing social media for personal purposes, academics are encouraged to see what their students are posting or asking, and they are forced to respond immediately. The social media LMS used for teaching is linked to their social activities. The social media LMS was commended because of convenience as many academics and students owned smartphones which have many learning

Table 1. Overview of demographic participants.

Characteristics	Demographic information	Participants
Gender	Male	18
	Female	24
Qualification:	Honours	4
	Masters	23
	PhD	15
Work experience (years):	1–3	5
	4–5	10
	6–10	5
	11–15	10
	16–20	11
	21–25	0
	26–30	1
Position:	Junior Lecturers	4
	Lecturers	17
	Senior Lecturers	12
	Professors	9
Colleges:	Accounting Sciences	7
	Agriculture and Environment Sciences	6
	Economics and Management Sciences	6
	Education	4
	Human Sciences	12
	Science, Engineering and Technology	5
	Graduate studies	2
	Total	**42**

and social apps on their phones. Academics feel connected with their students as they can interact daily, regardless of space and time. Dealing with modern students who are technologically oriented, encouraged academics to use the online spaces that encourage open access and OER such as Facebook, WhatsApp, Twitter, Instagram, LinkedIn, ResearchGate's, Library, and many more.

> *"you can advertise on Facebook, Twitter, Instagram is very easy I mean we are living in the age of 4ᵗʰ industrial revolution whereby a lot of internet platforms can be exploited"* (Academic 8).

However, despite the effectiveness of social media and LMS, using LMS and social platforms involves potential ethical challenges. Some of the preferred social media are connected by the institution to handle the academic content. There are limited measures to govern the ethics concerning the usage as some of the LMS social platforms are owned by private organisations or individuals. It is not guaranteed that the academic will be always available on the social platform to monitor when students are sharing and distributing OER. Potential ethical problems may arise when platforms compete for content or academic arguments. Also, as these learning and social platforms are not afforded to all students, academics were still reluctant to fully rely on some of the social media.

Besides social media, academics used myUnisa as the official virtual space of learning at Unisa. Academics preferred this platform for OER because, within this platform, they were able to embed social media to enhance tuition. On the other hand, myUnisa is considered lacking and not capable of handling OER for tuition and learning because it is limited in terms of storage capacity. That could be the other main reason for opting for social media rather than myUnisa. There were different views regarding myUnisa as best system for tuition and learning.

> *"I know that the MyUnisa system can do anything and has some social media engines"* (Academic 32).

The results showed that the most used spaces for OER are virtual. In such an event, academics realised that it is very easy to share information and make it easily accessible and open for students as the main users of information. However, academics emphasised that students must be guided within the social media platforms, including myUnisa, because if they are not monitored, they might abuse the platforms. All used platforms have various positive and negative opportunities like the luxury of interacting, posting, editing, deleting, and many more. The assumption was that students can post useless information that might jeopardise the whole teaching and learning objective of the platform. OER in digital spaces can fall victim to hackers. Academics mentioned that in open access spaces, it is easy to infiltrate and post information that encourages horrific behaviour.

> *"some of the OER content may be harmful and can be unfavourable"* (Academic 22).

5.2. Causality of OER ethics challenges

The study results showed that many factors contribute to potential ethical challenges when developing OER. Some of the OER ethics problems are related to OER, some to developers (academics), and others are institutionally related. This study presents three main themes related to the causes of OER ethics challenges:

- OER which are non-compliance to openness
- OER which are purchasable
- Non-incentivising of academics

Some of the developed OER were not truly comply to open access because they can only be accessed by academics and students associated with Unisa. Not all online accessed information can be considered as OER; creative commons qualify any information or content to be OER.

Academics indicated that nothing should be a barrier in the creation and accessing of OER in a higher education institution. They further suggested that there should be no technological barriers; there should be no ICT infrastructure barriers, and there should be no purchasing or payments involved. One of the recurring ethical problems is that the issue of openness in OER has not yet been resolved at Unisa because academics develop OER and keep them in their digital spaces and devices without copyright and creative commons. Yet, they believe they have successfully developed OER.

> *"the bad thing is that it caters for those within the eco-system and those outside the eco-system are more like aliens, outsiders they can`t access"* (Academic 16)

The real and ethical compliance OER are against the transactions and purchases. If there is such a trend in an organisation, they are considered as the perpetration of unethical behaviour. The other recurring potential ethical problem is that the OER initiative is still considered as a business model which benefits the institutions. Although OER are ostensibly free, they are not because once academics have developed them, they are posted in the institutional repository, and once they are in this space, they must be purchased by the information seekers. In other words, academics need to have internet if they want to access institutional repository.

> *"once OER are kept in the institutional repository cannot be freely accessed because an outsider has to subscribe to the university and the institution gets money out of it"* (Academic 28).

Moreover, funding in higher education is an issue. Whilst institutions want academics to produce OER for free, there are no incentives for academics. Academics were against the non-incentives approach, and they tended to ignore the OER initiative because it did not benefit them; instead, it benefitted only the institution. They believed that the creation of OER is time-consuming. Academics preferred to focus on research rather than developing OER. They believed that the development of OER was not charity work. Publishing OER without any incentives was considered a contravention of labour law. They complained that there was no justice in this regard as academics were expected to work for nothing.

> *"When we write and publish the research articles or book chapters we are incentivized, however in the development of OER, there are no incentives"* (Academic 25).

5.3. Lack of guidelines of processing

Academics indicated that they were expected to develop OER despite a lack of guidelines or policy. The absence of such documents presented ethical problems. One of the recurring ethical obstacles is related to the peer-review process, which is currently not guaranteed. Some of the OER submitted to the institutional repository lack relevance because academics submitted without any thorough review before posting in a public domain. Consequently, academics must navigate the process of OER development. The lack of policy suggested that the institution was more concerned about quantity than quality. That is why many academics were rushing to create and publish without crucial reviews. OER developers need to be vigilant in OER development. Academics are expected to be careful in the selection of OER materials, and they must check the authors to know whether the authors are accredited. OER knowledge needs to be scientifically tested based on evidence of peer review. The development mandate should help academics to grow intellectually and learn something new from developed OER. However, some academics do not believe that there is a need for peer review of OER.

> *"Not necessarily peer review it but by virtue of exposing that work we are in fact doing that but by virtue of taking that work the work that you promote but be scholarship and you must be a scholarship worker, open up to the public for scrutiny"* (Academic 4)

6. Discussion

The study sought to find out about potential problems during the development of OER in virtual spaces in an ODeL context. The structuration theory helped to provide answers to the study. Two sub-questions regarding potential ethical problems and the peer-review process were posed to provide answers to the main research topic. As part of the discussion, two themes are worth discussing, namely virtual spaces for OER access and OER peer-review processes.

6.1. Virtual spaces to access OER

The occurrence of OER ethical problems in academia is caused by the existence of a variety of OER virtual spaces. In the presence of institutional LMS, the social media dual structures and systems are dominant in the adoption, development, and distribution of OER. This concurs with literature because the ubiquity of social technologies has appropriated today's world as a global village (Verma, 2018). Social media has dynamic capabilities to create collaboration and centred learning spaces (Chukwu and Uhegbu, 2020). In the 4IR era, social platforms have provided affordances for integration in education, providing smart learning environments (Barfi et al., 2021) and promote open access for OER. This is an indication that education and users' social life have become embedded. There is no need for academics to physically go to the particular structure (lecture hall, classroom, or computer laboratory) for teaching. In the convergence of social media and education, tuition can occur anywhere and anyhow (Busch, 2011; Simui and Ferreira-Meyers, 2021). The growing space of integration of education and social media promotes collaborative learning (Gong et al., 2021).

The event of social media for open education may contribute to OER's potential ethical problems. OER ethics abuses may continue to be perpetrated because the social media structures are reported to be popular sources of cyberbullying (Whittaker and Kowalski, 2015; Sarwar et al., 2019; Henry, 2021). Cyberbullying may be caused by the abuse which is happening in social media during tuition. College staff often become victims of cyberbullying due to their visible and active roles as academics. This is particularly the case when the institution or colleagues interfere with academic work (Weiss, 2021). Also, it can be caused by unethical behaviour where academics start fighting because of the unfollowed procedure of sharing open resources without following appropriate creative commons. Therefore, with the advent of online technologies which have facilitated rapid communication via e-mail, social media, open education sharing, and chat platforms, bullying now often presents itself in the form of cyberbullying (Paragina et al., 2011; Kartiwi and Gunawan, 2019).

Open access challenges institutions to revisit their policies to cater for consistent integration of social media and academic content sharing. Social media structures are capable of distributing educational content; however, dealing with OER needs to be guided by copyrights and creative commons. In the name of easy-to-share, the users tend to bypass the creative commons that guide the transferability of OER. The usability of social media can play a role in ethical problems. Higher education institutions are guided by intellectual policy for educational resources (Hylén, 2021; Koseoglu et al., 2020). Still, there is a lack of strategies or policies that accommodate education content in the social media and institutional LMS.

Both institutions and academics can violate OER ethics. Institutions lack the inventive model for OER. They could devise policies to support, incentivise, and reward the adoption and development of OER and open practices (Mays, 2017). Academics commit unethical practices when sharing, creating, and distributing OER, and ignore copyrights. Also, it cannot be denied that faculty, educators, and lecturers are still faced with challenges concerning the appropriation of creative commons and copyright in academia (Tlili et al., 2021). The adherence to creative commons is another main concern for OER ethical problems. Therefore, the study proposes the following:

Proposition 1. *The integration of dual virtual structure policies for education contributes to the elimination of the recurring OER ethical problems in academic institutions.*

6.2. Peer-review process

The peer-review process of OER is not well articulated in the form of policy or written documents. Peer review is crucial in preventing unethical practices and determining knowledge that is of value in the world of knowledge. Peer review is the common quality assurance process in academia that describes the process of testing and validating information (Hylén, 2021). The literature opines that education is shifting from peer-reviewed resources for education and relying on OER, where less or no scrutiny may reinforce structural inequities (Veletsianos, 2021).

There is minimal literature concerning the peer review of OER. Nevertheless, different academics and institutions manage the peer-review process differently. If the emphasis on peer review is not considered in the creation and distribution of OER, that will fail social justice (Cox et al., 2020). Firstly, it is necessary for practitioners and researchers to further dismantle some of the structural inequities that OER may reproduce by asking the following questions: "*who creates OER? who is and who is not represented in OER? and Who is cited in OER and which forms of knowledge are reproduced in OER?*" (Veletsianos, 2021:409). Secondly, the approach, adopted by MERLOT, stipulates that the author must invite volunteer contributions or have a professional review committee to assist during the review of OER (Downes, 2007). It is further noted that the lack of a review process or quality assessment system is a serious issue and is hindering increased uptake and usage of OER. Lastly, the other method for peer review is peer assessment of the developed resources where the author obtains open assessment feedback which can be used to enhance OER (Atenas et al., 2015). This might confirm that the minimum is being done about the process, procedure, guidelines, and policy concerning the peer-review process of OER.

In academia, the OER peer-review process is an individual choice. Globally, there is still insufficient evidence on guidelines concerning the peer-review process of OER. OER brought many opportunities for academics to develop and adopt; indeed, gradually, academics are contributing to the development. Yet, the peer-review process is compromised as OER are not scrutinised in the same way as a research paper (Veletsianos, 2021). Anyone can develop OER based on their requirements or objectives. Even the publication systems for OER are not taken into consideration as an issue of peer review. In such an event, the increase of big data and open access continues to rise. Massive data have an impact on users. In the event where the user is not an expert, information seeking might lead to retrieving poor-quality data (Jiang et al., 2021).

Literature concurs with the results that during the creation of OER, scholars may publish their outputs anywhere; many can even publish on Wikipedia (Hilchey, 2021). Such platforms are not scrutinised as users can edit, share and republish. The beauty of OER cannot be denied because it is meant for both formal and informal education purposes (Nascimbeni et al., 2021). This leads to the suggestion of the following proposition:

Proposition 2. *The lack of a peer-review process contributes to the increase of irrelevant information and causes unnecessary traffic in the internet search engines.*

7. Conclusion

The study sought to establish potential ethical problems during the creation of OER at Unisa. To answer this question, we relied on the structuration theory with its three variables (structure, system, and structuration). In most instances, the OER ethics problems occur unintended. The study found that OER has dynamic virtual spaces for open access. Some of the systems used do not adhere to OER creative commons since they can allow sharing of content anyhow. The simplicity and user-

friendliness of systems can be unwittingly manipulated by the user, resulting in the violation of ethics. Enforcing academics to develop OER contributes to the rise of big data and open access. The violation of ethics persists because of many other existing structural factors such as lack of knowledge, lack of skills, and lack of policy and guidelines about the adoption and development of OER.

The ethical problems are perpetuated when academics publish OER without peer review or scrutinising the resources. Therefore, this study recommends that a code of ethics of good practice concerning OER should be developed. Furthermore, is it necessary to investigate the OER digital platforms for open access if they have policies and procedures in place for accepting OER for publication. The suitable method could be a quantitative approach by relying on web surveys, informetrics, webometrics, and artefact analysis.

Declarations

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